Sample Practical Lab Exam 1

NOVEMBER – 2022

There are 2 questions in this exam - answer both questions.

TOTAL MARKS: 100

Question 1: 25 marks

Question 2: 75 marks

PLEASE ENSURE THAT YOUR CODE COMPILES AND RUNS FOR EACH QUESTION. CODE THAT DOES NOT COMPILE WILL BE DOCKED MARKS.
IF YOU HAVE CODE OR BLOCKS OF CODE THAT DO NOT COMPILE, ENSURE THAT IT IS COMMENTED OUT PRIOR TO SUBMISSION.

Getting Started

- For each question create a java file called **FirstnameSurnameQuestionX.java** using your own first name and surname accordingly, where X is the number of the question. Rename the class name to match your Java program file name.

For Example:

JoeBidenQuestion1.java

JoeBidenQuestion2.java

Exam Requirements

- Add your name, student ID and today's date as comments of the top of ***each*** program
- Ensure your code has meaningful variable names and class names
- Ensure your code has appropriate use of space and indentation
- Ensure any non-working code is commented out prior to program submission
- Use comments throughout your program to describe the functions of your code

Question 1 (25 marks)

Write a Java program that prompts the user to input a month and a day as integers, then determines and outputs which season the given date falls into.

Your program should accomplish the following:

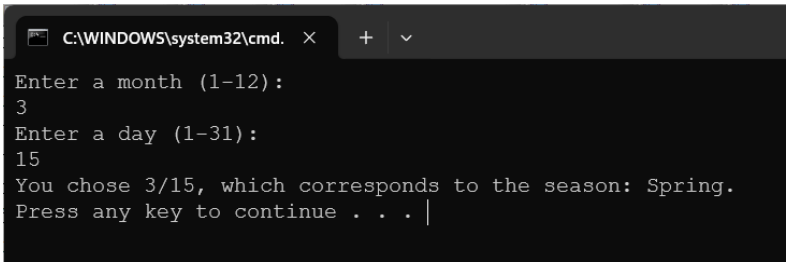
Prompt the user to input a month as an integer (1 through 12).
Prompt the user to input a day as an integer (1 through 31).
Determine the season that corresponds to the input date and output the result.
For this exercise, the seasons (Meteorological temperate seasons) are defined as follows:

Winter: December, January, February
Spring: March, April, May
Summer: June, July, August
Autumn: September, October, November

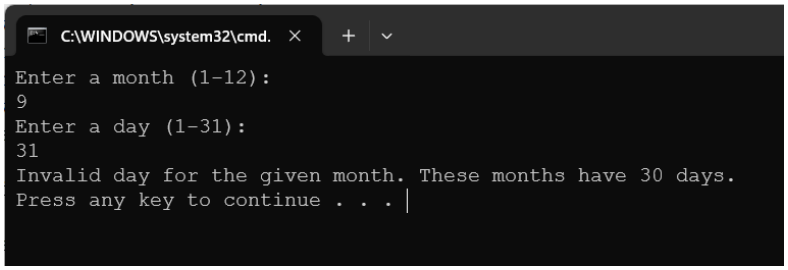
Include validation for the user's input:
Ensure the day entered is appropriate for the given month (e.g., no more than 30 days in April, June, September, November; no more than 28 or 29 days in February; no more than 31 days in any other month).

If an invalid day or month is entered, display an error message and terminate the program.

Guidelines:
Use conditional statements to handle different cases for different months and days. Validate the month and day to ensure that they fall within the correct range for a Gregorian calendar date.
Note that you do not need to account for leap years in this exercise.
If an invalid date is entered, your program should inform the user of the mistake with an appropriate message and then exit without attempting to process or output a season.
Sample Output:



or



Requirements:

Ensure your program includes the necessary Scanner object to take user input.
The season should be determined solely by the month. The day is only used for validation purposes and does not affect the season outcome.
After processing the input, the program should output a single line stating the entered date and its corresponding season, or an error message if the input is invalid.

Question 2 (75 marks)

You are tasked with developing a console-based application for managing a Bed & Breakfast (B&B) booking system. The application should enable the B&B staff to check in guests, view current and all reservations, generate a bill for the guest including optional breakfast, keep track of room usage, offer additional B&B extras for purchase, and exit the system.

Requirements:
Your Java application should meet the following specifications:

Prompt the user to enter a username at the start. If the username is "Manager" or "Owner", display a welcome message that acknowledges their role:

```
                ======================================
                    Welcome to The Cozy Corner B&B
                ======================================

Enter Username: Manager
Welcome to The Cozy Corner B&B Booking System - You are the MANAGER
```

Message for owner:

```
                ======================================
                    Welcome to The Cozy Corner B&B
                ======================================

Enter Username: owner
Welcome to The Cozy Corner B&B Booking System - You are the OWNER
```

All other users are not shown a welcome message:

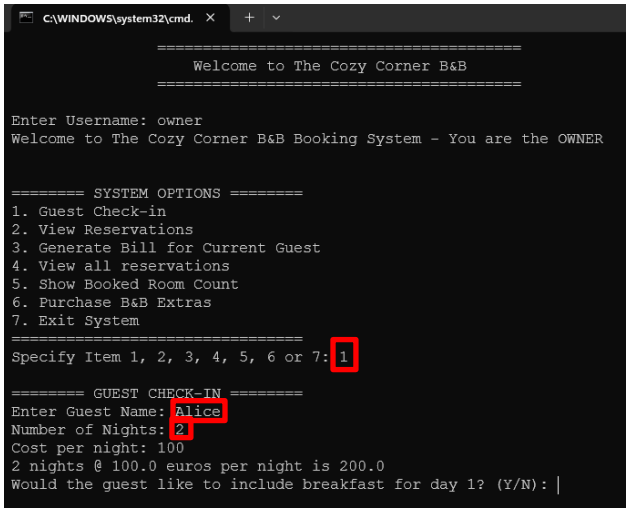
```
C:\WINDOWS\system32\cmd.

                ======================================
                    Welcome to The Cozy Corner B&B
                ======================================

Enter Username: bob
Welcome to The Cozy Corner B&B Booking System

======== SYSTEM OPTIONS ========
1. Guest Check-in
2. View Reservations
3. Generate Bill for Current Guest
4. View all reservations
5. Show Booked Room Count
6. Purchase B&B Extras
7. Exit System
================================
Specify Item 1, 2, 3, 4, 5, 6 or 7:
```

Display a menu with the following options as shown above:

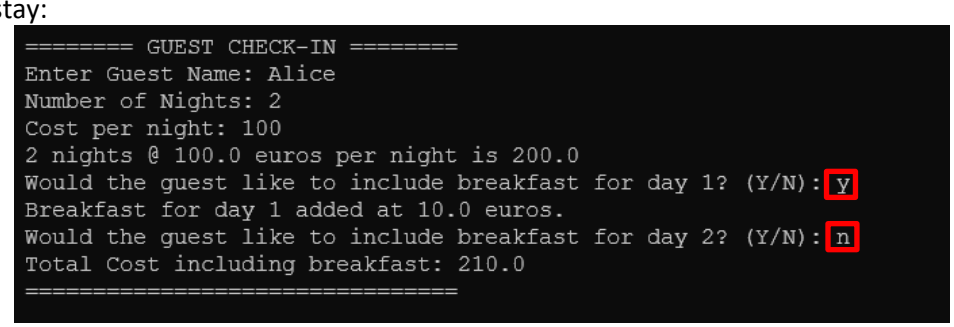
1. Guest Check-in
2. View Current Reservation
3. Generate Bill for Current Guest
4. View All Reservations
5. Show Booked Room Count
6. Purchase B&B Extras
7. Exit System

Allow the user to select an option from the menu by entering a number corresponding to each action.

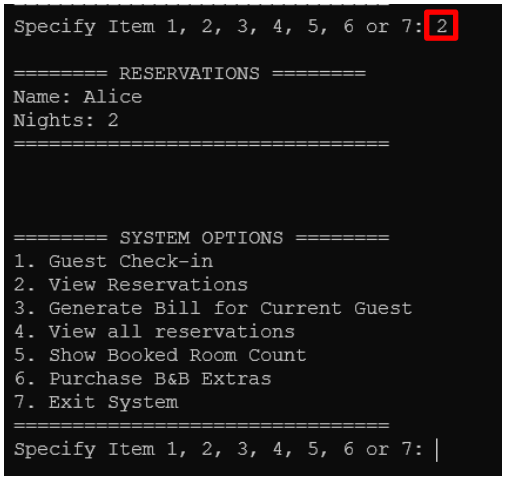
For the "Guest Check-in" option, prompt for the guest's name and the number of nights they are staying.



Then, for each night, ask if they wish to include breakfast, which adds an additional cost per day to their stay. Implement a loop that will allow the staff to ask about breakfast for each day of the guest's stay:



Option 2 will show the Reservations, eg:



For the "Generate Bill for Current Guest" option, calculate the total cost of the stay, including the room rate per night and the total cost for breakfast if taken.

```
Specify Item 1, 2, 3, 4, 5, 6 or 7: 3

========== VIEW BILL ==========
Customer Name: Alice
Booked for 2 Nights
2 nights @ 100 euros per night is 200
Breakfast x 1: 10
Total Cost: 210.0
================================
```

The "View All Reservations" option should display a list of all reservations made, including guest names and total cost.

```
Specify Item 1, 2, 3, 4, 5, 6 or 7: 4

========= RESERVATIONS ========
Alice is staying for 2 nights - Total Cost: 210.0

================================
```

The "Show Booked Room Count" option should display the total number of rooms booked.

```
Specify Item 1, 2, 3, 4, 5, 6 or 7: 5

========== ROOM COUNT =========
Number of rooms booked: 1
================================
```

The "Purchase B&B Extras" option should allow the staff to charge for a day trip excursion package, with different prices for guests (12.95) and non-guests (15.95).

```
Specify Item 1, 2, 3, 4, 5, 6 or 7: 6

====== PURCHASE B&B EXTRAS =======
Enter E for Excursion Package
Enter N for No purchase
Enter item for purchase: E
Is this customer a B&B guest? Y or N: Y
Price for Day Trip Excursion Package for this customer is: 12.95 euro
================================



======== SYSTEM OPTIONS ========
1. Guest Check-in
2. View Reservations
3. Generate Bill for Current Guest
4. View all reservations
5. Show Booked Room Count
6. Purchase B&B Extras
7. Exit System
================================
Specify Item 1, 2, 3, 4, 5, 6 or 7:
```

The "Exit System" option should terminate the application.

```
Specify Item 1, 2, 3, 4, 5, 6 or 7: 7

Exiting system, goodbye...


Press any key to continue . . .
```

The application should continue to display the menu and prompt for input until the exit option is chosen.

If additional guests are booked in, these booking are included in options 4 and 5.
For example, an addition guest to the one above:

```
======== SYSTEM OPTIONS ========
1. Guest Check-in
2. View Reservations
3. Generate Bill for Current Guest
4. View all reservations
5. Show Booked Room Count
6. Purchase B&B Extras
7. Exit System
==============================
Specify Item 1, 2, 3, 4, 5, 6 or 7: 1

======== GUEST CHECK-IN ========
Enter Guest Name: Bob
Number of Nights: 3
Cost per night: 100
3 nights @ 100.0 euros per night is 300.0
Would the guest like to include breakfast for day 1? (Y/N): y
Breakfast for day 1 added at 10.0 euros.
Would the guest like to include breakfast for day 2? (Y/N): y
Breakfast for day 2 added at 10.0 euros.
Would the guest like to include breakfast for day 3? (Y/N): n
Total Cost including breakfast: 320.0
==============================
```

```
Specify Item 1, 2, 3, 4, 5, 6 or 7: 3

========== VIEW BILL ==========
Customer Name: Bob
Booked for 3 Nights
3 nights @ 100 euros per night is 300
Breakfast x 2: 20
Total Cost: 320.0
================================



======== SYSTEM OPTIONS ========
1. Guest Check-in
2. View Reservations
3. Generate Bill for Current Guest
4. View all reservations
5. Show Booked Room Count
6. Purchase B&B Extras
7. Exit System
==============================
Specify Item 1, 2, 3, 4, 5, 6 or 7: 4

========= RESERVATIONS ========
Alice is staying for 2 nights - Total Cost: 210.0
Bob is staying for 3 nights - Total Cost: 320.0

================================



======== SYSTEM OPTIONS ========
1. Guest Check-in
2. View Reservations
3. Generate Bill for Current Guest
4. View all reservations
5. Show Booked Room Count
6. Purchase B&B Extras
7. Exit System
==============================
Specify Item 1, 2, 3, 4, 5, 6 or 7: 5

========== ROOM COUNT ========
Number of rooms booked: 2
================================
```