

Data Structures & Algorithms

Python Programming Assignment (40%)

DSF-IT2553

SUBMISSION REQUIREMENTS:

- 1) Name the **ZIP files** containing your solutions according to the following requirements:
ZIP all Python files to be submitted into a zip file and named it as "**ADMINNO_ASSN.zip**". For example:
"**123456F_ASSN.zip**".
- 2) At the beginning of every Python files to be submitted, include your "**Name, Student Admin no. and Tutorial Group**" as comments.
- 3) Submission Due Date: **Mon, 6 June 2022, 9AM (Week 8)**
- 4) The deliverable is to be submitted to your module tutor via Bright Space
- 5) Late Submission: Marks will be deducted for late submission at the rate of 4 marks per day (10% of 40 marks per day)
- 6) Assignment Interview (5%) will be scheduled in week 8 during LAB and TUT sessions. There will be code walkthrough and technical question asked about the assignment completed by student.

Staycation Package Deals Inventory

Basic function (25%)

The purpose of the system is to allow a renowned hotel to manage the **Staycation booking records** for the packages they offered. They can display and update staycation booking records from the system. User can perform searching and sorting of records. You would need to apply knowledge from the practical sessions to complete this assignment.

- a. Design a suitable data structure (e.g. by making use of Python list, dictionary, objects, etc.) to manage the staycation booking records. You are required to store the following staycation booking records. Each record has: **Package Name, Customer Name, number of pax and Package Cost per pax.**
- b. The data structure will store up to 10 records. All records are to be pre-initialized in the program.
- c. Design a **menu** for the application to allow the user to perform the following:
 1. **Display** all records
 2. **Sort record by Customer Name using Bubble sort**
 3. **Sort record by Package Name using Selection sort**
 4. **Sort record by Package Cost using Insertion sort**
 5. **Search record by Customer Name using Linear Search and update record**
 6. **Search record by Package Name using Binary Search and update record**
 7. **List records range from \$X to \$Y. e.g \$100-200**

Exit Application

(7 * 2marks)

- d. All sorting algorithms are in ascending order only. After sorting, the record will be stored as sorted order for next display.

(3marks)
- e. All search algorithms **MUST** ignore case sensitivity. Upon update, the updated record will be stored.

(3marks)
- f. Error handling is required.

(3marks)
- g. User friendly interface and design

(2marks)

Bonus features (10%)

Student may add any other algorithms/features that are not covered in this module and is/are useful for the application. To score well, student must research for advanced algorithms and apply it effectively for this assignment.

Assignment Interview (5%)

Student **MUST** submit completed assignment by week 8, Monday, 9AM. Tutor will conduct assignment interview in week 8 Lab and Tut session. The purpose is to assess student's understanding and application of DSA concepts in the project.