



CORE DUMP

The Magazine of The Coder

[SECOND EDITION]

CREATED BY PARTH SHIRALKAR

COMMITTEE:

PARTH SHIRALKAR (CHIEF EDITOR)

PRATIK

FACULTY CO-ORDINATOR:

PROF. SONALI LUNAWAT

LOGO DESIGN BY:

SIDDHARTH BHANDARKAR

EDITION 2, 2016

CORE DUMP 2.0

THE MAGAZINE OF THE CODER

INDEX

MESSAGE FROM THE PRINCIPAL.....	3
MORE ABOUT US	4
MESSAGE FROM THE H.O.D.	5
SOME OF THE EVENTS OF SEM TWO	6
NETWORK ATTACK.....	8
LI-FI TECHNOLOGY	10
HOW TO BE A GOOD PROGRAMMER?.....	13

MESSAGE FROM THE PRINCIPAL



India today stands as the world's third largest economic power, its economy growing at around 8%, Indian Entrepreneurs emerging as global entrepreneurs, Indians figuring increasingly in the list of the richest persons in the world, India's knowledge power making India as a preferred destination for out sourcing knowledge services from India, India fast emerging as a destination for world class R and D Centers and Innovation hub. Young friends, these are the signs of even a brighter tomorrow for India and its people.

You must, therefore, be highly excited to make your own contributions to the growth and development of India of your dream. At PCCOER, we have a tradition of nurturing leadership qualities alongside developing capabilities to challenge the state of art technologies. This we do by inspiring you to involve into a whole lot of innovative projects being pursued by the inspired student community under the guidance of their faculty mentors.

Empower yourself with the Wings of Knowledge and Power of Innovation and with this Empowerment imbibe an attitude akin to a positive and proactive thinking, caring concern for men and nature and above all, an eagerness to serve and excel in your chosen domain of activity throughout your lifetime.

I wish you a very happy and academically highly rewarding student life in PCCOER and hope that you and your good deeds will enhance the pride and prestige of this institution.

[INDEX]

MORE ABOUT US

Our Vision

To serve the society, industry & all the stake holders through value added Quality Education.

Our Mission

To serve the needs of society at large by establishing state-of –the-art Engineering, Management & Research Institute & impart attitude, knowledge & skills through Quality Education to develop individual & teams with ability to think & analyze right values & self-reliance.

Our Objective

To create aesthetically sensitive, socially committed & technologically competent Engineering & Management Professionals.

Quality Policy

We at PCCOER are committed to impart Value Added Quality Education to satisfy the needs and expectations of the Students and other Stakeholders. We shall achieve this by establishing and strengthening State-of-the-art Engineering and Management Institute through continual improvement in effective implementation of Quality Management System.

[INDEX]

MESSAGE FROM THE H.O.D.,



Mrs. Bhavini Shah

The Department of Computer Engineering is one of the four pillars of strength of the Pimpri Chinchwad College Of Engineering and Research.

Our Goal is the overall growth and development of the student as a professional as well as a good human being, to motivate the students and for this purpose, the department organizes regular workshops.

We believe in the notion of prioritizing tasks, and give utmost importance to academics, our students are highly skilled, and are wonderfully receptive. We find teaching such students enjoyable.

The department provides a platform for the students to achieve their career goals. Our students attend camps and seminars in various colleges, and proudly bring back awards.

Not only has this, but the Department of Computer Engineering formed a team of like-minded students, also known as C-Cube (Computer Cosmos Consortium).

As reflected by our academic programs, student and faculty activities, our department has made a strong and continuing commitment to engage with our students, our colleagues in other academic disciplines, and the expanding circles of our local, regional and international communities.

[INDEX]

SOME OF THE EVENTS CARRIED OUT BY THE DEPARTMENT OF COMPUTER ENGINEERING:

1. **PCKON 2016** :A workshop on PC Assembly,TroubleShooting,OSInstalation for the Students of 8th,9th and 10 th Standard organised on 19 and 20 Feb 2016.



2. A one Day SPPU Sponsored FDP ON “IOT AND CLOUD CONVERGENCE” on 16 Jan 2016.



[INDEX]

NETWORK ATTACK

Put together by Rutuja Abdagire, S.E. COMP

A sudden attempt to destroy, steal or gain unauthorized access to or make unauthorized use of an asset.

Denial Of Service Attacks

A Denial Of Service (DOS) attacks attempt to make a resource, such as a web server unavailable to users. A common approach is to overload the resource with illegitimate requests for service. This happens because the resource cannot process the flood of requests and either slows or crashes.

Browser Attacks

Browsers based attacks target end users who are browsing the internet. These types of attacks encourage the users to download malware as a fake software update or application. To avoid this kind of attacks browser is regularly updated; along with all the browser related services such as java and flash.

Phishing

Phishing is a type of deception designed to steal your valuable personal data, such as credit card numbers, passwords, account data, or other information. Some artist might send millions of fraudulent email messages that appears to come web sites you trust, like your bank or credit card company, and request that you provide personal information.

Back Door Attacks

Are essentially tunnels that lead into a computer which must be manually opened by an attacker. In this attacker sends a program on a channel that the backdoor is listening on.

Dictionary Attacks

This type of attacks uses a dictionary of common words to find out the password of a user. It can also use common words in either upper or lower case to find a password. There are many programs available on the internet to automate and execute dictionary attacks.

Botnet Attacks

Referred as “Zombies” infected with malware that allows an attacker to control them. Botnet – Group of hijacked computers that are controlled remotely by one or more malicious persons. Botnet owners are able to control the machines in their botnets.

Smurf Attacks

Source IP address of a broadcast ping is forged. Large number of machines respond back to victim, overloading it. Slow down the victims computer to the point where it becomes impossible to work.

TCP Attack

TCP connections have associated state. Starting sequence numbers, port numbers. If an attacker learns the associated TCP state for the connection, then the connection can be hijacked! Attacker can insert malicious data into the TCP stream, and the recipient will believe it came from the original source

Prevention for network attacks.

1. Provide source authentication.
2. Encrypts data before transport.
3. Firewall- To protect the data and to keep hackers out firewall technique is used. All the traffics to and from forced to flow through the electronic drawbridge called as “Firewall”.

[INDEX]

LI-FI TECHNOLOGY

Put together by Shubham Karmadkar, S.E. COMP

Now-a-days, internet has become a major demand for people are in search of Wi-Fi hotspots.

Li-fi or Light Fidelity was invented by professor Harald Hass of university of Edinburgh. This is the latest technology in present day communication system which makes the use of LEDs, Light Emitting Diodes that helps in the transmission of data much faster and flexible than the data that can be transmitted through Wi-Fi. The system uses visible light communication (VLC), between 400 and 800 terahertz (THz) to transmit messages in binary code, but operates at speeds that are too high to be detected by the naked eye. It works on the frequencies generated by an LED bulb.

›*Li-Fi has hit speeds of more than 200 Gbps in the lab.*

How it works:

Li-Fi and Wi-Fi are quite similar as both transmit data electromagnetically. However, Wi-Fi uses radio waves while Li-Fi runs on visible light.

As we now know, Li-Fi is a Visible Light Communications (VLC) system. This means that it accommodates a photo-detector to receive light signals and a signal processing element to convert the data into 'stream-able' content.

An LED lightbulb is a semi-conductor light source meaning that the constant current of electricity supplied to an LED lightbulb can be dipped and dimmed, up and down at extremely high speeds, without being visible to the human eye.

Data is fed into an LED light bulb (with signal processing technology), it then sends data (embedded in its beam) at rapid speeds to the photo-detector (photodiode).

The tiny changes in the rapid dimming of LED bulbs are then converted by the 'receiver' into electrical signal.

The signal is then converted back into a binary data stream that we would recognize as web, video and audio applications that run on internet enabled devices.

As professor Harald Haas said, “All we need to do is fit a small microchip to every potential illumination device and this would then combine two basic functionalities: illumination and wireless data transmission. In the future we will not only have 14 billion light bulbs, we may have 14 billion Li-Fi's deployed worldwide for a cleaner, greener, and even brighter future.”

COMPARISON BETWEEN LIFI AND WIFI:

While some may think that Li-Fi with its 224 gigabits per second leaves Wi-Fi in the dust, Li-Fi's exclusive use of visible light could halt a mass uptake.

Li-Fi signals cannot pass through walls, so in order to enjoy full connectivity, capable LED bulbs will need to be placed throughout the home. Not to mention, Li-Fi requires the light bulb is on at all times to provide connectivity, meaning that the lights will need to be on during the day.

What's more, where there is a lack of light bulbs, there is a lack of Li-Fi internet so Li-Fi does take a hit when it comes to public Wi-Fi networks.

As recently announced, an extension of standard Wi-Fi is coming and it's called Wi-Fi HaLow.

This new project claims to double the range of connectivity while using less power. Due to this, Wi-Fi HaLow is reportedly perfect for battery powered devices such as smartwatches, smartphones and lends itself to Internet of Things devices such as sensors and smart applications.

APPLICATION:

- ▶ Airlines: Li-Fi can be used to reduce weight and cabling and add flexibility to seating layouts in aircraft passenger cabins where LED lights are already deployed.

- ▶ Underwater Communications: Due to strong signal absorption in water, RF use is impractical. Acoustic waves have extremely low bandwidth and disturb marine life. Li-Fi provides a solution for short-range communications.

ADVANTAGES:

- ▶ Li-Fi can solve problems related to the insufficiency of radio frequency bandwidth because this technology uses Visible light spectrum that has still not been greatly utilized.
- ▶ High data transmission rates of up to 10Gbps can be achieved.
- ▶ Since light cannot penetrate walls, it provides privacy and security that Wi-Fi cannot.
- ▶ Li-Fi has low implementation and maintenance costs.

DISADVANTAGES:

- ▶ Light can't pass through objects.
- ▶ A major challenge facing Li-Fi is how the receiving device will transmit back to transmitter.
- ▶ High installation cost of the VLC systems.

[INDEX]

HOW CAN I BE A GOOD PROGRAMMER?

Put together by Mrs. Sonali Lunawat, Assistant Professor,
Department of Computer Engineering

Step 1: Identify and analyze the problem

Analysis is a process of finding of the facts, finding out what you know about the problem. The problem solving is programmer's activity consists of set of question checklist what problem is and what problem isn't. Analysis is done by surveying the problem, finding right solution which will prove to be cost and time efficient. During this process communicate with right people to get the feasibility of the problem.

A good programmer is someone who always looks both ways before crossing a one-way street.

~Doug Linder

Step 2: Brainstorm Solution

After analysis you will get more solution from which you have to find efficient solution. While doing you should have impressive technical skills that will come by reading and reading. Rule for Brainstorm

1. One solution at a time
2. be calm

3. Put off wild ideas

4. Read more Read

Think up Think down Think low and Think high.

Oh! The things you can think up if only you try

--Dr. Seuss

Step 3: Spend more time in analyzing the problem

Spend more time in understanding and analyzing the problem and designing solutions for it. You will find the rest of the things quite easily. Designing not always mean using algorithm and flowcharts or any tools, it can be as simple as looking at sky and thinking solution in your mind. Those who have habits of pressing keyboard (for coding) the moment get the problem, usually ends with something different than the requirement.

If you cannot grow the overall structure of a program while taking a shower, you are not ready to code it.

~Richard Pattis

Step 4: Choose a Language to learn

Too many beginning programmers try and jump into everything all at once and don't have the patience to learn a single programming language before moving forward. When starting out, many people struck with which language need to be used and which should be learned. C or C++? Java or Python?? Here's the solution if one knows a particular language well, then it is not difficult to transition to a new one. If you want to become a developer in future, fundamentals of programming language must be clear .Once you have a solid foundation, you can easily transition

to new languages.

Step 5: Learn and Help Others

Too many beginning programmers try and jump into everything all at once and don't have the patience to learn a single programming language before moving forward. Most of us have a common tendency of turning our heads towards groups only when we need help. Within a team, help others to solve their problems. Believe me, understanding others problem and investigating on that and by providing solutions; will leave you much more learned than before.

Step 6: Practice ...and Practice

As in every aspect of life, the formula of KISS (Keep it simple and short) works in programming as well. Write more and more logical code and avoid complexity. Sometimes people do write complex code just to prove their capability to write such codes. My experience says that simple but logical codes always works well, resulting in fewer issues.

Good code is its own best documentation. As you're about to add a comment, ask yourself, "How can I improve the code so that this comment isn't needed?" ~Steve McConnell

Step 7: Be the first to analyze and review your code

Although a bit difficult, but try to break your own code before others can and with the time you will learn to write bug free code. Always do close review of your code. Also never hesitate to take others view on your code. Working with good

programmers and taking their feedbacks will surely help you become a good programmer.

Step 8: Learn from others' code

Reading and referring reliable and known open source code or your senior's code can also help you in making your programming skills better.

Step 9: Don't compare yourself with others

Your comparison with others will only result in evolution of negative feelings and unhealthy competition. Everyone has got his or her strengths and weaknesses. It is more important that we understand ours and work on it. I have seen many times fundamentally strong programmer also makes silly mistakes. So analyze yourself and list down your areas of improvement and work on it. Programming is Fun!!!

Any fool can write code that a computer can understand. Good programmers write code that humans can understand.

~Martin Fowler

Step 10: Keep going

Just don't let it go to your head; you'll always have something to learn. A good shortcut is to try and always surround yourself with developers better than you are.

[INDEX]