Computer Network Lab

Objective:

To implement important computer networking protocols in a high – level programming language. Also, to become acquainted with socket programming and some of the important GUI based computer networking tools used for simulation such as NS2/NS3/GNS3/Omnet++. We also want to learn about different network traffic analysis tool and their purposes such as NMAP and WireShark.

Assignments:

1. Setup SVN server-client in the lab and emulate the work of a large software company to merge software projects from different time zone and different work groups. Use last semester project modules in a possible group
   a. **Marks 15**
   b. **Deadline: 24/1/2019 (Firm)**
2. Build the MAP of underline computer network of popular hosted websites such as

Insurance.com, Internet.com, 360.com, Fund.com, Hotels.com, Shoes.com, Fb.com, We.com, Business.com, Diamond.com, Z.com, iCloud.com, Israel.com, Toys.com

Take a popular domain from this list.

   a. Form a group of 4 and select a unique target domain name.
   b. Use **tracert ip / domain name** command in windows command prompt
   c. In order to get different routes, run it multiple times and initiate the request form different networks (GP, Banglalink, BTCL, Robi, ISPs, etc.).
   d. Select neighboring IP addresses of the target.
      i. Use Angry IP Scanner / Nmap kind of tools.
   e. Use excel sheet to log your **tracert** log file.
   f. Compare the excel fields and try to build a network MAP of at least 30 IP addresses.
   g. Organize the MAP according to their approximate IP level as a solar system. In this MAP your IP is in center and other IPs are in the bands around your IP.
   h. Find the list of services running in these machines such as FTP, TELNET, SSH, HTTP.
   i. **SUBMISSION: Your Map as PDF, your tracert log file dump as EXCEL, Services list MAP in the excel sheet according to the IP address.**
   j. **MARKS: 15**
   k. **Deadline: 14/02/2019 Firm**
   l. **Format: Zip   File   (160225-160227-160221-israel.com).zip mail : kazi@cseku.ac.bd**
   m. Useful tools

    i. http://imanetworkengineer.blogspot.com/search/label/tools
    ii. https://techtalk.gfi.com/the-top-20-free-network-monitoring-and-analysis-tools-for-sys-admins/
    iii. Angry IP Scanner type tool.

3. Use NS2/Omnet++/OPNET/Cooja-Coniki/Netsim/SENSE to simulate the mid level network scenario from LAB 2 and prepare detailed video tutorial about the project.
   - n. Each group should try to take a different simulator and submit the detail video.
   - o. **Marks: 15**
   - p. **Deadline: 01/02/2019 (Firm)**
4. Implement a simple protocol such as FTP, HTTP, DNS, Remote Desktop, Video Streaming, VoIP, etc. using TCP/UDP client-server socket programming.
   - q. JAVA or C#
   - r. **Marks: 15**
   - s. **Deadline: 15/03/2019 (Firm)**
5. Hands-on physical network   **(Bonus)**
   - t. Build a computer network
   - u. Build a Linux based networked grid for parallel computing
   - v. Building VPN.
   - w. TOR based project.
   - x. Configure LAB router
   - y. **Marks: 15**
   - z. **Deadline: 01/04/2019 (Firm)**

6. Lab Show Attendance: **Marks: 10**
7. VIVA: **30 marks**.
8. Total Marks: **100+**