

Data Structures & Algorithms

Python Programming Assignment 2 Set C (60 marks)

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 file to be submitted, include your "**Name, Student Admin no. and Tutorial Group**" as comments.
- 3) Submission Due Date: **Sun, 13 August 2023, 2359hrs (Week 17)**
- 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 **6 marks per day** (10% of 60 marks per day)
- 6) Code review will be scheduled in **Week 16/17** during LAB and TUT sessions. There will be code walkthrough and technical question asked about the assignment completed by student.

Book Management System (Phase II)

1. User Requirements (60 marks)

The project has entered Phase II of development, with a focus on enhancing the existing Book Management System application. The owner has communicated their intention to include the following additional features within the system:

<u>Main Requirements</u>		
1.	Create a function that enables the owner to use Insertion sort to arrange the book Titles in <i>ascending</i> order and display the outcome.	8 marks
2.	Create a function that enables the owner to use Merge sort to arrange the books in <i>ascending</i> order. The sorting should be done first by Year Published and then by ISBN number. Finally, display the results.	12 marks
3.	Add a <i>Manage Customer Request</i> menu function to manage customer request that fulfills the requirements listed below:	-
3a.	To handle customer requests efficiently, create a Queue data structure. The <i>Manage Customer Request</i> menu enables the owner to add customer requests using a new class object called "CustomerRequest," which includes "Customer_ID" and other variables and relevant methods. The Queue system should also support the addition of duplicate requests.	8 marks
3b.	To ensure correct addition of customer requests to the Queue, implement a Sequential Search validation module. The code within the module will check if a customer id already exists before adding them to the Queue system.	12 marks
3c.	The <i>Manage Customer Request</i> menu should include a function to view the number of customer requests in the Queue system.	2 marks
3d.	Include a function for processing the next customer request in the Queue system. Display the output details as shown in the provided screen capture pages (<i>Sample output screens</i>) below. Upon processing, remove the customer request record from the Queue system and show the updated number of remaining requests.	12 marks
4.	Update the main menu to incorporate these new additions.	1 mark
<u>Optional Requirements</u>		
5.	Optional: Additional validation, functions, and aesthetic features that enhance the usability of the system.	5 marks

Sample output screens:**Main Menu:**

```
Main Menu Page:
1. Display all the books record
2. Add a new book record
3. Sort books by Category in ascending order using Bubble sort and display
4. Sort books by Publisher in descending order using Selection sort and display
5. Sort books by Title in ascending order using Insertion sort and display
6. Sort books by Year published and then ISBN in ascending order using Merge sort and display
7. Manage customer request
8. Populate data
0. Exit
Please select one:
```

Queue System:

```
Main Menu Page:
1. Display all the books record
2. Add a new book record
3. Sort books by Category in ascending order using Bubble sort and display
4. Sort books by Publisher in descending order using Selection sort and display
5. Sort books by Title in ascending order using Insertion sort and display
6. Sort books by Year published and then ISBN in ascending order using Merge sort and display
7. Manage customer request
8. Populate data
0. Exit
Please select one: 7

Customer Request Page:
1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu
Please select one: 2

Number of request: 0
```

Customer Request Page:

1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu

Please select one: 1

Enter Customer ID: S111

Invalid Customer ID. Please try again!

Enter Customer ID: S222

Enter Customer's request: Please have more discounts!

Customer's request added successfully!

Customer Request Page:

1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu

Please select one: 2

Number of request: 1

Customer Request Page:

1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu

Please select one: 1

Enter Customer ID: S333

Enter Customer's request: Good service, thank you!

Customer's request added successfully!

Customer Request Page:

1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu

Please select one: 2

Number of request: 2

Customer Request Page:

1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu

Please select one: 1

Enter Customer ID: S444

Enter Customer's request: More snacks please!

Customer's request added successfully!

Customer Request Page:

1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu

Please select one: 2

Number of request: 3

Customer Request Page:

1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu

Please select one: 3

Customer Request Details:

Customer ID: S222

Name: John Tan

Email: jtan@yahoo.com

Tier: C

Points: 2000

Request: Please have more discounts!

Remaining request: 2

Customer Request Page:

1. Input customer request
2. View number of request
3. Service next request in Queue
0. Return to Main Menu

Please select one: 0

Main Menu Page:

1. Display all the books record
2. Add a new book record
3. Sort books by Category in ascending order using Bubble sort and display
4. Sort books by Publisher in descending order using Selection sort and display
5. Sort books by Title in ascending order using Insertion sort and display
6. Sort books by Year published and then ISBN in ascending order using Merge sort and display
7. Manage customer request
8. Populate data
0. Exit

Please select one:

2. Assessment Rubrics (60 marks)

Technical Walk Thru (Interview) and Submission.

Individual (100% - 60 marks)					
Category	Excellent (A)	Very Good (B)	Good (C)	Satisfactory (D)	Marks
[I] Main Requirements	Completed all (or more) functions listed in the user requirements with no errors.	Completed 3 functions (including the mandatory <i>Manage Customer Request</i> menu function) listed in the user requirements with no errors.	Completed 2 functions (including the mandatory <i>Manage Customer Request</i> menu function) listed in the user requirements with no errors.	Completed the mandatory <i>Manage Customer Request</i> menu function listed in the user requirements with no errors.	[I]
	Extensive coverage of validation rules ensures data submitted by users is in the correct format for all fields and with excellent validation messages to meet user needs.	Good coverage of validation rules ensures data submitted by users is in the correct format for all fields and with excellent validation messages to meet user needs.	Reasonable coverage of validation rules ensures data submitted by users is in the correct format for all fields and with excellent validation messages to meet user needs.	Implement validation rules with minimum validation messages in meeting user needs.	
[II] Optional Requirements	Completed 4 (or more) additional features (i.e. validations, functions, or aesthetic) that enhance the usability of the overall system.	Completed 3 additional features (i.e. validations, functions, or aesthetic) that enhance the usability of the overall system.	Completed 2 additional features (i.e. validations, functions, or aesthetic) that enhance the usability of the overall system.	Completed 1 additional feature (i.e. validations, functions, or aesthetic) that enhances the usability of the overall system.	[II]
[I + II]			Total Marks (60 marks)		

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