UNIVERSITI TEKNOLOGI MARA

(UiTM KEDAH, KAMPUS SUNGAI PETANI

SCHOOL OF INFORMATION SCIENCE

COLLEGE OF COMPUTING, INFORMATICS AND MATHEMATICS

DIPLOMA IN INFORMATICS LIBRARY

[CDIM144]

PROGRAMMING FOR LIBRARIES [IML208]

INDIVIDUAL PROJECT: YACHT HOTEL RESERVATION

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CLASS: KCDIM144 3E

PREPARED FOR:

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SUBMISSION DATE:

18th DECEMBER 2024

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ACKNOWLEDGEMENT

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NAME: ZARIFAH KAMILAH BINTI ZAIDEE

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UNIVERSITI TEKNOLOGI MARA

STUDENT PLEDGE OF ACADEMIC

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With this pledge, I am fully aware that I am obliged to conduct myself with utmost honesty and integrity. I fully understand that a disciplinary action can be taken against me if I, in any manner, violate this pledge.

X

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Name: ZARIFAH KAMILAH BINTI ZAIDEE

Matric Number: 2023860002

Course Code: IML207

Programme Code: CDIM144

Faculty / Campus: COLLEGE OF COMPUTING, INFORMATICS AND MATHEMATICS

PROJECT NAME: Yacht Hotel Reservation System

FILE NAME: yacht_reservation.py

PROMPT DATA:

i. **Name:** Customer's name for the reservation
ii. **Start Date:** Date when the booking begins (format: YYYY-MM-DD)
iii. **End Date:** Date when the booking ends (format: YYYY-MM-DD)
iv. **Number of Guests:** Number of guests included in the booking
v. **Yacht Selection:** Selection of the yacht based on the list of available yachts

FUNCTIONS:

i. **Create Data:**

1. Add Yacht Data:
    - Each yacht includes details such as:
        - Yacht ID
        - Yacht Name
        - Price per Night
        - Maximum Guest Capacity

2. Reserve a Yacht:
    - Allow users to book a yacht by providing the following inputs:
        - Customer's name
        - Number of guests
        - Start and end dates for the reservation

    - Validate the booking:
        - Check if the selected yacht is available during the given date range
        - Ensure the number of guests does bot exceed the yacht's capacity

- Calculate total cost:
    - Discount: Apply a 10% discount for bookings longer than 7 nights
    - Tax: Add a 15% tax to the final cost

- Display a confirmation message with the total price.

ii. Read Data:

1. View Available Yachts:
    - Display the list of yachts with details:
        - Name
        - Price per Night
        - Maximum Guest Capacity

    - Include their current availability based on the reservation calendar.

2. View Current Reservations:
    - Show all active reservations with the following details:
        - Customer Name
        - Yacht Name
        - Start and End Dates
        - Number of Guests
        - Total Cost

3. View Total Revenue and Average Booking Duration:
    - Total Revenue**:** Sum of the costs of all bookings made.
    - Average Booking Duration: Calculate the average number of nights for all reservations.

iii. Update Data:

1. Modify an Existing Booking:
    - Allows users to update reservation details such as:
        - Start Date and End Date (re-check availability)
        - Number of Guests
    - Ensure the updated details meet the yacht's availability and guest limits.

2. Cancel a Booking:
    - Allow users to delete an existing reservation by entering the customer's name.
    - Confirm the successful cancellation of the booking.

iv. Delete Data:

1. Remove Reservations:
    - Users can delete a booking by providing the customer's name.
    - If the booking exists, remove it and confirm the deletion.
    - If no booking is found, display an error message.

CONDITIONAL STATEMENTS:

Yes, the system uses conditional statements extensively:

1. **If Statements:**
    - To check if the start date is earlier than the end date
    - To validate whether the number of guests does not exceed the yacht's maximum capacity
    - To ensure that a yacht is available for the selected dates

2. **Elif Statements:**
    - To handle cases where a yacht is partially booked but unavailable for the selected period.
    - For checking additional conditions such as input validation errors.

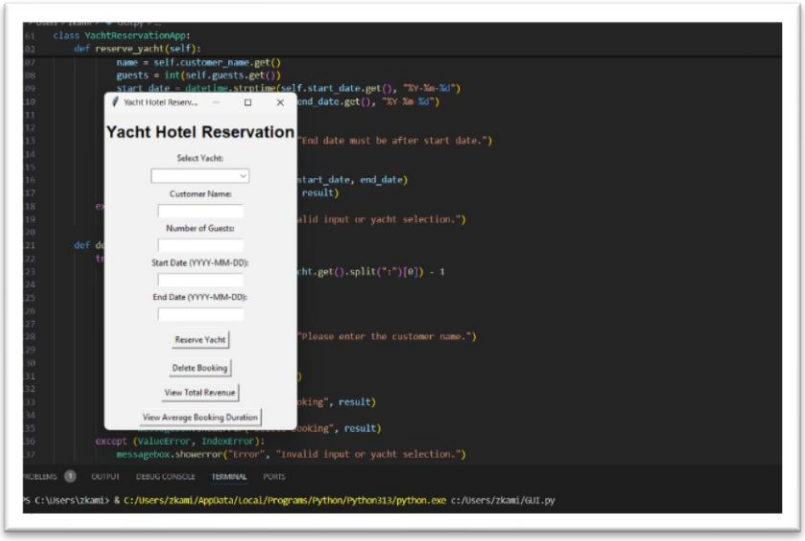
3. **Else Statements:**
    - To catch invalid conditions, such as when no yachts meet the requirements, or no booking exists for deletion

GUI:

Yes, the system includes a Graphical User Interface (GUI) designed using tkinter.

1. Features of the GUI:
    - Drop-down menu to select a yacht.
    - Input fields for:
        - Customer Name
        - Start Date
        - End Date
        - Number of Guests
    - Buttons for the following actions:
        - Reserve Yacht
        - Delete Booking
        - View Total Revenue
        - View Average Booking Duration
    - Pop-up windows (message boxes) to display confirmations, errors, or calculated results.
2. Layout:
    - User-friendly design with labeled fields and action buttons
    - All inputs are validated before submission

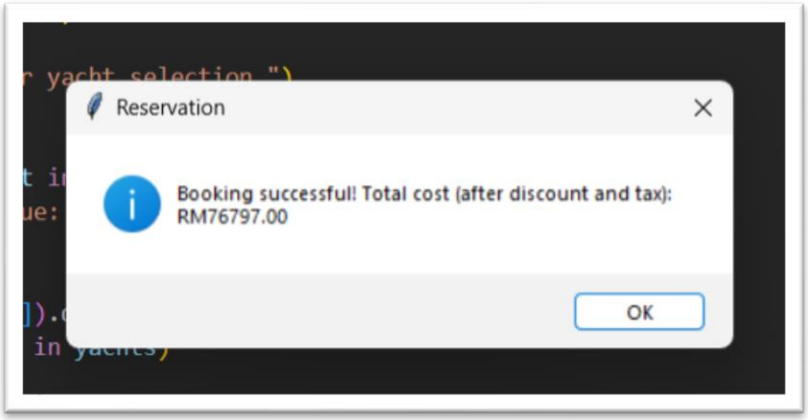
3. Screenshots:



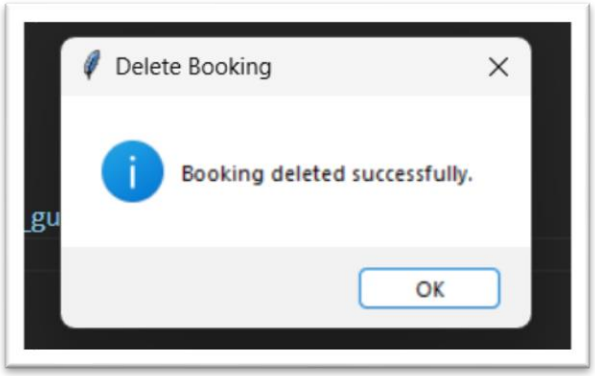
RESULTS:

- Main Functionalities Demonstrated:
    - Booking yachts with dynamic cost calculation (including discounts and taxes)
    - Displaying yacht availability and reservations
    - Updating and deleting bookings seamlessly

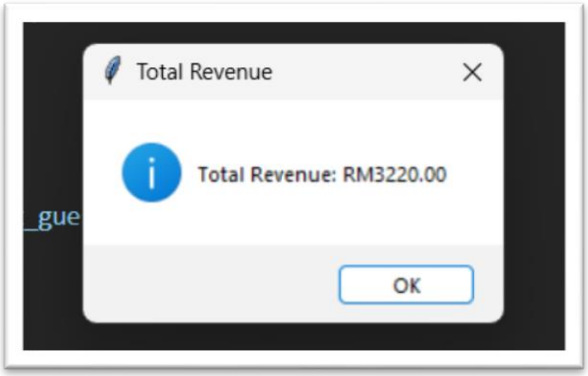
- Output:
    i. Reserve Yacht



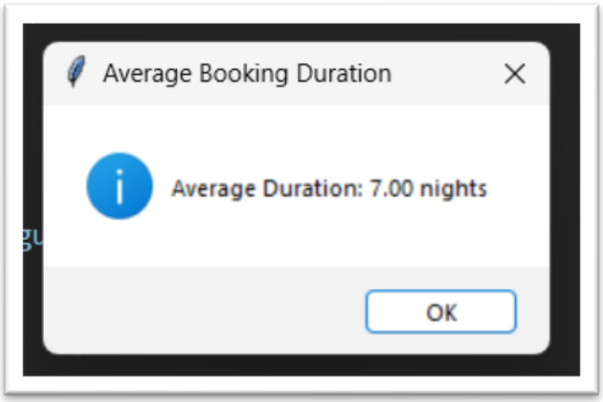
ii. Delete Booking



iii. View Total Revenue



iv. View Average Booking Duration



STRENGTHS:

1. **COMPREHENSIVE FEATURES**

    - The system includes all core functionalities required for a reservation system, such as creating, reading, updating, and deleting bookings.
    - Features like total revenue calculation and average booking duration add value by providing insights into business performance

2. **USER-FRIENDLY GUI (GRAPHICAL USER INTERFACE)**

    - The interface is developed using tkinter, which provide an intuitive and easy-to-navigate design
    - Error handling and confirmation messages enhance the user experience by providing immediate feedback.

3. **MODULAR AND SCALABLE CODE DESIGN**

    - The code is organized into classes and modular functions, making it:
        - Readble and easy to understand
        - Maintainable for future updates or changes

    - New features or yachts can be added effortlessly without breaking the existing codebase.

4. **LOGICAL ERROR HANDLING**

    - The application handles errors such as:
        - Invalid inputs (e.g., non-numeric values for guests)
        - Start and end date mismatches
        - Unavailable yachts for the selected dates

    - This ensures smooth executions and reduces the likelihood for system crashes or unexpected behaviors

KAIZEN (ROOM FOR IMPROVEMENT):

1. **PERSISTENT STORAGE**

    - **Current State:** The application runs entirely in memory, so booking and yacht data are lost when the program is closed
    - **Improvement:**
        - Implement persistent storage using:
            - A file-based system (e.g., CSV) for simple data saving
            - A database (e.g., MySQL) to handle more complex data storage
        - This would ensure all reservations, yachts details, and revenue data remain accessible after restarting the program

2. **ENHANCED GUI DESIGN**

    - **Current State:** The GUI is functional but visually basic
    - **Improvement:**
        - Improve the layout with better alignment and spacing.
        - Add colors, icons, and fonts for better aesthetics.
        - Include real-time feedback for invalid inputs, such as red borders or error icons near problematic fields.

3. **MULTI-LANGUAGE SUPPORT**

    - Enhance the user experience by providing options to select multiple languages for the GUI.
    - This will make the system more accessible to international users.

4. **INTEGRATION OF EMAIL OR SMS NOTIFICATIONS**

    - Automatically send confirmation messages via email or SMS after a booking is made.
    - Notify users of booking modifications or cancellations.