Computer Networks Lab Assignment 3

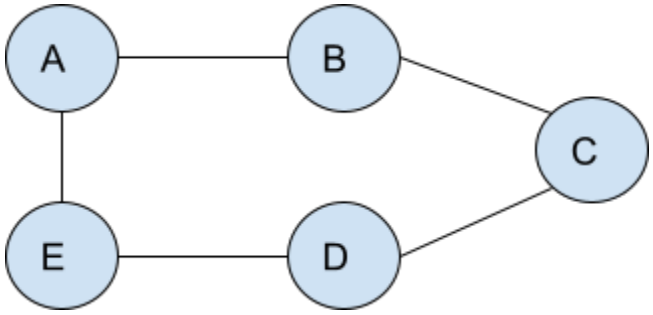
Max marks: 20 **Deadline: 11:59 PM, 26.04.2021**

Instructions:

- Please submit your original work. Plagiarism/copying of any form will attract a penalty.
- Late submissions will also attract a penalty, 1 mark per hour.
- Submit all necessary documents in the google classroom.
- You must submit a Readme file long with your submission, telling the proper way to run your codebase. Add your name and roll number in the readme file.
- Do not hard code the solution in the source code.
- Add necessary comments in your source file.
- You can use Python or C as your language of choice for this assignment.
- You can not use specialized library functions that solve the given programming task in part or full.
- Save all submission files into a single folder and submit the compressed folder.
- Do not email your submission to me or any of the TAs.
- Submit a single ZIP file with the name of the ZIP file as
    - Yourname_Rollnumber_Assignmentnumber.zip

Implement distance vector routing for the topology given in the below diagram. Initially, every node knows only its one-hop neighbours. The routing tables are updated periodically. At time t=0, there is no exchange of the routing tables, and every node knows its immediate neighbours only. At time t = 1, nodes share their routing table with their immediate neighbours, and every receiving node updates its routing table. The routing tables will be shared in alphabetical order, i.e., first node A will share its routing table with its neighbours, then node B will communicate with its neighbours, then C will communicate with its neighbours and so on. Likewise, the routing tables are updated periodically at time t = 1, 2, 3, …, so on. Answer the following:

1. After how many rounds of update, every node can reach every other node in the network. Answer in terms of the value of t, i.e., t =? Display the updated routing tables for all nodes at every step.
2. Now, assume that the routing tables are stabilised after t = x steps (x = your answer in part 1). At t = x+1, link BC breaks. Since the network is updated periodically, at step t = x+2 routing table of node B will be updated. Show after how many steps the network stabilises again. Use the split-horizon method if an infinite loop happens. Show the updated routing tables of all nodes after the network stabilises.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