Indian Institute of Technology Roorkee

Department of Computer Science and Engineering

CSN-361: Computer Networks Laboratory (Autumn 2019-2020)

Lab Assignment-6 (L6) **Date: September 5, 2019** **Duration: 4 Weeks**

General Instructions:

1. Every Lab Assignment will be performed by the students individually**.** No group formation is required and the evaluations will be done every week for the students individually**.**

Submission and Evaluation Instructions:

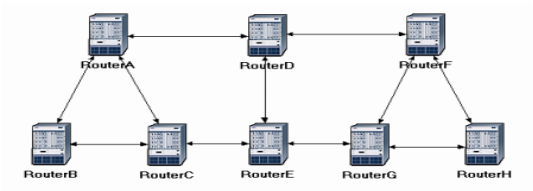
1. **Submit your** zipped folder (**<filename>.zip** or **<filename>.tar.gz**) through your account in Moodle through the submission link for this Lab Assignment in Moodle course site: https://moodle.iitr.ac.in/course/view.php?id=47
2. **Hard deadline for Final submission in Moodle: October 3, 2019 (9:00 am Indian Time).** For any submission after Final Deadline, 20% marks will be deducted (irrespective of it is delayed by a few seconds or a few days). The key to success is starting early. You can always take a break, if you finish early.
3. The submitted zipped folder (**<filename>.zip** or **<filename>.tar.gz**) must contain the following:
   (a) The source code files in a folder.
   (b) A report file (**<filename>.DOC** or **<filename>.PDF**) should contain the details like:
      i. Title page with details of the student
      ii. Problem statements
      iii. Algorithms and data structures used in the implementation
      iv. Snapshots of running the codes for each of the problems
4. The submission by each student will be checked with others' submission to identify any copy case (using such detection software). If we detect that the code submitted by a student is a copy (partially or fully) of other's code, then the total marks obtained by one student will be divided by the total number of students sharing the same code.

Instructions for L6:

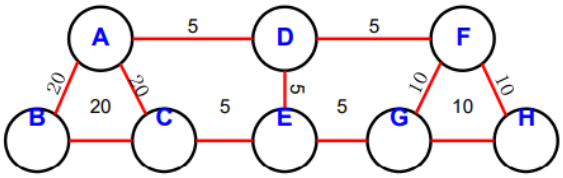
1. Objective of this Lab Assignment is to make the students familiar with the hardware and software aspects of computer networking.
2. The student will have to demonstrate and explain the coding done for this Lab Assignment in the next laboratory class to be held on **October 3, 2019** for evaluation**.**

Problem Statement 1:
Use OPNET to implement OSPF (Open Shortest Path First) protocol.

Create a scenario – *Scenario1*, of 8 routers of any type (e.g., slip8_gtwy) and configure the **Network topology** and the **Link costs** as shown in Fig. 1(a) and Fig. 1(b) respectively.



(a) Network topology



(b) Link costs

Fig. 1 Configuration of the network *Scenario1*

Create a duplicate scenario – *Scenario2*, where the routers in *Scenario1* are partitioned into 3 different areas as follows (Fig 2):

Area1: RouterA, RouterB, RouterC
Area2: RouterD, RouterE
Area3: RouterF, RouterG, RouterH

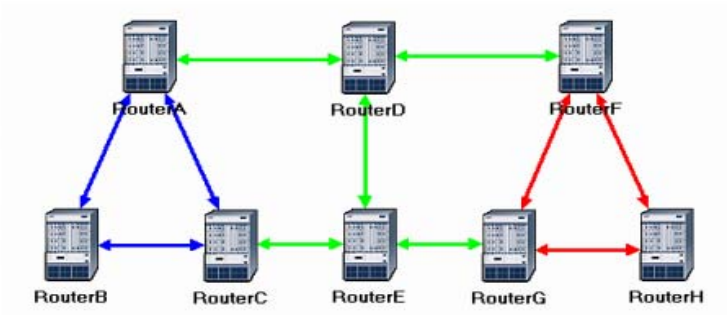


Fig. 2 Configuration of the network for *Scenario2*

Display the route for the traffic demand between RouterA and RouterC in *Scenario1.*
Display the route for the traffic demand between RouterA and RouterC in *Scenario2.*

Problem Statement 2:
Use OPNET to implement RIP (Routing Information) protocol on the same network configurations as given in **Problem 1**.

Display the route for the traffic demand between RouterA and RouterC in *Scenario1.*
Display the route for the traffic demand between RouterA and RouterC in *Scenario2*
