Design and Analysis of Algorithms (DAA) 2020-21

Instructor: Dr. Animesh Chaturvedi

Submission Instructions: submission will include only 1 PDF file as a report. The PDF file report with all the information. The PDF file must contain input graph, output result, and code. Files in any other format will not be evaluated.

Assignment Part 1:

Reduce[#] a code of Acyclic Shortest Path (in the given Java file) to the Acyclic Longest Path. Manually make your own random* PERT chart (expressing a parallel job-scheduling problem table). Then apply, the new acyclic longest path detecting code will find the longest path in the PERT chart. In the report, add following content

1. Demonstrate the modification in the code and highlight it.
2. Demonstrate the random job-scheduling problem table and its resulting PERT chart.
3. Demonstrate the execution of the code and on the above PERT chart.
4. Write and describe the longest path in the PERT chart as well as in the code's output result.

Assignment Part 2:

Reduce[#] the code of Bellman-Ford's algorithm to detect negative cycles (in the given Java file) for a given graph. Manually make your own random* currency exchange problem (expressing currency exchange values between multiple currencies in a table). Then apply, the reduced code to find the negative cycle in the currency exchange problem, where negative cycle will depict capital benefiting due to exchange. In the report, add following content

1. Demonstrate the modification in the code and highlight it.
2. Demonstrate the random currency exchange table and its resulting graph.
3. Demonstrate the execution of the code and on the above currency exchange to detect negative cycle.
4. Write and describe the negative cycle in the currency exchange graph as well as in the code's output result (representing as capital benefit).

Reduce[#] means modifying a code or an algorithm according to the objectives and goals

***random** (that you draw manually based upon thinking and write its graph, or adjacency list)

Note: If it is random graph drawn manually then it is almost impossible that any two of the students will have same graph and apply similar modified code in same way. In case of overlapping or similar inputs and output, it may result in investigation of unfair means.