ON BOSCO INSTITUTE OF TECHNOLOGY

Kumbalagodu, Mysore Road, Bengaluru-560074

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www.donboscobangalore.education

Department of Electronics and Communication Engineering

Three Day Workshop
on

"15ECL68 : COMPUTER NETWORK LAB"

(Hands-on with NS-2.35 Tool)

(VTU - 6th Semester CBCS ECE)

8th to 10th, January 2018

Registration Form

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Signature of the Participant

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Seal and Signature of the Sponsoring Authority

CHIEF PATRON

Sri. B. Bylappa

President, WET, Bengaluru.

PATRONS

Sri. P. B. Manjunath

Vice President, WET, Bengaluru.

Sri. Raghav Bylappa

Secretary, WET, Bengaluru.

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Principal, DBIT, Bengaluru.

CHIEF CONVENER

Dr. Krishna R

Group Director, DBGI, Bengaluru.

CONVENER

Dr. Rengaprabhu P

Professor & Head , Dept. of ECE, DBIT

COORDINATORS

Mr. Siddu Biradar, Asst. Prof. Dept. of ECE, DBIT

Mr. Sangam H, Asst. Prof. Dept. of ECE, DBIT

ORGANIZING COMMITTEE

Mr. Jai Prakash Prasad , Assoc. Prof. Dept. of ECE, DBIT

Mrs. Bhagya P, Assoc. Prof., Dept. of ECE, DBIT

Mrs. Roopa B S, Assoc. Prof., Dept. of ECE, DBIT

Mrs. Sowmya K S, Assoc. Prof. Dept. of ECE, DBIT

Mr. Chandrashekar N S, Assoc. Prof. Dept. of ECE, DBIT

Mrs. Babitha S, Assoc. Prof. Dept. of ECE, DBIT

Mr. Suresha H S, Assoc. Prof. Dept. of ECE, DBIT

Mr. R C Patil, Assoc. Prof. Dept. of ECE, DBIT

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Organized by:

Department of Electronics and Communication Engineering

(Accredited by NBA, New Delhi)

About WET

The Wayanamac Education Trust (WET) was founded with a realization that Education is the foundation for a healthy and vibrant society. This initiative has now burgeoned into a chain of Educational Institutions ranging from Pre-University to Professional Colleges under its umbrella.

About DBIT

Don Bosco Institute of Technology was established in the year 2001. The Campus is situated in a sprawling 36 Acres of land adjacent to Bangalore - Mysore State Highway and is 18 Km from the heart of Bengaluru city. The Institution offers state of the art technical and management education.

The following programs are offered for Bachelor Degree:
1. Computer Science & Engineering
2. Information Science & Engineering
3. Mechanical Engineering
4. Electronics Communication & Engineering
5. Electrical & Electronics Engineering
6. Telecommunication & Engineering
7. Civil Engineering.

The following programs are offered for M. Tech. Degree:
1. Digital Electronics
2. Computer Science & Engineering
3. Design Engineering
4. Power System Engineering
5. Master in Business Administration.

Departments of, Electronics and Communication Engineering, Electrical & Electronics Engineering, Information Science & Engineering and Mechanical Engineering are NBA accredited.

About Department

Department of Electronics and Communication Engineering (ECE) was established during the inception of the institute in 2001. The department runs undergraduate program with an intake of 180 seats and one post graduate programs with an intake of 24 seats each. The programs are approved by AICTE and affiliated to VTU, Belgaum. The department is focused towards growth and technology trends with well-furnished laboratories. The Department has highly efficient and qualified faculty with industrial experience.

About the Workshop

A network simulator is a software program that imitates the working of a computer network. In simulators, the computer network is typically modeled with devices, traffic etc and the performance is analyzed. Typically, users can then customize the simulator to fulfill their specific analysis needs. Simulators typically come with support for the most popular protocols in use today, such as WLAN, Wi-Max, UDP, and TCP. Examples of notable network simulation software are NS2, NS3, OPNET, ESTINet, OMNET etc.

In this workshop, the aim is to familiarize the participants with the state of the art simulation tools. The workshop will start from the basics of network simulators and major components of NS2. Then the introduction to writing, building and running a simple point-to-point network script will be given. After that the tutorial moves toward some more complex topologies including wired and wireless networks. Tracing, debugging and result analysis is also part of the tutorial. The new patch/protocol development in all mentioned tools will be studied.

Topics of the workshop

Day 1

Hands-On: Laboratory Experiments using NS2

1. Implement a point to point network with four nodes and duplex links between them. Analyze the network performance by setting the queue size and varying the bandwidth.
2. Implement a four node point to point network with links n0-n2, n1-n2 and n2-n3. Apply TCP agent between n0-n3 and UDP between n1-n3. Apply relevant applications over TCP and UDP agents changing the parameter and determine the number of packets sent by TCP/UDP.
3. Implement Ethernet LAN using n (6-10) nodes. Compare the throughput by changing the error rate and data rate.
4. Implement Ethernet LAN using n nodes and assign multiple traffic to the nodes and obtain congestion window for different sources/ destinations.
5. Implement ESS with transmission nodes in Wireless LAN and obtain the performance parameters.
6. Implementation of Link state routing algorithm.

Day 2

Hands-On: Laboratory Experiments using C/C++ Program

1. Write a program for a HLDC frame to perform the following
   ii) Character stuffing.
2. Write a program for distance vector algorithm to find suitable transmission.
3. Implement Dijkstra's algorithm to compute the shortest routing
4. For the given data, use CRC-CCITT polynomial to obtain Verify the program for the cases,i). Without error ii). With error.
5. Implementation of Stop and Wait Protocol and Sliding Window
6. Write a program for congestion control using leaky bucket algorithm

Day 3

Hands-On: Wireless Network Simulation using NS2 Tool

1. Working NS2 in Windows/Linux OS.
2. NS2 Compilation with WSN and MANETs.
3. Exploring Routing Protocols, Security and Energy Model MANETs.
4. Trace analysis using AWK Scripts, JTrcezer and NSWireless
5. Implementation of research papers on MANETs/WSN using NS2
6. Scope & Research avenues in NS2 .
7. Effective way of writing research paper and publishing in Conference/Journals.

Resource Persons

Mr. Siddu Biradar, Asst. Prof. Dept. of ECE, DBIT
Mr. Sangam H, Asst. Prof. Dept. of ECE, DBIT

Important Dates

Last Date for Registration: 5th January 2018
Registration Details:

Teaching Faculty/Research Scholars : Rs. 500/-
PG Students : Rs. 400/-

DD to be drawn in favour of Principal, DBIT payable at Bangalore. Confirmation your participation by mailing the registration form by forwarding authority and scanned copy of DD to ece@dbit.co.

Who Can Register?

The workshop is open to faculty, Research Scholars, PG students Engineers in the branches of engineering such as Computer Information Science, Electronics, Telecommunication, and other of Engineering.

For More Details Contact

The Coordinator
Department of ECE, DBIT
Mobile: 9880337267, 9742499894
Email:ece@dbit.co.in

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AVAILABLE WITH
CONFIRMA

DON BOSCO INSTITUTE OF TECHNOLOGY, BANGALORE-74

Department of Electronics and Communication Engineering
(Accredited by NBA, New Delhi))

Date: 06/12/17

REPORT ON WORKSHOP

DEPARTMENT: Electronics and Communication Engineering.

COLLEGE: Don Bosco Institute of Technology, Banglore.

NAME OF THE EVENT: Workshop on 15ECL68-COMPUTER NETWORK LAB.

DATE: 4/01/18-6/01/18.

VENUE: VLSI LAB.

DURATION OF WORKSHOP: 03 Days.

TECHNICAL RESOURCE PERSON /COORDINATOR:

1. Mr. Siddu Biradar, Asst. Prof. ECE Dept., DBIT.
2. Mr. Sangam H, Asst. Prof. ECE Dept., DBIT.
3. Mr. Shreenivas Gudi, Asst. Prof. ECE Dept., DBIT.

ABOUT THE WORKSHOP:

A network simulator is a software program that imitates the working of a computer network. In simulators, the computer network is typically modeled with devices, traffic etc and the performance is analyzed. Typically, users can then customize the simulator to fulfill their specific analysis needs. Simulators typically come with support for the most popular protocols in use today, such as WLAN, Wi-Max, UDP, and TCP. Examples of notable network simulation software are NS2, NS3, OPNET, OMNET etc.

In this workshop, the aim is to familiarize the participants with the state of the art simulation tools. The workshop will start from the basics of network simulators and major components of NS2, NS3. Then the introduction to writing, building and running a simple point-to-point

network script will be given. After that the tutorial moves toward some more complex topologies including wired and wireless networks. Tracing, debugging and result analysis is also part of the tutorial.

CONTENT OF WORKSHOP:

1. Introduction to network simulation
2. Installation and configuration of NS-2,
3. NS-2 wired and wireless fundamentals
4. TCL Programming, Topology Creation,
5. How to do performance analysis using NS- 2
6. Scope & Research avenues in NS-2
7. Implementation of Research Papers using NS-2

EXPECTED OUTCOME:

1. To get the in-depth knowledge in Computer Network Laboratory.
2. To expose the faculty to the depth of coverage as per revised VTU syllabus.
3. To explain the use of NS-2.35 software in evaluating the wired and wireless network.
4. Test the quality and reliability of algorithms for Ad hoc wireless communication and Sensor Networks.
5. Compare different design strategies to choose the best protocol in different wireless networks.
6. Design and analysis the security and energy model in different wireless networks.
7. Accurate and scalable simulation brings down cost and time of development, thus accelerating pace of research in that area.
8. Effective way of writing the research paper and publishing in International Conference/Journals.

DAY 1:

PART-A: Simulation experiments using NS2 (Hand-on)

1. Implement a point to pint network with four nodes and duplex links between them. Analyze the network performance by setting the queue size and varying the bandwidth.

2. Implement a four node point to point network with links n0-n2, n1-n2 and n2-n3. Apply TCP agent between n0-n3 and UDP between n1-n3. Apply relevant applications over TCP and UDP agents changing the parameter and determine the number of packets sent by TCP/UDP.

3. Implement Ethernet LAN using n (6-10) nodes. Compare the throughput by changing the error rate and data rate.

4. Implement Ethernet LAN using n nodes and assign multiple traffic to the nodes and obtain congestion window for different sources/ destinations.

5. Implement ESS with transmission nodes in Wireless LAN and obtain the performance parameters.

6. Implementation of Link state routing algorithm.

DAY 2

PART-B: Implement the following in C/C++ (Hand-on)

1. Write a program for a HLDC frame to perform the following. i) Bit stuffing ii) Character stuffing.

2. Write a program for distance vector algorithm to find suitable path for transmission.

3. Implement Dijkstra's algorithm to compute the shortest routing path.

4. For the given data, use CRC-CCITT polynomial to obtain CRC code. Verify the program for the cases, i). Without Error ii). With Error.

5. Implementation of Stop and Wait Protocol and Sliding Window Protocol.

6. Write a program for congestion control using leaky bucket algorithm.

DAY3

1. Working NS2 in Windows/Linux OS.
2. NS2 Compilation with WSN and MANETs.
3. Exploring Security and Energy Model in WSN/MANETs.
4. Investigation on different routing protocols in WSN/MANETs.

5. Trace analysis using AWK Scripts, JTrcezer and NSWireless.
6. Implementation of research papers on MANETs/WSN using NS2.35.
7. Scope & Research avenues in NS-2.
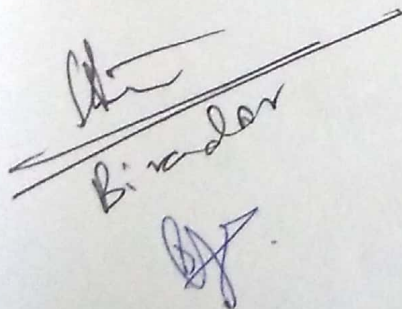8. Technical writing skills and publication of research papers in International Conference/Journals.
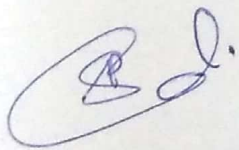
SOFTWARE REQUIRED:

1. Windows/Linux OS
2. Turbo C/C++
3. NS 2 Tool

TARGETED AUDIENCE:

1. Academicians
2. UG/PG students
3. Research Scholars
4. Industry Professionals

REGISTRATION EXPECTED: 40-50