bi₀₁Twise

**Department of Computer Science,
Hans Raj College**
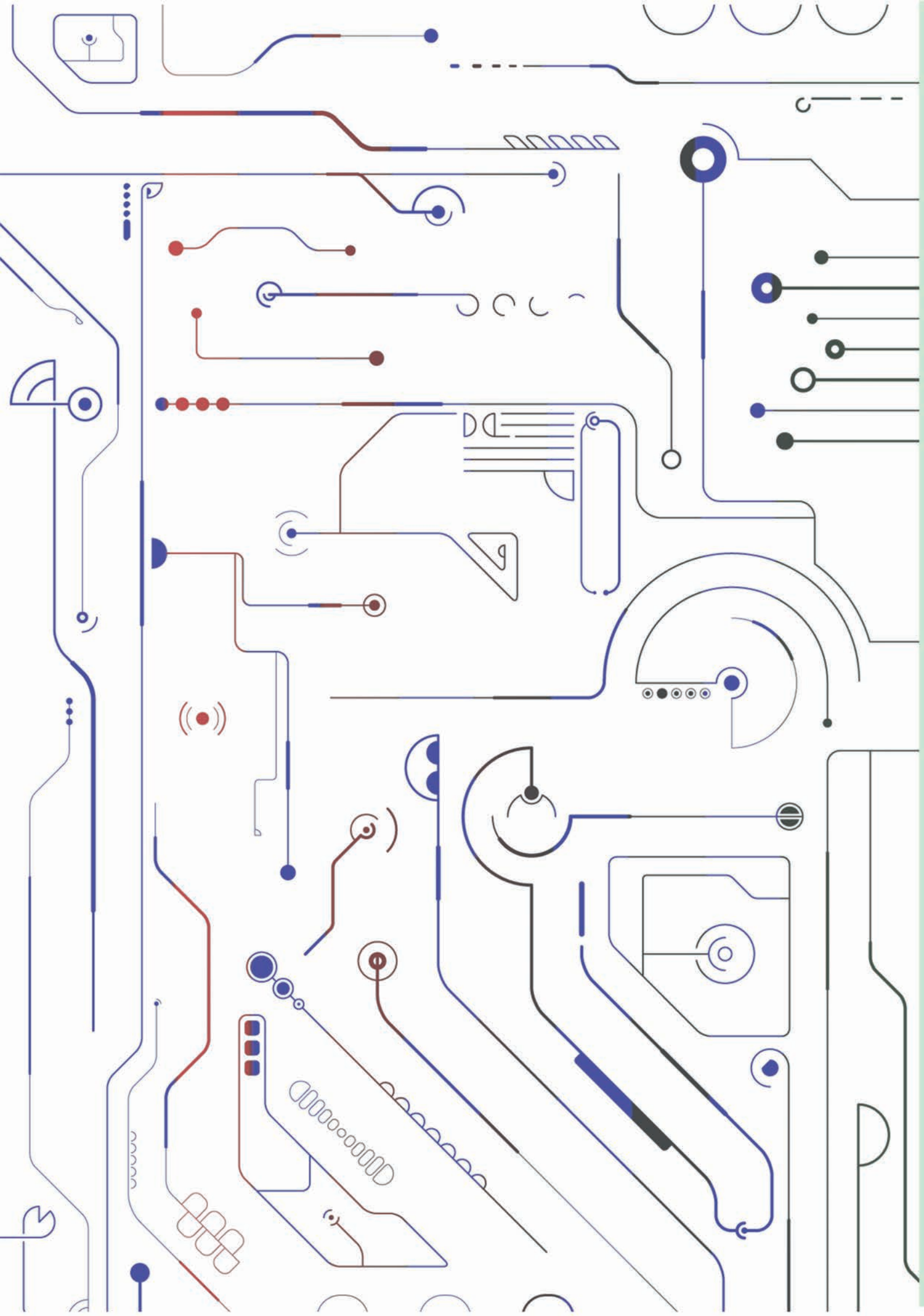
SPECIAL REPORT :

CYBER ATTACK

AMBIENT SOUND TO THE RESCUE

WILL QUANTUM COMPUTER
KNOCK YOUR DOOR SOON ?

Words of Encouragement

Dr. Rama
Acting Principal
Hans Raj College

Hans Raj College stands strong as a symbol of knowledge, learning and growth. The institution has been known to provide a placid environment and creditable knowledge to its students since time immemorial. An unblemished pillar of learning in the field of Arts, Science and Commerce, this college is proud of all its departments and students.

The Computer Science Department of our college, with their beautiful motive of spreading technical awareness in the college and outside, has come up with BITWISE. The idea behind this magazine is to engross the readers while peacefully leading them into the world of advancements. In a world where no one can afford to be technologically impaired, these pages with words carved on them will come as a great help.

I wish all the students luck and hope they achieve what they aim!

Dr. Harmeet Kaur
Head of Department

One need not be a nerd to be able to use computers. They are omnipresent. Whether we want or we don't want, human existence has become dependent on them. They are no longer limited to a few big organisations and intelligent people. Even common people use them, day-in day-out. Smartphones, ACs, cars, washing machines, ATMs, etc. computers have surrounded us from all sides. No one is spared - rich or poor, expert or novice, urban or rural.

We are lucky to be part of this field where we need not only sit and enjoy, but can contribute our bit to this Great Information Technology wave that has swept the entire world alike. To play our part, the family of Department of Computer Science at Hans Raj College under the banner of our Society 'Ordinateur' has come up with 'BITWISE' to keep ourselves and others in this field up-to-date with the latest research and technological developments across the globe.

We hope that we will be able to meet the expectations of our readers. However, there is always a scope for improvement and feedback is one of the most important inputs that will help us in future. Remember Sequential Circuits in CSA?

So enjoy, learn, explore and guide us for future.

Annual Report
2015-16

Computer Science Society, Hans Raj College
Convener: Dr. Baljeet Kaur

Ordinateur, the Computer Science Society of Hans Raj College, organised plenitude of workshops and seminars throughout the session. A two-day workshop on the MATLAB software was conducted in October, 2015. Nearly 40 students attended the workshop, Dr. Baljeet Kaur and Miss. Bharti Rana covered the essential topics and introduced the Image Tool-box.

An enlightening and inspiring session based on Web Science was led by Dr. Aastha Madaan, an alumnus of the department. Dr. Madaan is a Ph. D in the field of Databases, from the Database Systems Laboratory, University of Aizu, Fukushima, Japan.

To enable the students have a closer look at the professional opportunities, the society hosted an interactive session with the alumni of the department. It gave the students an insight on career planning and the developments in the field of Computer Science. The invited alumni were: Saurabh Garg, MTU Adobe India; Himanshu Mehta, Palak Ahuja, Mansi Gera, all having done MCA from Delhi University.

A web development workshop was organized as a peer learning initiative by the students of the department. Programming using HTML, PHP and SQL server was covered in the five day workshop during November 2015.

An IBM CE Training Programme on Android App Development using Phone Gap was held from 12-24th December 2015. Phone Gap is a popular mobile application development frame-work which enables cross platform development across devices running Android, Windows Phone OS and iOS. Students from both, in and outside the college took part in the workshop. The workshop gave the students thorough knowledge as well as experience of hands-on projects.

The Computer Science Society also organises its annual fest under the name of Cynosure. This time the society organised sessions on Internet Security (speaker: Prof S.K Muttoo, Head, Department of CS, Delhi University) and technical events that include quizzing, coding, debugging, gaming, a debating event and a group discussion.

ACHIEVEMENTS (ACADEMICS)

Innovation Project Scheme 2015-2016
A project submitted by the faculty members and students of the Computer Science department, Hans Raj College, under the name of Device for the Uniquely Abled (DUA) was selected by the varsity under the Innovation Project Scheme 2015-16. The project aims at creating a device which would help the visually impaired students to commute from one place to another while taking care of the obstacles that come in their way. In addition to the feature of obstacle avoidance, the device would also help the students to navigate from one place to another by giving them directions in audio form.

Another set of students from the Computer Science Department are also involved in an Innovation Project which is based upon the cryptographic techniques used in smart cards.

Students won the Web Designing competition at the Tecnia Institute of Ad-vanced Studies
Student Members: Paras Jain and Ronak Aggarwal

Team of four students short-listed for e-Yantra at Indian Institute of Technology-Bombay
e-Yantra is a robotics competition hosted by the Indian Institute of Technology, Bombay. The shortlisted students are Shobhit Agarwal, Nidhi Jadeja, Paras Jain and Dharmendra Lodhi.

Team of three scored AIR 182 at the ACM-ICPC
The ACM International Collegiate Programming Contest (ICPC) is a multitier, team-based, programming competition, sponsored by IBM. Manikaran Kathuria, Prateek Saigal and Shobhit Agarwal bagged an excellent AIR-182 at the same.

Vipin Kumar, took part in the National Science Olympiad Paper, Science Olympiad Foundation and is a Gold Medallist at Level 1 and has secured a rank 1108 at Level 2.

ACHIEVEMENTS (CO-CURRICULAR)

Shrutika Sathenapally, of third year, is currently the Vice-President of the Dramatics' Society of the college. Her team successfully secured second position and third position at the street play competitions organised by Kamala Nehru College and Miranda House College, respectively.

Prerna Gupta, of third year, is an international level shooter.
1. She has been selected for the National Squad 2015.
2. She participated in the All India Inter University Shooting Championship and won   bronze.
3. She participated in the 28th World University Games, South Korea.
4. She has won three golds and two silvers in the State Shooting Championship.
5. She has won two golds in the 5th Gun for Glory Shooting Championship.
6. She secured 2nd rank in the 13th Asian Shooting Championship, Kuwait.

Shaurya Sahai, of third year, is currently working as the Joint Secretary of Pixels, the photography society of Hans Raj College. She stood first at the annual photography competition hosted by Dyal Singh College. She bagged the second prize at the society fest of Botany Department, Hans Raj College. Her pictures were also exhibited at St. Stephen's College, Zakir Hussain College and Indraprastha College for Women. She is also the Copy Editor for DU Beat, Delhi University's leading newspaper.

Prateek Singh, of second year, won a photography competition under the name of 'Framed 2' organised by Keshav Mahavidalaya.

Rohit Sharma, of third year, is a part of Oorja, the western dance society of the college and their team has won a total of 20 events this year.

Naman Wadhwa, of third year is a part of Swaranjali, the music society of Hans Raj College. Their choir bagged the second position at IIT Kanpur's annual fest.

Reshmi Kheri, of first year, won a silver medal in an inter-college archery competition.

EDITORIAL

Shaurya Sahai
Editor-in-Chief

"A computer would deserve to be called intelligent if it could deceive a human into believing it was human", were the words of Alan Turing, inventor of the immensely wise and famous Turing Machines.

Starting with no more than a few cells and tapes, which people knew as a-machines, here we are today, breathing in a world where robots aren't merely imaginary figurines drawn on a piece of paper. Thoughts such as, possessing a device which could connect us to someone sitting miles apart must have been ridiculed or mocked at in the past. Who could have thought that a teeth-sized chip could hold enormous amount of data? Which minds would have perceived that calculating $987456.12549731 \times 7894.12346$ in nanoseconds wouldn't be a mammoth task?

Well, there were some brains which believed in these ideas. There were people who visualised which others could not comprehend. Thus, today, in the tiniest of elements around us, we find a hint of technology. Their dedicated amelioration and perseverance have landed us into a luxurious era. We live in a time where everything seems plausible, and believable.

It amazes me to see how technology has placidly slid into each and every aspect of our lives. In its immaculate form, Science has known to create wonders and make history. Being as old as time itself, Science has transformed us from being mere human beings into civilised ones.

What saddens me is to think how we are slowly and steadily surrendering to machines. At times, we just ignore the fact that no matter how easy our lives become with the help of technology, the essence of fine nature shouldn't be given up on. The cell-phones in our hands should not make us numb towards the moist grass under our feet. With the aim of spreading the knowledge and awareness, we have come up with BITWISE.

BITWISE, to me, is more than just pages, words and pictures. It is an opportunity to share with everyone the magical wonders which happen in today's world, in the blink of an eye; to get across latest researches and advancements in field of technology, primarily Computer Science. I hope that this sincere effort would succeed in instilling in us, a streak to invent and a desire to learn.

I would like to express my humble gratitude towards our principal, Dr. Rama for her constant support throughout. I also wish to thank all the staff members of the Computer Science Department, Hans Raj College, for showing us a path to illuminate others, while learning miraculously in the process, ourselves.

CYBER
ATTACKS

Ambient Sound to the Rescue

Many of us are no good at choosing passwords, that's why companies are increasingly looking to bolster their own website security through additional authentication methods.

Two-factor authentication (2FA) is a technology that provides identification of users by means of combination of two different components. These components may be something that the user knows, something that the user possesses or something that is inseparable from the user. A good example from everyday life is of withdrawing the money from a cash machine. Only the correct combination of a bank card (something that the user possesses) and a PIN (personal identification number, i.e. something that the user knows) allow the transaction to be carried out. Despite the high security provided by 2FA, there is one problem with it: it's really annoying. Every time you log in to a site, you have to get your phone out, unlock it, find authentication code and type it in. If you type too slowly, the code changes and you have to try again. This is too big of a hassle for many people, so they leave themselves open to attack.

With this in mind, a team of researchers from the Swiss Federal Institute of Technology in Zurich, Switzerland, have come up with "Sound-Proof". It is a much simpler system of 2FA which can be used with current phones and major browsers without any plug-in or interaction between the user and his phone. The process goes like this: the second authentication factor is the proximity of the user's phone to the computer being used to log in. Sound-Proof works even if the phone is in the user's pocket. When the user logs in, the two devices record ambient noise via their microphones. The phone compares the two recordings, determines if the computer is located in the same environment, and ultimately decides whether the login attempt is legitimate or fraudulent. A prototype of Sound-Proof has been implemented to discover that it saves up to 25 seconds per login when compared to other forms of 2FA.

Well, what happens when you are watching TV and an attacker gets lucky and switches on the same channel?

The ambient sound may just be similar enough to grant access. Unlikely, but in any event, using Sound-Proof would still be better than not using 2FA at all. ∎∎∎

Breaking the barriers between
Real and Virtual!

Virtual reality gaming, an oxymoron in itself, is where a person can experience being in a three-dimensional environment and interact with that environment during a game. It's pretty much like being in a game for real. The way of detecting a person's presence in a game is called bio-sensing. Bio-sensors are small sensors which are attached to a data glove, suit or even the body and record movements made by that person in a 3D space. Those movements are interpreted by a computer and trigger a variety of responses within that space. Several languages such as VRML (Virtual Reality Modelling Language), X3D, 3DML, COLLADA (Collaborative Design Activity) are used to create virtual reality.

Virtual reality has made its way through history, from 3D glasses to Oculus VR which is an American virtual-reality technology company founded by Palmer Luckey and Brendan Iribe. Their first product is the Oculus Rift, a head-mounted display for immersive technology virtual reality.

With a virtual reality headgear, it is possible for one to play offline games like FIFA, GTA in virtual reality. Then, how amazing would it be to experience MMOs (Massive Multiplayer Online) like second life and MMORPGs (Massive Multiplayer Role Playing Game) like Wizard101 in virtual reality? It would also be possible to interact, with other players in the game like real life.

Virtual reality applications are quickly making their way into to the mainstream. From mobile applications to web apps, virtual reality will soon become a reality. So will we see the future generation live or live ourselves more in virtual worlds or the real ones? Will it be a boon or a bane?
Adrenaline rush, already?

Did you know ?

The QWERTY keyboard layout is 129 years old.

The first domain ever registered was Symbolics.com

The first hard-drive was created in 1979 by Seagate and could holf 5MB of data.

Will Quantum Computers knock your door soon?

What is the maximum limit of computing speed? Have we reached a dead end? Will we able to surpass the Turing Machine for problem solving? In fact it is amazing that the search has never disappointed us. We thrive to become better and better making technology even a day old as history.

Moore's Law *states, that the number of transistors on a microprocessor continues to double every 18 months, so we should be soon expecting a microprocessor measured on an atomic scale.* Perhaps, this mystery has already been answered with next step to create Quantum Computers.

So, maybe in 5-6 years, your laptop and PC might just become too old in time. This race of quantum mechanics shaking hands with computing began in 1998 when Los Alamos and MIT research partners were able to spread a discrete unit of information across many different nuclear oscillations, in a solution of acid molecules. The suspension allowed different states to be analysed as quantum information. After years of research later a Canadian company D-Wave was able to produce the first 16 qubit quantum computer.

What's so astonishing about it?

"*If quantum mechanics hasn't profoundly shocked you, you haven't understood it yet,*" is very well justified here, as once said by Niels Bohr. At the molecular level qubits in a quantum state can teleport information from one place to another. They can also experience entanglement that is remaining eerily connected no matter how far apart they become like separated identical twins. It gets weirder as the qubits can also achieve "superposition", where they exist in multiple states simultaneously, like a qubit can be a 1 or a 0 -- or it can operate as both a 1 and a 0 at the same time. So,if one qubit, can act as both a 1 and a 0, it can do two calculations at once, then two qubits can do four, and things can get exponential pretty quickly.

Quantum computing due to its high speed would have serious implications for commonly used encryption systems, such as RSA. Research is being conducted to build "a crypto logically useful quantum computer". At present, various IT companies are investing in research into quantum computing like IBM, Google, and Microsoft.

It is possible that quantum computing may be a viable alternative in the future but the present incoherence and uncertainty issues of qubits are the most difficult barriers in the way of creating quantum computers. As claimed by some well-known physicists –"*anyone who can solve these challenges will not only win a Nobel Prize but also become the richest person on earth.*"
So what are you waiting for?

If you ask anyone to name a hacktivist group, chances are they'll come up with- 'Anonymous'. While other groups like Team Poison, LulzSecand Lizard Squad have inevitably crumbled, Anonymous prevailed, and has done so for years. In the recent light of the Paris tragedy what drew everyone's eye was the name – 'Anonymous'.

Who is Anonymous?

Anonymous is no-one.This is part of the reason as to why Anonymous has been so successful in avoiding infiltration and dismantlement like the others. Unlike most other groups Anonymous is independent by design, with no leader/head.

As Wikipedia defines them, "Anonymous (used as a mass noun) is a loosely associated international network of activist and hacktivistentities."

Spawning from 4chan, an image-board website, Anonymous began as a group of pranksters with a callous motive. However, it soon garnered a platform as a socio-cyber uprising against terror, corruption and their likes.

How does Anonymous hack?

DDoS(Distributed Denial of Service) is the major weapon in the hands of this much famed hacking group. It is a DoS(Denial of Service) attack where multiple compromised systems, which are often infected with a Trojan, are used to target a single system. Victims of a DDoS attack consist of both the end targeted system and all systems maliciously used and controlled by the hacker in the distributed attack.

Major Operations:

#OpParis: In the wake of Paris attacks, Anonymous declared a cyber-war against the Islamic State, soon making an impact by suspending thousands of pro-ISIS Twitter accounts and allegedly declaring personal information of quite many ISIS members. This brought Anonymous to the forefront of globe-wide media.

#OpAvengeAssange: Operation Avenge Assange was initiated in retaliation to freezing donations for WikiLeaks by Visa and MasterCard. The attacks on two of the prime global card payment companies caused significant public concern.

In this new web-era, where arms and ammunitions are being replaced with viruses and Trojans, we are about to witness a coming age of cyber war. With their own masquerading presence they are taking away the identities of those who prefer to attack in the shadows.

ANONYMOUS

DISCOVERING
IDENTITY

HOW ETHICAL IS "ETHICAL HACKING"?

The popularity of ethical hacking is unquestionable these days. Depending on their motives, hackers are represented by hat colors, where black hat hackers are the nefarious ones, infamous as computer criminals. White hat hackers are our very own ethical hackers who have been hired by companies to help identify potential threats to a computer or a network. In between the two are the grey hat hackers who cause security breaches only to prove that they can, and later inform the owners of the existing loopholes.

Constituent rules of ethical hacking are:

1)   Written permission is granted to the hacker to probe the systems for identifying risks.
2) Respect the individual's o company's privacy.
3) Close all the routes after testing is done so as to avoid exploitation by some other source.
4) Inform the company about any security vulnerabilities that are located.

Ethical hackers carry out penetration testing and provide business services to the companies but the real question is: Is ethical hacking even legal? The very fact that these hackers have been hired by the company itself is enough for some organizations to deem it legal, however under certain circumstances white hats of the hackers start changing shade. Social Engineering is a technique by which hackers try to gain confidential information from individuals by tricking them. Hacking into customer's or employee's account in such a way is an illicit instance. Another method of penetration is through systems of business partners. If the business partners have not been pre-informed about the testing then such hacking goes beyond the scope of law. There are too many young and impressionable coders out there, who may be drawn to the idea of hacking in order to prove their mettle or to reveal the holes in a security system. They must not forget that there is a thin demarcation among hackers and being on the wrong side of the line may pave the way for jail. ■■■

😂😂😂

**UNIX is user-friendly...
It's just very
particular about
who its friends are !!**

😂😂😂

**How do you tell an
introvert computer
scientist from an
extrovert computer
scientist?
The extrovert computer
scientist looks at
your feet while
talking to you.!**

Warning: Spoilers Ahead!

You knew Jon Snow died even before watching that awaited episode, didn't you? You wanted an answer to why did Katappa kill Bahubali even before you stepped into the movie hall. Accept it, you were scared to surf the internet immediately after Star Wars hit the theatres.

Reason? Spoilers, the scelestic spoilers!
For the small yet significant amount of the masses that run away from spoilers, the internet has become a walk of terror. A lot of us like waiting for the entire season to end and watching it in one go; but surfing the internet can leave such creatures in despair.

While the youth loves to discuss and debate about their favourite shows and movies characters through social media platforms, the unaware fans try to hop from one post to the other to avoid any eye contact with any kind of spoilers, which is rather impossible.

Whether it is spoilers in YouTube comments or suggested videos, Facebook wall feeds or Twitter's trending topic of why #so-and-so died, this is deadly for spoiler freaks who may give up watching the show entirely after stumbling upon a spoiler on the net. So, who is going to stop this from happening?

While we have the privilege of catching up episodes we missed on the internet, the internet won't stop the overflowing information just because you didn't happen to watch it. So, when is it okay to discuss about it? How long should the people before posting about it on the internet wait?

Back in 2008, Vulture proposed the Official Vulture Statute of Limitations: TV shows have to wait three days before putting spoilers in a headline. For movies, one must wait for a month. But with the internet such limitations have come to fade away.

Then, what is the way out? Websites like Facebook, YouTube, and Twitter could add spoiler alert mechanisms for saving someone's day or apps like Unspoiler could come in handy.

Code it Right!

CODECADMY:
Codecadmy provides an absolutely free resource at the hands of aspiring programmers. The very main page of the website gives a taste of programming to the beginners. The subjects covered include some of the most popular coding languages like HTML/CSS, JavaScript, JQuery, PHP, Python, Ruby and APIs. The Web Project sections provide some practical functionality to these courses. Codecadmy gives an introductory knowledge about various concepts involved in coding which act as building blocks for future coding ventures.

CODE AVENGERS:
Who said coding can't be fun? Code Avengers is a lighthearted service that provides a mixture of free and paid online courses. It, however, offers a limited range of courses, namely HTML5, CSS3, JavaScript and Python. The entire session is a game which entertains you while leveling your programming skills painlessly. In addition to online courses, it offers in-person code camps around the world. Unlike subscription services, any class you pay for remains with you for life.

TREEHOUSE:
Treehouse offers project oriented (as opposed to language oriented) courses for IOS development, Android development, Ruby, PHP and JavaScript. It is a subscription website with plethora of videos, coding exercises and quizzes. The content is crafted by in-house experts, who help you create real products, which can act as stepping stones for a business.

GITHUB:
GitHub is a social platform, the largest of its kind, where you can share code. Code host to millions of private and free repositories, it also provides collaboration features such as bug tracking, feature requests, task management and wikis for every project. GitHub Student Developer Pack is a new enterprise to give students a free access to various development tools and services. This website basically aims to build software better, TOGETHER.

Android 6.0 MarshMallow

Review: Performance and Polish

When Google released Android Lollipop 5.0, the world looked stunned. The new material design was something no previous Android version had ever witnessed. Now, when Google got it all firmed up, it decided to make its operating system smoother and better. Hence, Android MarshMallow. How'd they do? Spoiler alert: Damn well!

Marshmallow's lock screen is similar to that of Lollipop. The dialler shortcut has been replaced by Google's voice search clearly specifying how integral this function is to the coming Android updates.

The Appdrawer in Marshmallow has been changed to vertical scrolling tray as opposed to horizontal in its previous version. For unknown reasons, the support for rotation of home screen has been removed.

Google's Now on Tap is Google at its most Google-y. Long-press the home button and a white line traces its way around the screen -- once that's done, Google tries to find what you're looking at and gives you related information about it. Let's say you're listening to the track "Juicy" (which one should definitely do) in Spotify, invoking Now on Tap pops three results cards: one for the principal singer in the song, plus one for the title of the song itself, and another for the album.

Doze, after Google Now on Tap, is perhaps the biggest update in Marshmallow. Doze is an intelligent battery management feature that recognizes when your device is not in use, say when it has been lying on bedside for a while, and enters hibernation. While other devices lose an average of 15-25% of battery life overnight, Marshmallow can take it down to 3-5%, increasing your standby time to nearly two weeks in the process.

VERDICT:

Android Marshmallow isn't much of a revolution than a refinement of Android. The previous version of Android, Lollipop now has a lot more intricacy beneath that glossy surface. Marshmallow is basically about a few core points: making Google services easier to use; delivering performance oriented ways to access and manage apps; addressing system weaknesses like battery life and security; and delivering more customized and user-friendly controls to stock Android.

Android 6.0 adds a layer of advanced features for those that want to make use of them. Marshmallow makes a lot more sense than Lollipop and improves on its forerunner in terms of performance, battery life and stability feature set. Marshmallow isn't perfect, it not even introduces a new Android experience, but its beauty is it gives a glimpse to the more evolving Android world. ∎∎∎

Faculty Members

Mr. Sanjay Batra
Associate Professor M.C.A.

Dr. Harmeet Kaur
Associate Professor M.C.A. | Ph.D

Dr. Baljeet Kaur
Assistant Professor M.C.A. | Ph.D

Dr. Manoj Agarwal
Assistant Professor M.C.A. | Ph.D

Dr. Sunita Chand
Assistant Professor M.C.A. | M.Phil. | M.Tech.

Ms. Aditi Mittal
Assistant Professor M.Sc.

Ms. Alka Khurana
Assistant Professor M.C.A.

Dr. Manju
Assistant Professor M.Tech | Ph.D

Ms. Aarti Goel
Assistant Professor M.C.A. | M.Phil.

Ms. Bharti
Assistant Professor M.C.A. | M.Tech. | Ph.D (cont)

Our Team

Mansi Agarwal
Designer

Purnima Yadav
Writer

Shubham Kumar
Designer

Prakhar Gangrade
Writer

Vishal Pandey
Designer

Swati Sharma
Writer

ORDINATEUR

Computer Science Society

Hans Raj College