



National Institute of Technology Tiruchirappalli  
Department Of Computer Science And Engineering



# **BITS & BYTES**

**CSE NEWSLETTER**

volume 1, issue 1,  
february 2014

<http://www.nitt.edu/home/academics/departments/cse>



# TABLE OF CONTENTS

EDITORIAL.....	1
WHAT WE STAND FOR.....	2
A PEEK INTO COMPSCI.....	3
CONVERSATION WITH HOD.....	4
NBA VISIT.....	7
PRIDE OF DEPARTMENT.....	9
DEPARTMENT SYMPOSIUM.....	10
DEPARTMENT PROJECTS.....	12
DEBATE.....	13
ALUMNI INTERACTION.....	14
GIZMO TALK.....	16
ALGORITHM .....	18
FIREFOX CLUB.....	20
DECRYPT THE BITS.....	21



## EDITORIAL BOARD

### HEAD OF THE DEPARTMENT

DR. S. SELVAKUMAR

### FACULTY ADVISORY COMMITTEE

DR R LEELA VELUSAMY

PROF. R. GURURAJ

### CHIEF EDITOR

PURNANK PRAKASH

RAHUL VERMA

### CONTENT HEADS

JANIS MARIA FREDRICK

MEGHANA DUVVURI

### DESIGN HEADS

ANURAG KUMAR

KUMAR RISHAV

### CONTENT TEAM

ASHUTOSH NATH AGARWAL

SHRUTHI MUTHUKUMARAN

AKHILA YERUKOLA

PRASANN DUBEY

JAYTI SINGH

The department of Computer Science & Engineering, NITT is highly acclaimed in India and is known as one of the best institutes in the country because of the efficient teaching standards and methods practiced by its highly qualified faculty, and in turn the high level of motivation and expertise of its graduates. This department has undergone several changes in its years of excellence to maintain par with the changing methodologies of teaching practiced, and the requirements of time, to successfully produce batches of students year after year who are capable of taking charge of world renowned enterprises.

As far as academics are concerned, the curriculum followed is constantly updated with the requirements of the students taken as priority input. Professors put in extra effort to provide help and support to slow-learners of the classroom to reduce the variance of intellectual level of the students. To facilitate communication between students and the staff, a mentorship program was recently set up. This aimed at promoting interaction with the students and also helping them face difficulties in various aspects of their life, and make them more comfortable with the college environment. This department is proud of its quality of students and faculty and their achievements that make this department as good as it is. Through this newsletter, we aim to spread words of the activities and accomplishments of this department and motivate students to continue to excel in activities they take up. The Editorial Board is proud to release its first edition of the newsletter, 'Bits and Bytes', and hopes that it earns the interest and appreciation of its readers.

Team  
Bits & Bytes

# VISION & MISSION: WHAT WE STAND FOR

## VISION :

To Produce Creators of Innovative Technology.

## MISSION :

- To impart knowledge in the state of art in Computer Science and Engineering with relevant theoretical basis .
- To participate in design and development process in R&D establishment and industry .
- To promote research of international quality

## PROGRAMME EDUCATIONAL OBJECTIVES OF B.TECH PROGRAMME :

- Graduates are prepared to be employed in IT industries and be engaged in learning, understanding, and applying new ideas .
- Graduates are prepared to take up Masters/Research programmes .
- Graduates are prepared to be responsible computing professionals in their own area of interest .

## PROGRAMME OUTCOMES OBJECTIVES OF B.TECH PROGRAMME :

- Ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computer based systems .
- Ability to apply the engineering knowledge in all domains, viz., health care, banking and finance, other professions such as medical, law, etc.
- Ability to design and conduct experiments as well as to analyse and interpret data .
- Ability to analyse the problem, subdivide into smaller tasks with well defined interface for interaction among components, and complete within the specified time frame and financial constraints .

\*\*\*\*\*

vision

## COMPSCI INSIGHT: A PEEK INTO COMPSCI

National Institute Of Technology, Tiruchirappalli, formerly known as Regional Engineering College is recognized as an institute of national importance and is one among the top most engineering colleges of our country. It offers undergraduate and post graduate programs in disciplines spanning engineering, science, architecture and management. Of the various departments, **Computer Science and Engineering** was started in **1983** stands apart because of its integration of several fields of electric and electronic engineering and computer science to develop computer hardware and software.

Department of Computer Science and Engineering at NITT is renowned for its research and aims to promote research and development in the frontier areas of information technology, to generate competent professionals to become a part of the industry and research organization at the national and international levels and to provide necessary strengths to enable students to innovate and become entrepreneurs. It attracts some of the brightest students and provides an outstanding research environment complemented by excellence in teaching. It has a comprehensive curriculum on topics related to all aspects of computer hardware and software with an emphasis on practical learning. Octagon Computer Centre provides the state-of-the-art computing facilities and the servers which support the LAN also provide a Linux/Unix environment which includes SUN SPARC and Silicon Graphics workstations.

The faculty members aim at delivering top class education blending their rich research experience with classroom teaching. The department tops the placement charts every year with students being recruited by companies like Facebook, Google and Microsoft. Every CSE student is guaranteed of a job at the end of 4 years irrespective of his/her grades. Thus, admission into this department implies a secure future with not much of a mental stress which makes it one of the most sought after courses in the country.

To reach its goal, with its cohesive team of faculty members, the department offers a sound program at the UG and PG levels. It provides an extensive curriculum, regularly updated to keep up with the growing demands and changing trends of the software industry and research laboratories. It provides the students with a library, regular workshops, guest lectures and conferences to catch a glimpse of the various upcoming in the field. The multiple laboratories are equipped to provide the enthusiasts required facilities to venture into the field of their interest.

With AIEEE and DASA closing ranks being high, the department consists of the best students of the country. Since computer science is a vast field, these students have a wide option to choose from. Yet with a lot of self-determination and guidance from the faculty, employees are proudly provided to top companies like Facebook, Google, Cisco, Microsoft, Adobe, Directi, Amazon, Goldman Sachs etc. every year.

*One Sathukudi*

*with*

*HoD*

**Dr.S.Selvakumar is Head of the Department.**

**Dr.S.Selvakumar has been involved in research field since 21 years and his areas of interest are networks and network security.**



*When did your stint at NIT Trichy begin?*

I started working here as an Assistant Professor in December, 1984.

*Can you tell us about your professional journey through the years?*

During my engineering days, in 1978-83, I never imagined being a professor. When I started working as a polytechnic instructor, I used to prepare extensively for the classes and the students' reactions gave me satisfaction. This satisfaction helped to set my mind. Later as a PG student, I taught students in the mornings due to lack of faculty and attend classes myself in the evening. While I was working as a lecturer at the Madurai Kamaraj University, I was motivated by an emeritus professor there to pursue research and do a PhD. IIT Madras professors Dr.S.V.Ragavan and Dr.Pandurangan used to take classes there. On listening to Dr.Ragavan's lectures, I decided to do a PhD under him. I wanted to take this up with the QIP (Quality Improvement Program). An advertisement for the position of assistant professor in REC Trichy is what led me here. Dr Ilango, the then principal supported me, got me the QIP approval and authorized my leave for IIT Madras. I returned a PhD under Dr Ragavan, and established my position here.

*What is your specialization and why did you pick it?*

I was well versed in all topics except for Networks and Network Security as it wasn't in my M.Tech curriculum. I was confident that I could study it and teach my M.Sc. class. I used to use the 1<sup>st</sup> edition Tanenbaum and I learnt the concepts. The self study sparked my interest in this subject and I have been pursuing it ever since.

### *What significant changes would you like to make as the HoD?*

There's a lot I wish to do which can be accomplished with enough support and cooperation from all sides. We could bring up greater labs and better infrastructure, allowing professors to customize them according to needs. We must also have weekly discussion seminars throughout the academic year by professors and research students and probably open it to interested students as well. Annual CS department faculty meets could be held where professors will interact and can thus bring out a more intense curriculum. We should also try to publish a consolidated publication of the various research across the different NITs. I feel NIT Trichy should host an International Convention with a good advisory committee in order to gain a better standing in the academic world!

For want of time, communication and planning there is a delay in implementation, but hopefully in the near future it will be possible.

### *How satisfied do you feel when you see the present placements?*

When I teach, I enjoy it to the maximum and give it my best shot. I always gain from my teaching sessions and I incorporate the values in the successive classes. Just as my first day at work I still read up and prepare myself for my next class. Teaching is my duty and I am very satisfied with it. As a teacher I deliver the knowledge and as students, you must grasp however much you can. Some company will want that knowledge and will offer you a job. So when I see all my students attaining great heights and unique positions, I am happy!

### *What is student teacher interaction to you?*

If the delivery is such that the teacher plays the role of a student as well and is able to foresee the student's doubts and most common questions, a logical interaction is automatically created. This will be a good atmosphere for student interaction and hence every student will feel like he's having a one to one discussion with the teacher. I mimic the students' expected questions and that is why I always have the answers in the delivery itself and thus there is no physical need for interaction. I feel that this way I am successful and I encourage doubts as I don't see it as a disturbance. Hence there is always an interactive environment in my classes.

### *Who is your role model?*

When I see myself, I thank Dr. Ragavan for the inspiration and support which brought me to where I am today. I have always been amazed by his thought process, organization, teaching and always wanted to emulate him. Spiritually, I look up to Sadhguru Jaggi Vasudev, the founder of Isha Foundation as my guru and mentor.

### ***Apart from teaching and learning, what are your hobbies?***

Well whenever I need a break away from everything, I like watching movies and enjoy their music. For me even movies involve research and require an analytical mind. I'm up to date with a lot of them and am a fan of Surya, Ajith etc. I like to look into the more technical aspects of movie making- the script and the direction. Sometimes there are academic concepts and analogies hidden in movies which I appreciate. I use these as anecdotes in class like in the movie Thuppakki, I spotted a similarity between sleeper cells and computer malware and also the hero finds thrilling solutions to them. Similarly Madarasipattinam explains the concept of service oriented architecture through the character of a guide who expertly bills his services. So all this catches my attention.

I also enjoy the deep lyrics of Vairamuthu and Na.Muthukumar. Each line is powerful, either portraying the love stories in the movie or in depth philosophy. I admire the way there is so much expression in such crisp lines.

### ***What are your experiences in and contributions to research?***

In my 21 years of research, I have worked extensively over various projects. One distinguished project among these was the collaborated research on "Smart and Secure Environments" from 2007 to 2012. Funded by NTRO New Delhi, it was an 8 institution undertaking, with over 30 research scholars, led by Dr.Ragavan. We were given open ended problems to find solutions for. Being the highest of its kind in NIT-T, the 1 Crore project was successfully completed and handed over.

Currently, with a few other likeminded professors from 5 other universities like NIT Surathkal, Anna University etc. I'm heading the Integrated Framework for Cyber Space Security project. . It is an expansive multi-institution project, currently under review by DST, New Delhi.

### ***With the increase in competition and work load today, what message would you like to pass on to the students?***

Success or failure cannot be defined by your placements or your CGPA. The highest GPA's may not always get the highest paid jobs. It is knowledge and ability put together that make a person. So wherever you are, give it your best shot and think that you are second to none. This will give you a more holistic attitude with greater values and a better personality. You can never be last. Don't ever feel rejected; it's they who have lost an asset. Everyone is unique. Be confident and cherish what you have. You can set, get and reach your own destination. Whatever is due for you, you will get. Following this, when I look back I have no regrets and I'm happy and content. Even if a company is believed number 1, no one will stay with that company forever.

# NBA VISIT – ACCREDITATION REPORT

## **NBA: Who are they?**

The National Board of Accreditation (NBA), India was established by AICTE (All India Council of Technical Education) as an autonomous body for periodic evaluations of technical institutions & programmes according to specified norms and standards as recommended by AICTE council. NBA has introduced new process, parameters, and criteria for accreditation in line with the best international practices and oriented to assess the “outcomes” of the programme. There are three types of accreditation model, viz., Minimal model, Input – Output model, and Outcome model. Till 2010 AICTE was practicing only the first two models which mainly ascertains basic characteristics of the institution and programme and strictly adheres to the core curriculum. But, outcome based model focuses on the goals and objectives of the programme. Outcome based model is ‘Learner Centric’, rather than the traditional ‘Teacher Centric’ which is sophisticated and hard to evaluate.

## **Previous NBA visits:**

Previously, in the year 1997 and 2005 NITT-CSE department went for accreditation process for the B. Tech. programme and was awarded accreditation for 5 years and 3 years respectively. The validity of the Accreditation is measured in terms of years; the highest being 5 years. However, in the year 2013, NITT decided to go for accreditation under the Outcome based model. In fact NIT Tiruchirappalli (NITT) is one of the two Universities in South India chosen as an observation center by the Washington Accord (WA). WA is an international accord for accreditation and India is soon to join the International bandwagon as a permanent member. This would mean value added recognition of the B. Tech. Degree across the World.

## **Preparation of CSE Department:**

The preparation for the NBA visit started with the submission of the Self Assessment Report (SAR). The institute Chief-of-Works took care of the white washing of the department. The department prepared a consolidated “**Department Brochure**” which provided a nutshell view of the department for the committee. The department also prepared two “**Research Publication Books – Vol. I and Vol. II**”, each for Journal and Conference, of the research papers published in the recent three years of the CSE faculty members. Also, the dept. prepared an “**Outcome based Curriculum & Syllabus book**” which provided an impression of what the curriculum and syllabus are about and how it would be helpful for the students after their four year B. Tech. course. Prior to the NBA visit, a Course Outcome Survey was conducted for all the subjects that were taught in the academic year. The alumni students were also asked to provide their opinion about the programme.

One of the main aspects of the Outcome based model is to judge how the students have excelled after passing out from the department; how the B. Tech. programme has helped them in their professional career during their stay in the campus.

### **Day 1(04, Dec.'13):**

On the first day of the NBA department visit, the HoD of the department, Prof. S.

Selvakumar, gave a PPT presentation to the committee from the inception of the department to the future goals the department has in mind to raise the standard on par with international standards. In the afternoon session, the Committee

Expert members visited each lab in the department, interacted with the lab faculty-in-charge and technical assistants.

After the lab session, the Committee inspected the B. Tech. final year project reports to understand the standard, quality and evaluation of B. Tech. projects that were carried out by the students. In the evening, there was a separate meeting with 15 member students each from IV, VI, and VIII semesters. After the meeting with the students, the committee interacted with the faculty members regarding the curriculum and the POs.

### **Day 2(05, Dec.'13):**

On the second day of the NBA department visit, the expert committee interacted with all the 20 individual faculty members (permanent and temporary) to understand their competency and the research contribution. After that, the HoD presented to the committee the Academic Performance and accomplishments of the students. Subsequently, the committee members interacted with the Board of Studies (BoS) members regarding the process of syllabus revision. In the afternoon session, the committee members had a secluded interaction with a 5 member student's representation regarding the PO & Academic Performance. In the evening session, the expert committee had a meeting with alumni students to understand their perspective of the curriculum and its usefulness after their graduation. The day ended with a meeting with the HoD who clarified the queries raised by the NBA committee members.

### **Day 3(06, Dec.'13):**

On the last and third day, the HoDs of CSE, Production, Chemical, Civil, and ECE departments along with the Core Committee attended the Exit meeting of the NBA visit in the Admin block. The committee members briefed their findings in the meeting and thanked the individual department and the institute in general for their kind cooperation, support, and hospitality.

# PRIDE OF DEPARTMENT – ACHIEVEMENTS

## IV Year (2010-2014)

- Manoranjan NITTFEST.'13, Zombie Escapes won by Nithin Garg.
- Horizon Dance Competition, Painting Club won by Anusree Das Gupta, Erica Aranha.
- Movie Spoof (NITTFest.'12) won by Gokkula Sudan, R.
- Singing Competition won by Purnank Prakash.

## III Year (2011-2015)

- Vasuman Ravichandran & Vikas Bajaj won 1st prize for Proximity & Gesture based App at the PayPal Hackathon.
- Riviera'14 1st place in Cryptography-Harish K, R.Sibi.
- Smt Sundari Ramanujan and Shri Ramanujan Memorial Award for First Rank Holder in English among First years-Harish K
- Tech Hunt, Synergy, Fast & Furious, General Quiz, and Kurukshetra won by R. Sibi.

## II Year (2012-2016)

- Arjun Bala got a internship at Reliance Animation Studios
- Kumar Rishav and Ashutosh Nath Agarwal included in Contributor list of Mozilla Mozilla: credits)
- Catch the Young Programmer (Infosys): Kushmitha Unni Kumar
- Jayti Singh won Reach For the Stars Challenge-2013, organised by University of Strathclyde , Glasgow.



### Fun Facts:

- It was once considered a letter in the English language. The Chinese call it a little mouse, Danes and Swedes call it 'elephant's trunk', Germans a spider monkey, and Italians a snail. Israelis pronounce it 'strudels' and the Czechs say 'rollmops'...What is it? The @ sign.
- The weird Bluetooth logo is really the initials of Danish King Harold Bluetooth, the tech's namesake.
- Compaq is considering changing the command 'Press any key' to 'Press Enter key' because of the flood of calls asking where is the 'Any' key.
- Linux is only free if your time has no value.

# VORTEX – THE DEPARTMENT SYMPOSIUM

## INTRODUCTION:

The Computer Science and Engineering Association hosts an annual national level technical symposium Vortex. It has been providing a platform for the budding software engineers from across the country to display their prowess in the various fields of computing. Vortex has seen its moments of triumph and failure, but the quest for knowledge is conspicuously noticed every year with the best brains from more than 50 premier institutes from all over the country locking horns. Vortex '13 has set new standards and Vortex has risen to an all new level with more than 1000 online registrations and 400 onsite attendance.

## STRUCTURE:

A general panorama of events for the two day festival will include guest lectures by leading names in the academic arena as well as by eminent persons from the software industry to enlighten the students and unravel the corporate world and a wave of events like the paper presentation contest, mind boggling quiz session and a host of side events.

## VORTEX' 13 THEME:

Every year Vortex has its own theme depicting the advancement or changes in a particular field of technology .The theme for the highly successful Vortex'07 was Genetic and Parallel Computing. This year Vortex's theme is to serve as a clarion call to mark, The New Era in Application Development. Right from the internet boom to advent of community development to the introduction of the App Store and Android, the field of computer science and that of developing applications have been redefined. Anyone with a basic computer science knowledge and a zest to solve problems can create their own solutions in the form of applications and make it available for the utility of fellow users around the world. Internet Freedom, Cloud applications and App stores have helped motivate many amateur independent developers to get involved in active collaborative development of applications.

This year, Vortex aims to herald this milestone development in the field of computer science by organizing workshops in Android development, Windows 8 application development, guest lectures from eminent academics and entrepreneurs who have made a mark for themselves in the field: Mrinal Kumar, CTO and Co-founder of Navriti Technologies and Sriram V Iyer, Co-founder of United Mobile Apps.

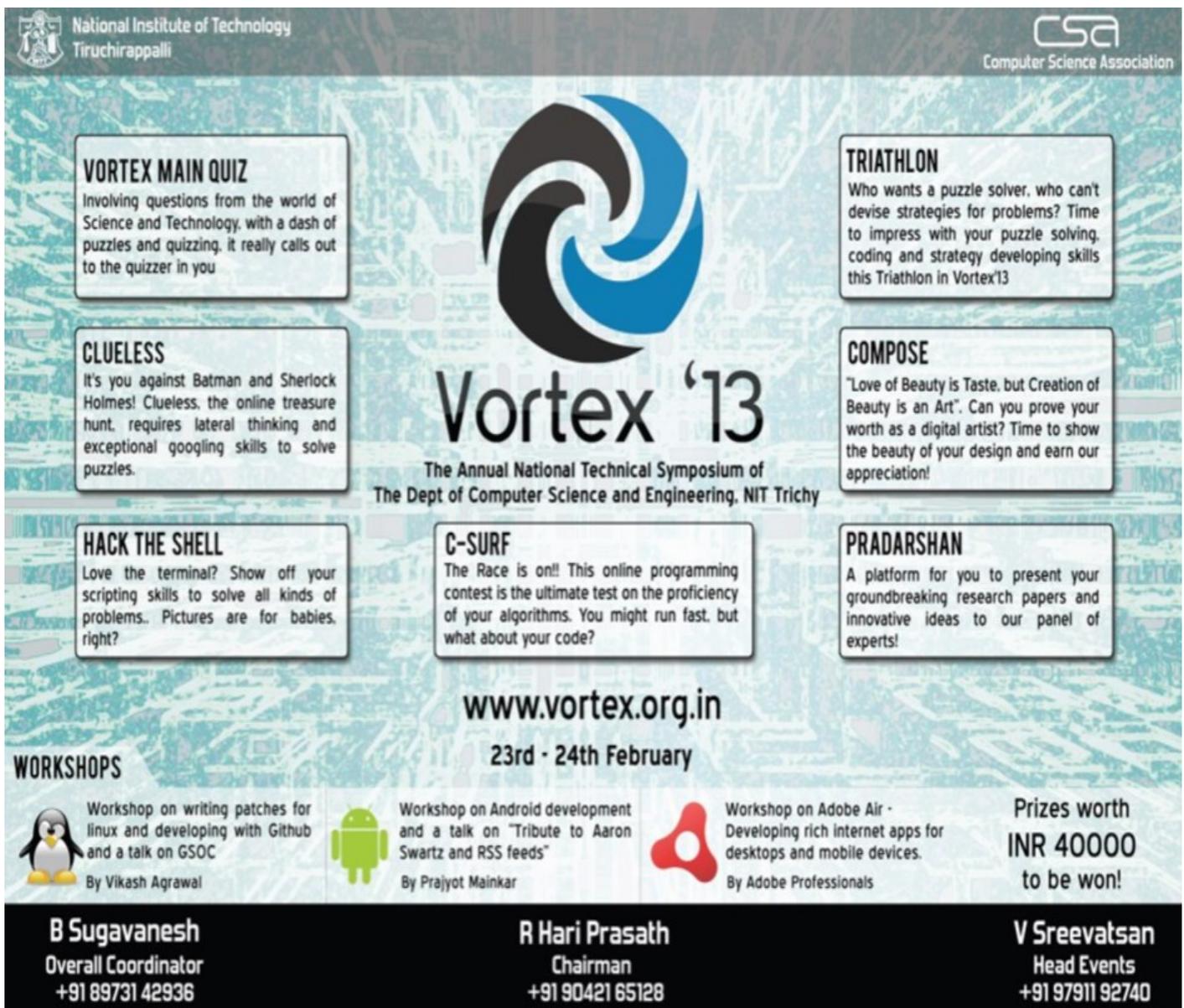
Apart from hosting many events like Hack the Shell, Triathlon and Compose to in still creative spirit in students aka the future developers. Also, Vortex gives equal priority to the traditional and fundamental aspects of Computer Science by organizing coding competitions, quizzes, guest lectures from giants like Dr. C Pandu Rangan, workshops and designing events pertaining to core computer science.

## EVENTS:

**CSURF :-** The best brains in the country competing with you, racing against the clock to try and win with their efficient codes. For those of you looking for a countrywide exposure of your talents, C-Surf sets the stage for you as part of Vortex'13. Fight it out against competitors from all over the country, and try to wrest the mantle of Top Coder.

**VORTEX MAIN QUIZ :-** A quiz involving questions from the world of science and technology with a dash of puzzles and quizzing. Let the quizzer inside you speak for yourself!

**HACK THE SHELL :-** Linux is all about coding and commands on the terminal. Your scripting skills in bash can help you win this coveted event.



The poster for Vortex '13 features a central logo of a blue and black swirl. The background is a light blue grid pattern. At the top left is the logo of National Institute of Technology Tiruchirappalli, and at the top right is the logo of the Computer Science Association (CSA). The text is arranged in several boxes around the central logo, describing various events and workshops. At the bottom, there are contact details for the organizers and a list of prizes.

**National Institute of Technology Tiruchirappalli** **CSA**  
Computer Science Association

**VORTEX MAIN QUIZ**  
Involving questions from the world of Science and Technology, with a dash of puzzles and quizzing, it really calls out to the quizzer in you

**CLUELESS**  
It's you against Batman and Sherlock Holmes! Clueless, the online treasure hunt, requires lateral thinking and exceptional googling skills to solve puzzles.

**HACK THE SHELL**  
Love the terminal? Show off your scripting skills to solve all kinds of problems. Pictures are for babies, right?

**C-SURF**  
The Race is on!! This online programming contest is the ultimate test on the proficiency of your algorithms. You might run fast, but what about your code?

**TRIATHLON**  
Who wants a puzzle solver, who can't devise strategies for problems? Time to impress with your puzzle solving, coding and strategy developing skills this Triathlon in Vortex'13

**COMPOSE**  
"Love of Beauty is Taste, but Creation of Beauty is an Art". Can you prove your worth as a digital artist? Time to show the beauty of your design and earn our appreciation!

**PRADARSHAN**  
A platform for you to present your groundbreaking research papers and innovative ideas to our panel of experts!

**Vortex '13**  
The Annual National Technical Symposium of  
The Dept of Computer Science and Engineering, NIT Trichy

[www.vortex.org.in](http://www.vortex.org.in)  
23rd - 24th February

**WORKSHOPS**

-  Workshop on writing patches for linux and developing with Github and a talk on GSOC  
By Vikash Agrawal
-  Workshop on Android development and a talk on "Tribute to Aaron Swartz and RSS feeds"  
By Prajyot Mainkar
-  Workshop on Adobe Air - Developing rich internet apps for desktops and mobile devices.  
By Adobe Professionals

**Prizes worth INR 40000 to be won!**

**B Sugavanesh**  
Overall Coordinator  
+91 89731 42936

**R Hari Prasath**  
Chairman  
+91 90421 65128

**V Sreevatsan**  
Head Events  
+91 97911 92740

**VORTEX'13**

vortex

## DEPARTMENT PROJECTS

### Projects in Dept. of CSE

#### **Collaborative Directed Basic Research in Smart and Secure Environment (CDBR – SSE) Project (2007 – 2012) – Completed**

CDBR-SSE Project was a multi institutional research project. The project was sponsored by National Technical research Organization (NTRO), New Delhi. The total cost of the project was Rupees 1 Crore. The duration of the project was 5 years (2007–2012). Eight different universities/institutions from geographically separated areas in Tamil Nadu took part in the project. IITM, Chennai was the lead institute with Prof. S. V. Raghavan as the Chief Investigator. The other institutes and the corresponding investigators are as follows:

- NIT, Tiruchirappalli : Dr. S. Selvakumar
- Anna University, Chennai : Dr. C Chellappan
- Pondicherry University, Puducherry : Dr. G. Aghilaa
- PSG College of Tech., Coimbatore : Dr. R. Anitha
- Thiagarajar College of Tech., Madurai : Dr. S. Shalinie
- Madurai Kamaraj University, Madurai : Dr. G. Arumugham
- Alagappa University, Karaikudi : Dr. V. Palanisamy

The project was initiated in March 2007. Around 40 research scholars and 8 project assistants worked towards with a common problem in mind – Cyber Security. From NIT, Trichy, a total 6 research scholars worked under this project. Apart from the research scholars, many UG and PG students also did their summer internship as well as end semester project. Also, students from colleges in the vicinity of Trichy were encouraged to do their internship. NIT, Tiruchirappalli submitted a total of 13 prototypes to NTRO as part of the outcome of the project. The project was formally closed on 26, Feb.'12.

#### **Integrated Framework for Cyber Space Security (IFCSS) Project - Submitted**

IFCSS Project is a multi-institutional research project. The project is submitted to DST, New Delhi. The total cost of the project is Rs.7.90 Crore. The project is yet to be commissioned. Six different universities/institutions from geographically separated areas in Tamil Nadu including NIT Surathkal,

Karnataka are part of the proposed project. NIT, Trichy is the lead institute with Prof. S. Selvakumar as the Chief Investigator. Dr. S. Mary Saira Bhanu and Dr. R. Leela Velusamy are the other investigators from NIT, Tiruchirappalli. The proposed project will have strength of 45 research scholars and six project assistants.

# PREVAILING OPINION: THE VIEW POINT BATTLE

## OPEN SOURCE:

- ◆ Open source software (OSS) is computer software whose source code is freely available.
- ◆ OSS and its authors are legally protected by the General Public License which enables them the rights to study, modify and distribute the software to anyone and for any purpose. Anyone can work on OSS and this is thus developed in a public collaborative manner.
- ◆ OSS has a highly extended community support which leads to many people working on similar codes thus giving people a feeling of ownership. Also extending the usable life of the product as the community to continue work even if the developer leaves.
- ◆ Since hundreds of people have access to the same codes, the workload on each person is low while overall development of the product is high, thus new versions are regularly released. Experienced OSS developers believe in security taking precedence over convenience.
- ◆ The power of diverse customization in OSS doesn't ensure a unified product with standard specifications and thus the user doesn't get a warranty. OSS buyers ponder over the differentiating features between two versions of software.
- ◆ The OSS and numerous contributing developers prepare an ecosystem where bugs are fixed at a quicker speed than they are exploited – anyone can identify a bug or loop hole and fix it accordingly. Also, there is a sea of support available on internet – mailing lists, wikis, experienced users, official support staff, updates, patches to get your queries resolved within no time. OSS developers are mainly rewarded by self satisfaction and appreciation.

## CLOSED SOURCE:

- ◆ Closed source software is developed by a single person or company. Only the final product that runs on your computer is made available, while the all important source code is hidden.
- ◆ This software is normally copyright or patented and is legally protected as intellectual property and only the owner of the software can legally distribute, copy or modify it. If the developer leaves, finishing the product is harder and the process is often started over.
- ◆ To compete with latest OSS versions, Closed source software is not always tested in every way and thus is less secure at times - It is cheaper to spend 200 hours fixing security and reliability problems found by customers than spending months fixing poor code which may or may not turn out to be a problem.
- ◆ CSS developers ensure they provide each customer with a similar experience and in case of any faults, the customer knows who to sue! Closed source does not allow core features to be changed (fewer versions) thus making it easier to pick the appropriate product.
- ◆ There is usually a single team available for maintenance and support task. So there can be huge delays in rectifying bugs. For Closed source developers, their hard work is highly profitable to them.

## *Getting in touch with Saurabh Gupta*



**Mr. Saurabh Gupta is the alumni of NITT, pass out of 2010 batch. He is currently working in Zynga as a Data Analyst. Recently he was admitted into Indian School of Business.**

*What was your experience in NIT Trichy as a part of CSE department and apart from the department?*

Well this space is not enough to describe my experience in NITT. So I'll keep it short. It was a humbling and an incredible learning experience to study with some of the most brilliant people from across the nation and outside. Just like the case with most of us it was my first time living outside home and those 4 years were transformative. NITT is a melting pot of so many different cultures. The diversity of the class taught me a lot of things about those cultures and now I have friends who came from almost every state and now are based in almost every state. For me those relations I made are as valuable as the degree itself. Aayaam and Spider were two experiences that shaped me most. The department was a lot of fun with Horizons, NITTFEST and Vortex. The studies of course were an essential part of the experience in the department but after 3 years what I really have in my memories are those experiences. They really give life to the otherwise intense curriculum.

*Where are you working currently and what is your position in that company?*

I work with Zynga as a Data Analyst in the Mafia Wars Game Team. Although I joined Zynga in the software engineering role, I found the analytics field interesting so I transitioned to this role.

*How do you feel NITT helped you to reach your current position?*

Pretty much in every way. The skills and the network I gained working in Aayaam and Spider have also gone a long way in helping me in the professional world and in personal life.

*Other Alumni of NITT you are currently in touch with?*

Quite a lot of people, both in Bangalore and in other cities. I am also able to keep in touch with other Alumni via the Alumni Association Bangalore Chapter. Right now we are working towards the Golden Jubilee Celebration events as Alumni with full enthusiasm.

*How do you feel NITT CSE department has changed since last you were there?*

I should be asking you this question. But the level of placements, especially in CSE department is quite note worthy, with a lot of companies recruiting the students of our department.

*How did the professors help in shaping your career?*

The professors in CS department understand the importance of all around development of the student along with the technical knowledge and they are pretty cooperative in this regard.

*What are the various opportunities in CSE department according to you?*

Tremendous, The courses, the symposiums, Tech Fest, projects and NITTFEST are some I can list off the top of my head.

*What message would you like to give for current batch of students?*

These 4 years of NITT are the best time in your life you'll get to transform yourself, to build lifelong friendships and to lay a strong foundation for your career. Make the most of it.

\*\*\*\*\*



**Smile, It's free therapy:**

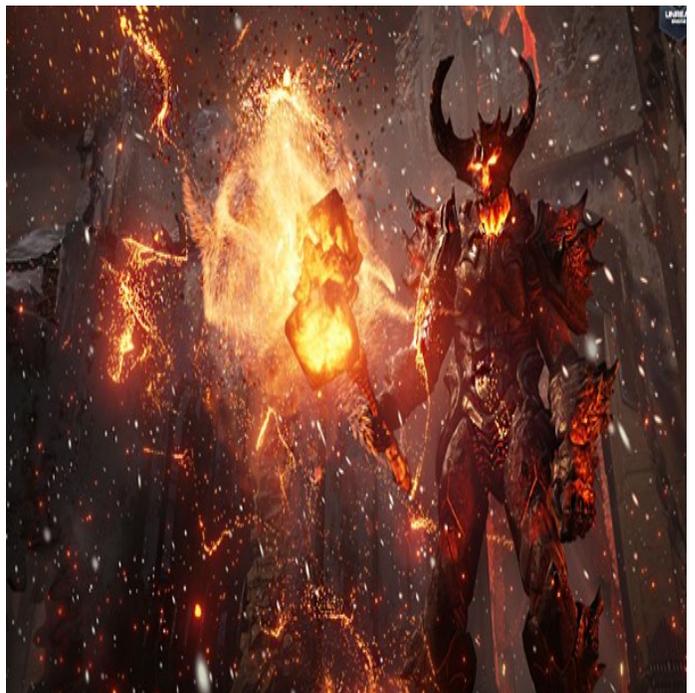
- ◆ Theory is when you know something, but it doesn't work. Practice is when something works, but you don't know why it works. Programmers combine theory and practice : Nothing works and they don't know why.
- ◆ The best place to hide a dead body, is page 2 of Google search results.
- ◆ UNIX is user-friendly. It's just picky about who it's friends with
- ◆ CAPS LOCK: Preventing Login since 1980

### Oculus Rift:

Oculus Rift is a new virtual reality (VR) headset designed specifically for video games that will change the way you think about gaming forever. With an incredibly wide field of view, high resolution display, stereoscopic 3D view, and ultra-low latency 360° head tracking, the Rift provides a truly immersive experience that allows you to step inside your favorite game and explore new worlds like never before. It is being developed by Oculus VR, who have raised US\$91 million, of which \$2.4 million was raised with crowd funding via Kick starter.

The Rift takes 3D gaming to the next level. There are a number of VR headsets out there, but none that deliver a truly immersive gaming experience. Most products either lack the technical features required for believable immersion or sit at a very high price-point (\$20,000+) reserved for the military or scientific community.

The Oculus VR is set out to change all that with the Rift, which is designed to maximize immersion, comfort, and pure, uninhibited fun, at a price everyone can afford. The Rift is designed to be as comfortable and lightweight as possible for long play sessions. The current Oculus Rift development kit is 369g, similar to a heavy pair of ski goggles. The key to success appears to depend at least in part on the headset's ability to provide a convincing simulation of reality. Disconnects between what users are seeing in game, what they think they should be able to do in terms of character control and in-world interaction.



### Cortana:

To anyone who's played the Halo games, Cortana needs no introduction: she's an advanced artificial intelligence and Master Chief's only real friend.

And now she's coming to the real world: Microsoft is working on a rival to Siri and Google

Cortana is currently the code name for a whole new way of controlling not just the Windows Phone, but across major Microsoft platforms, such as desktop Windows, Surface and the Xbox One. It will respond to your voice, answer your questions, control your device and anticipate the information you need at particular times.

Cortana is a combination of three things: Tell me natural language processing Microsoft's enormous cloud processing power, and Satori. The Satori knowledge repository is designed to be more intelligent than traditional search. It's intended to answer your questions and anticipate your needs, not just present you with a page of links. To use Google's phrase, it's about things, not strings.

Microsoft, as you might expect, promises that Cortana will be better: it'll take the best of Google Now's analysis and Siri's user-friendliness, bring them together and then take everything one step further. Cortana won't just listen to you, she'll understand you, and she'll be aware of everything from your location to your personal preferences.

Microsoft says that it won't release a rival to Siri and Google Now until we have something more revolutionary than evolutionary. With the inclusion of the Live Tile notifications and Cortana somewhere down the line, Microsoft devices seem like they'll be a breeze to use.

### **Google Glass:**

Google Glass is a wearable computer with an optical head-mounted display (OHMD) that is being developed by Google in the Project Glass research and development project, with a mission of producing a mass-market ubiquitous computer. Google Glass displays information in a smartphone-like hands-free format, that can communicate with the Internet via natural language voice commands.

Technical specifications :

- Android 4.04 and higher
- 640 X 360 Hi max HX7309 LCoS display
- 5-megapixel camera , capable of 720p video recording
- Wi-Fi 802.11b/g
- Bluetooth
- 16GB storage (12 GB available)
- Texas Instruments OMAP 4430 SoC 1.2Ghz Dual
- 682MB RAM
- 3 axis gyroscope , magnetometer , accelerometer



While the frames do not currently have lenses fitted to them, Google is considering partnerships with sunglass retailers such as Ray-Ban or Warby Parker, and may also open retail stores to allow customers to try on the device. The Explorer Edition cannot be used by people who wear prescription glasses, but Google has confirmed that Glass will eventually work with frames and lenses that match the wearer's prescription; the glasses will be modular and therefore possibly attachable to normal prescription glasses. On 26 Jan 2014, Google announced that they were adding four prescription frame choices for about \$225.00 U.S. It is necessary to remove a small screw in order to move the Google Glass from one frame to another.

# AHO-CORASICK STRING MATCHING ALGORITHM

In computer science, the **Aho–Corasick string matching algorithm** is a string searching algorithm invented by Alfred V. Aho and Margaret J. Corasick. It is a kind of dictionary-matching algorithm that locates elements of a finite set of strings (the "dictionary") within an input text. It matches all patterns simultaneously. The complexity of the algorithm is linear in the length of the patterns plus the length of the searched text plus the number of output matches. Note that because all matches are found, there can be a quadratic number of matches if every substring matches (e.g. dictionary = a, aa, aaa, aaaa and input string is aaaa).

Informally, the algorithm constructs a finite state machine that resembles a trie with additional links between the various internal nodes. These extra internal links allow fast transitions between failed pattern matches (e.g. a search for cat in a trie that does not contain cat, but contains cart, and thus would fail at the node prefixed by ca), to other branches of the trie that share a common prefix (e.g., in the previous case, a branch for attribute might be the best lateral transition). This allows the automaton to transition between pattern matches without the need for backtracking.

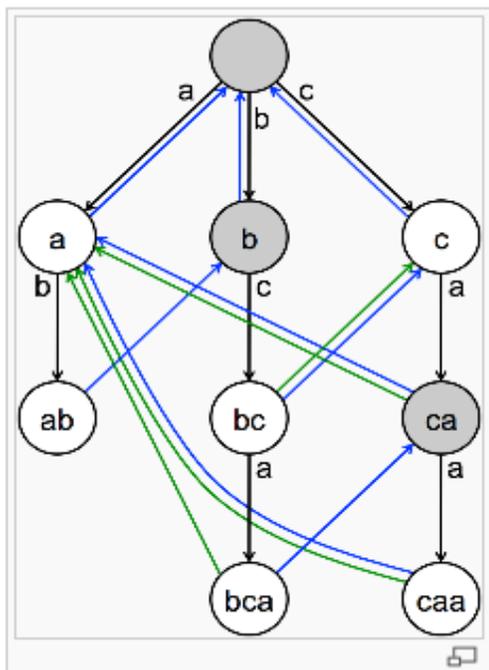
When the pattern dictionary is known in advance (e.g. a computer virus database), the construction of the automaton can be performed once off-line and the compiled automaton stored for later use. In this case, its run time is linear in the length of the input plus the number of matched entries.

The Aho–Corasick string matching algorithm formed the basis of the original Unix command `fgrep`.

The graph below is the Aho–Corasick data structure constructed from the specified dictionary, with each row in the table representing a node in the trie, with the column path indicating the (unique) sequence of characters from the root to the node.

The data structure has one node for every prefix of every string in the dictionary. So if (bca) is in the dictionary, then there will be nodes for (bca), (bc), (b), and (). There is a black directed "child" arc from each node to a node whose name is found by appending one character. So there is a black arc from (bc) to (bca). There is a blue directed "suffix" arc from each node to the node that is the longest possible strict suffix of it in the graph. For example, for node (caa), its strict suffixes are (aa) and (a) and (). The longest of these that exists in the graph is (a). So there is a blue arc from (caa) to (a). There is a green "dictionary

suffix" arc from each node to the next node in the dictionary that can be reached by following blue arcs. For example, there is a green arc from (bca) to (a) because (a) is the first node in the dictionary (i.e. a white node) that is reached when following the blue arcs to (ca) and then on to (a).



Dictionary {a, ab, bc, bca, c, caa}

Path	In Dictionary	Suffix Link	Dict Suffix Link
()	-		
(a)	+	()	
(ab)	+	(b)	
(b)	-	()	
(bc)	+	(c)	(c)
(bca)	+	(ca)	(a)
(c)	+	()	
(ca)	-	(a)	(a)
(caa)	+	(a)	(a)

At each step, the current node is extended by finding its child, and if that doesn't exist, finding its suffix's child, and if that doesn't work, finding its suffix's child, and so on, finally ending in the root node if nothing's seen before.

When the algorithm reaches a node, it outputs all the dictionary entries that end at the current character position in the input text. This is done by printing every node reached by following the dictionary suffix links, starting from that node, and continuing until it reaches a node with no dictionary suffix link. In addition, the node itself is printed, if it is a dictionary entry.

Execution on input string abccab yields the following steps:

Analysis of input string abccab

Node	Remaining String	Output:End Position	Transition	Output
()	abccab		start at root	
(a)	bccab	a:1	() to child (a)	Current node
(ab)	ccab	ab:2	(a) to child (ab)	Current node
(bc)	cab	bc:3, c:3	(ab) to suffix (b) to child (bc)	Current Node, Dict suffix node
(c)	ab	c:4	(bc) to suffix (c) to suffix () to child (c)	Current node
(ca)	b	a:5	(c) to child (ca)	Dict suffix node
(ab)		ab:6	(ca) to suffix (a) to child (ab)	Current node

## NEW BEGINNINGS: FIREFOX CLUB

The inauguration of the Mozilla Firefox Club - NIT Trichy Chapter was the department of Computer Science's 4th inaugural event under the golden jubilee celebrations. As part of the same, a session was conducted by Mozilla Representative - Sujith Reddy on the 1<sup>st</sup> of October. The session was intended to give students an insight into Mozilla's open source technologies and their opportunities to grow and learn upon joining this newly formed club. The turnout for the event was not only impressive considering busy schedules, but also the



**Respective Director Dr. Srinivasan Sundarajan, HOD Dr. S. Selvakumar & Dr. R Leela Velusamy during the Firefox Club inauguration!**

audience comprised of enthusiastic followers of the open source world. They were a major support throughout the event and openly suggested their views and eagerness in discussions. The event began with the official inauguration of the Mozilla club and an introduction on the motives, inspirations and benefits of the club and the dedicated vision of the Institute's involvement in the world of Open Source. The event moved into the seminar and Sujith Reddy took the stage to address the students. He started out with captivating the students with the idea behind open source software's and the need for an interest based contribution to the open web. With this, he directed his talk to the specifics of the Mozilla community and its role in promoting openness and an open web world. The talk moved onto Mozilla's various programmes and initiatives to attract students to its ideals, and of becoming a part of the Mozilla world along with the endless career opportunities that it brings along. The seminar ended with the students learning a great deal about Mozilla and the proposed club activities. Overall the event was a huge success and delivered the expected outcomes.

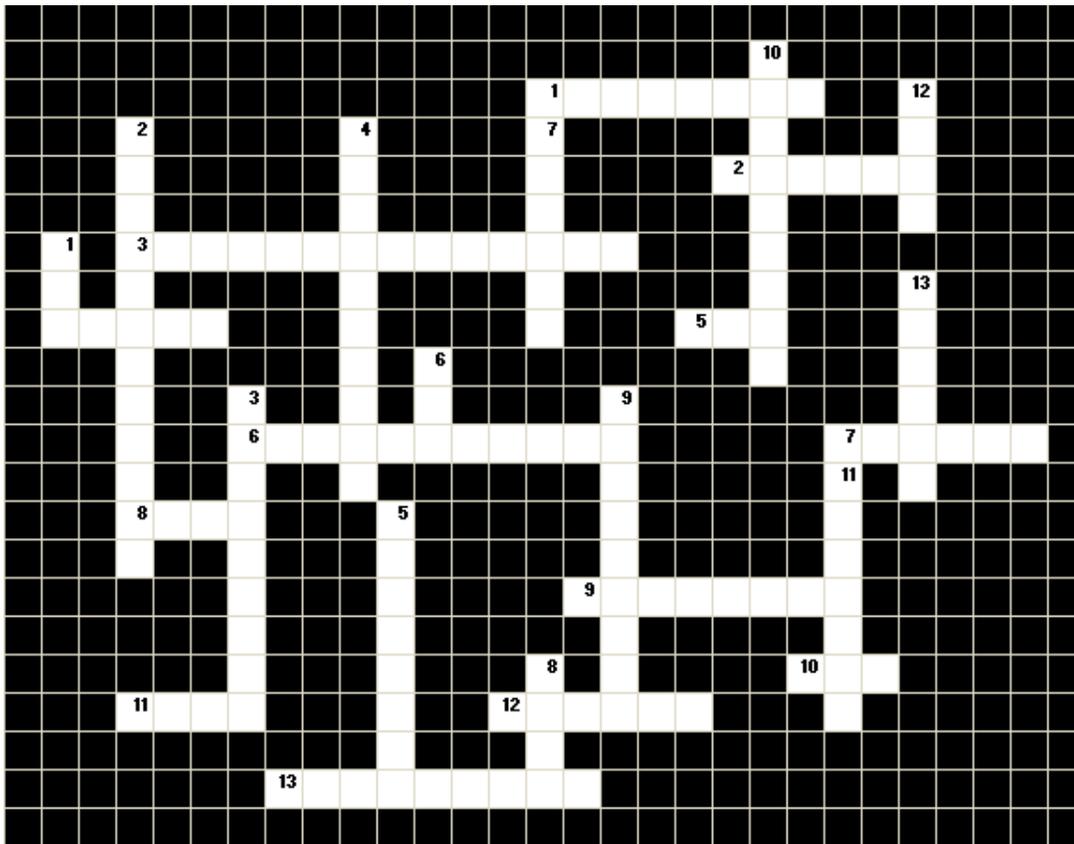
\*\*\*\*\*

firefox

# CROSS WORD: DECRYPT THE BITS

## ACROSS

- a computer network authentication protocol that is used by both Windows 2000 and Windows XP as their default authentication method
- a process in an operating system that runs in the background
- used to describe a computer with the capability of connecting to another computer or network device.
- a computer server or software program that is part of the gateway server or another computer that separates a local network from outside networks.
- network server that helps to point domain names to their associated IP address
- a register in a CPU in which intermediate arithmetic and logic results are stored
- a network protocol used to provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection.
- an umbrella term for computer data storage schemes that can divide and replicate data among multiple hard disk drives
- the original name of the open-source Wire Shark packet analysis software
- is a three-row 15-pin DE-15 connector
- Equal length size spaces into which virtual memory is divided.
- a packet of information that travels between a browser and the web server.



## DOWN

- a high-speed point-to-point channel for attaching a video card to a computer's motherboard
- the memory that stores the microcode of a CPU
- the process of one computer establishing a connection with another computer or from, a computer or a coming between the characters of a font.
- a numerical value used to illustrate the total amount of data being transferred through the computer or device at that given time. through the computer

- an electronic or electromechanical hardware device that is used for entering data into, and displaying data from, a computer or a computing system
- a computer hardware unit having all memory references passed through itself, primarily performing the translation of virtual memory addresses to physical addresses.
- refers to the spacing between the characters of a font.
- An autonomous computer in a network
- Electromagnetic interference received by one or more wires
- Default name describing the local computer address
- the arrangement of the various elements of a computer network
- a computer network tool used to test whether a particular host is reachable across an IP network



for any queries and suggestions, contact us:  
csenewsletter@nitt.edu  
Like us on fb: [www.facebook.com/csnewslettternitt](http://www.facebook.com/csnewslettternitt)