

# Shell

Newsletter

Department of Computer Science  
& Engineering



Volume 3

Issue 1

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## Vision and Mission of the Institute

### Vision

- To be one of the premier Institutes of Engineering and Management education in the country.

### Mission

- To provide Engineering and Management education that meets the needs of human resources in the country.
- To develop leadership qualities, team spirit and concern for environment in students.

### Objective

- To achieve educational goals as stated in the vision through the mission statements which depicts the distinctive characteristics of the Institution.
- To make teaching-learning process an enjoyable pursuit for the students and teachers.

## Vision and Mission of the Department

### Vision

- To be a premier department for education in Computer Science and Engineering in the state of Karnataka, moulding students into professional engineers.

### Mission

- To provide teaching/ learning facilities in Computer Science and Engineering better than prescribed by University for easy adaptation to industry and higher learning.
- Provide a platform for self-learning to meet the challenges of changing technology and inculcate team spirit and leadership qualities to succeed in professional career.
- Comprehend the societal needs and environmental concerns in the field of Computer Science.



## “Shell”

from the Department of Computer Science and Engineering, is dedicated to **Marvin Lee Minsky** who was an American cognitive scientist co-founder of the Massachusetts Institute of Technology's AI laboratory.

## Inside Shell ....

- ✓ AI Takeover
- ✓ Crystal Language
- ✓ Blockchain Technology
- ✓ Alexa by Amazon
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- ✓ Student Achievements
- ✓ Think-A-Thon
- ✓ Technical Quiz



*B. N. M. Institute of Technology*

(Approved by AICTE, Affiliated to VTU, ISO 9001:2008 certified and NAAC accredited grade A Institution)  
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## Editor's Message

Dear Reader,

It gives me great pleasure to present to you the 1<sup>st</sup> issue of “Shell '17-'18”, the bi-annual newsletter from the Computer Science and Engineering Department.

As a step towards being environmentally conscious, the newsletter is being presented in the online format. This edition includes the latest developments in the field of Computer Science in the form of articles, quizzes and puzzles, including departmental activities and student achievements.

For the first time ever, a Think-A-Thon section is also being introduced, which is aimed at invigorating reader's thought process.

I would also take this opportunity to thank all those who have enthusiastically submitted their contributions for this issue. The newsletter would not have been possible without the assistance and guidance of the staff as well as the efforts put in by the Editorial Team, whom I'd heartily like to thank. Feel free to provide any feedback! We'd love to receive interesting articles, bits of information and photos for inclusion in our forthcoming issues.

On that note, I wish you all 'Bonne lecture' and the very best for the coming New Year!

**Sumuka Gummaraju, VII CSE**

***BNMIT has been accredited with 'A' grade by the National Assessment and Accreditation Council.***

## Department Profile

The Department of Computer Science and Engineering at BNMIT is renowned for imparting state of the art education and carrying out cutting edge research. In addition to the strong UG Program, PG CSE Program and research facilities for M.Sc (Engg.) and Ph.D courses are also offered. The Department has an equipped R&D centre and ongoing sponsored projects from VTU, DST-IISc and company incubated facilities.

The Department is associated with professional bodies viz. IEEE (USA), ACM (USA), Computer Society of India (CSI), student branch of Institution of Engineers & Indian Society for Technical Education. Major areas of specialization of the faculty include Image Processing, Computer Vision, Pattern Recognition, Computer Networks, Network Security, Embedded Systems, Compiler Design, Wireless Sensor Networks and Data Mining.

The department organizes national and international conferences regularly. Guest lectures are arranged every semester for the benefits of students. Students are placed in leading IT companies. Students are also pursuing higher studies in reputed Universities around the globe.

The Director of our Esteemed Institution Prof. T.J. Rama Murthy had a memorable get together with the BNMIT Alumni at Sunnyvale, USA on 29<sup>th</sup> September 2017.

### Happy Times



BNMIT Alumni Get together with Director Prof. T.J. Rama Murthy in Sunnyvale, USA On 29th Sept 2017

“Happy to share with all students and staff about my visit to USA and attending BNMIT Alumni get together in Sunnyvale on 29th September 2017. The get together was a platform to bring back the alumni to the alma mater for encouragement and mentoring the budding engineers of our Institution. In the get together it was proposed to initiate a BNMIT alumni chapter in the Bay area which is well received by the management. BNMIT alumni will be an integral part of our endeavours.”

**Prof. T. J. Rama Murthy**  
Director of BNMIT



## The AI TakeOver

AI takeover refers to a hypothetical scenario in which artificial intelligence (AI) becomes the dominant form of intelligence on Earth, with computers or robots effectively taking control over the planet, away from the human race. Possible scenarios include replacement of the entire human workforce, takeover by a superintelligent AI agent, and the popular notion of a robot uprising.

Earlier this year, Researchers at Facebook Artificial Intelligence Research built a chatbot that was meant to learn how to negotiate by mimicking human trading and bartering. But when the researchers paired two of the programs, nicknamed Alice and Bob, to trade a few objects such as balls, books and hats against each other, it led to divergence from human language as the bots developed their own language for negotiating and began to learn their own bizarre form of communication. The researchers said it wasn't possible for humans to crack the AI language and translate it back into English.

The chatbots had been instructed to work out on how to negotiate among themselves, and improve their bartering as they went along. But they were NOT instructed to use comprehensible English, allowing them to create their own shorthand which was considered precarious.

Indeed, some of the negotiations that were carried out in this bizarre language even ended up successfully.

Facebook's experiment wasn't the only time when artificial intelligence had invented a new form of language. Google revealed that the AI it uses for its Translate tool, would translate user input into its own language and then, rebuild it into English. But the company was happy with its development and allowed it to continue.

Physicist Stephen Hawking, Microsoft founder Bill Gates and SpaceX founder Elon Musk have expressed concerns about the possibility that AI could develop to the point that humans could not control it, with Hawking theorizing that this could spell the "end of the human race".

The Physicist in 2014 quoted "Success in creating AI would be the biggest event in human history, but might also be the last, unless we learn how to avoid the risks." He believes that in the coming decades, AI could offer incalculable benefits and risks such as "technology outsmarting financial markets", outclassing human researchers and leaders, and developing weapons that are beyond our understanding."

**Sumuka Gummaraju**  
**VII CSE 'A'**

## Crystal Lang

Programming languages, although considered to be *just* tools to write and execute programs on a digital system, holds a special place in the hearts of many programmers.

Some of them would defend the integrity of their favourite programming language by relentlessly and sometimes even ignorantly debating, stating why the language is better than the rest.

When, such language loyalty is observed in the world of computer science, new languages find it difficult to go head to head against those that have decades under their belt. Enter, Crystal-Lang. A language which is as fast as C and as slick as Ruby.

Crystal-Lang, a newcomer to the world of programming languages, has already created ripples by performing many times better than languages that already have a considerable number of programmers.

Ruby, A very popular language used to create thousands of applications, both desktop and web based, has a significant influence on the syntax and functionality of Crystal. So much so that, basic Ruby applications can be directly compiled using the Crystal Compiler "cr".

This unique situation allows us to compare the performance of the two Languages with exact same benchmark programs. Surprisingly, Crystal out-performed Ruby, running the benchmark programs 20 to 30 times faster than that of Ruby while consuming significantly lesser memory. This considerable difference is attributed to the fact that Crystal is statically typed while Ruby is dynamically typed.

Crystal uses an advanced global type inference algorithm to determine the type or set of types that can be attributed to a variable, thus performing type checks during compile time itself. Crystal has a very supportive development team with all the core functions and the nuances being well documented. This is a major plus point for Crystal as the base of the language plays a major role in its favourability in the future.

Crystal offers relatively advanced computing techniques such as concurrent computing and Inter process communication in a rather beginner friendly way with high level of abstraction so that programmers can focus on the logic rather than redundant and boilerplate code.

Thus crystal is a very refreshing language which has a beautiful syntactic structure similar to Ruby and has performance comparable to C, which is extremely fast due to it being relatively nearer to Machine code. Just as there are two sides to a coin, Crystal comes with its own set of disadvantages.

Although Crystal supports concurrency, it does not currently support parallel computing which means that Crystal applications run on only one core even if multiple cores are available and even though Crystal contains libraries that allow crystal applications to be deployed at the server side, not all web hosting companies allow the hosting of Crystal programs.

In conclusion, Crystal has the potential to shine amongst its competitors if the rate of development continues as is.

**U.Sai Kiran**  
**VII CSE 'B'**

## **BLOCKCHAIN – A TECHNOLOGY FOR PRIVACY**

“ In the current age of the smartphone, he who has control over data, controls the World”. The above quote is true, especially with respect to big conglomerates of the IT industry such as Google, Facebook, Microsoft, Instagram etc.

The amount of data generated at any given time is very huge and there are a lot of contributing reasons for that, but the main three reasons are :-

- “Free” usage of software such as social networking sites, email providers etc.
- Low cost internet thanks to ISPs such as Jio.
- Availability of low cost smartphones to the public.

Let us focus on the most fundamental reason -“Free” usage of software. The “Free” software that billions of people use daily is not necessarily free i.e., even though the user does not pay for the software he/she gives away something more valuable in return - their internet privacy.

When a user uses such services, they give away(knowingly or unknowingly) a variety of their personal data such as their likes, dislikes, interests, browsing habits, frequently bought items etc. This data is then analysed by companies and they start pushing targeted ads based on interests. Also ISPs provide their users numbers as a part of an agreement with ad agencies in exchange for an agreed amount of money. All this results in the user’s privacy being compromised. Thus to help avoid it, we can use this new technology called “Blockchain”.

Blockchain is a technology that helps prevent data misuse and provide users the necessary privacy. It was the basis of a research paper, written in 2008 by a person or a group known only by the pseudonym “Satoshi Nakamoto” who is the creator of Bitcoin. In fact, Blockchain is the underlying technology used in Bitcoin that makes it a secure currency system.

In blockchain technology there is a ledger i.e., a book of records that is available to all users on a particular blockchain network to view and verify the transactions recorded. A block refers to a container of sorts in which a set of transactions are stored. Each block is linked to another by an imaginary chain. This chain is nothing but the 'hash' value of the previous block. There is a pre-defined time period agreed upon by the network participants at which a new block is created. The new block created contains three values – It's hash value, the previous block's hash value and the number of transactions recorded since the last time period elapsed.

Here each block is a cryptographic block i.e., it is an encrypted block that connects to another block. Thus if an attacker wants to attack a particular transaction then he has to attack all the blocks subsequent to the block that contains the transaction. He has to decode each block and if there are million to billions of blocks that takes a lot of time to decode. Also he has to decode each and every block being created as the blockchain is not a static one. It constantly keeps adding new blocks thus making it difficult for any attacker to extract data.

If the user details and their interests are encrypted in a block and if all users are interlinked with one another using the blockchain then their privacy data is secure and any company cannot access it without requesting permission from the user first. Thus protecting them from unwanted ads and malicious attacks.

**Naveen K B**  
**V CSE ‘B’**

## **Alexa By Amazon**

Alexa is an intelligent personal assistant developed by Amazon, made popular by the Amazon Echo and the Amazon Echo Dot devices developed by Amazon Lab126. It is capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic, and other real-time information, such as news. Alexa can also control several smart devices using itself as a home automation system. The name Alexa was chosen due to the fact that it has a hard consonant with the X and therefore could be recognized with higher precision. The name is also claimed to be reminiscent of the Library of Alexandria, which is also used by Amazon Alexa Internet for the same reason.

Alexa can be used by owners of Alexa-enabled devices to install skills, control music, manage alarms, and view shopping lists. For example, the Amazon Echo. It has enough built-in smarts to do a number of tasks, like playing back music and making lights blink. You can use Alexa in Amazon’s Echo product. By default, Echo devices use “Alexa” as their wake word. While the device is constantly listening, it only starts tracking and analyzing what you say next after it hears “Alexa.”. Now suppose there is already a person named Alexa in your house, you can change the name (wake word) from Alexa to any other name you would wish like ‘Amazon’, ‘Echo’ etc.

There are also a number of hidden features and quirky questions-and-answers you can ask Alexa. For example, you can ask her to play Rock, Paper, Scissors; get responses when you quote favorite movies (“May the force be with you”); or use her to do math on your behalf. You can customize a lot of what Alexa can do (beyond just changing her wake word). You can log into your favorite music sources, including Spotify, add items to shopping or to-do lists, and manage alarms or reminders. FYI, out of the 15,000 skillsets that are available on the Alexa, setting timers is the most popular skill. Second being playing music. You can also manage Amazon Shopping notifications, adjust what content you want in your daily flash briefing of the day’s headlines, and choose what sports teams you care about for your sports update. You can also enter in your home or work address to get traffic updates for your daily commute, and sync with your calendar (Gmail, Outlook, or iCloud) to know what’s up next on the day’s schedule. If Alexa has trouble understanding your commands, you can go through a quick voice-training session to teach it how you speak. And if you’re wary that she might accidentally make purchases on your behalf, you can enable or disable voice purchasing.

**Akhil Shridhar**  
**III CSE ‘B’**



## WORKSHOP/INTERNSHIP AND TRAINING

- Saloni Handuja, Shweta Gupta, Vaishnavi Vinay and Tanmaya Mishra completed their Internship at QuEST Global, between 6th Feb, 17 to 25th May, 17.
- Shobana B, Sahana P, Priyanka R and Sandhaya P completed their Internship on “An Approach for Privacy Preservation and Data Publishing” using New Cluster based Anonymization techniques at Novateur Solution, between Feb, 17 to May, 17.
- Ketan Anand completed his Internship at Mcafffeine, Digital Marketing Intern organised by MCaffine held between 12th Feb, 2017 to 20th March, 2017.

## Council of Scientific and Industrial Research (CSIR) Technofest Exhibition

On the occasion of CSIR platinum Jubilee Celebrations, CSIR had organized Technofest Exhibition from 25<sup>th</sup> to 27<sup>th</sup> October, 2017. Fifty two students (also CSI members) from Computer Science and Engineering and Information Science and Engineering visited the exhibition held at CSIR-NAL, HAL Airport road, on 25<sup>th</sup> October, 2017. Dr. Sejal Santosh Nimbhorkar, Associate Professor, Dept. of CSE and Mr. Manjunath G S, Assistant Professor, Dept. of ISE accompanied students for the exhibition. The exhibition covered key contributions of CSIR to the Science & Technology in the field of food, agriculture, energy, aerospace, landslide and health.

## Android Application Development Workshop

A three day workshop on Android Application Development was conducted under CSI-BNMIT on 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> of November, 2017. The resource person, Mr. Vishwa Kiran is a senior corporate trainer from Aprameyah Technologies Pvt. Ltd. and research scholar from UVCE. He has 15 years of rich experience as a corporate trainer and software developer. The topics covered were basics of Android application and its development and its Design Attributes.



## Technical Talk on Intellectual Property Rights

To create awareness about the intangible rights protecting commercially valuable products of the human intellect and to incentivize creativity and serve the public interest by facilitating economic growth, an event was conducted by ACSIS on Intellectual Property Rights for the 5<sup>th</sup> semester students of ISE and CSE branches.



The talk was delivered by Dr. Anindya Sircar who is currently engaged in consulting, strategizing, teaching and training programs in the field of Intellectual Property management. He has featured in the Lex Witness's Hall of Fame – Top 50 as a prominent player in the India's legal sector in 2010 and IAM Strategy 300 – World's Leading IP Strategists in 2017. Dr. Sircar interacted with the students and briefed them about the elements of IP, the complete IP cycle, legal remedies, Business Strategies, and IP Management- Integration.



## Technical Talk on Professional Ethics

On 30<sup>th</sup> October 2017, Mr. Amitkeerti M. Lagare delivered a talk on Professional Ethics, that encompasses the personal and corporate standards of behaviour, values and guiding principle expected by professionals in an IT industry.



The audience of the program were the students from 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup> semester and alumni of CSE branch. Mr. Amitkeerti is currently working as a Manager and Software Architect in Wireless Connectivity Solutions group at Intel Mobile Communications India. He works in the GPS group at Intel and is responsible for delivering the GPS solution for various Intel platforms.

The focus of the talk was on how to maintain personal integrity by not using the company Intellectual Property for personal gain. Students also learnt that personal integrity deals with judicious use of office resources for personal use. In this program, the students who had scored First Class with Distinction in the respective semesters were honoured with mementoes.

## Workshop on Webservices and JSON



A two day workshop was held on Webservices, Javascript and JSON was conducted under CSI-BNMIT student chapter on 4th and 5th November, 2017. Fifty eight students from Computer Science and Engineering and Information Science and Engineering have actively participated in this workshop. Mr. Albin Xavier is a corporate trainer and Sun certified java programmer from Aprameyah Technologies Pvt. Ltd. He has 11 years of rich experience as a corporate trainer and software

developer. The topics covered included developing a JAX-RS RESTful Service, HTTP Method and URI matching and JAX-RS injection.

The students were able to develop real-world JavaScript applications, create object-oriented JavaScript applications using JSON to transmit and store data, design and build RESTful services & clients and build JAX-RS services as an outcome of this workshop.

## Orientation Program on NGO Activity

An Orientation Program was conducted by Youth for Seva for the 5<sup>th</sup> semester CSE students on 30 August 2017. Ms. Darshini who is the co-ordinator of Indiranagar cluster of the NGO spoke about the Services provided by Youth For Seva to help the needy and serving the society, the factors blocking from Volunteering, the opportunities in Youth For Seva for volunteering. The goal of the NGO is to support schools, destitute shelters, government hospitals and other organizations in the social sector through volunteers who can help them mitigate some of their shortcomings and challenges. Youth for Seva aims to create positive change agents in the society, through the culture of volunteering.



## List of Students selected as volunteers for the NGO:

Ms. Aishwarya MS – V A  
Ms. Akshata P Hegde – V A  
Mr. Arvindh K – V A  
Ms. Arpita R Patil – V A

Ms. Gayathri K – V A  
Ms. Greeshma R – V A  
Mr. Jayanth K – V A  
Ms. Keerthana Bhoopal – V B

## Student Achievements

### Cultural

- Bhargavi Venkataram of 7<sup>th</sup> sem CSE bagged the First Prize in Senior Level Competition of Veena Seshanna Competition – Vocal in the Forty Eighth Music Conference held by The Bangalore Gayana Samaja.
- The Prathyarpana Foundation conducted an event to help the underprivileged children of the Sparsha Trust which provides care, shelter, education and all-round skill development to needy children of single mothers, construction workers and orphans. The event was held at the ADA Rangamandira, on the 10th of November 2017. It featured a choir of over a hundred students of Vijaya College of Music and was conducted by Bhargavi Venkataram of 7<sup>th</sup> Sem CSE.



### Technical

- Nandan A.S of 5<sup>th</sup> Sem B Section won the Best project award at semester level in the IPL winter competition 2017.

### Sports

- Monisha G of 3<sup>rd</sup> Sem CSE won the 200m medley II, 201m Breaststroke III, 100m Breaststroke III in the VTU State Level Swimming Competition held on 30<sup>th</sup> August 2017
- Ranjeetha J of 5<sup>th</sup> Sem CSE won the 200m Fly III, 200m Backstroke II, 800m Freestyle III in the VTU State Level Swimming Competition held on 30<sup>th</sup> August 2017
- Akshara G Dutt 5<sup>th</sup> Sem CSE won the VTU Inter Zone Lawn Tennis Tournament (Women) organized by VVCE Mysore from 12<sup>th</sup> to 14<sup>th</sup> of September 2017.

## QUIZ

- Which programming language is exclusively used for Artificial Intelligence?
- A dual layer Blue –ray disc can store data up to \_\_\_\_\_.
- First computer virus is known as \_\_\_\_\_.
- Which was the first search engine on Internet?
- What is the codename of Ubuntu 17.04?
- A computer on the internet that hosts data that can be accessed by web browser using http is known as \_\_\_\_\_.
- When was IoT started?
- Where did Hadoop gets its name?
- What open source software was developed from Google's map reduce?
- An Artificial Intelligence technique that allows computers to understand associations and relationships between objects and events is called \_\_\_\_\_.



10. Pattern Matching  
9. Spark  
8. Toy Elephant  
7. 2000  
6. Web Server

**Answers:**  
1. Prolog  
2. 50 GB  
3. Creeper Virus  
4. Archie  
5. Zesty Zapus

## Think-A-Thon

- Chef has sequence of digits  $S_1, S_2, \dots, S_n$ . He is staying in the first digit ( $S_1$ ) and wants to reach the last digit ( $S_n$ ) in the minimal number of jumps.

While staying in some digit  $x$  with index  $i$  (digit  $S_i$ ) Chef can jump into digits with indices  $i - 1$  ( $S_{i-1}$ ) and  $i + 1$  ( $S_{i+1}$ ) but he can't jump out from sequence. Or he can jump into any digit with the same value  $x$ .

Help Chef find the minimal number of jumps he needs to reach digit  $S_n$  from digit  $S_1$ .

**Input :** Input contains a single line consist of string  $S$  of length  $N$ - the sequence of digits.

**Output:** In a single line print single integer - the minimal number of jumps he needs.

- Write a program to find the closest common parent node for two given nodes in a tree from the given forest. The forest can contain one or more trees.

**Input format:** First line will contain value of  $T$  (which is the number of trees in the forest), followed by  $3T$  lines of input, Where the first line denotes the  $N$  value where  $N$  is the number of nodes of the tree. Second line will contain  $N$  number of values such that the value at index  $i$  is the parent of node having the value  $i$ ,  $-1$  is the root node. The third line denotes the two nodes  $M_1$  and  $M_2$  for which we need to find the closest common parent node.

**Output:** Depending on the number of trees output the closest common parent nodes on each line.

Tough nut to Crack? Contact Mohan Kurali and Mohammed Azam (VII CSE-A) for Clues.

Send your solutions to : [bnmitcse.shell@gmail.com](mailto:bnmitcse.shell@gmail.com) . Most efficient codes will be rewarded with Goodies.

## Editorial Team

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Ms. Zainab Noorain – III C  
Mr. S Akhil – III B  
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