1. **SAMPLE -PROBLEM STATEMENT -Exception**

BookMyHotel is an online platform where users can book hotel rooms based on their preferences and dates of stay. The system requires users to log in using their credentials and validates their details before proceeding with the booking. Upon successful login and validation, the system calculates the total booking cost based on the selected hotel, room type, duration of stay, and any additional preferences. Exception handling is implemented to manage any invalid inputs effectively.

Consider the following scenario:

You receive input that includes the user's name, age, email, and credit card details in the `UserInterface` class.

Component Specification: **HotelBooking** (Utility class)

Method: `validateUserDetails`
Parameters: `int age, String email, String creditCard`
Responsibilities: Validates user details according to predefined rules. Throws `InvalidBookingDetailsException` with appropriate messages if any detail is invalid.

Validation Rules:
  - Age: Must be between 18 and 100 (inclusive). If not, throw an `InvalidBookingDetailsException` with the message "Invalid age".
  - Email: Must be a valid email format (e.g., name@example.com). If not, throw an `InvalidBookingDetailsException` with the message "Invalid email".
  - Credit Card: Must be exactly 16 digits. If not, throw an `InvalidBookingDetailsException` with the message "Invalid credit card number".

Method:`validateBookingDetails`
Parameters:`String hotelName, String roomType, LocalDate checkInDate, LocalDate checkOutDate`
 Responsibilities: Validates booking details. Throws `InvalidBookingDetailsException` with appropriate messages if any detail is invalid.
  Validation Rules:
  - Hotel Name: Must be a recognized hotel name in the system. If not, throw an `InvalidBookingDetailsException` with the message "Invalid hotel name".
  - Room Type: Must be either "Standard", "Deluxe", or "Suite" (case sensitive). If not, throw an `InvalidBookingDetailsException` with the message "Invalid room type".
  - Check-in Date and Check-out-Date not in yyyy-MM-dd format throw an `InvalidBookingDetailsException` with the message "Invalid date format". (practice with DateTimerFormater(java8) and simpledateformate class)
  - Check-in Date: Must be in the future. If not, throw an `InvalidBookingDetailsException` with the message "Invalid check-in date".
  - Check-out Date: Must be after the check-in date. If not, throw an `InvalidBookingDetailsException` with the message "Invalid check-out date".

Method: `calculateBookingCost`
Parameters: `String roomType, int numNights, boolean breakfastIncluded`
Responsibilities: Calculates and returns the total booking cost based on the room type, duration of stay, and whether breakfast is included. Guidelines for cost calculation are based on provided rates for different room types and optional services.
Example (you can modify the below values according to the scenario)
Standard => 1000 per day
Deluxe=>2000 Per day
Suite =>3000 Per day
Breakfast =>100

Component Specification: **InvalidBookingDetailsException**

- **Responsibilities**: Inherits from `Exception`. It has a single-argument constructor: `public InvalidBookingDetailsException(String message)`. Thrown when any user or booking detail does not follow the validation rules.

The main method in the `UserInterface` class starts by getting the user's name, age, email, and credit card details, then calls `validateUserDetails()` to validate these details. If user details are valid, it proceeds to get the hotel name, room type, check-in, and check-out dates, validating these inputs using `validateBookingDetails()`. If all validations pass, the method calculates the total booking cost using `calculateBookingCost()` and prints the result. If any validation fails, an `InvalidBookingDetailsException` is caught, and the exception message is displayed.

Sample Input/Output:

```
Enter Name
John Doe
Enter Age
25
Enter Email
johndoe@example.com
Enter Credit Card Number
1234567890123456
Enter Hotel Name
Hilton
Select Room Type
Suite
Enter Check-in Date (yyyy-MM-dd)
2024-07-01
Enter Check-out Date (yyyy-MM-dd)
2024-07-05
Total Booking Cost: $3000.00
```

```
Enter Name
```

Jane Smith
Enter Age
17
Invalid age
```

```
Enter Name
Mike Johnson
Enter Age
30
Enter Email
mikejohnson@example
Invalid email
```

```
Enter Name
Sarah Lee
Enter Age
28
Enter Email
sarahlee@example.com
Enter Credit Card Number
12345
Invalid credit card number
```

```
Enter Name
Chris Brown
Enter Age
35
Enter Email
chrisbrown@example.com
Enter Credit Card Number
9876543210123456
Enter Hotel Name
Hyatt
Select Room Type
Penthouse
Invalid room type
```

```
Enter Name
Ella Davis
Enter Age
40
Enter Email
elladavis@example.com
Enter Credit Card Number

1111222233334444
Enter Hotel Name
Marriott
Select Room Type
Standard
Enter Check-in Date (yyyy-MM-dd)
2024-06-27
Enter Check-out Date (yyyy-MM-dd)
2024-06-25
Invalid check-out date
```