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## ABOUT THE COLLEGE

**Panimalar Institute of Technology** started by **Jaisakthi Educational Trust** focuses on disseminating knowledge coupled with discipline and ethics. It is a Christian Minority Institution and a self- financing engineering college with five streams viz. CSE, IT, ECE, EEE and MECH at present. This institution is affiliated to Anna University meets the guidelines of AICTE, New Delhi in all aspects. Among the five departments, CSE, IT, ECE and EEE departments are accredited by National Board of Accreditation (NBA), New Delhi. Our college is a combination of a world class infrastructure built upon the greatest faculty strength combined with a pictures environment to chisel the finest minds into the most capable future generations of India. It is located in Poonamallee, not far away from Chennai city limits.

Our institution is likely to expand its sphere in other facilities also. The institution takes care to impart updated and high quality technical education throughout the year. Special care is taken in the matter of students becoming qualified as well as competent to face the challenges of the leading corporates in the present world of tough competition. Every effort is taken to transform the students into well rounded personality with strong confidence and sound character making no compromise in perfection, morality, dedication and commitment.

**Students :** Our well-equipped Engineers

**Staff :** Our means

**Industry and Profession :** End users



# INSTITUTE

## VISION

An Institution of Excellence by imparting quality education and serve as a perennial source of technical manpower with dynamic professionalism and entrepreneurship having social responsibility for the progress of the society and nation.

## MISSION

Panimalar Institute of Technology will strive to emerge as an Institution of Excellence in the country by

- Providing state-of-the-art infrastructure facilities for designing and developing solutions for engineering problems.
- Imparting quality education and training through qualified, experienced and committed members of the faculty.
- Inculcating high moral values in the minds of the Students and transforming them into a well-rounded personality.
- Establishing Industry Institute interaction to make students ready for the industrial environment.
- Promoting research based projects/activities in the emerging areas of Engineering & Technology.

## **ABOUT THE DEPARTMENT**

The Department of Computer Science and Engineering was established in the year 2008 and accredited by NBA, with well-equipped, spacious and state-of-the-art infrastructure. The department strives to impart best training to the students on Computer Science. The department has dedicated and qualified faculty besides good infrastructure for computing. The department has world-class laboratories to serve the needs of the faculty to enrich teaching and research activities and also to provide an experimental foundation for the students to experience learning with practical dimensions. Research at the department is nurtured through various sponsored technical program to keep pace with the current technological trends. The department is an active member of the professional bodies like Computer Society of India – Chennai Chapter, IEEE Computer Society and ICT Academy. CSE department is fabulous in maintaining Industry- Institute interaction with the aim of imparting Short-Term Courses, Workshops, Certification Courses, Faculty Development Program and Sponsored Projects at our campus. The major objectives of the department are to assist and develop top quality professional engineers and technicians required by the industries and other organizations.

- **Department of CSE creates new knowledge and opportunities to the students for learning through the process of research and enquiry.**
- **Department of CSE inculcates its students to recognize and value communication as the tool for creating new understanding, collaborating with others and furthering their own learning.**



## **DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

### **VISION**

To evolve as a Centre of Excellence in Computer Science and Engineering to compete with latest trends and also persistently strive to inculcate the requisite skills in research, innovation and entrepreneurship, making the budding engineers as competent professionals to take up any global challenge.

### **MISSION**

- To produce high-quality Computer Engineers with employable skills and professional standards by imparting theoretical and practical training.
- To collaborate with industry in pursuit of education and research, leading to the development of commercially-viable technologies.
- To develop an overall personality of the students by encouraging them to participate in co-curricular and extra-curricular activities.
- To train teachers capable of inspiring the next generation of engineers and researchers.
- To develop research interest among the student community.

## **DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

### **PROGRAM EDUCATIONAL OBJECTIVES (PEOs)**

#### **PEO-I:**

To excel in Computer Science and Engineering program to pursue their higher studies or succeed in their profession through quality education.

#### **PEO-II:**

To acquire knowledge in the latest technologies and innovations and an ability to identify, analyze and solve problems in computer engineering.

#### **PEO-III:**

To become recognized professional engineers with demonstrated commitment to life-long learning and continuous self-improvement in order to respond to the rapid pace of change in Computer Science Engineering.

#### **PEO-IV:**

To be capable of modeling, designing, implementing and verifying a computing system to meet specified requirements for the benefit of society.

#### **PEO-V:**

To possess critical thinking, communication skills, teamwork, leadership skills and ethical behavior necessary to function productively and professionally.



## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### PROGRAM OUTCOMES (POs)

*On completion of the B.E (CSE) degree the Computer science and Engineering graduates will be able to*

**PO1. Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2. Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3. Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4. Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5. Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6. The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7. Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9. Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12. Life-Long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING****PROGRAM SPECIFIC OUTCOMES (PSOs)**

**PSO1:** An ability to apply knowledge of software development concepts to select and apply software development processes, programming paradigms, and architectural models appropriate to different applications.

**PSO2:** Familiarity with various programming languages and paradigms, with practical competence in atleast three languages and two paradigms.

**PSO3:** An ability to demonstrate knowledge in theoretical computer science and in related areas such as algorithm design, compiler design, artificial intelligence and information security.



**RIP. Dr. JEPPIAAR, M.A., B.L., Ph.D.,**  
**Founder & Chairman**

Our Founder & Chairman Late Dr. Jeppiaar, M.A., B.L., Ph.D., deserves the due homage of immortals for he lives and reigns in the hearts of many through his service by education.

He had a vision to offer quality based technical education to those who were deprived due to poverty, social status and many other such factors. He was committed to bring equality of opportunity despite a student coming from rural background.

Inspite of the college's success in terms of glory and money, his motive was not into making profit out of education instead; he has been the eye opener for many who lived in the darkness of illiteracy. His ardent desire was to give back to the society that nurtured him.

With his blessings we are happy to release this magazine **Bits and Bytes '18** from Department of Computer Science and Engineering for the academic year 2017-2018.

## MESSAGE FROM THE SECRETARY



**Dr. P. Chinnadurai, M.A., Ph.D.,  
Secretary and Correspondent  
Panimalar Institute of Technology**

Greetings! Education is the development of individual according to one's needs and demands of society, and contributes to building socio-economic infrastructure of nation. Our college is committed to bring about social empowerment through dynamic education. The efforts taken to provide education to the masses have made our country emerge as an economic power. We feel proud to act as a contributor of this social transformation. Our college has been playing a crucial role in the development of academic excellence. Its policies are aimed at overall development of the students. Beyond providing a sound education, we wish to provide our students a holistic learning experience for life. I sincerely appreciate all the members of staff and students who have contributed besides their academic activities and those who have taken strenuous efforts in bringing out the magazine successfully. I wish it to be a continuous process. Wish you Good Luck!

## MESSAGE FROM THE DIRECTOR



**Mr. C. Sakthikumar, M.E.,  
Director, Panimalar Institute of Technology**

It is the matter of great happiness to see the success of the CSE Department's magazine BITS & BYTES '18. The humans have been exchanging the ideas for acquiring and using the knowledge. This exchange of idea was initially limited to tribes or the people living in close vicinity. With the advent of the technology the horizon of this sharing expended and today internet has made the whole world as a single tribe where one can have communication irrespective of the distance. Though the technology has made the life simpler for the mankind but at the same time it has made the life difficult for the budding engineers who have to learn new technologies every day. This learning can be possible only through sharing. This sharing need not be only about the contemporary research but also about the usage of the current technologies. I hope this magazine will provide a platform where the students and faculties can discuss the mechanisms of using the state of art technologies and refine their skills.

## MESSAGE FORM THE PRINCIPAL



**Dr. T. JAYANTHY, M.E., Ph.D.,  
Principal, Panimalar Institute of Technology**

It gives me pleasure to know that the Department of Computer Science and Engineering has come out with magazine BITS & BYTES '18. The technology is changing at a very rapid pace and the only way one can remain acquainted with the recent technology is through sharing. This magazine will help the students and the staff of the CSE department to share and discuss the state-of-the-art technologies. It will also help the students and faculty members to improve their writing skills and also provide an opportunity to ventilate their feeling and thoughts. I appreciate the CSE department for its initiative and congratulate students and faculty members who have made contributions to make this effort fruitful.



## MESSAGE FROM THE HEAD OF THE DEPARTMENT



**DR. V. SUBEDHA, M.Tech., Ph.D.,**  
**Professor & Head**

At this outset let me extend my warm greetings and best wishes to each and every one for yet another magazine BITS & BYTES' 18. The CSE department has reached a landmark since its inception in the Year 2008. Apart for the growth in intake and infrastructure, we have been able to improve the quality of education provided to the students.

Moreover, it gives me immense pleasure to release the current issue of our magazine BITS & BYTES and I extend my hearty congratulations to the Editorial Board and the faculty members for their laudable venture in bringing out this issue. Department magazines are the means to show the skills of the students in their respective fields. We are proud to have such students among us who, I am sure, will significantly contribute towards the development their own career, the department, the institution and the entire nation.

With this edition we could revitalize CSE department and show the way ahead for its future growth and expansion. Keep up the Good Work.

## CEO TALK.....

*“Don’t let anyone’s opinion of you become your reality”*



Ankur Warikoo is the CEO and Co-founder of Nearbuy, that is a part of Groupon Global, an e-commerce marketplace. He gave a very inspiring and motivating speech at Youth Ki Awaaz’s flagship event, CONVERGE 2016. There were huge rounds of applause throughout his speech.

Ankur has been an entrepreneur for about eight years now. He said that being an entrepreneur was about ‘managing people’. Yet, the talk wasn’t about him or the company he founded. It was about how someone can be successful in life. Based on his valuable experience, he shared his optimistic vision of how life must be led, with a very enthusiastic and young audience.

The motivating talk began with an exercise. Ankur asked everyone to close their eyes for a moment. Then he said that when one closes their eyes, one has no idea of how the world is looking at them. It’s possible to be completely yourself.

He asked everyone a very important question. “How many of you are genuinely scared of failing?” After everyone closed their eyes, he pointed out how nobody could see them. What really scares people is what people will think. During the course of the speech, he said that the reason most were scared of failing was because of what people thought. The problem was external and not internal.

People should learn from Ankur on how one should view failure. He said, *“Most of you are scared of failure. There is no measurement of failure. We fear of what people would think. We are not bothered by failure.”*

What he said later on will definitely inspire the generation spoilt by modern technology. “We think that if we don’t have five likes, we are a failure. *You are being told that there is a certain measurement. Don’t let world define failure or success. Go ahead and define your success and failure,*” he said.

Apart from being an entrepreneur, he is also a professor at a business school in Gurgaon. For many years he has been asking one question to his students at the end of his course. List at least three things which you have learned in this course? Over the years only six students have answered to his satisfaction because they were the only ones to list more than three things that they had learnt. This shows how much modern society has limited and restricted our ambitions.

Ankur realised how the entire system is ‘messed’ up. *“This system will define what success means to you. We’ve been dreaming someone else’s dreams every single day. Each one of us are told what each one of us should be doing.”*

In a scathing criticism of a society which is becoming more and more consumerist, he said, “We create values by connections, not by building goods.”

Ankur Warikoo ended with a line which should be memorised with the same passion that a devout Christian remembers the Bible. *“Don’t let anyone’s opinion of you become your reality.”*



# Plant Leaf Disease Detection using Image Processing Techniques

**ABSTRACT** ---- Agriculture is the mainstay of the Indian economy. Almost 70% people depend on it & shares major part of the GDP. Diseases in crops mostly on the leaves affects on the reduction of both quality and quantity of agricultural products. Perception of human eye is not so much stronger so as to observe minute variation in the infected part of leaf. In this paper, we are providing software solution to automatically detect and classify plant leaf diseases. In this we are using image processing techniques to classify diseases & quickly diagnosis can be carried out as per disease. This approach will enhance productivity of crops. It includes several steps viz. image acquisition, image pre-processing, segmentation, features extraction and neural.

## I. INTRODUCTION:

In developing countries, farming land can be much larger and farmers cannot observe each and every plant, every day. Farmers are unaware of non-native diseases. Consultation of experts for this might be time consuming & costly. Also unnecessary use of pesticides might be dangerous for natural resources such as water, soil, air, food chain etc. as well as it is expected that there need to be less contamination of food products with pesticides. There are two main characteristics of plant disease detection machine-learning methods that must be achieved, they are: speed and accuracy [1]. There is need for developing technique such as automatic plant disease detection and classification using leaf image processing techniques. This will prove useful technique for farmers and will alert them at the right time before spreading of the disease over large area. Solution is composed of four main phases; in the first phase we create a color transformation structure for the RGB leaf image and then, we apply color space transformation for the color transformation structure. Then image is segmented using the K-means clustering technique. In the second phase, unnecessary part (green area) within leaf area is removed. In third phase we calculate the texture features for the segmented infected object. Finally, in the fourth phase the extracted features are passed through a pre-trained neural network.

## II. TYPES OF PLANT DISEASE:

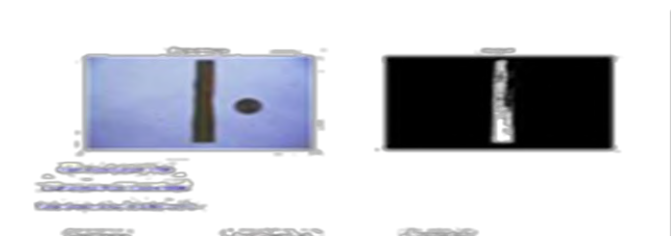
Most plant diseases are caused by fungi, bacteria, and viruses. Fungi are identified primarily from their morphology, with emphasis placed on their reproductive structures. Bacteria are considered more primitive than fungi and generally have simpler life cycles. With few exceptions, bacteria exist as single cells and increase in numbers by dividing into two cells during a process called binary fission. Viruses are

extremely tiny particles consisting of protein and genetic material with no associated protein. The term disease is usually used only for the destruction of live plants.

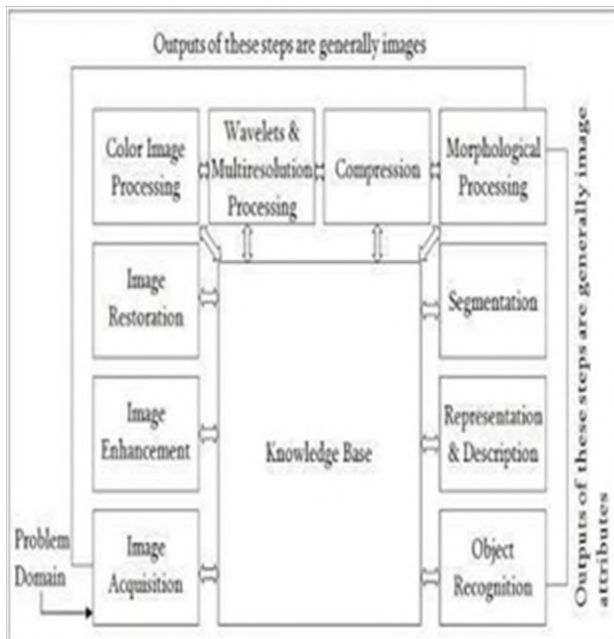


## III. TYPES OF IMAGES:

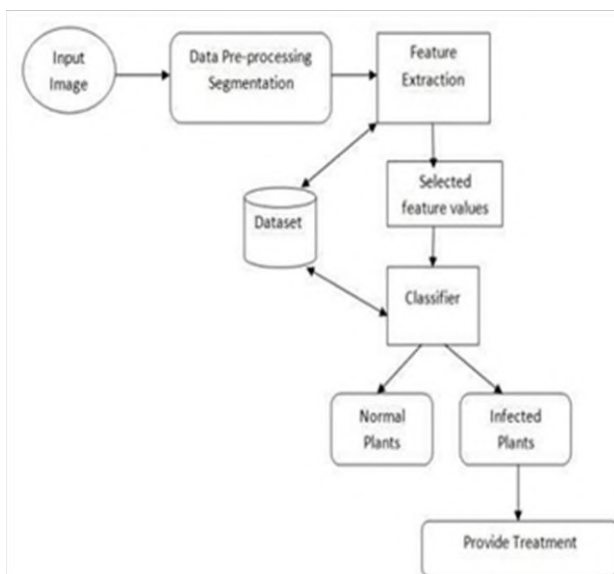
- Black and white(0,1)
- grey scale
- color image(RGB)



#### IV. GENERAL STEPS INVOLVED IN DIGITAL IMAGE PROCESSING:



#### V. OVERVIEW OF PLANT LEAF DISEASE DETECTION:



#### VI. STEPS INVOLVED IN PLANT LEAF DISEASE DETECTION

##### A. Color Transformation Structure

First, the RGB images of leaves are converted into Hue Saturation Intensity (HSI) color space representation. The purpose of the color space is to facilitate the specification of colors in some standard, generally accepted way. HSI (hue, saturation, intensity) color model is a popular color model because it is based on human perception.

##### B. Hue Color Attribute

It refers to the dominant color as viewed by a person. Saturation refers to the relative Purity or the amount of white light added to hue and intensity refers to the amplitude of the light. Color spaces can be converted from one space to another easily. After the transformation process, the H component is taken into account for further analysis. S and I are dropped since it does not give extra information.

##### C. Masking Green Pixels

Here, we identify mainly the green colored pixels. After this, based on specified threshold value computed for these pixels, the mostly green pixels are masked as if the green component of the pixel intensity is less than the pre-computed threshold value, the red, green and blue components of the this pixel is assigned to a zero value.

##### D. Segmentation

From the above steps, the infected portion of the leaf is extracted. The infected region is then segmented into a number of patches of equal size. The size of the patch is chosen in such a way that the significant information is not lost. In this approach patch size of 32\*32 is taken. The next step is to extract the useful segments. Not all segments contains significant amount of that information. So the patches which are having more than fifty percent of the information are taken into account for the further analysis.

##### E. Color Co-Occurrence Method

The color co-occurrence texture analysis method is developed through the Spatial Gray- level Dependence Matrices (SGDM). The gray level co-occurrence methodology is a statistical way to describe shape by statistically sampling the way certain gray- levels occur in relation to other gray levels. These matrices measure the probability that a pixel at one particular gray level will occur at a distinct distance and orientation from any pixel given that pixel has a second particular gray level.

##### F.. Texture Features

Contrast, Energy, Local homogeneity, Cluster shade and Cluster prominence are the texture features which are calculated for the Huecontent of the image.



## VII. IMPLEMENTATION OF THIS PROJECT IN REAL TIME:

### System Overview

The system consists of a mobile application, which will enable the farmers to take images of plants using their mobile phones and send it to a central server where the central system in the server will analyze the pictures based on visual symptoms using image processing algorithms in order to measure the disease type. An expert group will be available to check the status of the image analysis data and provide suggestions based on the report and their knowledge, which will be sent to the farmer as a notification in the application.

### Mobile Application Development

The mobile application consists of 5 basic functionalities. They are

- 1) Image capture,
  - 2) Image selection,
  - 3) Image zoom and crop,
  - 4) Share image with expert group,
  - 5) Receive notification from central server.
- Image capture:** At the very first page of the application, the application bar shows the icon for capturing image using the application. On navigation of the menu, the user gets to take image on shutter click event using the phone. **Image selection:** In case of previously taken pictures of paddy, the application navigation menu also contains the option of selecting an image from the existing photo library of the phone.

**Image zoom and crop:** The leaf of paddy is a very thin one, and it is important that the targeted area of the leaf gets focus in the image. The mobile application lets the farmer to zoom the affected region of paddy using pinch with twofingers. The test images were taken with a phone which has a camera in it. The application allows to zoom 4x times the original image. In addition, once the targeted region has been selected, the crop button of the crops the image in a 170x400 pixel frame, which in the targeted resolution for processing images in the server image processing application. Selecting target region of paddy leaf in mobile application.

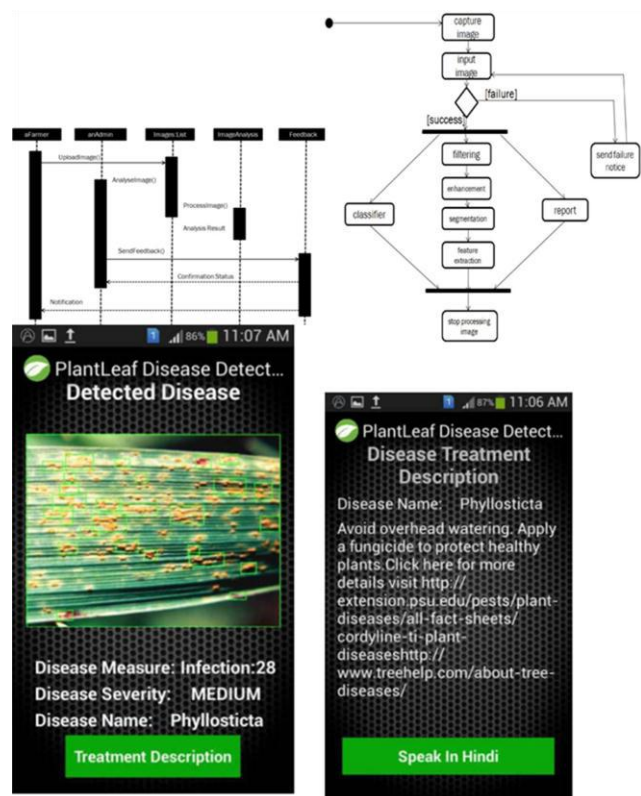
### Share image with expert group:

This functionality of the application enables the farmer to send the captured/ selected image to be uploaded in the remote server using HTTP Web Services in Windows phone. The client mobile application uploads two basic types of data in the server for every request, the image that the farmer selects for seeking suggestion and a unique URL created through windows live services which is created for communicating with the mobile phone from a remote application.

The URL created using Windows Live service is used for sending notification from the server application of sent by the expert groups with their feedback.

### Receive notification from central server:

Once the image has been uploaded in the remote server, the expert sends feedback to the client mobile application via notification. This notification is sent through a URL generated by Windows Live Services which is unique for every device. Once the notification is received, it is displayed in the application which the user will be able to view for taking appropriate steps suggested by the experts.



### Server Script for Storing Data:

The image and the data uploaded from Windows Phone application is received in the server using a script. The images are stored within the assigned directory and the device URL is mapped in the database against every uploaded image in the database.

## IX. APPLICATION:

The image processing can be used in agricultural application for following purposes:

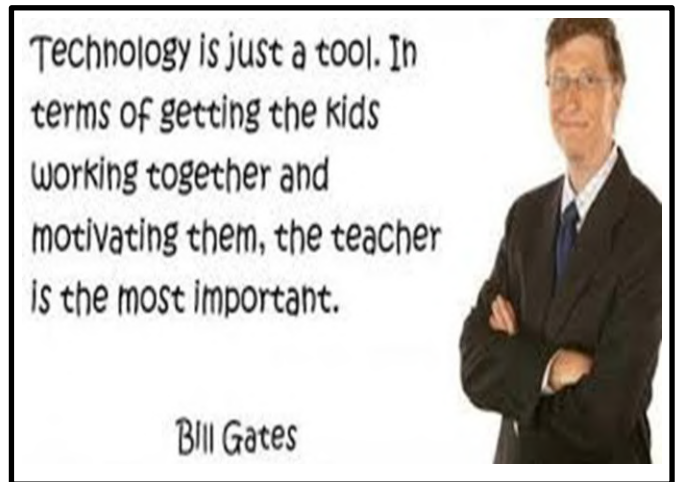
1. Detecting leaves with disease.
2. Quantify area that is affected.
3. Finding the shape of affected area.
4. Determine color of the affected area.
5. Texture analysis by determining size and shape of leaf.



**XI. REFERENCE:**

- i) "digital image processing" by Rafel C.Gonzalez and Richards E.Woods
- ii) "digital image processing" by S.Rajakumar and S.Deepa
- iii) [www.britannica.com/scientific/plant-diseases](http://www.britannica.com/scientific/plant-diseases)

**KUSHAL.S**  
**III Year CSE**



## DIGITAL SERVICE MASTER

**ABSTRACT:**

*Nowadays, android applications are mastering humans. Many applications are developed in the motivation to assist them in various aspects. Similarly, this new innovative project DIGITAL SERVICE MASTER is an android application which tracks the home appliances. Each user will sign up a new account with complete details of their every available home appliances. The hard copies of essential documents and invoices of your appliances are digitalized and stored in a cloud based service. This method also helps them to retrieve their important documents in any situations of missing it. This app also reminds the user by giving earlier alert regarding any warranty or guarantee services date limits or about any free service date bars or AMC payments remainders, etc. In case of device malfunction, intimated by the user the system automatically composes a mail with the corresponding user given details, as per mentioned in the 'Repair form' (a module in the application) and sends it to the service centre to get in contact easier with the respective device manufacturers.*  
**Keywords:** AMC (annual maintenance contract), cloud based service, Repair form.

### I. MODULES DESCRIPTION FOR THE PROPOSED SYSTEM:

Android OS for smart phones are the wide popular and user friendly environment. So, developing an application in this platform make many users get benefits out of it.

There are THREE major modules proposed in this android application. They are:

- Sign up module
- Add device module
- Repair form module

Let us see about each module in detail and apart from this common modules of an application like settings, forget password, share the app, remove account, help centre etc are designed in this system.

#### A) Sign up module:

As like every application the user can sign up into the system by using their email id. They are provided with the option to also sign up with their g-mail account. This application actually follows a slogan "ONE USER ID FOR A HOUSE" that is, it is enough that any one person of the house (say master of the house) can create an account and anyone who knows the user name and password can login and update or modify data from any device provided that the application is installed. This method facilitates user in many ways. Like, if master of the house who signed up the account was overseas and at this situation any other person of the house can login the application, provided they know their house's username and password, and add the details of any new device, scan their documents, invoices and also can complaint about any malfunction of the devices even in the absence of the person who created this account.

#### B) Add Device module:

In this module the users select all the devices that are available in their house as listed category wise, the **automotive equipments** like :

- car,
- bike,
- two wheelers, etc are listed

and **electric and electronic devices** like:

- TV
- AC
- washing machine
- motor
- UPS
- generator
- vacuum cleaner
- hair dryer
- speaker systems etc

and other **kitchen devices** such as:

- grinder
- mixer
- oven
- dish washer
- toaster
- refrigerator
- induction stove etc

and also **technical devices** like:

- desktop computers
- modem
- laptops
- mobile phones
- ipod
- ipad etc

are listed from which the user selects the available devices at their home , mention their **counts** , and **scan the barcode** using specially attached feature of '*barcode scanner*' that generates the details of the products which auto fills the data or if the product does not possess barcodes they are mentioned manually in the form . The details like:

- ✓ product's company,
- ✓ model,
- ✓ unique item number (like 'imei no' for mobile phones),
- ✓ date of purchase ,
- ✓ location of purchase,
- ✓ amount paid, etc



are entered and also the user can select the picture of their devices from the image options suggested (with reference to the mentioned details) from our database. Then the user has to **scan their invoice and other essential documents** available like:

- warranty card,
- guarantee card,
- free service coupon,
- AMC membership card

and if any other documents depending upon the product using '*camera scanner*'. This module takes time but *once they are stored they are saved for life time*. There is also an option in which if the user does not know about any purchase details because they 'got it as a gift' then they select upon this option and now, the module skip this session automatically. Thus all the documents are digitalized along the details of the product and they are stored in cloud.



This facilitates the user by **retrieving all the data whenever and wherever they needed by logging into the application** with the given user id and password. Thus if the user lost all his documents in any flood or other natural calamities they need not go for long procedures, this application retrieve them all the securitized documents which is approved and acceptable by the product manufacturers. The modules also **give alert message to the mail id** of the user before 15 days of the warranty/guarantee date limits if so the product is within that period. Also it **reminds about yearly insurance payments** for Annual Maintenance Contracts (AMC) if the products are enrolled in it. At any time the user can also update any new product if they purchased.

This the most attracting and interesting module of the application. Usually, if the user founds any malfunction of the product they need to fight back heavily to complaint to the official service centre of the project. In between many fake service centres emerges everyday and try to cheat people by possessing the same name as of the product. The user is also unaware of the customer care centre phone numbers and mail ids sometimes which differ for each model, the producer release. So to avoid all these chaos a new idea was proposed in this system where the end user enjoys the comfort with "**repair form**". At the time of fault in any product, the user fills the questions raised up in that repair form which poses questions like:

- Product name
- When did the fault found? (time and date)
- What act makes you to feel the fault? (description regarding the repair)
- Did u break it manually?
- How that did happen? (if you know the reason )

On clicking submit button finally, the system validate *the age of the device and whether the product is within or out of warranty\guarantee period*. Integrating all the above records with the validated records **a mail is composed and it is send automatically to the customer service- mail id** of that particular product model as per mentioned by the company, officially. This is achieved using *“mailchimp automatic workflow software”*. So that, the mail sent enables quick response from the product manufacturer.

## II. EXISTING SYSTEM:

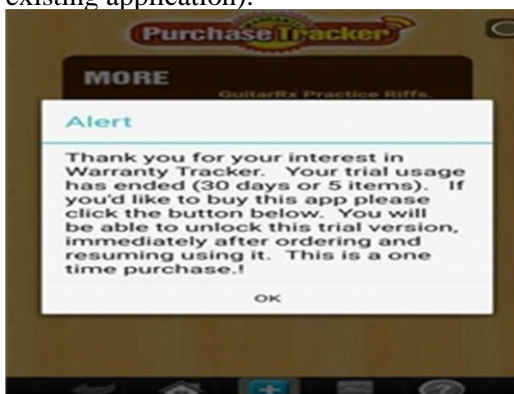
There exists an android application “PURCHASE WARRANTY TRACKER LITE ” (version : 1.2) in the goggle play store which has few similar facilities as mentioned in first and second major module of our proposed system .

But it has the following **disadvantages**:

It does not have the barcode scanner for the product and makes the user to enter all details of the product manually, which consumes time.

- It seems like some trial version and there is no security for digitalized documents.
- It does not have any complaint facility about the product faults.
- This will allow the user only to add up to 5 items for 30 days. If it reaches the limit, the application works but adding of additional item is disabled. And it is enable only by paying for the upgraded version.

After adding 5 items the response will be as displayed in this image (screen snap of the existing application):



## III. ADVANTAGES:

The proposed system “DIGITAL SERVICE MASTER” has the following boons:

- ❖ This application keeps track of all details about the home appliances and other products that we use daily.
- ❖ All the documents and invoices are digitalized such that there is no need to safeguard any hardcopies or search them for hours, if misplaced or lost.
- ❖ Each house can have one user id and any members of the house with this application, irrespective of the place and time can access and manage account provided that they know the password.
- ❖ Users are intimated through mail about their warranty, guarantee or insurance remainder or any other service dates regarding the product.

The user need not enter all details manually in the description form about any particular product, they can scan their barcode and the system automatically, gets required data about the product.

- ❖ In case of any faults, the user need not go and search for nearest available service centres and queue somewhere for long time, or keep on making phone calls to the customer Centre explaining about the product's fault. Hence they can fill the “repair form” module in the application.



## V. CONCLUSION:

Thus, in this modernized world it is difficult to maintain records and waste time by complaining in paragraphs through phone calls. In midst of thoughts of various problems, humans faces daily, it is even impossible to remember the dead end dates for all product services and payment due dates for policies. So the DIGITAL SERVICE MASTER android application, that is to be launched shortly in Goggle play store assists us in all ways and worth to use it.

**SREE VISHNU .S**  
**III Year CSE**



**12 MOST IMPORTANT PERSONALITY DEVELOPMENT TIPS****12. Know yourself**

*"Knowing yourself is the beginning of all wisdom."*

~Aristotle

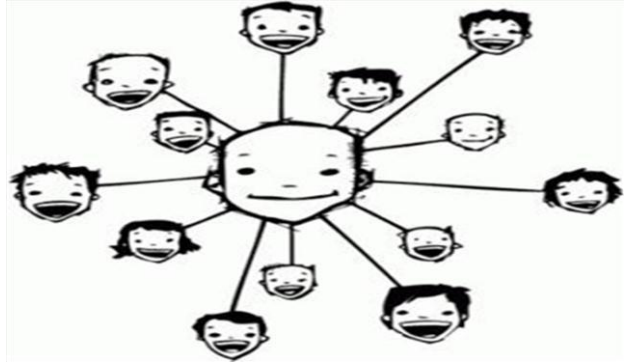
**11. Bring positivity in your outlook**

POSITIVITY  
*can change*  
**YOUR LIFE**

www.bctuniversity.co

**10. Have an opinion**

Your **Opinion**  
Counts

**9. Meet new people****8. Read more often and develop new interests****7. Be a good listener****6. Be a little fun**

## 5. Be courteous



## 4. Work on your Body Language



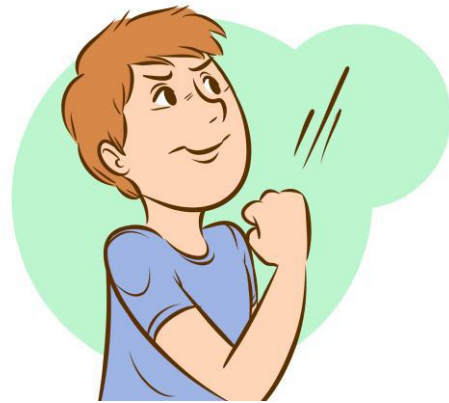
## 3. Check your attire



## 2. Be yourself



## 1. Be confident



**SAINATH REDDY .G**  
III Year CSE

**G.R.E.A.T G.P.A.**  
STUDY TIPS

- G**o to class
- R**evise and Pre-Read
- E**arly Study
- A**nswer questions
- T**ake Notes
- G**adgets-aided Learning
- P**eers can help
- A**sk for past exams and other schoolwork

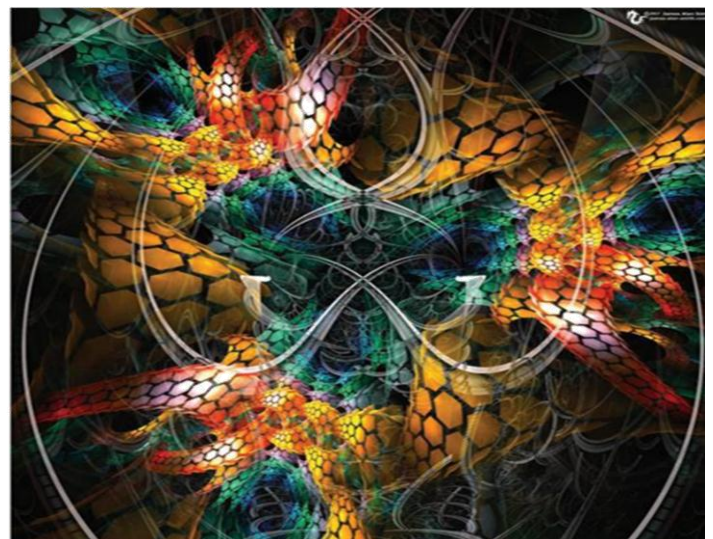


## CONTROL AND RELEASE IN COMPLEX RELATIONSHIPS

For James Alan Smith, coding is an artful activity. In the same way a painter might visualize the final product even before starting. Smith formulates his algorithms in his head. But it wasn't always the way. When he started out at age seven, working on Commodore and Atari machines and learning basic, his approach was that of trial and error. Eventually, he developed his programming chops by creating his own software and becoming a natural at coding. As he grew up programming became a part of him. "It morphed into a process where I can see the code and formulas I need in my head much like conventional artists can visually see their ideas form in their mind's eye" Smith says. "When I tell people about this, I use the example of learning a second language. After a time, it is just a part of you and you don't even really think about it". As Smith grew up, programming thus became a portal into another world.

Through code he could create worlds that didn't exist otherwise. He could write operating systems, troubleshoot errors, and make machines do almost anything he imagined. Visual art had a similar appeal. Through the medium of visual art, Smith explains that he "can take an idea and control everything, from one color choice out of millions, right down to where the next pixel goes." When he graduated high school, computers were just becoming mainstream, so starting a tech support career didn't seem like a logical choice at first. Nevertheless, he persisted and to this day, 30 years later, he owns a small computer repair company. That doesn't stop Smith from regularly cranking out elaborate visual works.

**Layers of Imagination :** The cover image, Imagination, is what a visual artist or composer might refer to as a "study," the result of testing out an idea or two. Smith created the first layer using Formula to Frac Export, a program he wrote more than 20 years ago and that he occasionally still updates. That first layer was flat, with just the basic underlying shapes. From there, he imported and duplicated the layer three times in JWilderfire, a Java-based open source fractal flame generator, adding colors and textures to each new layer to give the background a 3D steel architectural world-building vibe.



Smith created the female figure in Poser, a program for modeling humans. He used a few different layers to create the glowing effect. Finally, Smith imported everything into paint.net, a free Windows photo editor, where he made the final tweaks and corrections. "The idea was a young woman creating a world in her mind," Smith says. Soul Colors (see Figure 1) may resemble Imagination, but the two pieces are not related. Smith says Soul Colors primarily suggests that there is a colorful soul shining through all the different layers of life, just as the woman's face emerges from all the different fractal layers of creativity and code. In the image, the various layers resemble stars, oceans, animals, vegetables, and minerals. The effect is extraordinary and mysterious, earthy yet still digital somehow. Possibility Matrix and ordo ab chao – order to chaos are examples of abstract, multilayered fractal work (see Figure 2). In each case, the more you zoom in on the final image, the more intricate the layers become.

One feels lost inside an imaginary forest. Degrees of symmetry seem to be present, but one can dive deep and wander off in any possible direction. For a more detailed experience, Smith's website ([www.james-alan-smith.com](http://www.james-alan-smith.com)) allows viewers to enlarge each image and see the complex relationships between the various layers. Smith says he feels equally comfortable with abstract and representational imagery

A great benefit of working with digital media is that he can migrate from style to style, free to explore any idea that comes his way. "With pure abstract, I tend to explore with the left side of my brain and get a bit deeper into the 'code' of it all," Smith says. "With my more representational works, I am usually getting in touch with my feelings and conveying through my art the wonder with the universe we all share from time to time."

## **Code Is Art**

To Smith, writing code is a form of art all by itself, but it never gets recognized as such. One can apply the same mentality to digital art as to programming, if one's aesthetic is to be in control of everything that happens, of course. If someone has the will to drill down and develop his or her programming chops, the possibilities far outnumber the obstacles. One can write an operating system, design vast interactive worlds like Second Life, create a free encyclopedia like Wikipedia, or as Smith has done, use fractal equations, rendering programs, and image editing software to create multilayered works of digital art. The only limit is one's imagination. To Smith, crunching code and creating visual art are similar in many ways. Both have rules. "With the visual arts you have color theory, composition, gradation, movement, and proportion," he says. With VR, people could theoretically dive into his finished pieces in a more immersive manner, as opposed to a 2D image trying to look 3D. Viewers could go in deeper as each layer is created, adding a whole new type of experience. "That coming trend, combined with advances in processing power and storage, will enable artists such as myself to create works that will appear vast to the viewer and be an even better conduit.

**SAHISS HASSAN N.V**  
**III Year CSE**

## 20 Interesting Facts About Computers

Computers have become a very important part of our daily life. This awesome machine changed our lives in so many ways. There are lots of interesting facts about computer that I thought you would be interested in. That's why I've listed 20 of them that you can check out. Some of these computer facts might just blow your mind! so be prepared for that blast.

1. The first electronic computer ENIAC weighed more than 27 tons and took up 1800 square feet.
2. Only about 10% of the world's currency is physical money, the rest only exists on computers.
3. TYPEWRITER is the longest word that you can write using the letters only on one row of the keyboard of your computer.
4. Doug Engelbart invented the first computer mouse in around 1964 which was made of wood.
5. There are more than 5000 new computer viruses are released every month.
6. Around 50% of all Wikipedia vandalism is caught by a single computer program with more than 90% accuracy.
7. If there was a computer as powerful as the human brain, it would be able to do 38 thousand trillion operations per second and hold more than 3580 terabytes of memory.
8. The password for the computer controls of nuclear tipped missiles of the U.S was 00000000 for eight years.
9. Approximately 70% of virus writers are said to work under contract for organized crime syndicates.
10. HP, Microsoft and Apple have one very interesting thing in common – they were all started in a garage.
11. An average person normally blinks 20 times a minute, but when using a computer he/she blinks only 7 times a minute.
12. The house where Bill Gates lives, was designed using a Macintosh computer.
13. The first ever hard disk drive was made in 1979, and could hold only 5MB of data.

14. The first 1GB hard disk drive was announced in 1980 which weighed about 550 pounds, and had a price tag of \$40,000.
15. More than 80% of the emails sent daily are spams.
16. A group of 12 engineers designed IBM PC and they were called as “The Dirty Dozen”.
17. The original name of windows was Interface Manager.
18. The first microprocessor created by Intel was the 4004. It was designed for a calculator, and in that time nobody imagined where it would lead.
19. IBM 5120 from 1980 was the heaviest desktop computer ever made. It weighed about 105 pounds, not including the 130 pounds external floppy drive.
20. Genesis Device demonstration video in Star Trek II: The Wrath of Khan was the the first entirely computer generated movie sequence in the history of cinema. That studio later becomes Pixar.

**SAI VAIBHAV REDDY K**  
**III Year CSE**



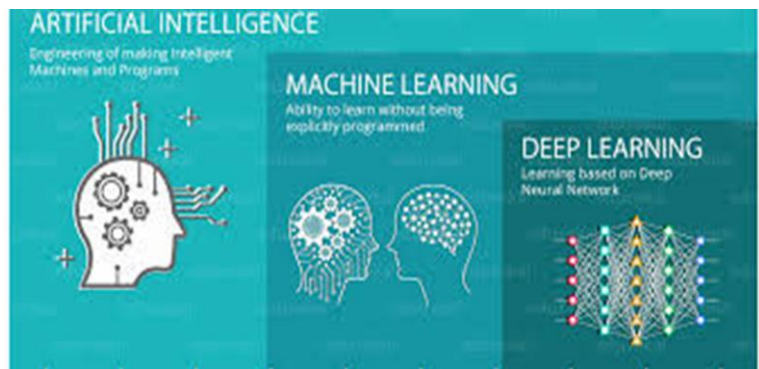


## ARTIFICIAL INTELLIGENCE WITHOUT NETWORK

### Future of AI

Teaching AI machine learning systems that they don't need a lot of resources could make neural networks portable and reduce data transmission costs. The advancement of edge computing, along with increasingly powerful chips, may make it possible for artificial intelligence (AI) to operate without wide-area networks (WAN). Researchers working on a project at the University of Waterloo say they can make AI adapt as computational power and memory are removed. And indeed if they can do that, it would allow the neural networks to function free of the internet and cloud — the advantages being better privacy, lower data-send costs, portability and the utilization of AI applications in geographically remote areas. The scientists say they can teach AI to learn it doesn't need lots of resources. The group claims to be doing it by copying nature and placing the neural network in a virtual environment. They "then progressively and repeatedly deprive it of resources." The AI subsequently evolves and adapts. The engine essentially learns to work around the fact that it doesn't have huge resources to draw on — AI typically uses a lot of power and processing capability.

"The deep-learning AI responds by adapting and changing itself to keep functioning," the researchers say.



### Making AI smaller

Whenever computational power or memory is removed from the school's experimental AI, it becomes smaller and is thus "able to survive in these environments," says Mohammad Javad Shafiee, a research professor at Waterloo and the system's co-creator. Fitting the deep-learning engine onto a chip for use in robots, smartphones, or drones — where both connectivity and weight can be issues — are possible uses for the technology, the researchers say.

"When put on a chip and embedded in a smartphone, such compact AI could run its speech-activated virtual assistant and other intelligent features," the news article continues.

Gaining momentum from that launch, Movidius's technology is also being used in Google's upcoming Raspberry Pi-based hobbyist AIY VISION KIT, a do-it-yourself neural vision processor for the Pi camera that costs less than \$50. It, too, is portable, simply requiring the Pi computer, camera and the Movidius - running, Vision Bonnet Raspberry PI add-on board. Again, no network is needed. The Google TensorFlow-based software can recognize common objects, faces and animals. Movidius's vision processing can also now be found in security cameras, drones and industrial machines.

In the case of the University of Waterloo's AI project, the researchers say they have been able to obtain a 200-times reduction in the size of overall deep-learning AI software for object recognition.

Add to that the absence of a need for a network, and "this could be an enabler in many fields where people are struggling to get deep-learning AI in an operational form," the Waterloo scientists say.

**ERAIANBU K**  
**III Year CSE**



*Code-a-thon*

1. Write a c++ program to print one 100 times
2. Write a c program to add two numbers without using + operator
3. Write a c++ program to find the given number is odd or even
4. Write a c function to find sum of digits of a number in a line
5. Write a one line c function that calculates and returns  $\log_2 n$ . For example, if  $n=64$ , then function should return 6, and if  $n=129$ , then your function should return 7.
6. Write a c++ program to swap two numbers without using temporary variables
7. Write a c program to print “welcome” without using semicolon
8. Write a c program to print; without using it
9. Write a c program that run without main function
10. C programs to shutdown the system for both Linux and windows operating systems

**LALITHA V**  
**II Year CSE**



*Mindsweeper*

**1. How many built in conversions are there in c++?**

- a) 3
- b) 4
- c) 5
- d) 2

**2. Which of the following is not conversion in c++?**

- a) const\_cast
- b) interept\_cast
- c) static\_cast
- d) dynamic\_cast

**3. which of the following is incorrect?**

- a) pure virtual function is a member of abstract class
- b) abstract class is a class which has at least one pure virtual function
- c) pure virtual function doesn't have definition
- d) pure virtual function can be overridden

**4. what is the output of the following code?**

```
#include<stdio.h>
void main ()
{
    int i=5,x;
    x=++i+++i+++i;
    printf("%d",x);
}
```

- a)21
- b)24
- c)12
- d)15



**5. What will be the output?**

```
#include<stdio.h>
int main()
{
    char a[11]="The African queen";
    printf("%s",a);
    return 0;
```

- a)The African queen
- b)The African
- c)compilation error
- d)none of the above

**6. What will be the output?**

```
#include<stdio.h>
void main()
{
    static char name[5][20]={ "pascal","code","cobal","photon","perl"};
    int i;
    char *t;
    t=name[3];
    name[3]=name[4];
    name[4]=name[3];
    for(i=0;i<=4;i++)
        printf("%s",name[i]);
}
```

**7. Which of the following is incorrect?**

- a)In java final is a keyword that prevents a function from being overloaded
- b)In java anonymous is an array without name
- c)finalize is a built-in method in java
- d) Java has automatic garbage collector

**8. How many access specifiers are there in java?**

- a) 4
- b) 3
- c) 5

**9. Which language is the faster?**

- a) Java
- b) c++
- c) Both

**10. Which of the following is performed by static\_cast?**

- a) Performs basic conversions
- b) performs checked polymorphic conversions
- c) Performs general low level conversions
- d) Implicit conversions from one type to another

**RISHIKANTH R  
II Year CSE**

## *How Search Engines Work? – Data Analysis by SEs*

Here are some of the ways Google uses Search algorithms to return useful information from the web:

### **STEP 1: Analyzing your words**

Understanding the meaning of your search is crucial to returning good answers. So to find pages with relevant information, the first step is to analyze what the words in your search query mean. The language models try to decipher what strings of words we should look up in the index.

This involves steps as seemingly simple as interpreting spelling mistakes, and extends to trying to understand the type of query you've entered by applying some of the latest research on natural language understanding. For example, Google's synonym system helps Search know what you mean, even if a word has multiple definitions.

### **STEP 2: Matching your search**

Next, we look for web pages with information that matches your query. When you search, at the most basic level, Google's algorithms look up your search terms in the index to find the appropriate pages. They analyze how often and where those keywords appear on a page, whether in titles or headings or in the body of the text.

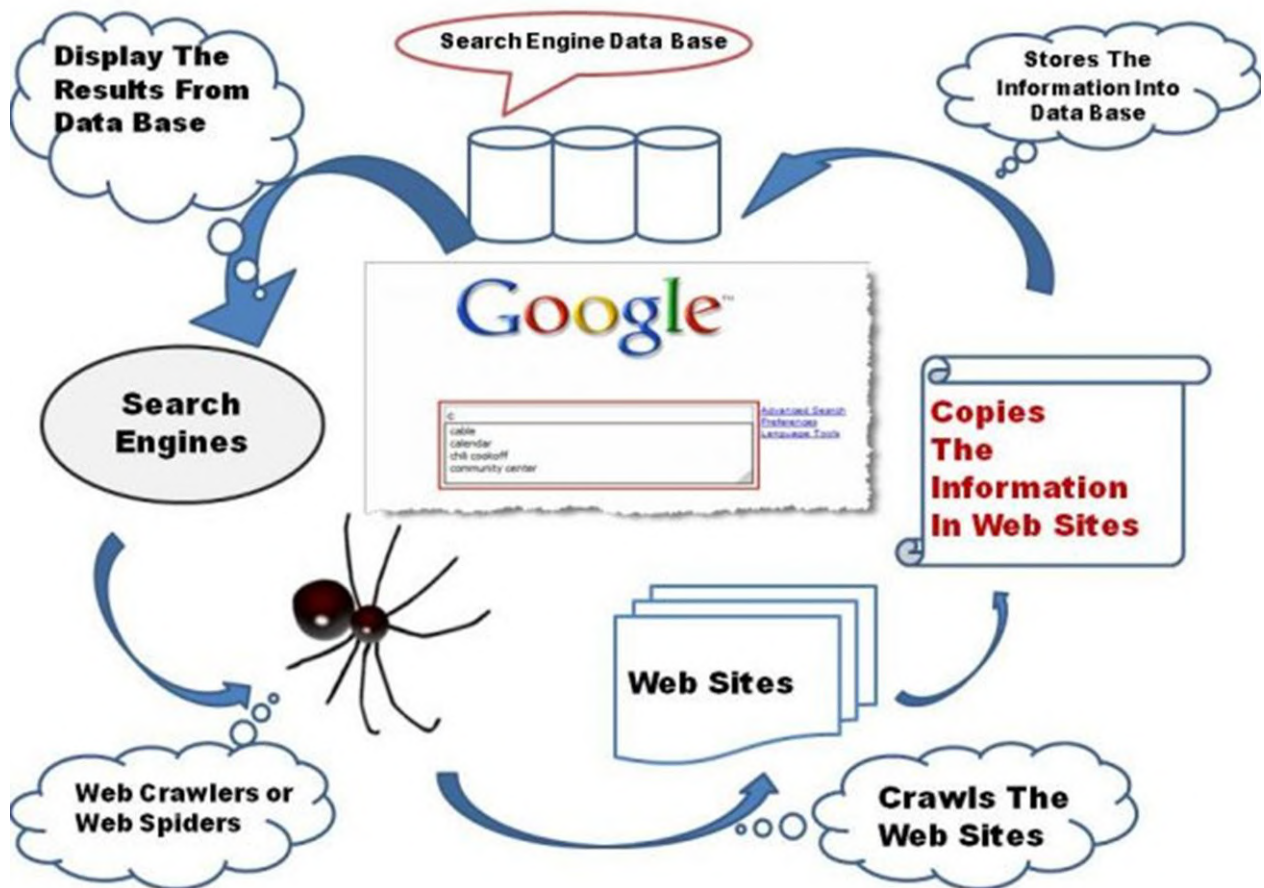
As well as matching keywords, algorithms look for clues to measure how well potential search results give users what they are looking for. When you search for "dogs" you likely don't want a page with the word "dogs" on it hundreds of times. It tries to figure out if the page contains an answer to your query and doesn't just repeat your query. So Search algorithms analyze whether the pages include relevant content — such as pictures of dogs, videos, or even a list of breeds. Finally, it checks to see if the page is written in the same language as your question in order to prioritize pages in your preferred language.

### **STEP 3: Ranking useful pages**

For a typical query, there are thousands, even millions, of webpages with potentially relevant information. These algorithms analyze hundreds of different factors to try to surface the best information the web can offer, from the freshness of the content, to the number of times your search terms appear and whether the page has a good user experience. In order to assess trustworthiness and authority on its subject matter, search engine looks for sites that many users seem to value for similar queries. If other prominent websites on the subject link to the page, that's a good sign the information is high quality.

### **STEP 4: Considering the Context**

Information such as your location, past search history and Search settings all help us to tailor your results to what is most useful and relevant for you in that moment.



Search engine use your country and location to deliver content relevant for your area. For instance, if you're in Chicago and you search "football", Google will most likely show you results about American football and the Chicago Bears first. Whereas if you search "football" in London, Google will rank results about soccer and the Premier League higher. Search settings are also an important indicator of which results you're likely to find useful, such as if you set a preferred language or opted in to SafeSearch (a tool that helps filter out explicit results).

#### STEP 5: Returning the best results

Before Google serves your results, it evaluates how all the relevant information fits together: is there only one topic among the search results, or many? Are there too many pages focusing on one narrow interpretation? It strives to provide a diverse set of information in formats that are most helpful for your type of search.

**SARVESHWAR S**  
**II Year CSE**

## TOP ANDROID APPS

### *Panda Keyboard*

Panda Keyboard is an app aimed at people looking for an attractive, simple, and comfortable keyboard. With this app, you can type correctly while saving yourself as many movements as possible.



After you install Panda Keyboard you have to activate it and set it as your main keyboard. This way your Android will make it your default and Panda Keyboard will appear every time you go to write something. The best thing about this app is that it comes with a voice recognition system that lets you search for specific words and find the best way to send a message correctly. The predictive keyboard offers three words as soon as you tap any letter, saving you time when writing. Plus the keyboard learns with you: it remembers your most used phrases to make communication even easier.

This keyboard is fully customizable and comes with a bunch of different interfaces to choose from and change whenever you want. It also includes the option to change the language and send hundreds of emojis.



### *Loopsie*

Loopsie is an app to create photos with moving parts and export them in GIF format. The way it works is as simple as focusing your smartphone's camera and tapping the button for a few seconds. After this, all you have to do is use your finger to 'draw' the parts you want to stay animated. In just a few seconds, your 'loopsie' will be finished. From there, you can share it as a GIF on any of your installed social networks.



### *Send Anywhere*

Send Anywhere is a cross-platform file sharing service which allows users to easily share digital content peer-to-peer, in real-time, without cloud storage. Unlike messenger or cloud based storage apps Send Anywhere allows the end user to send as many files, of any file type and size, as many times as they want, across Android, iOS, Windows Phone, Windows 8, Chrome, Linux and Desktop. SA utilizes p2p networking to bypass cloud storage thereby making the transfer process more secure and quicker.

Furthermore, Send Anywhere requires no login or registration - all that is needed is a one time six digit code that will sync the sending and receiving device. A cross-platform file sharing service which allows users to easily share digital content peer-to-peer, in real-time, without cloud storage. Unlike messenger or cloud based storage apps Send Anywhere allows the end user to send as many files, of any file type and size, as many times as they want, across Android, iOS, and Desktop. Send Anywhere utilizes p2p networking to bypass cloud storage thereby making the transfer process more secure and quicker. Furthermore, Send Anywhere requires no login or registration - all that is needed is a one time six digit code that will sync the sending and receiving device.



### *Transcriber for WhatsApp apk;*

Have you ever been receiving voice messages from WhatsApp and not being able to listen at that time? Now you can convert them to text and know in time what your friends communicate, even when the situation does not allow. All this thanks to Transcriber, without advertising or time limits.

- Now the Transcriber icon will be visible for all types of audio format in the sharing menu (to point out to the user that the message passed to the application is not a vocal note, if it happens).
- New interface for transcription in the foreground.
- Temporarily remove the quick start function, for an improper use of accessibility services.
- Fixed crashes during automatic transcription.



### *Block WiFi Freeloader - Detect Who Use My WiFi ?*

Block WiFi Freeloader is a simple and free network tool to help you scan WiFi , show all devices connected to your WiFi, see who is on my WiFi, and block the strange device in router admin page or in one click.

Block WiFi Freeloader helps you find out WiFi intruders, and make your home network clean and fast. Do you want to know if someone is connected to your wireless network without your permission? Do you want to know if someone are stealing your WiFi when your connection is slow, and who is on my WiFi download something?

Are you sure nobody is spying your Network communications?

Worried that neighbors may have access to your personal data?

Don't worry, Block WiFi Freeloader is the all-in-one professional tool for better WiFi speed experience. Using Block WiFi Freeloader can easily scan my wifi and see how many people or device connected to your network/router such as tplink/tp-link, dlink or huawei router etc. In seconds you can know how many and which device is connected to your router with IP, MAC ID and vendor listing.

**MOHAN R**  
**MOHAN PRABU B**  
**II Year CSE**

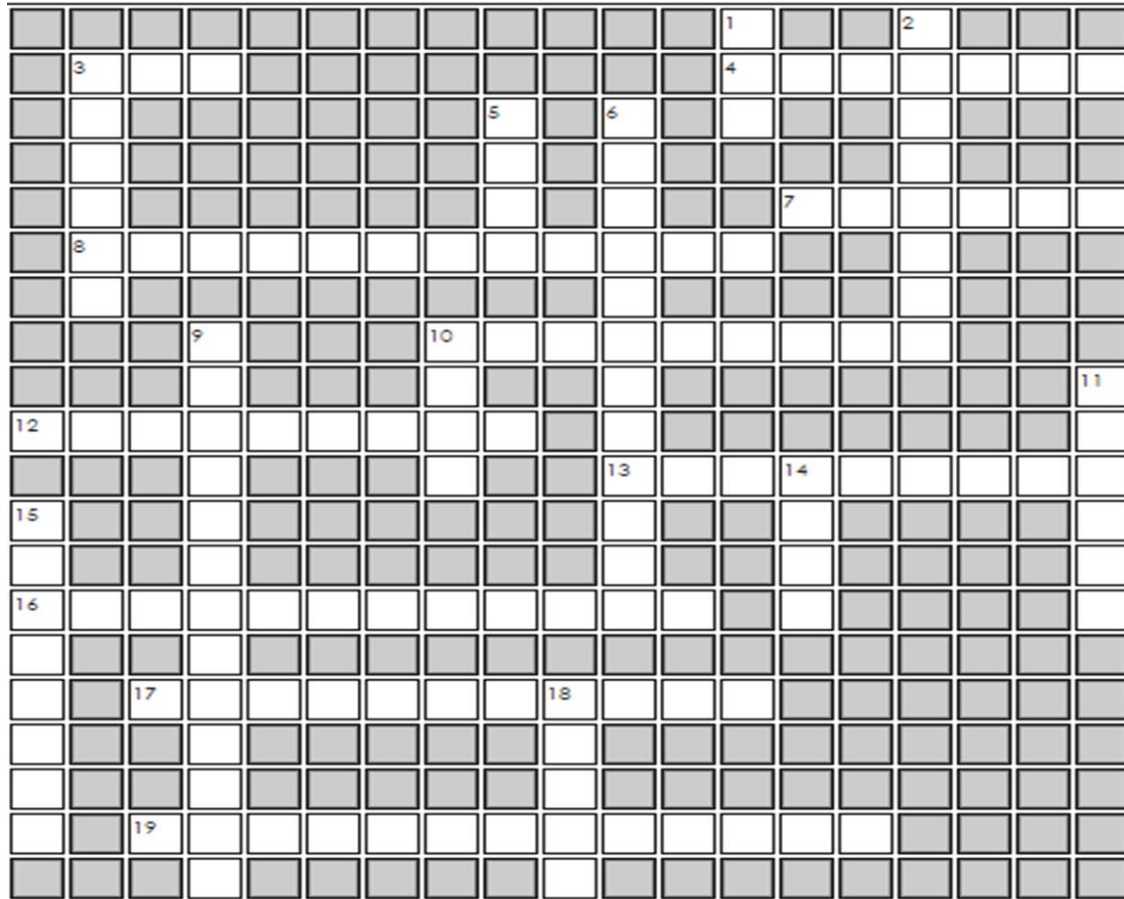
**GENERAL IT QUIZ**

1. Who is known as the father of Free Software Foundation?
2. In which year was the 'C' programming language developed?
3. Who is known as the father of Internet?
4. Who used the binary system of numeration for the first time?
5. Who is the first computer programmer?
6. In which year was computer graphics originated?
7. What is the name of the tablet introduced by Amazon?
8. Who invented Computer Mouse?
9. Speak to Tweet is a service given by which giant?
10. 'Xoom' is the name of tablet developed by which company?
11. 'WIT' is the NASDAW code of which Indian IT company?
12. Expand HDMI.
13. Who invented Compact disc?
14. Which computer language is used on the Internet?
15. Which computer language is used for Artificial Intelligence?
16. Who is the new CEO of Flipkart.com ?
17. Which country recently shut down the use of FM Radio?
18. What is the URL of world's first webpage? Hint: info.cern.ch
19. Bill Gates wrote his first program for which paper & pencil game popular amongst the students? Hint : T\_\_T\_\_T
20. Who owns the domains beautyoftheweb.com?

**SAI LAKSHMAN B**  
**III Year CSE**



## CROSSWORD PUZZLE

**Across**

3. Random Access Memory
4. Setting that is automatic unless changed by user
7. Electronic mail
8. Printers and Monitors (2 words)
10. Area on screen where the user interacts with the software application
12. A small window with options for completing an action (2 words)
13. Miniature version of the document
16. Allows more than one application to run at a time
17. Keyboard, Mouse, Disk Drive, USB Drive (2 words)
19. A tab added to the Ribbon for certain activities (2 words)




Down


1. Format widely used because all document formatting is preserved
2. Expands the window to fill the screen
3. Related commands that are divided into tabs
5. Collection of related data stored on a hard disk
6. Displays a menu of commands for opening, saving, and printing (2 words)
9. Indicates the file type and is used by the application to recognize files (2 words)
10. Little pictures that represent programs on the desktop
11. Used to organize files
14. A list of commands
15. Follows a program; designed to compute
18. Malicious code that appears like a useful program

**NAGESHWAR MACHGAHE P**  
**III Year CSE**


**BRAIN TEASER**




Which Statement is False ? - Logic Riddle



At a Birthday Party,



1. There were 9 men and children.
2. There were 2 more women than children.
3. The number of different man-woman couples possible is 24.  
E.g. If there were 9 men and 5 women, then there would be 45 man-woman couples possible.
4. There were one group of 4 people.
5. There were one group of 6 people.
6. There were one group of 8 people.



One of the above statement is false, which one is it?  
Also, how many men, women and children are at the party?

**WHY INDIA NEEDS TO CHANGE ITS ATTITUDE TOWARDS EDUCATION?**

**“Education which does not help the common mass of people to equip themselves for the struggle for life, which does not bring out strength of character, a spirit of philanthropy, and the courage of a lion; is it worth the name? - Swami Vivekananda”**



Now is probably the best time to reflect upon these words which Swami Vivekananda spoke decades ago. President Pranab Mukherjee recently raised concern on the fact that none of the Indian universities or colleges have made a mark in the global rankings of top educational institutions. This isn't necessarily a race, but if it was, we as a country are left far behind.

According to a report by the UNESCO, if we were to go by the current trend, it could take us another half century to achieve global education commitments. This means that we are way behind on our deadline to meet the 2030 Sustainable Development Goals (SDGs) deadline. One of the goals of the SDGs is to ensure that all girls and boys complete free, equitable and quality primary and secondary education.

On account of International Teachers' Day, we spoke to a few teachers and got their insights on the Indian Education System. Emmanuel Ratnaraj, the Principal of the Shishya Public School in Dehradun, insists that the education system needs to steer away from the traditional method of teaching as soon as possible.

"The global education system has marched way ahead compared to other countries, but our educational systems have seen no change and we are bound to follow the same old ground rules," he told Jaago Re.

His own approach towards education is a little different. He said, "At our school, we have a different way of teaching. We don't teach ABCDs. A is never the first thing a kid learns. They start by learning how the alphabets sound. We talk about sonics. They are taught how the alphabets would sound, and then move on to learning how to write. It makes the learning process easier."

It makes their ability to pronounce and learn newer words better."

While this approach is not always understood or appreciated by guardians, Mr. Ratnaraj and his team look at it as a challenge that they are more than happy to take on.

"We need to realise that we are lacking behind. Our engineers and doctors do really well and that pushes us to believe that our education system needs no change. But, it is really important to realise that we can't boast about what we are. If that is the case, there is no moving forward."

Nevi Koshy has been a part of the Indian Education System for a while now, as a student and as a teacher. He also spent 6 months last year teaching students in a village in Dehradun. He felt that our system falls behind on concept and practical aspects of the teaching-learning experience.

"Our education system revolves around exams instead of understanding the concept and hence the students who come out of our system are most of the time unemployable. The mindset in the society needs to change. Education should be about enjoying what you study, not getting a job, or securing a degree just for namesake."

Education is the primary means to shape young minds into productive and responsible individuals, and only a handful of schools strive to work alongside the community to help achieve this.

**Mrs. K. HEMA PRIYA**  
**ASSISTANT PROFESSOR / CSE**


### **ARE CELLULAR AND PCS TOWERS AND ANTENNAS SAFE?**

#### **Recommendation by FCC**

Cellular radio services transmit using frequencies between 800 and 900 megahertz (MHz). Transmitters in the Personal Communications Service (PCS) use frequencies in the range of 1850-1990 MHz. Antennas used for cellular and PCS transmissions are typically located on towers, water tanks or other elevated structures including rooftops and the sides of buildings. The combination of antennas and associated electronic equipment is referred to as a cellular or PCS "base station" or "cell site." Typical heights for free-standing base station towers or structures are 50-200 feet. A cellular base station may utilize several "omni-directional" antennas that look like poles, 10 to 15 feet in length, although these types of antennas are becoming less common in urban areas.

Antennas on Cell tower transmit in the frequency range of:

- 869 - 890 MHz (CDMA)
- 935 - 960 MHz (GSM900)
- 1805 - 1880 MHz (GSM1800)
- 2110 - 2170 MHz (3G)

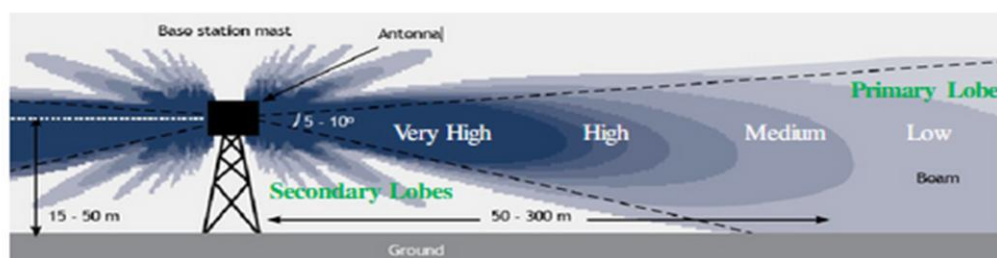


In urban and suburban areas, cellular and PCS service providers now more commonly use "sector" antennas for their base stations. These antennas are rectangular panels, e.g., about 1 by 4 feet in dimension, typically mounted on a rooftop or other structure, but they are also mounted on towers or poles. The antennas are usually arranged in three groups of three each. One antenna in each group is used to transmit signals to mobile units (car phones or hand-held phones), and the other two antennas in each group are used to receive signals from mobile units.

At a given cell or PCS site, the total RF power that could be transmitted from each transmitting antenna at a cell site depends on the number of radio channels (transmitters) that have been authorized and the power of each transmitter. Typically, for a cellular base station, a maximum of 21 channels per sector (depending on the system) could be used. Thus, for a typical cell site utilizing sector antennas, each of the three transmitting antennas could be connected to up to 21 transmitters for a total of 63 transmitters per site. When Omni-directional antennas are used, up to 96 transmitters could be implemented at a cell site, but this would be very unusual. Furthermore, while a typical base station could have as many as 63 transmitters, not all of the transmitters would be expected to operate simultaneously thus reducing overall emission levels. For the case of PCS base stations, fewer transmitters are normally required due to the relatively greater number of base stations.

The signals from a cellular or PCS base station antenna are essentially directed toward the horizon in a relatively narrow pattern in the vertical plane. The radiation pattern for an Omni-directional antenna might be compared to a thin doughnut or pancake centered around the antenna while the pattern for a sector antenna is fan-shaped, like a wedge cut from a pie. As with all forms of electromagnetic energy, the power density from a cellular or PCS transmitter decreases rapidly as one move away from the antenna. Consequently, normal ground-level exposure is much less than exposures that might be encountered if one were very close to the antenna and in its main transmitted beam.

### Radiation Pattern of a Cell Tower Antenna



Propagation of "main beam" from antenna mounted on a tower or roof top



People living within 50 to 300 meter radius are in the high radiation zone (dark blue) and are more prone to ill-effects of electromagnetic radiation

Power varies by  $1/R^2$ , where R = Distance from tower



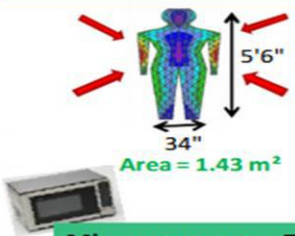
Measurements made near typical cellular and PCS installations, especially those with tower-mounted antennas, have shown that ground-level power densities are thousands of times less than the FCC's limits for safe exposure. In fact, in order to be exposed to levels at or near the FCC limits for cellular or PCS frequencies an individual would essentially have to remain in the main transmitting beam (at the height of the antenna) and within a few feet from the antenna. This makes it extremely unlikely that a member of the general public could be exposed to RF levels in excess of these guidelines due to cellular or PCS base station transmitters.

When cellular and PCS antennas are mounted at rooftop locations it is possible that ambient RF levels could be greater than those typically encountered on the ground. However, once again, exposures approaching or exceeding the safety guidelines are only likely to be encountered very close to or directly in front of the antennas. For sector-type antennas RF levels to the side and in back of these antennas are insignificant.

Tower Installation : USA (FCC Guidelines) vs India	
<b>In USA</b> 	<b>In India</b> 
<ul style="list-style-type: none"> <li>Cellular cell site towers are typically 50-200 feet high.</li> <li>In urban areas, cell sites commonly emit an ERP of 10 watts per channel or less. An ERP of 10 watts corresponds to an actual radiated power of around 1 watt depending on the type of antenna used.</li> </ul>	<ul style="list-style-type: none"> <li>Cellular cell site towers are even 5-10 feet high; on sides of building and outside window.</li> <li>In INDIA, cell sites transmit 100's of Watts of power with antenna gain of more than 10, so ERP &gt; 1000 Watts</li> </ul>

### Power Absorbed by Human Body

Microwave power absorbed by human body if exposed to so called safe radiation level adopted in India, which is  $f/200$ , where  $f$  is in MHz?



ICNIRP Guideline – At 940 MHz, Power density ( $P_d$ ) is  $4.7\text{W/m}^2$

Power received ( $P_r$ ) by human body will be  $[P_r = P_d \times \text{Area}] = 6.75$  Watts in one sec.

Microwave oven: 700 to 1000 W. With say 60% efficiency, microwave power output is say 500 W.

In one day, microwave energy absorbed will be  $[6.75 \text{ Watts} \times 60 \times 60 \times 24 \text{ sec}] = \underline{583.2 \text{ KW-sec.}}$

This implies that human body can be safely kept in a microwave oven for 1166 secs = **19 minutes per day**

## BIOLOGICAL EFFECTS

Neurodegenerative Disorders –Alzheimer, Parkinson's

Immune System Degradation

Tinnitus and Ear Damage

Irreversible infertility

Effect on Skin

DNA Damage

Increase in Cancer risk



**Mrs. S. HEMAMALINI**  
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## *'Digital India' Beginning of new zones.*

### Introduction:

*'Anything and everything that can go digital is going digital – at an exponential rate.'*

The same goes for our motherland, India. With the Digital India Project introduced under the governance of Prime Minister Narendra Modi, India is all set to go Digital. As the process to be a developed country mandates the inclusion of a maximum number of individuals in the mainstream.

Digital India is a campaign launched to achieve the ultimate goal of 'inclusion of everyone' and to ensure that Government services are made available to citizens electronically by improving online infrastructure and by increasing Internet connectivity or by making the country digitally empowered. This campaign will also act as a facilitator for Right to Information which is mandated by the constitution of India, as the same right includes facilities to be provided for the purpose of accessing information.

It was launched on 2 July 2015 by Prime Minister Narendra Modi. The initiative includes plans to connect rural areas with high-speed internet networks. Digital India consists of three core components.



This include:

- The creation of digital infrastructure
- Delivery services digitally
- Digital literacy

The purpose is to Intra and interconnect India with the globe, especially rural India which consists quarter of the total population living without any digital access. The total population of India is 1.252 billion whereas no. of individuals connected to the internet is less than the 50% is the sole reason for a policy like digital India is launched.

The author of this article discusses the importance of digital India campaign and its initiatives towards the achievement of the ultimate goal of inclusion of all.

What is the concept all about?

Motto: "Power to Empower"

The vision of Digital India program is inclusive growth in areas of electronic services, products, manufacturing and job opportunities etc. and it is centered on three key areas – Digital Infrastructure as a Utility to Every Citizen, Governance & Services on Demand and Digital Empowerment of Citizens.

Bharat Broadband Network Limited acts as the initial milestone of the program, which executes the National Optical Fiber Network project and also the custodian of Digital India (DI) project. BBNL had ordered United Telecoms Limited to connect 250,000 villages through GPON to ensure FTTH based broadband, and planning to create 28,000 sets of BPOs in various states and set up at least one Common Service Centre in each of the gram panchayats in the state. These are the initial steps of Digital India expected to be completed by 2017.

The 2016 Union budget of India announced with 11 technology initiatives including the use data analytics to nab tax evaders, creating a substantial opportunity for IT companies to build out the systems that will be required. Digital Literacy mission will cover six crore rural households. It is also planned to connect 550 farmer markets in the country through the use of technology.

9 Pillars of digital India:

These are the points that the Government of India hopes to achieve growth on multiple fronts with the Digital India Program. Specifically, the government aims to target nine 'Pillars of Digital India' that they identify as being:

1. Broadband Highways
2. Universal Access to Mobile Connectivity
3. Public Internet Access Programme
4. e-Governance – Reforming Government through Technology
5. eKranti – Electronic delivery of services
6. Information for All
7. Electronics Manufacturing
8. Digital or IT for Jobs
9. Early Harvest Programmes

These are the primary principles of DI which covers each and every sector of the country to be digitalized.

### Services planned under the Digital India project:

Some of the facilities which will be provided through this initiative are Digital Locker, e-education, e-health, e-sign and national scholarship portal. Facilities are:

1. **DigiLocker:** Digital Locker facility will help citizens to digitally store their important documents like PAN card, passport, mark sheets, degree certificates and motor vehicles documents. Digital Locker will provide secure access to Government issued documents with a simple click on your mobile phone. Locker will also be linked to the Aadhar-Card for the purpose of authentication.
2. **Attendance.gov.in:** This is a website, launched by PM Narendra Modi on 1 July 2015 to keep a record of the attendance of Government employees on a real-time basis to ensure any fraud entry for the purpose of attendance.

**MyGov.in:** This platform is designed to share inputs and ideas on matters of policy and governance by the common population. Govt. with the view of including people in the policy making process, through a "Discuss", "Do" and "Disseminate" approach.

1. **SBM Mobile app:** *Swachh Bharat* Mission (SBM) Mobile app is being used by people and Government organizations for achieving the goals of *Swachh Bharat* Mission.
2. **E-Sign framework:** This framework allows citizens to digitally sign a document online using Aadhaar authentication.
3. **E-Hospital:** The eHospital application provides important services such as online registration, payment of fees and appointment, online diagnostic reports, enquiring availability of blood online etc. for the purpose of empowering patients to avail the services easily.

**National Scholarships Portal:** It is a one stop solution for end to end scholarship process right from submission of student application, verification, sanction and disbursal to end beneficiary for all the scholarships provided by the Government of India.

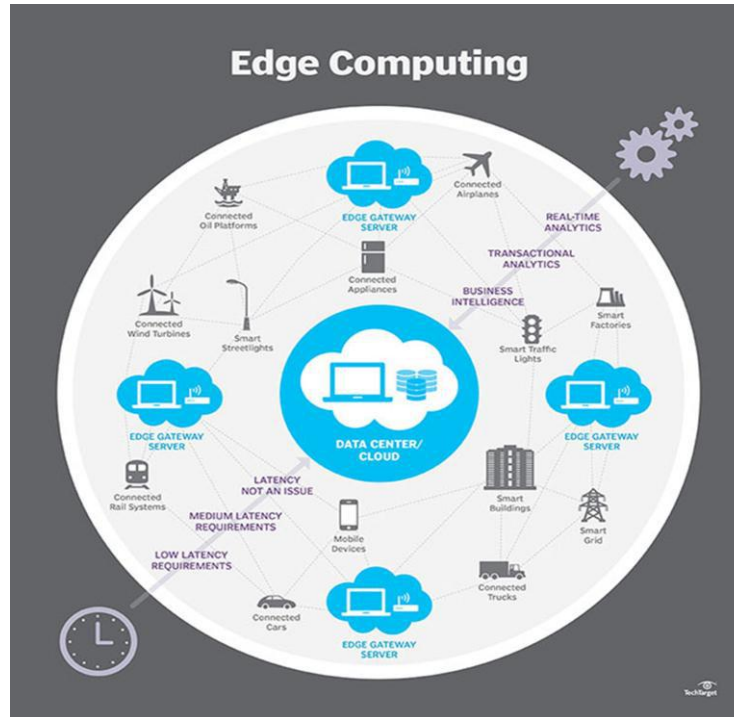
### Conclusion:

One of the major problems which affect the growth of the country is corruption; India is also a victim of this parasite. Being non-transparent helps the parasite to develop. This program will make the working of India transparent and government will be more accountable to the public by making them aware of their rights and including them in the policy making process. At the same time including the motor vehicle documents digitally will reduce corruption by traffic policemen.

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## EDGE COMPUTING

Edge computing is a method of optimizing cloud computing systems by performing data processing at the edge of the network, near the source of the data.

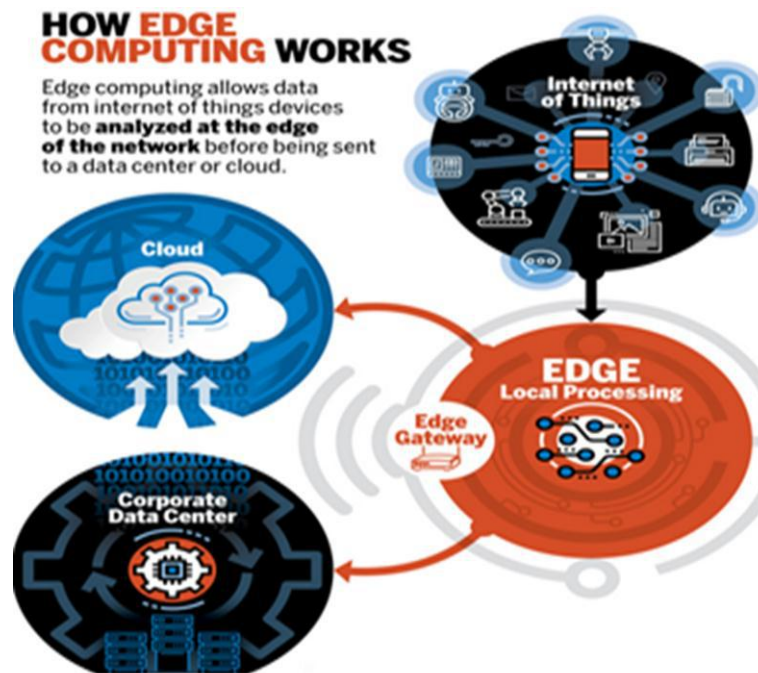


Edge computing allows data produced by internet of things (IoT) devices to be processed closer to where it is created instead of sending it across long routes to data centers or clouds. This computing works closer to the edge of the network and organizations analyze important data in near real-time with a need of organizations across many industries, including manufacturing, health care, telecommunications and finance.

Edge computing is a “mesh network of micro data centers that process or store critical data locally and push all received data to a central data center or cloud storage repository, in a footprint of less than 100 square feet,”. Data is processed at the edge and all or a portion of it is sent to the central processing or storage repository in a corporate data center, co-location facility or IaaS cloud.

### Why does edge computing matter?

Edge computing deployments are ideal in a variety of circumstances. One is when IoT devices have poor connectivity and it's not efficient for IoT devices to be constantly connected to a central cloud. Other use cases have to do with latency-sensitive processing of information. Edge computing reduces latency because data does not have to traverse over a network to a data center or cloud for processing. Another use case for edge computing has been the build out of next-gen 5G cellular networks by telecommunication companies.



## Edge computing security

There are two sides of the edge computing security coin. The security is theoretically better in an edge computing environment because data is not traveling over a network, and it's staying closer to where it was created. The less data in a corporate data center or cloud environment, the less data there is to be vulnerable if one of those environments is comprised.

### Terms and Definitions:

- **Edge devices:** These can be any device that produces data. These could be sensors, industrial machines or other devices that produce or collect data.
- **Edge:** What the edge is depends on the use case. In a telecommunications field, perhaps the edge is a cell phone or maybe it's a cell tower. In an automotive scenario, the edge of the network could be a car. In manufacturing, it could be a machine on a shop floor; in enterprise IT, the edge could be a laptop.
- **Edge gateway:** A gateway is the buffer between where edge computing processing is done and the broader fog network. The gateway is the window into the larger environment beyond the edge of the network.
- **Edge computing equipment:** Edge computing uses a range of existing and new equipment. Many devices, sensors and machines can be outfitted to work in an edge computing environment by simply making them Internet-accessible.
- **Mobile edge computing:** This refers to the buildout of edge computing systems in telecommunications systems, particularly 5G scenarios.

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## WATERMARKING VS. STEGANOGRAPHY

Watermarking and steganography are processes in which the digital image is changed in a way that one can see the background image or the text without any kind of corruption in the image.

### WATERMARKING:

*A watermark is a “secret message” that is embedded into a “cover message”. Usually, only the knowledge of a secret key allows us to extract the watermark.*

Watermarking is used to verify the identity and authenticity of the owner of a digital image. It is a process in which the information which verifies the owner is embedded into the digital image or signal. These signals could be either videos or pictures or audios. For example, famous artists watermark their pictures and images. If somebody tries to copy the image, the watermark is copied along with the image.

### Watermarks Classification:

Paper Watermark: Intended to be somewhat visible.

Digital Watermark: A digital signal or pattern imposed on a digital document (text, graphics, multimedia presentations , ...).

### Paper Watermark:

The technique of impressing into the paper a form of image or text. “ Cannot be photocopied or scanned effectively”

Purpose: To make forgery more difficult to record the manufacturer’s trademark,  
Copyright protection, logos, etc ...



Used in: Currency, Banknotes , Passports, ...

**Fig: Paper Watermarking**

### Digital Watermarking Types:

Digital Watermarking is of two types;

1. Visible watermarking and
2. Invisible watermarking.



**Visible Watermarking:**

As the name suggests, visible watermarking refers to the information visible on the image or video or picture. Visible watermarks are typically logos or text. For example, in a TV broadcast, the logo of the broadcaster is visible at the right side of the screen.

**Invisible Watermarking:**

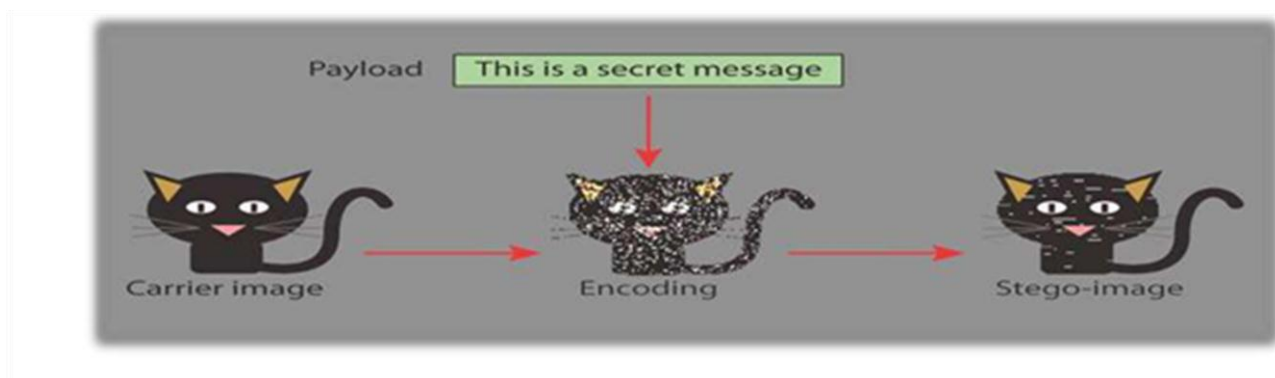
Invisible watermarking refers to adding information in a video or picture or audio as digital data. It is not visible or perceivable, but it can be detected by different means. It may also be a form or type of steganography and is used for widespread use. It can be retrieved easily.

**Visible Watermarking****Invisible Watermarking****Applications:**

- It is used for copyright protection.
- It is used for source tracing.
- Annotation of photographs.

**STEGANOGRAPHY:**

The word steganography comes from the Greek 'steganos', meaning covered or secret, and 'graphy', meaning writing or drawing. Therefore, steganography literally means – “covered writing”.



Steganography is changing the image in a way that only the sender and the intended recipient is able to detect the message sent through it. It is invisible, and thus the detection is not easy. It is a better way of sending secret messages than encoded messages or cryptography as it does not attract attention to itself.

There are many ways in which steganography is done. The messages appear as articles, images, lists, or sometimes invisible ink is used to write between the lines. Steganography is achieved by concealing the information in computer files. Sometimes steganographic codes are inside the transport layer like an image file, document file, media files, etc. Due to the large size of the media files, they are considered ideal for steganography.

### **Applications:**

- Steganography is used in modern printers.
- It has been used allegedly by terrorists.
- It is allegedly used by intelligence services.

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## **Virtual Reality vs. Augmented Reality**

One of the biggest confusions in the world of augmented reality is the difference between augmented reality and virtual reality. Both are earning a lot of media attention and are promising tremendous growth.

### **What is Virtual Reality?**

Virtual reality (VR) is an artificial, computer-generated simulation or recreation of a real life environment or situation. It immerses the user by making them feel like they are experiencing the simulated reality firsthand, primarily by stimulating their vision and hearing.



VR is typically achieved by wearing a headset like Facebook's Oculus equipped with the technology, and is used prominently in two different ways:

- To create and enhance an imaginary reality for gaming, entertainment, and play (Such as video and computer games, or 3D movies, head mounted display).
- To enhance training for real life environments by creating a simulation of reality where people can practice beforehand (Such as flight simulators for pilots).

Virtual reality is possible through a coding language known as VRML (Virtual Reality Modeling Language) which can be used to create a series of images, and specify what types of interactions are possible for them.

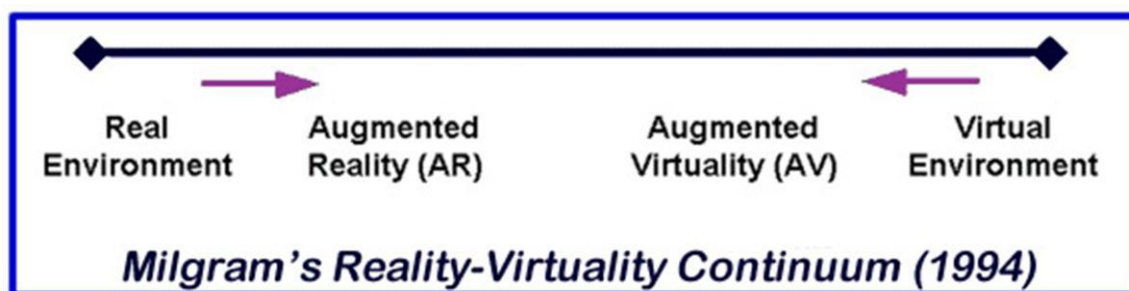
### What is Augmented Reality?

Augmented reality (AR) is a technology that layers computer-generated enhancements a top an existing reality in order to make it more meaningful through the ability to interact with it. AR is developed into apps and used on mobile devices to blend digital components into the real world in such a way that they enhance one another, but can also be told apart easily.



### Augmented Reality vs. Virtual Reality

Augmented reality and virtual reality are inverse reflections of one in another with what each technology seeks to accomplish and deliver for the user. Virtual reality offers a digital recreation of a real life setting, while augmented reality delivers virtual elements as an overlay to the real world.



Virtual Reality and Augmented Reality Similar in Technology, Entertainment, Science and Medicine

## Augmented and Virtual Realities Differ in:

### Purpose

Augmented reality enhances experiences by adding virtual components such as digital images, graphics, or sensations as a new layer of interaction with the real world. Contrastingly, virtual reality creates its own reality that is completely computer generated and driven.

### Delivery Method

Virtual Reality is usually delivered to the user through a head-mounted, or hand-held controller. This equipment connects people to the virtual reality, and allows them to control and navigate their actions in an environment meant to simulate the real world.

Augmented reality is being used more and more in mobile devices such as laptops, smart phones, and tablets to change how the real world and digital images, graphics intersect and interact.

### How do they work together?

It is not always virtual reality vs. augmented reality– they do not always operate independently of one another, and in fact are often blended together to generate an even more immersing experience. For example, haptic feedback-which is the vibration and sensation added to interaction with graphics-is considered an augmentation. However, it is commonly used within a virtual reality setting in order to make the experience more lifelike though touch.

Virtual reality and augmented reality are great examples of experiences and interactions fueled by the desire to become immersed in a simulated land for entertainment and play, or to add a new dimension of interaction between digital devices and the real world. Alone or blended together, they are undoubtedly opening up worlds-both real and virtual alike.

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**ANSWERS****CODE-A-THON**

1.

```
// CPP program to print one 100 times without using loop.
```

```
#include <iostream>
```

```
#include <setjmp.h>
```

```
using namespace std;
```

```
jmp_buf buf;
```

```
int main()
```

```
{
```

```
    int x = 1;
```

```
    // Setup jump position using buf
```

```
    setjmp(buf);
```

```
    cout << "1"; // Prints 1
```

```
    x++;
```

```
    if (x <= 100)
```

```
        // Jump to the point setup by setjmp
```

```
        longjmp(buf, 1);
```

```
    return 0;
```

```
}
```

Output :

100 times 1.



2.

To add two numbers without using + operator

```
int add(int x, int y)
{
    return printf("%c%c%c", x, ' ', y, ' ');
}

int main()
{
    printf("Sum = %d", add(3, 4));
    return 0;
}
```

Output:

Sum = 7

3.

c++ program to find the given number is odd or even without using conditional statement

#### Method 1

Below is a tricky code can be used to print "Even" or "Odd" accordingly.

```
#include<iostream>
#include<conio.h>

using namespace std;
int main()
{
    char arr[2][5] = {"Even", "Odd"};
    int no;
    cout << "Enter a number: ";
    cin >> no;
    cout << arr[no%2];
    getch();
    return 0;
}
```

Method 2

Below is another tricky code can be used to print "Even" or "Odd" accordingly.

```
#include<stdio.h>
int main()
{
    int no;
    printf("Enter a no: ");
    scanf("%d", &no);
    (no & 1 && printf("odd"))|| printf("even");
    return 0;
}
```

4.

To find sum of digits in a line

Below function has three lines instead of one line but it calculates sum in line. It can be made one line function if we pass pointer to sum.

```
# include<stdio.h>
/* Function to get sum of digits */
int getSum(int n)
{
    int sum;

    /* Single line that calculates sum */
    for (sum=0; n > 0; sum+=n%10,n/=10);

    return sum;
}

int main()
{
    int n = 687;
    printf(" %d ", getSum(n));
    return 0;
}
```

Output :

21

5.

Write a one line C function that calculates and returns  $\log_2 n$ . For example, if  $n = 64$ , then your function should return 6, and if  $n = 129$ , then your function should return 7.

Using Recursion: // C program to find  $\log(n)$  using Recursion

```
#include<stdio.h>
unsigned int Log2n(unsigned int n)
{
    return (n > 1)? 1 + Log2n(n/2): 0;
}
```

```
int main()
{
    unsigned int n = 32;
    printf("%u", Log2n(n));
    getchar();
    return 0;
}
```

Output

5

Time complexity:  $O(\log n)$

Auxiliary space:  $O(\log n)$  if the stack size is considered during recursion otherwise  $O(1)$

Using inbuilt log function

We can use the inbuilt function of standard library which is available in library.

// C program to find  $\log(n)$  using Inbuilt

// function of <math.h> library

```
#include<stdio.h>
#include<math.h>
int main()
{
    unsigned int n = 32;
    printf("%d", (int)log2(n));
    return 0;
}
```

Output

5

Time complexity:  $O(1)$

Auxiliary space:  $O(1)$

6.

TO SWAP two numbes without using temp variable

```
#include<iostream>
using namespace std;
void main()
{
    cout<<"enter two numbers";
    int a,b;
    cin>>a>>b;
    a=a+b;
    b=a-b;
    a=a-b;
    cout<<"\n after swapping \na="<a<<"\nb="<b;
}
```

7.

Write a C program to print "welcome" without using a semicolon

```
#include<stdio.h>
int main()
{
    if (printf("welcome") )
    { }
}
```

8.

Write a C program to print ";" without using a semicolon

```
#include<stdio.h>
int main()
{ // ASCII value of ; is 59
    if (printf("%c", 59))
    {
    }
}
```

Output: ;

9.

Program that can run without main function; Using a macro that defines main

```
#include<stdio.h>
#define fun main
int fun(void)
{
    printf("Geeksforgeeks");
    return 0;
}
```

Output: Geeksforgeeks

10.

C program to shut down the systemLinux OS:

```
// C program to shutdown in Linux
#include <stdio.h>
#include <stdlib.h>
int main()
{ // Running Linux OS command using system
    system("shutdown -P now");
    return 0;
}
```

Windows OS:Shutdown/ Log off/ Restart a Windows OS

We will make use of system() from < stdlib.h > to perform a system operation with the help of a C program. To perform any of the afore-mentioned system operation we will code as:

```
#include <stdio.h>
#include <stdlib.h>
int main(){
    system("c:\\windows\\system32\\shutdown /i");
    return 0;
}
```

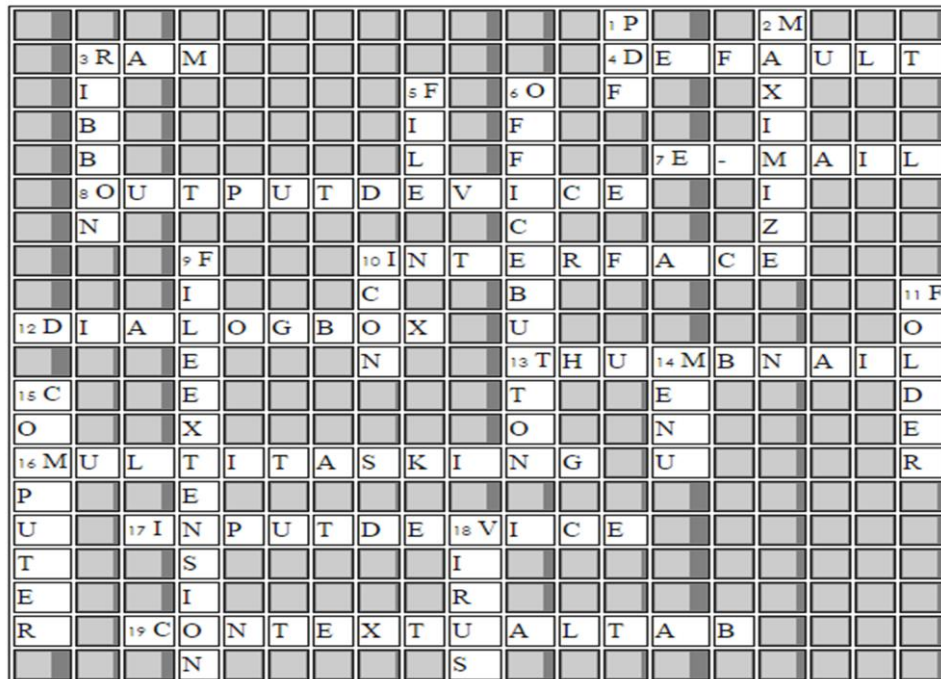


**MINDSWEEPER:**

1. B
2. B
3. C
4. B
5. C
6. **Error: Invalid Array Assignment**
7. A
8. A
9. B
10. A

**GENERAL IT QUIZ:**

1. Richard Mathew Stallman
2. 1972
3. Vinton Cerf
4. Thomas Harriot
5. Ada Lovelace
6. 1940
7. Kindle Fire
8. Doughles Engelbert
9. Google
10. Motorola
11. Wipro
12. High Defenition Multimedia Interface
13. James Russel
14. Java
15. Prolog
16. Kalyan Krishnamoorthy
17. Norway
18. <http://info.cern.ch/hypertext/WWW/TheProject.html>
19. Tic Tac Toe
20. Microsoft

**CROSSWORD PUZZLE:****BRAIN TEASER:****Logic Riddle Answer:**

Statement 4 is false.

There are 3 men, 8 women and 6 children at the party.

How is the answer derived?

Let's tackle it via logical elimination method.

Assume that all three statements 4, 5, 6 are true.

Then statement 1 is false.

But both statements 2 and 3 cannot be true either, thus we can conclude that one of the three statements 4, 5, 6 must be false and all three statements 1, 2, 3 are true.

From statements 1 and 2, we know that there are 11 men and women.

Then from statement 3, there are 2 possibilities, either there are 8 men and 3 women or 3 men and 8 women.

If there are 8 men and 3 women, then there is only 1 child (statement 2) which will make both statements 4 and 5 false. We know that only one statement is false, hence this possibility is eliminated.

If there are 3 men and 8 women, it will mean that there are 6 children (statement 2). Bingo!! Statement 4 is false.

## ALUMNI TALK

**Mithilaesh J**

***Program Analyst Trainee,  
Cognizant Technology Solutions, Chennai.***

I am Mr. Mithilaesh Jayakumar who was a graduate of Panimalar Institute of Technology from the recently passed out batch. I came here initially with an ambition to finish my graduation with a decent score like all of us did. But this 4 years of time in the college gave me the best of the memories as everyone says graduation is the best phase of life everyone should go through. I have not only secured good grades by listening to the lectures but also acquired knowledge which will help for the rest of my life. I would say that from being a student I have transformed myself into a complete person here. Thanks to all my Lecturers who guided me for their support and such amazing bunch of friends who never left my side. I studied, enjoyed, laughed and even cried here but I learned something which is more important. The experience of studying in PIT is very memorable with all our lovely faculty here and the way they take care of the overall development of their students.

I always thought of graduating from a college like Panimalar Institute of Technology but now I would rather prefer being a student again for what it gave me. This is the kind of institution which I think one would always love to be a part of. I am proud to be an alumnus of Panimalar Institute of Technology and a student of all lecturers who mentored me. I have been blessed with a good job and where ever I go, whatever I achieve in my life I would still be pleased to be a part this college.

I would always love to say that it is my college. I would cherish the experiences I had here forever. I take immense pleasure in getting this opportunity to write these words about my college.

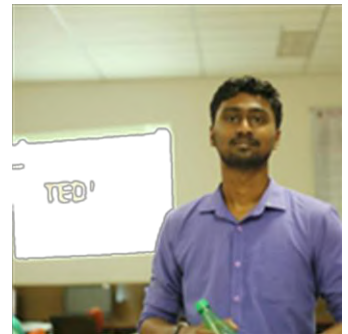
Thank you.



**L Hemalatha**  
System Engineer, Infosys Ltd

*Panimalar Institute of Technology, is one of the best thing that happened in my life. It helped me to discover more about myself and motivated me to work towards my goal.*

*It has a very good infrastructure. Well experienced and well qualified teaching faculties are the backbones of this institution. I am very thankful to my teachers for their guidance, support and the immense knowledge that they shared with me over the past 4 years. It provided all the basic facilities in a proper and systematic manner, which helped students to focus more on their studies and career. It also provides a very good platform for the students to work towards their innovative ideas. The food in the campus is very good. Panimalar Institute of Technology has nurtured me and made me what I am today. It made me more disciplined and helped me to grow not only professionally but holistically...as a good human being.*



**Santhoshkumar Kotteeswaran**  
Associate Consultant,  
Wipro Technologies

*It's very rare that you find a place that challenges conventional thinking and streamlines the way you work, Panimalar Institute of Technology is one such place. Being fed with knowledge and awesome food would make anyone fall in love with this place. The key value I took home from PIT is responsibility, I say this because my bus was never late, food was on time, commitment of professors.*

*This place allowed me to experiment to the greatest possible extent, I was allowed to take workshops to my juniors. As an alumni I would extend my support to the coming batches. I was deeply motivated by Mr. Sathyamoorthi who has in all ways guided me towards the end.*

## FIRST SOCIAL HUMANOID ROBOT



**Sophia** is a social humanoid robot developed by Hong Kong-based company **Hanson Robotics**. Sophia was activated on April 19, 2015 and made her first public appearance at **South by Southwest Festival (SXSW)** in mid-March 2016 in Austin, Texas, United States. She is able to display more than 62 facial expressions.

Sophia has been covered by media around the globe and has participated in many high-profile interviews. While interviewers around the world have been impressed by the sophistication of many of Sophia's responses to their questions, the bulk of Sophia's meaningful statements are believed by experts to be somewhat scripted.

In October 2017, the robot became a **Saudi Arabian** citizen, the first robot to receive citizenship of any country. In November 2017, Sophia was named the **United Nations Development Programme's** first ever Innovation Champion, and the first non-human to be given any United Nations title.

## History

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Sophia was created by Hanson Robotics in collaboration with AI developers, including Google's parent company Alphabet Inc, who built her voice recognition system, and SingularityNET, which powers her brain.

Sophia was activated on April 19, 2015. The robot is modeled after actress [Audrey Hepburn](#), and is known for her human-like appearance and behavior compared to previous robotic variants. According to the manufacturer, [David Hanson](#), Sophia uses [artificial intelligence](#), visual data processing and [facial recognition](#). Sophia also imitates human gestures and facial expressions and is able to answer certain questions and to make simple conversations on predefined topics (e.g. on the weather). Sophia uses [voice recognition](#) technology from [Alphabet Inc.](#) (parent company of [Google](#)) and is designed to get smarter over time. Sophia's intelligence software is designed by [SingularityNET](#). The AI program analyses conversations and extracts data that allows her to improve responses in the future.

Hanson designed Sophia to be a suitable companion for the elderly at nursing homes, or to help crowds at large events or parks. He has said that he hopes that the robot can ultimately interact with other humans sufficiently to gain [social skills](#).

Sophia has seven robot humanoid "siblings" who were also created by Hanson Robotics. Fellow Hanson robots are Alice, Albert Einstein Hubo, Bina48, Han, Jules, Professor Einstein, Philip K. Dick Android, Zeno, and Joey Chaotic. In December 2017, fellow Hanson robot BINA48 passed a college course on philosophy and love taught by Professor William J. Barry at Notre Dame de Namur University.

## Features

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Cameras within Sophia's eyes combined with computer algorithms allow her to see. She can follow faces, sustain eye contact, and recognize individuals. She is able to process speech and have conversations using Alphabet's Google Chrome voice recognition technology and other tools. Around January 2018 Sophia was upgraded with functional legs and the ability to walk.

Sophia is conceptually similar to the computer program [ELIZA](#), which was one of the first attempts at simulating a human conversation. The software has been programmed to give pre-written responses to specific questions or phrases, like a [chatbot](#). These responses are used to create the illusion that the robot is able to understand conversation, including stock answers to questions like "Is the door open or shut?" The information is shared in a [cloud network](#) which allows input and responses to be analysed with [blockchain](#) technology.



