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**STUDENTS CORNER**

**FACULTY CORNER**
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. 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.
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 with well-equipped spacious and state-of-the-art laboratories. The department strives to impart best training to the students on Computer Science and Engineering. The department has dedicated and qualified faculties besides good infrastructure for computing. Research at the departments are nurtured through various technical programs and always been on a high growth path and to keep pace with the current technological trends. The major objectives of the department are to assist and contribute in the development of top quality professional engineers and technicians needed 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 AND 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 AND 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 AND ENGINEERING

PROGRAM OUTCOMES (POs)

On completion of the B.E (CSE) degree the Computer science and Engineering graduates will have

PO1 : An ability to apply knowledge of mathematics, science, and Computer engineering.

PO2 : An ability to design and conduct experiments, as well as to analyze and interpret data.

PO3 : An ability to design a system to meet the business activities within realistic constraints such as economic, environmental, commercial, political, ethical, health and safety.

PO4 : An ability to use the techniques, skills, and modern tools in the development of hardware/software components.

PO5 : An ability to develop Leadership skill and work in a team during system design and implementation.

PO6 : An ability to function on multidisciplinary team.

PO7 : An ability to identify, formulate, and solve problems related to computer engineering.

PO8 : An understanding of professional and ethical responsibility.

PO9 : An ability to communicate effectively.

PO10 : An ability to recognize that broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

PO11 : A recognition of the need for life-long learning.

PO12 : A knowledge of contemporary issues.

PO13 : An ability to develop project management skills necessary for successful system design and implementations.
Engineers play the most vital role in building a nation. They create new innovations using best technologies to make human life more comfort, secure and productive. I am very much pleased to note that Department of Computer Science and Engineering of Panimalar Institute of Technology, advocates recent trends and advancements in Computer Science and Information Technology. CSE is the most promising sector with high growth opportunities and computer science department motivates their students to involve in the activities of both hardware and software products.

I hope that the activities performed by the department bring Industry-Institution collaboration to enhance and drives forward the research and development in the field of Computer Science and Information Technology. As the chairman of this renowned institution, I earnestly wish them in all their endeavors and to achieve success.
MESSAGE FROM THE SECRETARY

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

I am very much honored and pleased that Department of Computer Science and Engineering has involved in many technical and other activities in building up the student career. Students from CSE department have brought laurels to the institute through their contributions in different activities like academic and research. I extend my hearty congratulations to the entire faculty and students of Department of Computer Science and Engineering for their enthusiasm and effort to achieve success.
MESSAGE FROM THE DIRECTOR

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

Campus magazines are important not just to capturing the currents and moods of the time, but also because they act as an archive for the department. I am glad that, Department of Computer Science and Engineering of Panimalar Institute of Technology is putting together an annual compendium of technical articles, reviews and the various activities carried out by them. I express my compliments to the editorial board for their valuable efforts in bringing out the talents in the form of archives. I wish them all success!!

Bit & Bytes ‘15
MESSAGE FROM THE PRINCIPAL

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

“Success is achieved by those who try and keep trying with a positive mental attitude”

I have great pleasure in conveying my best wishes to the Department of Computer Science and Engineering for releasing the technical magazine which brings the students and teachers on a common platform to share and display their ideas and creativity. I extend my warm patronage to all those who have contributed their best to achieve success.
I am happy to know that our staff and students are bringing out the magazine for the department “Bit & Bytes ‘15” for the academic year 2014-15. The wide spectrum of articles in different sections gives us a sense of pride that our students and teachers possess creative potential and original thinking in ample measures. Commendable job has been done by the Editorial Board in planning for and producing the Magazine. I convey my congratulations to the team who took the responsibility for the arduous task most effectively. The CSE Department has a vision to evolve as a department with a difference in terms of quality and innovation. I request all my students to concentrate on studies, co-curricular and extracurricular activities by the vision in mind and bring laurels to the department. My Heartfelt Wishes to all

Dr. V. Subedha
Editor
Professor & Head / CSE
Inspiration is the one thing that we cannot restrict to a single source; many of us even have the habit of gaining inspiration from a simple walk which is why we bring you the inspirational quotes and talks from various C.E.Os of the world. The first on the list is,

**Marissa Mayer—CEO of Yahoo**

**Warren Buffett,**

CEO of Berkshire Hathaway

“**Rule No. 1: Never lose money; Rule No. 2: Don’t forget Rule No. 1.**”

“I always did something that I was a little not ready to do. I think that, that is how you grow. When there’s a moment of ‘Wow, I’m not so sure that I can do this, and you push through those moments, it’s then that you have a breakthrough. Sometimes that’s a sign that something really great is about to happen. You’re about to grow and learn a lot more about yourself.”
Michael Dell, CEO of DELL

"You don’t need to be a genius or a visionary, or even a college graduate for that matter, to be successful. You just need framework and a dream.”

Kavin Bharti Mittal, Founder and CEO of Hike

When asked his advice for young entrepreneurs, Mr. Kavin Bharti Mittal had an instant answer.

"My response is do not start up for the sake of starting up. Don't do it because you think it is cool. It is one of the hardest journeys of your life. There are more failures than successes; more downs than ups. And you really have to want it bad. If you don't want it bad, you are not going to be up working at 4 in the morning on two hours
Robert Iger, CEO of Walt Disney

Ask him what the soul and heart of a company is and he’ll answer right away.

“...The heart and soul of a company is creativity and innovation...”

Larry Ellison, CEO of Oracle

When it comes to this quote we all can be sure that his words are true.

“When you innovate, you must prepare yourself for everybody to tell you that you’re nuts.”
Steve Jobs, Founder of Apple

The worst thing that could happen might turn out to be the best thing that could happen.

"I didn't see it then, but it turned out that getting fired from Apple was the best thing that could have ever happened to me,"

A. NAVIN PRAKASH
IV Year CSE
Green computing and green technology refers to the environmentally responsible use of computers and any other technology related resources. Green computing includes the implementation of best practices, such as energy efficiency central processing units (CPUs), peripherals and servers. In addition green technology aims to reduce resource consumption and improve the disposal of electronic waste (e-waste).

Cutting carbon emissions and going green is no longer just an option: it is the inevitable future of business in the 21st century. Execs are being urged to junk their Jag and pick up a Prius. Business travellers are encouraged to take the train over the 'plane. And organisations are urged, through legislation, public relations and sheer economics, to increase the efficiency of their operations, from logistics to networks to datacenters. Yet there is a common misconception that going green is a tiresome, expensive process, needing support at every turn. This couldn't be further from the truth. These myths are simply based on outdated impressions of green technology.

The reality is that green technology is now becoming the norm and it actually makes business and environmental sense to use it. For example, take the network. This is traditionally the beating heart of a business: if it is not working, then the business cannot operate. As a result, it is imperative that
IT departments are able to use the most capable technology they can to keep their network performing.

More and more, the most capable and the greenest technology are one and the same. Currently, green technology offers the same functionality as traditional technology, and for much the same up-front price. However, it also adds a host of additional benefits in terms of costs, technology and its influence on the organisation. For example, green networking switches use less energy and so generates less heat. This means that the latest generation of products also has fewer moving parts such as fans. This results in less maintenance, a longer lifespan and a greatly reduced total cost of ownership (TCO), above the reduced energy costs green technology provides.

From a technological standpoint, green products can offer much more intelligent functionality than their traditional counterparts. Green network switches can now shut down automatically when not in use; they can schedule wireless access and port use to ensure that maximum efficiency is achieved at all times; and can even adjust power usage to correspond with the amount of Ethernet cable used in the network. Put simply, green network technology lasts longer, costs less and does the same job as traditional equipment. As a result, adopting it becomes as much a business decision as an environmental one.

The one important question is what should be done by organizations currently using traditional networking equipment? After all, an older switch won't magically become as efficient as a newer model, while upgrading a network early on in its life cycle is simply wasteful. Like any other equipment upgrade, making the switch to green technology should be a simple matter of measuring costs and benefits. Organisations should measure the total lifetime costs of using green technology against those of their current equipment: when it becomes cost-effective to upgrade to a newer model, taking into account an increased lifespan and lower energy costs, then it's time to switch. As a result, going green simply becomes another part of the equipment procurement process.
The green revolution is not going anywhere: whether it is done for purely altruistic or financial reasons, organisations will need to become more energy-efficient. However, achieving this is far from a Herculean task that will cost the earth: if IT departments can sort fact from fiction with green technology, they will soon be able to reap the benefits.

S. DIWAKAR

III Year CSE
FUN TIME

Just like learning having fun is a part of life too, here are some brain teasers that’ll make you go crazy.

1. What number comes inside the circle?

2. Which number replaces the question mark?
3. Which letter replaces the question mark?

4. What goes in the empty square?

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Hint: it's not 6
5. Which picture cube does this shape make?

6. Which letter replaces the question mark?

The Answers are provided in the next page but be sure to try the puzzles before you check them.
Answers:

1. 6
2. 9
3. O
4. R
5. C
6. K

Explanation:

1. Looking at the diagram in rows, the central circle equals half the sum of the numbers in the other circles to the left and right of the centre.
2. The number at the centre of each triangle equals the sum of the lower two numbers minus the top number.
3. In each segment of the diagram are a pair of letters, one of which is the same distance from the start of the alphabet as the other is from the end.
4.
How Antivirus Software works: Virus Detection Techniques

An antivirus tool is an essential component of most antimalware suites. It must identify known and previously unseen malicious files with the goal of blocking them before they can cause damage. Though tools differ in the implementation of malware-detection mechanisms, they tend to incorporate the same virus detection techniques. Familiarity with these techniques can help you understand how antivirus software works.

Virus detection techniques can be classified as follows:

- **Signature-based detection** uses key aspects of an examined file to create a static fingerprint of known malware. The signature could represent a series of bytes in the file. It could also be a cryptographic hash of the file or its sections. This method of detecting malware has been an essential aspect of antivirus tools since their inception; it remains a part of many tools to date, though its importance is diminishing. A major limitation of signature-based detection is that, by itself, this method is unable to flag malicious files for
which signatures have not yet been developed. With this in mind, modern attackers frequently mutate their creations to retain malicious functionality by changing the file’s signature.

- **Heuristics-based detection** aims at generically detecting new malware by statically examining files for suspicious characteristics without an exact signature match. For instance, an antivirus tool might look for the presence of rare instructions or junk code in the examined file. The tool might also emulate running the file to see what it would do if executed, attempting to do this without noticeably slowing down the system. A single suspicious attribute might not be enough to flag the file as malicious. However, several such characteristics might exceed the expected risk threshold, leading the tool to classify the file as malware. The biggest downside of heuristics is it can inadvertently flag legitimate files as malicious.

- **Behavioral detection** observes how the program executes, rather than merely emulating its execution. This approach attempts to identify malware by looking for suspicious behaviors, such as unpacking of malcode, modifying the hosts file or observing keystrokes. Noticing such actions allows an antivirus tool to detect the presence of previously unseen malware on the protected system. As with heuristics, each of these actions by itself might not be sufficient to classify the program as malware. However, taken together, they could be indicative of a malicious program. The use of behavioral techniques brings antivirus tools closer to the category of host intrusion prevention systems (HIPS), which have traditionally existed as a separate product category.

- **Cloud-based detection** identifies malware by collecting data from protected computers while analyzing it on the provider’s infrastructure, instead of performing the analysis locally. This is usually done by capturing the relevant details about the file and the context of its execution on the endpoint, and providing them to the cloud engine for processing. The local antivirus agent only needs to perform minimal processing. Moreover, the vendor’s cloud engine can derive patterns related to malware characteristics and behavior.
by correlating data from multiple systems. In contrast, other antivirus components base decisions mostly on locally observed attributes and behaviors. A cloud-based engine allows individual users of the antivirus tool to benefit from the experiences of other members of the community.

Though the approaches above are listed under individual headings, the distinctions between various techniques are often blurred. For instance, the terms "heuristics-based" and "behavioral detection" are often used interchangeably. In addition, these methods -- as well as signature detection -- tend to play an active role when the tool incorporates cloud-based capabilities. To keep up with the intensifying flow of malware samples, antivirus vendors have to incorporate multiple layers into their tools; relying on a single approach is no longer a viable option.
TIME FOR REASONING

1.

Which grid replaces the question mark?

Answer : A

Explanation : Working from left to right, top row then bottom row, the first grid contains a sequence of 2 black dots and a sequence of 3. The next grid contains one of 3 and one of 4. Continue, adding 1 to each sequence every time.

2.

How many number of dots replaces the question mark?

Answer : 3
Explanation: Starting on the left and working to the right, take pairs of dominoes and calculate the sum of the dots they are displaying. This sum follows the sequence 3, 6, 9 and 12.

3.

Which playing card replaces the question mark?

<table>
<thead>
<tr>
<th>7 ♠</th>
<th>2 ♠</th>
<th>8 ♥</th>
<th>9 ♦</th>
<th>6 ♥</th>
<th>4 ♠</th>
<th>3 ♥</th>
<th>5 ♠</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♠</td>
<td>3 ♠</td>
<td>8 ♥</td>
<td>9 ♦</td>
<td>6 ♥</td>
<td>4 ♠</td>
<td>3 ♥</td>
<td>5 ♠</td>
</tr>
<tr>
<td>10 ♥</td>
<td>4 ♠</td>
<td>2 ♠</td>
<td>8 ♥</td>
<td>9 ♦</td>
<td>6 ♥</td>
<td>4 ♠</td>
<td>3 ♥</td>
</tr>
<tr>
<td>3 ♥</td>
<td>5 ♠</td>
<td>2 ♠</td>
<td>8 ♥</td>
<td>9 ♦</td>
<td>6 ♥</td>
<td>4 ♠</td>
<td>3 ♥</td>
</tr>
</tbody>
</table>

Answer: 9 of Clubs

Explanation: Taking red cards as positive values and black cards as negative values, in each column of the diagram, the lower card value equals the sum of the two upper card values. The suits are used alternately in each column.

4.

Which playing card replaces question mark?

<table>
<thead>
<tr>
<th>6 ♥</th>
<th>2 ♥</th>
<th>10 ♦</th>
<th>3 ♥</th>
<th>6 ♥</th>
<th>2 ♥</th>
<th>10 ♦</th>
<th>3 ♥</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ♥</td>
<td>5 ♠</td>
<td>2 ♠</td>
<td>8 ♥</td>
<td>9 ♦</td>
<td>6 ♥</td>
<td>4 ♠</td>
<td>3 ♥</td>
</tr>
<tr>
<td>2 ♠</td>
<td>8 ♥</td>
<td>9 ♦</td>
<td>6 ♥</td>
<td>4 ♠</td>
<td>3 ♥</td>
<td>5 ♠</td>
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<tr>
<td>3 ♥</td>
<td>5 ♠</td>
<td>2 ♠</td>
<td>8 ♥</td>
<td>9 ♦</td>
<td>6 ♥</td>
<td>4 ♠</td>
<td>3 ♥</td>
</tr>
</tbody>
</table>

Answer: King of Clubs
Explanation: Start at the top left of the diagram and move to the right, then down one row and to the left etc. in a snakes and ladders pattern. The value of each card increases by 5 each time, with their suit following the sequence of hearts, clubs, diamonds and spades.

5.

![Image of watches showing times](image)

**Question**: What time should the last watch show?

**Answer**: 5:19

**Explanation**: Starting with the watch on the left, add 42 minutes to the time shown to give the time on the next watch to the right.

6.

![Image of clock with minute hands](image)

**Question**: Where should the minute hand be put on the bottom clock?

**Answer**: [Diagram showing the correct position of the minute hand]
<table>
<thead>
<tr>
<th>Answer</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand pointing to 5</td>
<td>Starting with the top clock and moving anti-clockwise around the others, the hour hand moves back 1 hour, then 2, then 3 etc, while the minute hand moves forward 10 minutes each time.</td>
</tr>
</tbody>
</table>

7.

**What time should the last watch show?**

![Image of watches](image)

<table>
<thead>
<tr>
<th>Answer</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:20</td>
<td>On each watch, the sum of the digits shown equals 8.</td>
</tr>
</tbody>
</table>
8. Which letter replaces the question mark?

Answer: Q

Explanation: Adding the three numbers in each square together gives the numerical value of the letter at the centre of each square.

9. Which letter replaces the question mark?

Answer: P
Explaination: Working in rows, add the left and right hand numbers together, and put the letter with the reverse alphabetical value of this sum in the central box.

10.

Which number replaces the question mark?

Answer: 22

Explanation: Add together values in corresponding positions of the top two crosses, and put the results in the lower left cross. Calculate the difference between values in corresponding positions of the top two crosses, and put the results in the lower right cross. Finally, add together the value in corresponding positions of the lower two crosses to give the values in the central cross.
From Bricks to Brains

The Evolution of the Cell Phone

For years, Nokia and Motorola ruled the cell phone industry. But that all changed with the development of the smartphone. With all of the mobile phone manufacturers still producing today, which are the most successful? Let’s take a look at cell phone trends and sales throughout the years, from the very first Motorola in 1983 to the Apple iPhone 5S of 2013.
$3,995
Price of first cell phone in 1983, the Motorola DynaTAC 8000X

1973
Year first-ever mobile phone call was made, by Motorola's Martin Cooper

1985: 340,213 U.S. mobile subscribers
Today: 300,520,098 U.S. mobile subscribers

**Popular Models Through the Years**

Here is a look at key moments in the history of mobile phones along with some of the most popular models for each year.

**1983**
Motorola DynaTAC 8000X **1989**
Motorola MicroTAC 9800X

**1992**
Nokia 101
Motorola International 3200

Nokia decides to focus solely on making mobile phones.

**1993**
Apple releases its first personal digital assistant device.

**1996**
Nokia 1610

**1997**
Motorola D160

Samsung enters the mobile phone business.
1998
Nokia 5110

Nokia becomes the leading global mobile phone manufacturer.

1999
Nokia 8210, 7110, 5210, 3210

2000
Nokia 3310

Samsung launches its first PDA phone.

2001
Nokia 8310
Ericsson T68
Siemens S45

2002
Nokia 6100, 6610, 6650, 3510, 7650
Siemens A50
Samsung SGH-T100

Nokia releases its first 3G phone, the 6650.

2003
Nokia 1100, 3100, 3200, 6600
Samsung SGH-E700
BlackBerry Quark 6210, 7210

2004
Motorola Razor V3
Nokia 6630, 7280

2005
Nokia 6680
Motorola Razor Magenta
Samsung outshines Sony as consumers' preferred electronics manufacturer.

2006
BlackBerry Pearl
LG Chocolate KG800
Samsung BlackJack

2007
Apple iPhone
HTC Touch
LG Shine
Nokia 6500 Slide, 6500 Classic

The first iPhone is released, threatening Nokia's reign as most popular manufacturer. Apple releases its first iPhone as well as iOS 1.1.1.

2008
Apple iPhone 3G
LG Vu, Secret
Nokia N96, E63
BlackBerry Storm, Bold

Apple sells 1 million iPhone 3Gs in its opening weekend. Apple launches the AppStore with iOS 2.0, introducing third-party applications.

Samsung's chairman Lee Kun-hee steps down after being convicted of tax evasion. In 2010, he is later re-appointed to the position.

2009
Apple 3GS
Motorola Droid
BlackBerry Curve
Sidekick LX 2009
HTC Magic
Nokia experiences its first quarterly loss in more than a decade, just after the Android operating system becomes popular with HTC phones.

Apple sells 1 million 3GSs iPhones in its opening weekend.

**2010**

Apple iPhone 4
Samsung Galaxy
Nokia N8
Nokia hires Microsoft executive Stephen Elop as its first non-Finnish executive. 1,800 jobs are cut from the company.

**2011**

Apple iPhone 4S
Samsung Galaxy S II
Motorola Droid 3
HTC Evo

Samsung launches a series of TV ads mocking Apple devotees.

Nokia joins with Microsoft, announcing that Nokia smartphones will now sport the Microsoft operating system. 14,000 jobs are cut worldwide.

Steve Jobs resigns as Apple's CEO and is replaced by Tim Cook. Later in the year, Jobs dies of cancer.

**2012**

Apple iPhone 5
Samsung Galaxy S III
Nokia Lumia 920
LG Nexus 4

Apple introduces the iPhone 5. Five million units are sold in the first weekend.

Samsung overtakes Nokia as the world's leading manufacturer of mobile phones.
2013
Apple iPhone 5S
Samsung Galaxy S4
BlackBerry Z10
Nokia Lumia 520
HTC One

Nokia agrees to sell its entire mobile phone business to Microsoft for $7.18 billion.
Apple introduces the iPhone 5S (complete with fingerprint authentication technology) and 5C (the company's first so-called "budget device"). A combined 9 million handsets are sold on the first weekend after the phones' launch.
Apple revamps its operating system with the release of iOS7.
Which manufacturers have sold the most phones and been the most profitable throughout the years?

1992-2011
The years in which Nokia was the top-selling manufacturer

2012-2013
The two years in which Samsung surpassed Nokia as top-selling manufacturer

2012 global sales by manufacturer
Samsung 396.5 million units
Nokia 335.6 million units
Apple 135.8 million units
LG 55.9 million units

P.R. KEERTHANA
III Year CSE
REASONS TO CHOOSE WINDOWS

With the Windows phones enjoying an increase in popularity and giving their Android counterpart a good competition, consumers today have plenty of options to choose an Android phone or Windows phone to suit their need. We present 5 reasons that make a Windows phone a better option than the Android smartphones.

 Cortana

Cortana is said to be the most personal digital assistant. Cortana is efficient in performing a variety of tasks including taking notes, reminders and searching things. Setting her apart are the tasks she can perform like recharging your phone using voice commands through the Freecharge app, or ordering pizza via voice command using Dominos app. She can reserve seats for you in restaurants, predict for matches, and so on. Cortana also sings, cracks jokes and narrates stories. She can give answers to your queries than show search results in most cases. The list goes on and it makes a way more superior than Google now.

 Live Tiles

Live Tiles give a very beautiful touch to the user interface. Apart from creating shortcuts, they give a glimpse of information from respective apps. They display mass information that is updated every minute without taking much of the battery backup. They can be easily resized, enabling you to add more of them, unlike Android Widgets.
Live Lock Screen

With Windows Phone 8.1 enables the user to customize its lock screen. Android and iOS provide semi-customizable lock screens, while Windows Live Lock Screen allow third-party apps to fully control of your lock screen. You can see your Facebook Albums, Reddit gallery, weather forecast, etc.

Lumia Exclusives

Most of the Windows phones are Lumia. Lumia exclusive apps are only for Lumia users and are very different. Glance Screen is one of the most efficient Lumia apps that allows you to see time and notifications by simply peeping at the screen, without waking up the phone. Other useful apps are Nokia Camera, Lumia Selfie, Lumia Creative Studio, Lumia Panorama, and Lumia Cinemagraph.

Hubs

Hubs get all the different related features at one location. You just need to launch the People Hub and all the information will be there at one place, be it the latest tweet or post. Music Hub, Video Hub and Games Hub are the other Hubs.
Twist the Tongue

A twister of twists once twisted a twist; a twist that he twisted was a three-twisted twist; if in twisting a twist one twist should untwist, the untwisted twist would untwist the twist.

I wish to wish the wish you wish to wish, but if you wish the wish the witch wishes, I won’t wish the wish you wish to wish.

Six sick hicks nick six slick bricks with picks and sticks

U.SWATHI
II Year CSE
A photographer in the United Kingdom recently came upon a striking white rainbow hovering over Rannoch Moor in Scotland. Melvin Nicholson and a friend had just arrived at a tree he was hoping to photograph when they witnessed the phenomenon, he told ABC News. "The sun started to rise behind us, burning off the mist, and at that point, the fogbow appeared," he said. "I had never seen anything like it in my 10 years capturing landscape photos around the globe."

White rainbows, which resemble normal rainbows with the color leached out, emerge from fog that is thin enough to be pierced by sunlight. Often, an observer can see a red or bluish tinge at the edges, while color in the middle is wiped out.
Like rainbows, fogbows can be seen when the sun is at your back. Fogbows and regular rainbows are both made when sunlight hits water droplets suspended in the atmosphere. “They’re just different in the fact that the water droplets in fog are way, way smaller than the droplets in your typical rain drop,” says Brian Jackson, a meteorologist at the National Weather Service.

To form a rainbow, that light bends, or refracts, as it travels from air into the water droplet, separating into different colors. Some light is reflected against the back of the droplet, sending it back the way it came (i.e., towards your eyeballs). On its way out, the light bends again as it passes from water back into air.

Violet light bends the most, red least. So red light is angled more steeply towards the ground than other colors. This means that red light leaving water droplets higher in the sky has a better chance of reaching your eyes. This is why we see rainbows as bands of colors with red on the outside.

The curve you see represents a kind of sweet spot, where the reflected and refracted sunlight is most visible from your position (this shape is actually a circle, interrupted by the ground; the entire ring can sometimes be spotted from airplanes).
As with a rainbow, a fogbow’s arc shape comes from the water droplets at the best angle shooting sunlight back to the viewer. But with fogbows, the colors are smeared out. Fogbows are made from fog droplets that are about 100 times smaller than plump raindrops. Most of this light is diffracted, or scattered, when it hits these tiny droplets, but some is refracted.

“Due to the small size of the droplets, the light waves don't spend enough time within the droplet to refract enough to separate cleanly and focus into colors,” Jackson says. “So, they mostly continue to overlap, and appear white.”
1. At a conference, 12 members shook hands with each other before & after the meeting. How many total number of handshakes occurred?

- 100
- 132
- 145
- 144
- 121

**Correct answer: 132**

Explanation: The first person shook hands with 11 remaining people, the second person also shook hands with 11 people, but we count 10, as the hand shake with the first person has already been counted. Then add 9 for the third person, 8 for the fourth one & proceeding in this fashion we get:

\[11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 66.\]

Hence 66 handshakes took place before & 66 after the meeting, for a total of 132.

2. The day after the day after tomorrow is four days before Monday. What day is it today?

- A. Monday
- B. Tuesday
- C. Wednesday
- D. Thursday
- E. Friday
Correct answer: A. Monday

Explanation: Four days before Monday is Thursday, simply because four days after Thursday is Monday. Besides, day after the day after tomorrow is Thursday only if present day is Monday.

3. A fisherman has 5 fishes (namely A, B, C,D, E) each having a different weight.

- (i) A weighs twice as much as B.
- (ii) B weighs four and a half times as much as C.
- (iii) C weighs half as much as D.
- (iv) D weighs half as much as E.
- (v) E weighs less than A but more than C.

Which of the following is the lightest?

- (i) A
- (ii) B
- (iii) C
- (iv) D
- (v) E

Correct answer: (iii) C

Explanation: On logical interpretation of the given statements one can arrive at the following conclusion:
A>B>E>D>C in order of decreasing weight. Hence C is the lightest of all the given fishes.

4. In the above problem, E is lighter in weight than which of the following pairs?

- (i) B,D
- (ii) D,C
Correct answer: (v) A,B

Explanation: On logical interpretation of the given statements one can arrive at the following conclusion:
A>B>E>D>C in order of decreasing weight. Hence, it can be seen that E is the lighter than A and B.

5. 6121135 is to flame as 21215120 is to ?

- A. voice
- B. bald
- C. bloat
- D. castle

Correct answer: C. bloat

Explanation: 6,12,1,13,5 each number in the break up signifies the corresponding letter in the alphabet. (viz. 6->f, 12->l...etc.) Similarly 2,12,15,1,20 which signifies bloat.

6. Forest is to tree as tree is to ?

- A. plant
- B. leaf
- C. branch
- D. mangrove

Correct answer: B. leaf
Explanation: As forest houses several trees, a tree has many leaves. Branches is a close choice but it is incorrect as all trees do not have branches.

**IQ Ability Test:**

1. If Bob sold 15 apples in a working week, what is the average number of apples he sells each day?

2. “Pig is to pork” as “Cow is to ____”:
   a. Lamb
   b. Beef
   c. Stew
   d. Cattle

3. If it takes 2 hours to drive to City A and the city is 120km away, what speed was the vehicle travelling at?

4. If Sally sells more tickets than Betty and Betty sells more tickets than Jodie, who sells the most if we compare Sally and Jodie?

5. The words “inclusive” and “exclusive” have:
   a. The same meaning
   b. Different meanings
   c. Are the opposite in meaning

6. If you have a cube which is 5m x 5m x 5m, what is the cubic metres this container would hold?

7. The acronym RSVP originally came from the French term Répondez s’il vous plaît – True or False?
8. “Boat is to water” therefore “Plane is to _____”
   a. Fly
   b. Sky
   c. Float
   d. Air

9. The following series of numbers contains one number that does not fit the pattern set by the others. What number does not fit? 3, 5, 7, 11, 14, 17

10. The word PARTICULAR is the opposite of:
   a. Distinct
   b. Vague
   c. Exacting
   d. Fussy

**Answers to the above IQ Ability Test:**

1. 3 – there are 5 days in a working week, so you divide 15 by 5 = 3
2. Beef – Pig is the animal pork meat comes from so what meat comes from Cows – Beef
3. 60km per hour – Take the number of kms 120 and divide by the number of hours, then you get the kilometres per hour
4. Sally – Given Betty sells more than Jodie, and Sally sells more the Betty, therefore Sally must sell more than Jodie
5. These words have opposite meanings
6. 125 cubic metres – to work this out you multiple each dimension of the cube by the others. 5x5 = 25; 25*5=125

7. True

8. Air – Boats travel through the water and water goes through a boat’s engine, therefore what do planes travel through and what goes through the engine? The Air.

9. 14 does not fit, the others are prime numbers, but 14 is not.

10. Vague. Particular generally means to be quite specific and exact about what you want, therefore being vague would be the opposite.

J. MERCY FAUSTINA
IV Year CSE
10 Breakthrough Technologies 2014

1. **Agricultural Drones**

   Relatively cheap drones with advanced sensors and imaging capabilities are giving farmers new ways to increase yields and reduce crop damage.

2. **Ultra Private Smartphones**

   New models built with security and privacy in mind reflect the Zeitgeist of the Snowden era.

3. **Brain Mapping**

   A new map, a decade in the works, shows structures of the brain in far greater detail than ever before, providing neuroscientists with a guide to its immense complexity.
4. **Neuromorphic Chips**

Microprocessors configured more like brains than traditional chips could soon make computers far more astute about what’s going on around them.

5. **Genome Editing**

The ability to create primates with intentional mutations could provide powerful new ways to study complex and genetically baffling brain disorders.

6. **Microscale 3-D Printing**

Inks made from different types of materials, precisely applied, are greatly expanding the kinds of things that can be printed.
7. Mobile Collaboration

The smartphone era is finally getting the productivity software it needs.

8. Oculus Rift

Thirty years after virtual-reality goggles and immersive virtual worlds made their debut, the technology finally seems poised for widespread use.

9. Agile Robots

Computer scientists have created machines that have the balance and agility to walk and run across rough and uneven terrain, making them far more useful in navigating human environments.
10. **Smart Wind and Solar Power**

Big data and artificial intelligence are producing ultra-accurate forecasts that will make it feasible to integrate much more renewable energy into the grid.

M. RADHAKRISHNAN  
III Year CSE
Sample Diagrammatic IQ Test

For each of the following diagrams, select the item below it which would complete the pattern:

**Question A**

**Question B**
Answers to the above IQ questions:

A. 1
B. 4
C. 5

**Question D**

Look at the diagram below. Within the diagram there are series of letters that are altered in some way by various commands. These commands are represented by symbols. Your task is to work through the diagram following the paths indicated by arrows in order to determine the effect of the commands and then to answer the questions that follow, using the same commands.
### Question Answers:

1. D
2. B
3. E
4. A
Question E

Find the number that should be in the shaded square for the following items:

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<td>15</td>
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<td>41</td>
<td>32</td>
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**Answers:**

a) 14  
b) 7  
c) 23
Understanding Big Data

What is Big Data?

- Big data is a buzzword, or catch-phrase, used to describe a massive volume of both structured and unstructured data that is so large that it's difficult to process using traditional database and software techniques.

- In most enterprise scenarios, the data is too big or it moves too fast or it exceeds current processing capacity.

- Big data has the potential to help companies improve operations and make faster, more intelligent decisions.

<table>
<thead>
<tr>
<th>Byte</th>
<th>one grain of rice</th>
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</thead>
<tbody>
<tr>
<td>Kilobyte</td>
<td>cup of rice</td>
</tr>
<tr>
<td>Megabyte</td>
<td>8 bags of rice</td>
</tr>
<tr>
<td>Gigabyte</td>
<td>3 Semi trucks</td>
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<tr>
<td>Terabyte</td>
<td>2 Container Ships</td>
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<td>Petabyte</td>
<td>Blankets Manhattan</td>
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<td>Exabyte</td>
<td>Blankets west coast states</td>
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<tr>
<td>Zettabyte</td>
<td>Fills the Pacific Ocean</td>
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<td>Yottabyte</td>
<td>A EARTH SIZE RICE BALL!</td>
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<td>Byte</td>
<td>one grain of rice</td>
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The Future?
Characteristics of big data

Volume
Data at Rest
Terabytes to exabytes of existing data to process

Velocity
Data in Motion
Streaming data, milliseconds to seconds to respond

Variety
Data in Many Forms
Structured, unstructured, text, multimedia

Veracity*
Data in Doubt
Uncertainty due to data inconsistency & incompleteness, ambiguities, latency, deception, model approximations

Who's Generating Big Data?

Social media and networks
(all of us are generating data)

Scientific instruments
(collecting all sorts of data)

Mobile devices
(tracking all objects all the time)

Sensor technology and networks
(measuring all kinds of data)

To extract knowledge ➔ all these types of data need to linked together

The progress and innovation is no longer hindered by the ability to collect data.
But, by the ability to manage, analyze, summarize, visualize, and discover knowledge from the collected data in a timely manner and in a scalable fashion.
How Is Big Data Different?

1) Automatically generated by a machine
   (e.g. Sensor embedded in an engine)

2) Typically an entirely new source of data
   (e.g. Use of the internet)

3) Not designed to be friendly
   (e.g. Text streams)

4) May not have much values
   — Need to focus on the important part

Type of Data

- Relational Data (Tables/Transaction/Legacy Data)
- Text Data (Web)
- Semi-structured Data (XML)
- Graph Data
  - Social Network, Semantic Web (RDF), …
- Streaming Data
  - You can only scan the data once

What to do with these data?

- Aggregation and Statistics
  - Data warehouse and OLAP
- Indexing, Searching, and Querying
  - Keyword based search
  - Pattern matching (XML/RDF)
  - Knowledge discovery
  - Data Mining
  - Statistical Modeling

Mrs. S. HEMAMALINI
Asst. Professor / CSE

Bit & Bytes ‘15
Technology Growth

How Technology Changed Our Life...

15 Years Ago

- Sigh! Letters
- Ding, You’ve Got Mail

Today

- 220 Unread Emails
- OMG! A Letter

Mr. S.KAVIARASAN
Asst. Professor / CSE
Essential Skills for Good Roboticists

**WHAT TYPE OF PERSON WORKS IN ROBOTICS?**

Roboticists are a combination of opposites. As specialists, we are skilled in the fine details of our specialisms. As generalists, we are able to see "the big picture" — something our broad knowledge base allows us to do. Every career requires a different balance of skills. One system of categorizing careers, used by vocational psychologists, is the Holland Codes. These codes present people's vocational choices based on their personality types and skill-sets. According to this theory, robotic engineers fall largely into the Thinking (Investigative) and Doing (Realistic) categories. This means that roboticists need to be a good mix between two opposing working styles. "Investigative" people generally like to solve problems by thinking, reading and studying. On the other hand, "Realistic" people are highly practical - they like to solve problems by "getting their hands dirty".

Robotics is a delicate balance between hard study and "fiddling about" (as I like to call it), i.e. working on physical things.

**10 ESSENTIAL SKILLS ALL GOOD ROBOTICISTS HAVE**

To be effective as specialists and generalists — as well as being both practical and investigative — roboticists need a good set of supporting skills. In this list we've taken 25 career skills and grouped them into 10 essential skills for roboticists.

**1. SYSTEMS THINKING**

A project manager once told me that many people with robotics degrees turn out to be project managers or systems engineers. This makes a lot of sense, as robots are very complicated systems. We have to be good at mechanics, electronics, electrics, programming, sensing and even psychology and cognition.
A good roboticist is able to understand how all of these different systems work together and is comfortable with the theory behind all of them. Whereas, a mechanical engineer could reasonably say: "that's a programming or an electrical problem, it's not my job", a roboticist must be well versed in all of the different specialisms.

Therefore, skills like **Systems Analysis** and **Systems Evaluation** are key to being a great roboticist.

### 2. The Programming Mindset

**Programming** is a pretty essential skill for robotics. It doesn't matter if you're involved in low-level control systems (only using MATLAB to design controllers) or if you're a computer scientist designing high-level cognitive systems. Robotic engineers can be involved at any stage of the programming abstraction. The main difference between robotics and other programming disciplines is that robotic programming interacts with hardware, electronics and the (messy) real world.

There are over 1500 programming languages in the world. Although you clearly don't need to learn all of them, a good roboticist will be having 'The Programming Mindset'. They will be comfortable learning any new language if and when it is required.

### 3. Active Learning

There are so many topics within robotics that it is impossible to learn all of them before you need them for a project. Even after a 5 year undergraduate degree in robotics and a 3 year PhD, I had only scratched the surface of the topics in robotics.

Being good at **Active Learning** is an essential skill throughout your whole career. Therefore, having a good level of **Reading Comprehension** and a grasp of the **Learning Strategies** that work for you personally will help you to learn new things quickly and easily when the need arises.
4. Mathematics
There are not many "core" skills in robotics (i.e. topics that can't be learned as you go along). One of these core skills is Mathematics. You would probably find it challenging to succeed in robotics without a good grasp of at least algebra, calculus and geometry. This is because, at a basic level, robotics relies on being able to understand and manipulate abstract concepts, often representing those concepts as functions or equations. Geometry is particularly important for understanding topics like kinematics and technical drawing (which you're likely to see a lot of in your career, even if it's only on the back of a napkin).

5. Science or other Applied Mathematics
There are some people (pure mathematicians for example) who only need to handle mathematics without applying the concepts to the real world. Roboticists are not this type of person. Skills in Science and other Applied Mathematics are important for robotics, because the real world is never as exact as mathematics. Being able to decide when the result of a calculation is "good enough to actually work" is a key skill for a robotics engineer.

6. Judgement and Decision Making
Being a good roboticist means continually making engineering decisions. Should you program with ROS or another system? How many fingers should you give your robot? Which sensors should you use? Robotics is full of choices and there is almost never one correct solution. Thanks to the wide knowledge base of roboticists, you might find yourself in a better position to weigh up certain problems than engineers from more specialized disciplines. Judgement and Decision Making are essential to make the most of your position. Skills in Analytical Thinking will allow you to analyze the problem from various angles while Critical Thinking skills will help you to use logic and reasoning to balance the strengths and weaknesses of each solution.

7. Good Communication
As a roboticist, your generalist knowledge will mean that you often have to explain concepts to non-specialists. For example, you might have to explain a high-level programming issue to a mechanical engineer, or a structural mechanics problem to a computer scientist. Good roboticists are a channel of communication between the different disciplines. Therefore, Communication skills are vital. Being able to use your Speaking and Writing skills effectively is important. Also, if you have good Instructing skills this is a big bonus.
8. Technology Design
Being proficient at Technology Design means being able to design things that actually work. It also means being able to figure out why something isn't working properly and come up with possible solutions, meaning skills in Repairing. Robotics involves a wide range of technologies, so skills in technology design mean you can effectively isolate the source of problems and propose effective solutions. An almost magical ability to "get it working" (whatever it is and however it is broken) is one of the marks of a truly talented roboticist.

9. Complex Problem Solving
As we've seen from the previous skills, a lot of robotics is about using your Complex Problem Solving skills. This includes Foreseeing Problems, to fix the problems before they've even arisen, and troubleshooting them if they do arise.

10. Persistence
Finally, given the complex nature of robotics, Persistence is a pretty essential skill. It might be persistence in trying to find the solution to a particularly difficult problem, or persistence in trying to explain a complex topic to others. Good roboticists will also support their persistence with Dependability, proving themselves to be as knowledgeable and adaptable as robotics requires them to be.

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