Rajalakshmi Engineering College

Name: Alvin .B
Email: 240701034@rajalakshmi.edu.in
Roll no: 240701034
Phone: 9677000577
Branch: REC
Department: CSE - Section 10
Batch: 2028
Degree: B.E - CSE

Scan to verify results

2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 8_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Tim was tasked with creating a user profile system that validates the user's date of birth input. The system should throw a custom exception, InvalidDateOfBirthException, if the date is not in the specified format "dd-mm-yyyy" or if it represents an invalid calendar date.

The main method takes user input, validates the date of birth, and prints whether it is valid or not.

Input Format

The input consists of a string, representing the date of birth of the user.

Output Format

The output displays one of the following results:

If the entered date of birth is valid according to the specified format, the program prints:

"[Date] is a valid date of birth"

If the entered date of birth is not valid according to the specified format, the program prints:

"Invalid date: [Date]"

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 01-01-2000

Output: 01-01-2000 is a valid date of birth

Answer

```
// You are using Java
import java.util.Scanner;
import java.text.SimpleDateFormat;
import java.text.ParseException;

class InvalidDateOfBirthException extends Exception {
    public InvalidDateOfBirthException(String message) {
        super(message);
    }
}
public class Main {
    public static void validateDOB(String dob) throws InvalidDateOfBirthException
{
        SimpleDateFormat sdf = new SimpleDateFormat("dd-MM-yyyy");
        sdf.setLenient(false);

        try {
            sdf.parse(dob);
        } catch (ParseException e) {
            throw new InvalidDateOfBirthException("Invalid date: " + dob);
        }
```

```
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String dob = sc.nextLine().trim();

        try {
            validateDOB(dob);
            System.out.println(dob + " is a valid date of birth");
        } catch (InvalidDateOfBirthException e) {
            System.out.println(e.getMessage());
        } finally {
            sc.close();
        }
    }
}
```

Status : Correct **Marks : 10/10**

2. Problem Statement

Camila, a user of a social media platform, is looking to change her password to enhance account security. The platform enforces specific rules for password strength to ensure the safety of user accounts. Camila needs a program that prompts her to enter a new password and throws custom exceptions based on the strength of the password.

Password Strength Criteria:

Weak Password:

Length less than 8 characters.Medium Password:

Length 8 or more characters.Missing a mix of uppercase letters, lowercase letters, and digits.

Implement a custom exception, to assist Camila in changing her password securely. The program should interactively take user input for a new password, categorize its strength, and handle custom exceptions (WeakPasswordException and MediumPasswordException) if the password fails to meet the specified criteria.

Input Format

The input consists of a string s, representing the new password.

Output Format

The output is displayed in the following format:

If the entered password meets the strength criteria, the program outputs

"Password changed successfully!"

If the entered password is weak, the program outputs

"Error: Weak password. It must be at least 8 characters long."

If the entered password is of medium strength, the program outputs

"Error: Medium password. It must include a mix of uppercase letters, lowercase letters, and digits."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: ComplexP@ss1
Output: Password changed successfully!

Answer

```
// You are using Java
import java.util.Scanner;

class WeakPasswordException extends Exception {
    public WeakPasswordException(String message) {
        super(message);
    }
}

class MediumPasswordException extends Exception {
    public MediumPasswordException(String message) {
        super(message);
```

```
    }
}

public class Main {

    public static void validatePassword(String password) throws
WeakPasswordException, MediumPasswordException {
        if (password.length() < 8) {
            throw new WeakPasswordException("Error: Weak password. It must be at
least 8 characters long.");
        }

        boolean hasUpper = false;
        boolean hasLower = false;
        boolean hasDigit = false;

        for (char ch : password.toCharArray()) {
            if (Character.isUpperCase(ch)) hasUpper = true;
            else if (Character.isLowerCase(ch)) hasLower = true;
            else if (Character.isDigit(ch)) hasDigit = true;
        }

        if (!(hasUpper && hasLower && hasDigit)) {
            throw new MediumPasswordException("Error: Medium password. It must
include a mix of uppercase letters, lowercase letters, and digits.");
        }
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String password = sc.nextLine().trim();

        try {
            validatePassword(password);
            System.out.println("Password changed successfully!");
        } catch (WeakPasswordException | MediumPasswordException e) {
            System.out.println(e.getMessage());
        } finally {
            sc.close();
        }
    }
}
```

Status : Correct *Marks : 10/10*

3. Problem Statement

Faustus is managing his bank account and wants to create a program to update his account balance based on certain conditions. However, he needs to handle specific scenarios related to invalid inputs and insufficient balances. Faustus wants to update his account balance. He inputs the current balance and the amount to be updated.

The initial account balance should be positive. If Faustus enters a negative initial balance, the program should throw an InvalidAmountException with the message "Invalid amount. Please enter a positive initial balance."If the amount to be updated is negative, the program should check if the subtraction results in a negative balance. If so, it should throw an InsufficientBalanceException with the message "Insufficient balance."If the amount to be updated is positive, it should be added to the current balance, and the new balance should be printed.

Implement a custom exception, InvalidAmountException, and InsufficientBalanceException, to manage his bank account.

Input Format

The first line of input consists of a double value 'd', representing the initial account balance.

The second line of input consists of a double value 'd1', representing the amount to be updated.

Output Format

The output is displayed in the following format:

If the validation passes, print

"Account balance updated successfully! New balance: {new_balance}"

where {new_balance} is the updated account balance.

If the initial bank amount is negative it displays

"Error: Invalid amount. Please enter a positive initial balance."

If the updated amount exceeds the initial account balance in withdrawal it displays

"Error: Insufficient balance."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1000
500
Output: Account balance updated successfully! New balance: 1500.0

Answer

```
// You are using Java
import java.util.Scanner;

class InvalidAmountException extends Exception {
    public InvalidAmountException(String message) {
        super(message);
    }
}

class InsufficientBalanceException extends Exception {
    public InsufficientBalanceException(String message) {
        super(message);
    }
}

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        double initialBalance = sc.nextDouble();
        double updateAmount = sc.nextDouble();
        sc.close();

        try {
```

```
            if (initialBalance < 0) {
                throw new InvalidAmountException("Error: Invalid amount. Please enter
a positive initial balance.");
            }

            double newBalance = initialBalance + updateAmount;
            if (newBalance < 0) {
                throw new InsufficientBalanceException("Error: Insufficient balance.");
            }

            System.out.println("Account balance updated successfully! New balance:
" + newBalance);
        } catch (InvalidAmountException | InsufficientBalanceException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

Status : Correct **Marks : 10/10**

4. Problem Statement

A company is developing a user registration system that requires users to provide valid email addresses. The development team is implementing an EmailValidator program to ensure that the entered email addresses meet certain criteria using exception handling.

The email address must contain the "@" symbol.The email address must consist of a non-empty username(before "@" symbol) and a non-empty domain(after "'@" symbol).The domain part of the email address must contain at least one period (".").The email address must not contain leading or trailing spaces.

Implement a custom exception, InvalidEmailException, to fulfill the company's requirements and validate it according to the specified rules.

Input Format

The input consists of a string value 's', which represents the email address.

Output Format

The output is displayed in the following format:

If the entered email address is valid according to the specified rules, the program prints:

"Email address is valid!"

If the entered email address misses the username or domain part or misses "@" symbol or has two or more "@" symbols or misses '.' in the domain part it outputs:

"Error: Invalid email format."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: johndoe@example.com
Output: Email address is valid!

Answer

```
// You are using Java
import java.util.Scanner;

class InvalidEmailException extends Exception {
    public InvalidEmailException(String message) {
        super(message);
    }
}

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String email = sc.nextLine();
        sc.close();

        try {
            validateEmail(email);
            System.out.println("Email address is valid!");
        } catch (InvalidEmailException e) {
```

```
            System.out.println("Error: Invalid email format.");
        }
    }

    public static void validateEmail(String email) throws InvalidEmailException {
        if (email == null || email.trim().length() != email.length()) {
            throw new InvalidEmailException("Invalid email");
        }

        int atIndex = email.indexOf('@');
        int lastAtIndex = email.lastIndexOf('@');

        if (atIndex <= 0 || atIndex != lastAtIndex || atIndex == email.length() - 1) {
            throw new InvalidEmailException("Invalid email");
        }

        String domain = email.substring(atIndex + 1);
        if (!domain.contains(".")) {
            throw new InvalidEmailException("Invalid email");
        }
    }
}
```

Status : Correct **Marks : 10/10**