

Machine Problem 4

Greedy Algorithms vs Divide and Conquer

Greedy Algorithm is an approach for solving a problem by selecting the best option available at the moment. It doesn't worry whether the current best result will bring the overall optimal result. Divide and Conquer algorithm is a problem-solving strategy that involves breaking down a complex problem into smaller, more manageable parts, solving each part individually, and then combining the solutions to solve the original problem.

OBJECTIVE: In this Machine Problem, you were asked to do comparison between Greedy Algorithms and Divide and Conquer. You were asked to choose one (1) algorithm on each algorithmic strategies and do a comprehensive review.

1. The students should analyze and review these algorithms accordingly.
2. The students will be asked to identify the advantages, disadvantages, limitations, and comparisons of these algorithms and then implement them.
3. The students should provide a learning outcome and insights while working on this machine problem.

GUIDELINES:

1. Create a document report containing the following sections:
 - (a) I. Introduction *Describe Greedy Algorithm and Divide and Conquer strategy and the content of your document report*
 - (b) II. Greedy Algorithms *Define each Greedy Algorithms that we discussed including the Djikstra Algorithm and Huffman Coding. Provide the time complexity of each algorithm*
 - (c) III. Divide and Conquer *Define each Divide and Conquer algorithms that we discussed including the Quick Sort. Provide the time complexity of each algorithm*
 - (d) IV. Algorithms Comparison *Select one (1) algorithm per each algorithmic strategy and compare these algorithms in a tabular form and showing the Strengths, Weaknesses, Time Complexity, Implementation Complexity, and Real World Application*

- (e) V. Limitations *Identify the limitations of these algorithms.*
 - (f) VI. Findings and Conclusion *Create a comprehensive conclusion for your implementation and review. Discuss the importance of understanding these two algorithmic strategies, findings, and learning outcomes.*
 - (g) VII: References
2. Implement the two (2) algorithms that will support what you have stated in your Document Report. Do it by coding the implementation using **any Programming Language**.

DELIVERABLES:

1. You need to submit the Document Report containing the sections listed above. The Document Report should be done in LaTeX and export it into PDF format (both .latex and .pdf files should be submitted).
2. You also need to submit the source of code of your implementation technique located in a repository for better checking of the structure.
3. You are required to record the demo of the implementation explaining the optimization you did for these algorithms.

NOTES:

1. You are allowed to use any programming language only to implement this Machine Problem.
2. In google classroom submission bin, you just need to submit all the requirements above. You can submit a google link containing all the files related with your Machine Problem.
3. Be unique and creative.
4. Submit the folder with filename: COURSEYEARANDSECTION-GROUP-MP2

REMINDERS:

1. This should be done by group.
2. AI Generated work or copied from the internet will be considered as DISHONESTY and CHEATING and should be a sanction for FAILING GRADE with this activity.
3. Similar work with your **classmate or even with other block** should be a sanction as well for FAILING GRADE with this activity.
4. Late submission will not be accepted. Submit your machine problem on the said deadline.

GOOD LUCK AND WORK ON YOUR MACHINE PROBLEM!