Society for Promotion of Excellence in Electronics Discipline

Volume 4 Issue 1
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SPEED e- NEWSLETTER

INSIDE THIS ISSUE

Wishing you all a very Happy, Prosperous and Joyful New Year 2016

The IOT Revolution

Grab the keys and get set to unveil the new revolution just waiting round the corner! It's time to move into the future and admire the wonders that science, technology and engineering has brought around. It is well known that the Internet has fundamentally changed society and made the world a small place with connectivity at your fingertips. But the greatest transformation actually still lies ahead of us with a number of new technologies converging in a way such that the objects large and small get connected and assume their own web identity leading to substantial expansion in the internet – the IOT.

(IoT) is a buzzword today, that has the potential to impact how we live and work. The term *Internet of Things* (abbreviated *IoT)* was coined more than ten years ago by industry researchers but has caught public attention recently. It all started with the communication revolution and the internet. The Web has extended the concept of internet of Computers, network of Mobiles to Internet of Things. People today talk of smart locks, smart thermostats, smart cars and we are going to hear them even more as the year goes on. Initially these devices were embedded systems with intelligence. However recent advances in low power VLSI, embedded computing, communication hardware and the convergence of computing and communications, are making them become increasingly smarter !

These devices are all part of an emerging category called the Internet of Things, or IoT for short. At its very basic level, IoT refers to the connection of everyday objects/things to the Internet and to one another, with the objective of providing users with smarter, more efficient experiences. The new rule for IOT objects can be simply stated as, "Anything that can be connected will be connected." The objects span a wide range of categories, from wearable to light bulbs to home appliances (like the coffee maker, washing machine, air conditioner and even your car) — really, anything.

What will be the use of so many devices communicating with each other? Will that make life simpler and more comfortable? For example you are on your way to the office and you are informed of the best route to take as well as the as well as your smart car sends a message to the office, if it is caught up in the traffic. This could be a boon, considering the traffic situation in most of the cities and on the highways as well. What if the Coffee pot is switched on so that you get a hot cup of coffee when you reach home? The fridge would be intelligent to reorder food items as per requirement. The wearable device you used in the workplace could monitor and record your

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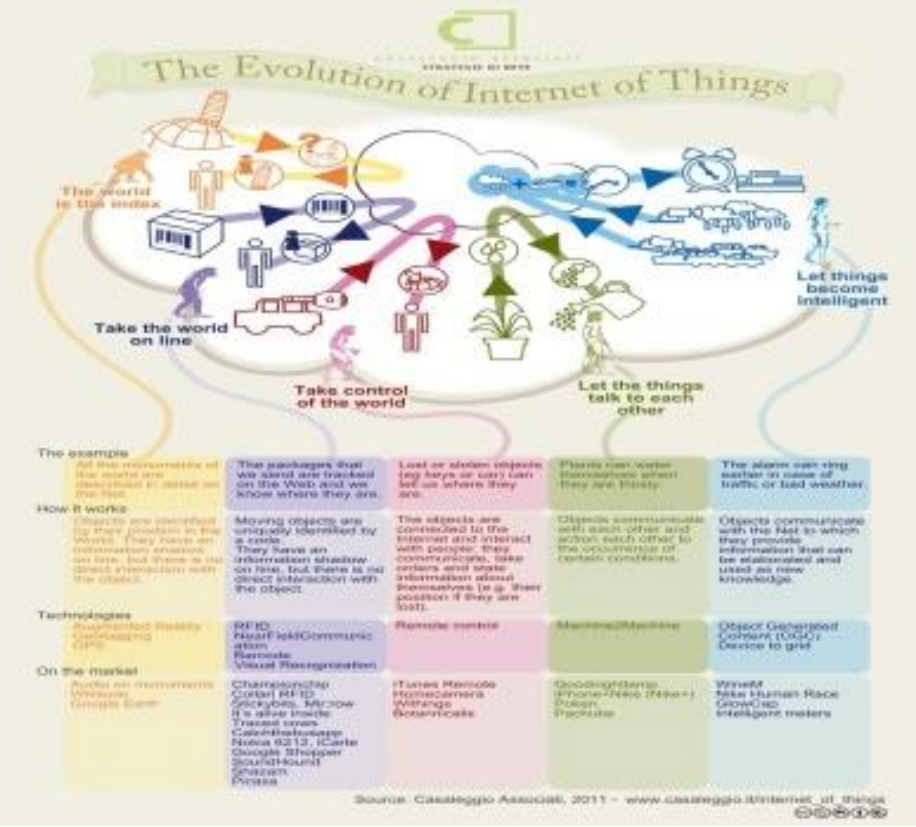

activity, analyze the data to find out when and where you were most active and productive. smart things offer various sensors and smart-home kits that can monitor stuff like who is coming in and out of your house and can alert you to potential water leaks, to give homeowners peace of mind. Thus information will become real-time based, person specific and localized, delivered to your mobile phone for example, and packaged as services with standard APIs through which others will be able to add services. IoT is also being applied to the medical and health-care industry, to smart grids in energy distribution and to transportation systems.

Till date we were used to man to machine communication but IOT is on the verge of enabling things to communicate with one another without human intervention.

IoT allows for virtually endless opportunities and connections to take place. As more and more things are connected together a whole lot of data becomes available which could be used for making smarter decisions. The impact of this technology cannot be fully understood today but it certainly opens the door to a lot of opportunities along with many challenges. The major challenge of the IoT is less in of information will be available, without the user's knowledge. Strategies and protocols will have to be developed to ensure security of the information. The IoT also opens up issue related to privacy and data sharing.

The real time information regarding ones physical location or updates about various parameters like Blood sugar levels, Blood pressure may be accessible and could be misused.

Another challenge is processing and analyzing the massive amounts data that all of these devices are going to produce. It opens up opportunity for research on how to store, track, analyze and make sense of the vast amounts of data that will be generated using data mining techniques. With a number of companies working on different products, technologies and platforms, making all these devices communicate with each other is no small feat. An open standard to allow interoperability of devices will have to be designed so that the devices and seamlessly talk to each other. Light weight protocols for devices to work together and communicate seamlessly with each other, unique identifiers for each of the devices will have to be developed. Issues of cyber security and privacy will also have to be taken into account. IOT has a tremendous potential for development and research on various aspects.

It is clear that Internet of things is a technological innovation on the threshold of a great breakthrough ... IoT includes many objects (preferably smart objects) connected and communicating effectively amongst themselves as well as with people on the Internet to help solve the problems of the world!

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INNOVATIONS DRIVE THE SOCIETY

(Parimal Kawatal, parimal.kowtal@gmail.com)

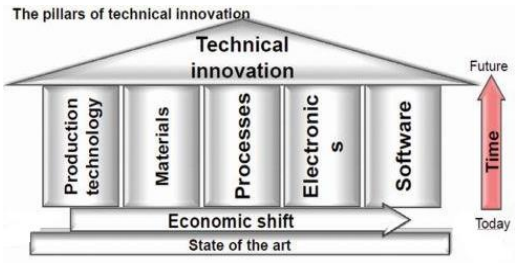
INNOVATIONS DRIVE THE SOCIETY

The 21st century, in which we are living, is experiencing technological innovation driven society. It may be recalled that in 1972 Black and White Television was introduced in India. A decade later Color TV entered the Indian market. Today, within a period of 30 years (Generation Gap), we note that the technological innovations have not only revolutionized the size and appearance of the TV's but also the entertainment quality. The bulky, monotonous entertainer, the then IDIOT BOX had a prestigious position, a North Star, in the living room has now become just a plug and play device 24x7 which can be shunted geographically. The analog technology gave way to digital television based on set top boxes and CRT picture tubes were replaced by LCD/LED and Plasma displays, all adding elegance to the IDIOT BOX.

The telephone was a luxury of wired communication medium until 1990. The open policy adopted by the then government of India, revolutionized the communication sector. The electro-mechanical exchanges were upgraded to electronic drastically reducing the waiting period for a house-hold connection from a couple of years to a weeks and later on demand, immediate installation and commissioning. Further with the penetration of mobile, the age old national service provider presently is struggling to maintain the reducing number of landline subscribers. A single house hold having a wired connection amongst a family of 4 members now has at least 4 mobile handsets and free group communication facility.

The impact of innovation is to such an extent that the photo copying process invented by ZEROX Corporation is very well identified by the word XEROX, in vogue, it had to be incorporated in the dictionary in spite of the fact that the company has been closed down.

The technological innovations have not only down sized communication, storage, computing and entertaining applications but drawn a very thin line between the relevant devices. In fact, the intelligence embedded is compared and competing with human brain.



This 3D effect of technological innovation has caused a great impact on socioeconomics not only locally but globally leading to mergers and acquisitions which has not only wiped out major brands along-with their ancillaries but also support services leading to obsolescence and generating waste. The E-waste generated is a cause of major concern globally. But ideas and innovations have also perpetuated leading to developments of systems for handling waste systematically. Hence, the novelty or obviousness of the innovation in any form or application is closely guarded and protected by the innovator under the various elements of Intellectual Property Rights. A concept or an idea experimented can lead to an INNOVATION which can cause a massive impact and AFFECT THE SOCIETY.

HAPPY NEW YEAR

SPEED ACTIVITY : November 2015

Workshop on Simulation And Emulation Of Self Organizing Networks Using NS2/NS3

Interest in Wireless Sensor Network among researchers and academicians has been long prevailing. Different aspects of Wireless Sensor Networks, including hardware, software and applications caught the interest of the researchers in the department of electronic science, Savitribai Phule Pune University (SPPU) about a decade ago. Realizing the need for understanding various aspects of WSN such as planning, designing and analysis of the networks, the idea of study of simulators came forward. There are many simulation tools such as NS2, OPNET, OMNET etc. Out of these, NS2 is open source tool. This is a ready platform for academicians and industrial experts to coming together, sharing experiences with each other for developing a knowledge and skill based wired and wireless sensor network applications. Wired and wireless networking are the current needs of technology.

Considering wide range of applications and the scope for research in this area, Department of Electronic Science in association with SPEED, organized a workshop on simulation using network simulator NS2. The workshop was technically sponsored by IEEE SSCS India Chapter. The workshop was conducted in the Department of Electronic Science, SPPU on 1st to 3rd November, 2015.

The three days workshop was inaugurated on 1st November at the hands of Dr. A. D. Shaligram, Chairman, SPEED. Dr. P.B. Buchade, Secretary, SPEED also graced the inaugural function. Dr. Mrs. Neha Deshpande, Coordinator of the workshop and Dr. Ajay Kumar organized the event. The resource persons, Mr. Jude Joseph and Mr. V. C. Dinesh were faculty of Kongu Engineering College, Erode, Tamilnadu. The workshop was attended by 19 registered participants, faculty members or research students from Various Science and Engineering Colleges and 10 students from M. Sc. Part II from SPPU. On day one introduction to NS2 architecture, wireless scenario creation and Mobility Model (Hands on), Traffic Model (Hands on), Wireless Trace Analysis were discussed and hands-on experiments were conducted.

On the second day participants learnt routing protocols and practically implemented VANET in NS-2 (Hands on), VanetMobisim, MOVE protocols. Then, Graph Generation (Hands on), AWK Script, and GREP Command were discussed. .

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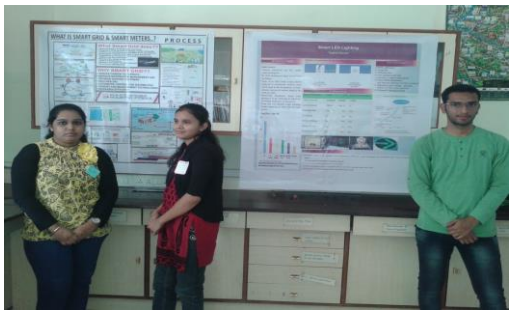
Day three started with the introduction the NS3. Architecture of NS3 and different wireless scenarios were explained. The day concluded with valedictory function.

The participants appreciated the contents and delivery of the lectures and suggested that a workshop for duration of 8 days should be conducted.

NEWS and EVENTS at COLLEGES

An intercollegiate competition -TEKLOGICA
St. Mira's College For Girls

Like every year St. Mira's college for girls organized "TEKLOGICA" this year also on 17-18 Dec. 2015. On the first day of the event there was poster competition in all departments, C programming contest and Mathematics aptitude test. Maths aptitude test showed a great response. Second day started with zest of paper presentation, project competition and fun games. The topics for poster presentation in electronics was, Bio - Battery, Smart grid and Smart meters, 3D printing. The topics for paper presentation in electronics was, Ray- Kurzewiel predication for future, Energy harvesting, automotive electronics.



"Let us work towards Excellence in Electronics for the betterment of society"

- Deepa Ramane

More About SPEED

Dear ALL

What are you waiting for?

GET CONNECTED TO SPEED

Share your talent in Electronics with others by submitting advance development and research, projects, new technologies in Electronics field to SPEED on

Speednewsletters@gmail.com

Website :

www.excellentspeed.org

SPEED MEMBERSHIP DETAILS :

Membership Type	Fees
Patron Members	Rs. 10,000/-
Life Members	Rs. 2,000/-
Ordinary Members	Rs. 500/-(per year)
Student	Rs. 200/-(per year)

* Members will be eligible for privileges at events organized by SPEED

* Form is attached on last page

SPEED UPCOMING EVENT

VIA_NE_Mation!15" Competition for the year 2015-16

The world of 3D is rapidly expanding, and career opportunities exist in a wide range of fields – including architecture, games, product and industrial design, civil engineering, and short video films, films and television animation. This competition allows students to step into a real world production environment where creative output must be accomplished within specific time frames, resources and design constraints. The students have the opportunity to interface with and get feedback from high-profile judges with successful careers in the field.

The ViA-The hardware and software of choice (but not limited to) for the competition are:

1. Computers
2. Digital Camera
3. WACOM digital tablet
4. Power Point
5. Flash
6. AniMaker Etc.

Please inform the students about this competition. It will be conducted in Feb, 2016.

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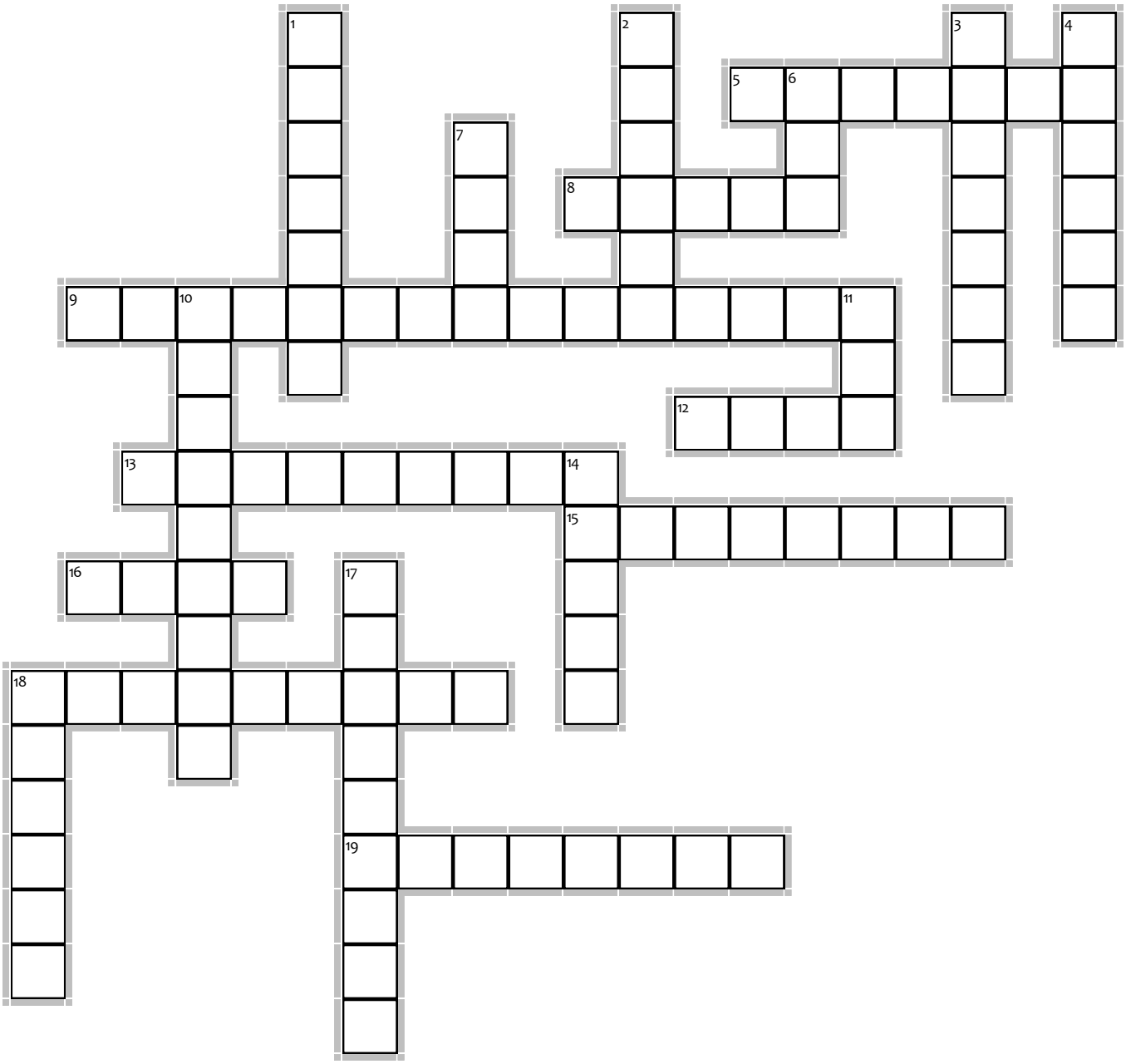

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Across

5. "A JK Flip-flop is presently in the SET state and must remain SET on the next clock pulse. Then J must be X and K must be 1" - This statement is..... (7)
8. " A RS Flip-flop is presently in a SET state and must go to the RESET state on the next clock pulse. S must be 1 and R must be 0" - This statement is..... (5)
9. ..... tables define logical properties of a Flip-flop. (15)
12. The ..... state for the T Flip-flop is the same as the present state Q if T = 0 and complemented if T = 1 (4)
13. Characteristics Equation of the circuit are used to describe its ..... in algebraic form. (9)
15. Characteristics ..... of the circuit are used to describe its behaviour in algebraic form. (8)
16. A RS Flip-flop is presently in a SET state and must go to the RESET state on the next clock pulse. S input must be ..... and R must be 1. (4)
18. For a ....., when the present state Q = 0 goes to the next state Q = 1, the required D input is D = 1. (9)
19. Characteristics tables define logical properties of a..... (8)

Down

1. Characteristics tables define ..... properties of a Flip-flop. (7)
2. For a D Flip-flop, the next state is .....equal to the D input. (6)
3. The next state for the T Flip-flop is the same as the ..... state Q if T = 0 and complemented if T = 1 (7)
4. Characteristics tables..... logical properties of a Flip-flop. (6)
6. A RS Flip-flop is presently in a SET state and must go to the RESET state on the next clock pulse. S input must be 0 and R must be..... (3)
7. The next state for the T Flip-flop is the..... as the present state Q if T = 0 and complemented if T = 1 (4)
10. Characteristics Equation of the circuit are used to describe its behaviour in..... form. (9)
11. A JK Flip-flop is presently in the SET state and must remain ..... on the next clock pulse. Then J must be = 0 and K must also be = 0. (3)
14. A JK Flip-flop is presently in the..... state and must go to the SET state on the next clock pulse. J must be 1 and K must be X(Don't care) (5)
17. The next state for the.....is the same as the present state Q if T = 0 and complemented if T = 1 (9)
18. For a D Flip-flop, the next state is always equal to the..... (6)

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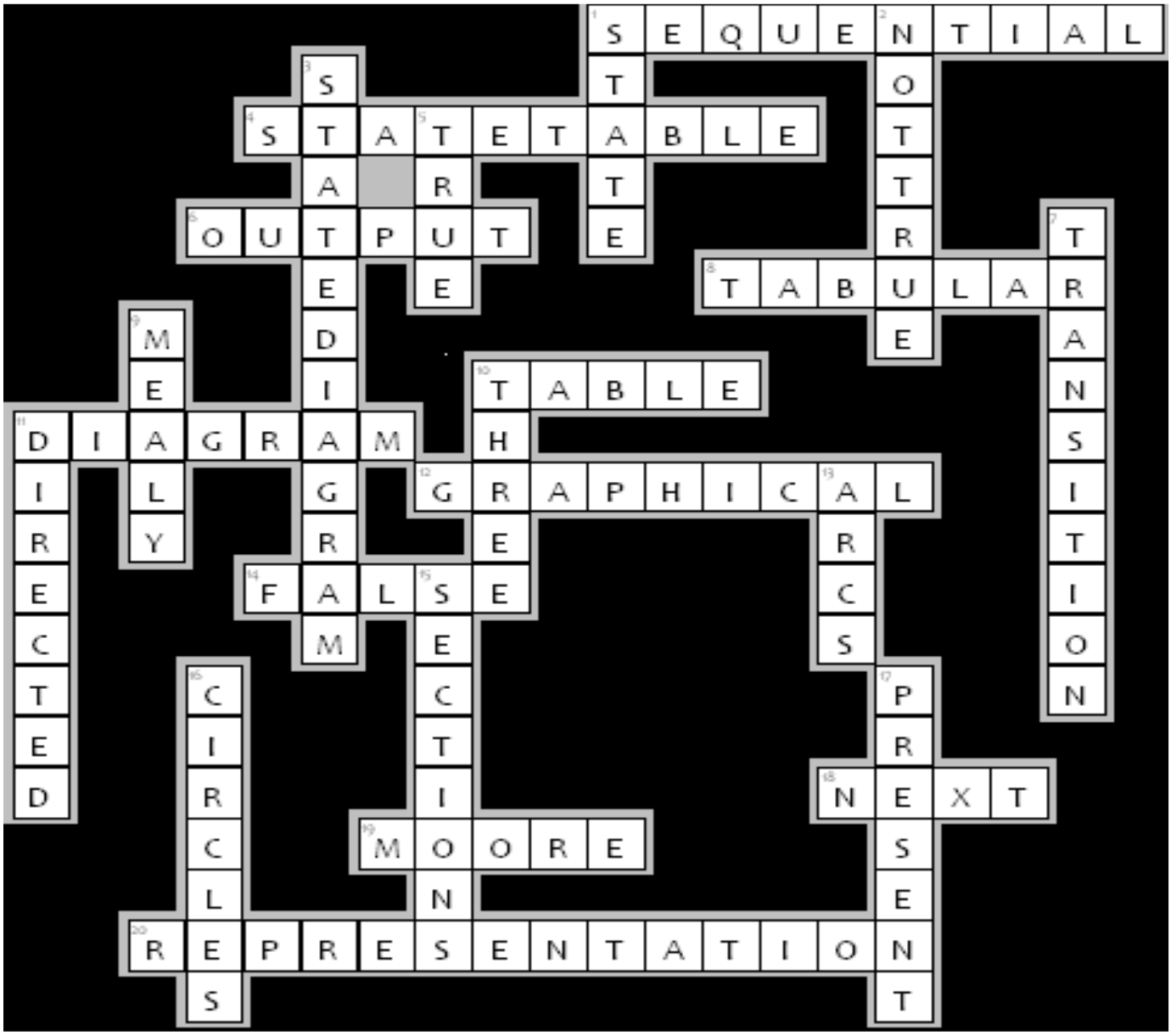
Answer Key For Puzzle

(Vol 3, issue3)



PUZZLES By - Hemant Yashwant Satpute

Society for Promotion of Excellence in Electronics Discipline

Membership Form

No. :

1. Name of the Applicant : _____
(Surname) (Name) (Middle Name)

2. College / Institute / Organization : _____

3. Designation : Student ☐ Teacher ☐ Professional ☐ Other ☐

4. Date of Birth : _____ Age : _____ Years.

5. Permanent Postal Address : _____

_____

6. Telephone Number : _____

7. e-mail address : _____

8. Hobbies : _____

9. Academic Record :

Name of the last Exam. Passed	Year of Passing	Percentage marks	Special Achievements	Other

10. Membership Type : Patron ☐ Life Member ☐ Ordinary Members ☐ Student ☐

11. Fees Paid : ₹

12. Membership Valid : From / / 20 to / / 20

Date : _____ Signature of Applicant

Membership No.:

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Membership No.:

RECEIPT

Received with thanks from _____

₹ _____ on account of the Membership of SPEED organization.

Membership Valid : From / / 20 to / / 20

Date : _____ Signature of Receiver