**Data Structures Applications Lab (21EECF201) [0-0-2]**

**Term-work Report**

|  |  |  |  |  |  |  |  |  |  |  |  |
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| **Term-work** | *01* | | | | |  |  | | | | |
| **Student Name** | Safa Imtihaz Sayyad | | | | |  |  | | | | |
| **SRN** | 01FE2XBEC205 | | | | **Roll Number** | | 429 | | **Division** | D | |
| **Code of ethics:**  I hereby declare that I am bound by ethics and have not copied any text/program/figure without acknowledging the content creators. I abide to the rule that upon plagiarized content all my marks will be made to zero.  Digital signature of the student | | | | | | | | | | | |
| **Apply Programming Skills**  **(5 marks)** | | **Identify Constraints and Implement**  **(10 marks)** | | **Integrate Modules**  **(3 Marks)** | | **Debugging and Tool usage**  **(2 marks)** | | **Remarks** | | | **Total**  **(20 Marks)** |
|  | |  | |  | |  | |  | | |  |
| **Problem Statement** | | | | | | | | | | | |
| Explain the operation of each algorithm type, take into account two examples of programmes for each algorithm type, and express the time complexity of each programme.   1. Iterative, 2. Recursive, 3. Back tracking, 4. Divide and conquer, 5. Dynamic programming, 2. Greedy, 7. Branch and Bound, 8. Brute force, 9. Randomized | | | | | | | | | | | |
| **Type of algorithm** | **Example No** | | **Which data structures are used?** | | | | | **What is the time complexity? O(n)** | | | |
| Iterative | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |
| Recursive | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |
| Back tracking | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |
| Divide and conquer | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |
| Dynamic programming | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |
| Greedy | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |
| Branch and bound | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |
| Brute force | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |
| Randomized | **1** | |  | | | | |  | | | |
| **2** | |  | | | | |  | | | |

Were you able to solve this problem? If not what where the challenges?

*<Write your answer here>*

What assistance do you need to learn this term work better?

*<Write your answer here>*

What are the areas you think you should work on to be able to make this solution better?

*<Write your answer here>*

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Modularity** |  | **Documentation** |  | **Indentation** |  | **Programming practices** |  |
| **Type of Algorithm:** *Iterative/Recursive/Back tracking/Divide and conquer/Dynamic programming/*  *Greedy/Branch and Bound/Brute force/Randomized* | | | | | | | |
| **Details of the algorithm:** | | | | | | | |
| *<Mention about the algorithm, why the name, which kind of applications are these types of algorithms used, steps involved in the algorithm>* | | | | | | | |
| **Code for example 1:** | | | | | | | |
| *<Write/paste your code here>*  *<code should be well documented and indented>* | | | | | | | |
| **Sample Input:** | | | | | | | |
| *<Sample Input>* | | | | | | | |
| **Sample Output:** | | | | | | | |
| *<Sample Output>* | | | | | | | |
| **Time complexity calculation:** | | | | | | | |
|  | | | | | | | |

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| **Code for example 2:** |
| *<Write/paste your code here>*  *<code should be well documented and indented>* |
| **Sample Input:** |
| *<Sample Input>* |
| **Sample Output:** |
| *<Sample Output>* |
| **Time complexity calculation:** |
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