

# Rajalakshmi Engineering College

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Department: AI & ML - Section 4  
Batch: 2028  
Degree: B.E - AI & ML

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 8\_Q5

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

In a file management system, users are required to provide a valid file name when creating new files. The system enforces specific rules for file names to maintain consistency and avoid potential issues. Your task is to implement a Java program named FileNameValidator that takes user input for a file name and validates it according to the specified rules.

##### **Rules for Valid File Name:**

The file name must consist of alphanumeric characters (letters and digits) only. The file name must have a minimum length of 3 characters.

Implement a custom exception, FileNameValidator, to handle cases where the entered filename does not meet the specified criteria.

##### ***Input Format***

The input consists of a string S, representing the desired filename.

### ***Output Format***

The output is displayed in the following format:

If the entered file name meets the specified criteria, the program outputs

"Valid file name"

If the entered file name does not meet the criteria and triggers the `InvalidFileNameException`, the program outputs

"Error: Invalid file name. It must be alphanumeric and have a minimum length of 3 characters."

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: myfile123

Output: Valid file name

### ***Answer***

```
import java.util.Scanner;

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

class FileNameValidator {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String fileName = sc.nextLine();
        try {
            validateFileName(fileName);
            System.out.println("Valid file name");
        } catch (InvalidFileNameException e) {
            System.out.println("Error: Invalid file name. It must be alphanumeric and")
        }
    }
}
```

```
        have a minimum length of 3 characters.");
    }
}

public static void validateFileName(String name) throws
InvalidFileNameException {
    if (name.length() < 3 || !name.matches("[A-Za-z0-9]+")) {
        throw new InvalidFileNameException("Invalid file name");
    }
}
```

**Status : Correct**

**Marks : 10/10**

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 8\_Q4

Attempt : 1

Total Mark : 10

Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

A local municipality is implementing an online voting system for a community event and wants to ensure that only eligible voters (those aged 18 or older) can participate.

Your task is to develop a program that validates the age of individuals attempting to vote online. If the user's age is below 18, the program should throw a custom exception, `InvalidAgeException`, preventing them from casting their vote. If the input is invalid, catch the appropriate `InputMismatchException` and print the in-built exception message.

##### ***Input Format***

The input consists of an integer representing the age.

##### ***Output Format***

If the age is 18 or older, print "Eligible to vote"

If the age is below 18, print "Exception occurred: InvalidAgeException: Age is not valid to vote"

If there is any other type of exception, print "An error occurred: " followed by the in-built exception message.

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 20

Output: Eligible to vote

### **Answer**

```
import java.util.*;  
  
class InvalidAgeException extends Exception {  
    public InvalidAgeException(String message) {  
        super(message);  
    }  
}  
  
public class Main {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        try {  
            int age = sc.nextInt();  
            validateAge(age);  
            System.out.println("Eligible to vote");  
        } catch (InvalidAgeException e) {  
            System.out.println("Exception occurred: InvalidAgeException: " +  
e.getMessage());  
        } catch (InputMismatchException e) {  
            System.out.println("An error occurred: " + e);  
        } catch (Exception e) {  
            System.out.println("An error occurred: " + e.getMessage());  
        }  
    }  
}
```

```
public static void validateAge(int age) throws InvalidAgeException {  
    if (age < 18) {  
        throw new InvalidAgeException("Age is not valid to vote");  
    }  
}
```

**Status : Correct**

**Marks : 10/10**

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 8\_Q3

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

In a user registration system, there is a requirement to implement a username validation module. Users attempting to register must adhere to specific criteria for their usernames to be considered valid.

Your task is to develop a program that takes user input for a desired username and validates it according to the following rules:

The username must not contain any spaces. The username must be at least 5 characters long.

Implement a custom exception, InvalidUsernameException, to handle cases where the entered username does not meet the specified criteria.

##### ***Input Format***

The input consists of a string S, representing the desired username.

### ***Output Format***

If the username is valid, print "Username is valid: [S]" .

If the username is invalid:

1. If the username is short, print "Invalid Username: Username must be at least 5 characters long"
2. If the username contains spaces, print "Invalid Username: Username cannot contain spaces"

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: John

Output: Invalid Username: Username must be at least 5 characters long

### ***Answer***

```
import java.util.Scanner;

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

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String username = sc.nextLine();
        try {
            validateUsername(username);
            System.out.println("Username is valid: " + username);
        } catch (InvalidUsernameException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

```
public static void validateUsername(String username) throws  
InvalidUsernameException {  
    if (username.contains(" ")) {  
        throw new InvalidUsernameException("Invalid Username: Username  
cannot contain spaces");  
    } else if (username.length() < 5) {  
        throw new InvalidUsernameException("Invalid Username: Username must  
be at least 5 characters long");  
    }  
}
```

**Status : Correct**

**Marks : 10/10**

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 8\_Q2

Attempt : 1

Total Mark : 10

Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

Elsa, a busy professional, is using a scheduling application to plan her meetings efficiently. The application requires users to input meeting durations in minutes, ensuring that the duration is a positive integer and does not exceed 240 minutes (4 hours). Elsa needs a program to assist her in scheduling meetings securely with proper exception handling.

Create a Java class named ElsaMeetingScheduler. Implement a custom exception: InvalidDurationException for invalid meeting duration entries. Implement the main method to interactively take user input for a meeting duration. Implement the validateMeetingDuration method to validate the meeting duration based on the specified rules and throw a custom exception if the validation fails. Print appropriate success or error messages based on the meeting duration.

Implement a custom exception, `InvalidDurationException`, to handle cases where the entered meeting duration does not meet the specified criteria.

#### ***Input Format***

The input consists of an integer value '`n`', representing the meeting duration.

#### ***Output Format***

The output is displayed in the following format:

If the entered meeting duration meets the specified criteria, the program outputs  
"Meeting scheduled successfully!"

If the entered meeting duration is invalid, the program outputs an error message indicating the issue.

"Error: Invalid meeting duration. Please enter a positive integer not exceeding 240 minutes (4 hours)."

Refer to the sample output for formatting specifications.

#### ***Sample Test Case***

Input: 120

Output: Meeting scheduled successfully!

#### ***Answer***

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

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

class ElsaMeetingScheduler {
    public static void validateMeetingDuration(int duration) throws
```

```
InvalidDurationException {
    if (duration <= 0 || duration > 240) {
        throw new InvalidDurationException("Invalid meeting duration");
    }
}

public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    int duration = sc.nextInt();
    sc.close();

    try{
        validateMeetingDuration(duration);
        System.out.println("Meeting scheduled successfully!");
    } catch (InvalidDurationException e) {
        System.out.println("Error: Invalid meeting duration. Please enter a positive
integer not exceeding 240 minutes (4 hours).");
    }
}
```

**Status : Correct**

**Marks : 10/10**

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 8\_Q1

Attempt : 1

Total Mark : 10

Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

Write a program to validate the email address and display suitable exceptions if there is any mistake.

Create 3 custom exception classes as below

DotExceptionAtTheRateExceptionDomainException

A typical email address should have a ". " character, and a "@" character, and also the domain name should be valid. Valid domain names for practice be 'in', 'com', 'net', or 'biz'.

Display Invalid Dot usage, Invalid @ usage, or Invalid Domain message based on email id.

Get the email address from the user, validate the email by checking the

above-mentioned criteria, and print the validity status of the input email address.

#### ***Input Format***

The first line of input contains the email to be validated.

#### ***Output Format***

The output prints a Valid email address or an Invalid email address along with the suitable exception

If email ends with . or contains not exactly one . after @, it throws:

DotException: Invalid Dot usage

Invalid email address

If @ appears not exactly once, it throws:

AtTheRateException: Invalid @ usage

Invalid email address

If the part after the last dot is not among accepted domains:

DomainException: Invalid Domain

Invalid email address

If all conditions satisfied then print:

Valid email address

Refer to the sample input and output for format specifications.

### **Sample Test Case**

Input: sample@gmail.com

Output: Valid email address

### **Answer**

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

// Custom Exception Classes
class DotException extends Exception {
    public DotException(String msg) {
        super(msg);
    }
}

class AtTheRateException extends Exception {
    public AtTheRateException(String msg) {
        super(msg);
    }
}

class DomainException extends Exception {
    public DomainException(String msg) {
        super(msg);
    }
}

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

        try {
            validateEmail(email);
            System.out.println("Valid email address");
        } catch (DotException e) {
```

```
        System.out.println("DotException: " + e.getMessage());
        System.out.println("Invalid email address");
    } catch (AtTheRateException e) {
        System.out.println("AtTheRateException: " + e.getMessage());
        System.out.println("Invalid email address");
    } catch (DomainException e) {
        System.out.println("DomainException: " + e.getMessage());
        System.out.println("Invalid email address");
    } catch (Exception e) {
        System.out.println("Invalid email address");
    }
}

public static void validateEmail(String email)
    throws DotException, AtTheRateException, DomainException {

    // Check for exactly one '@'
    if (email.chars().filter(ch -> ch == '@').count() != 1) {
        throw new AtTheRateException("Invalid @ usage");
    }

    // Check start or end with '.' or '@'
    if (email.startsWith(".") || email.endsWith(".") || email.startsWith("@") || email.endsWith("@")) {
        throw new DotException("Invalid Dot usage");
    }

    // Check for consecutive '.' or '@'
    if (email.contains(..) || email.contains("@@")) {
        throw new DotException("Invalid Dot usage");
    }

    String[] parts = email.split("@");
    String localPart = parts[0];
    String domainPart = parts[1];

    // Check if '.' exists after @@
    if (!domainPart.contains(".")) {
        throw new DotException("Invalid Dot usage");
    }

    // Check if email ends with '.'

}
```

```
if (email.endsWith(".")) {  
    throw new DotException("Invalid Dot usage");  
}  
  
// Extract domain extension  
String[] domainSplit = domainPart.split("\\.");  
String domainExtension = domainSplit[domainSplit.length - 1];  
  
// Valid domains  
String[] validDomains = {"in", "com", "net", "biz"};  
boolean valid = false;  
for (String d : validDomains) {  
    if (domainExtension.equals(d)) {  
        valid = true;  
        break;  
    }  
}  
  
if (!valid) {  
    throw new DomainException("Invalid Domain");  
}  
}
```

**Status :** Correct

**Marks :** 10/10

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## 2024\_28\_III\_OOPS Using Java Lab

### **REC\_2028\_OOPS using Java\_Week 8\_MCQ**

Attempt : 1

Total Mark : 15

Marks Obtained : 15

#### **Section 1 : MCQ**

1. What will be the output for the following code?

```
import java.io.*;  
  
class UnderageException extends Exception {  
    public UnderageException(String message) {  
        super(message);  
    }  
}  
  
class Test {  
    public static void main(String[] args) {  
        try {  
            int age = 17;  
            if (age < 18) {  
                throw new UnderageException("Underage, cannot proceed");  
            }  
        } catch (UnderageException e) {  
            System.out.println(e.getMessage());  
        }  
    }  
}
```

```
        }
    } catch (UnderageException e) {
        System.out.println(e.getMessage());
    }
}
```

**Answer**

Underage, cannot proceed

**Status : Correct**

**Marks : 1/1**

2. What will be the output for the following code?

```
import java.io.*;

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

class Test {
    public static void main(String[] args) {
        try {
            int stock = 0;
            if (stock == 0) {
                throw new OutOfStockException("Item is out of stock");
            }
        } catch (OutOfStockException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

**Answer**

Item is out of stock

**Status : Correct**

**Marks : 1/1**

3. What will be the output of the following code?

```
class MyException extends Exception {  
    public MyException() {  
        super("Default Exception Message");  
    }  
}  
  
class Test {  
    public static void main(String[] args) {  
        try {  
            throw new MyException();  
        } catch (MyException e) {  
            System.out.println(e.getMessage());  
        }  
    }  
}
```

**Answer**

Default Exception Message

**Status : Correct**

**Marks : 1/1**

4. What will be the output for the following code?

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

```
class Test {  
    public static void main(String[] args) {  
        try {  
            String username = "abc";  
            if (username.length() < 5) {  
                throw new InvalidUsernameException("Username must be at  
least 5 characters long");  
            }  
        }  
    }  
}
```

```
        } catch (InvalidUsernameException e) {  
            System.out.println(e.getMessage());  
        }  
    }  
}
```

**Answer**

Username must be at least 5 characters long

**Status :** Correct

**Marks :** 1/1

5. What will be the output for the following code?

```
class InvalidVotingAgeException extends Exception {  
    public InvalidVotingAgeException(String message) {  
        super(message);  
    }  
}  
  
class Test {  
    public static void main(String[] args) {  
        try {  
            int age = 15;  
            if (age < 18) {  
                throw new InvalidVotingAgeException("You are not eligible to  
vote");  
            }  
            System.out.println("Eligible to vote");  
        } catch (InvalidVotingAgeException e) {  
            System.out.println(e.getMessage());  
        }  
    }  
}
```

**Answer**

You are not eligible to vote

**Status :** Correct

**Marks :** 1/1

6. Which keyword is used to explicitly throw a custom exception?

**Answer**

throw

**Status : Correct**

**Marks : 1/1**

7. How do you create an unchecked custom exception?

**Answer**

By extending RuntimeException

**Status : Correct**

**Marks : 1/1**

8. Which of the following is true about custom exceptions?

**Answer**

Custom exceptions must extend either Exception or RuntimeException

**Status : Correct**

**Marks : 1/1**

9. What will be the output for the following code?

```
import java.io.*;  
  
class TemperatureTooHighException extends Exception {  
    public TemperatureTooHighException(String message) {  
        super(message);  
    }  
}  
  
class Test {  
    public static void main(String[] args) {  
        try {  
            int temperature = 110;  
            if (temperature > 100) {  
                throw new TemperatureTooHighException("Temperature too  
high");  
            }  
        } catch (TemperatureTooHighException e) {  
            System.out.println(e.getMessage());  
        }  
    }  
}
```

```
        }
    } catch (TemperatureTooHighException e) {
        System.out.println(e.getMessage());
    }
}
```

**Answer**

Temperature too high

**Status : Correct**

**Marks : 1/1**

10. What will happen if a checked custom exception is thrown inside a method without being caught or declared?

**Answer**

Compilation Error

**Status : Correct**

**Marks : 1/1**

11. What is the purpose of a custom exception in Java?

**Answer**

To create user-defined exceptions for specific scenarios

**Status : Correct**

**Marks : 1/1**

12. What will be the output for the following code?

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

```
class Test {
    public static void main(String[] args) {
        try {
```

```
        double balance = -500;
        if (balance < 0) {
            throw new NegativeBalanceException("Balance cannot be
negative");
        }
    } catch (NegativeBalanceException e) {
        System.out.println("Error: " + e.getMessage());
    }
}
```

**Answer**

Error: Balance cannot be negative

**Status : Correct**

**Marks : 1/1**

13. What will be the output for the following code?

```
import java.io.*;

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

class Test {
    public static void main(String[] args) {
        try {
            int age = -5;
            if (age < 0) {
                throw new NegativeAgeException("Age cannot be negative");
            }
        } catch (NegativeAgeException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

**Answer**

Age cannot be negative

**Status : Correct**

**Marks : 1/1**

14. what is the output of the following code?

```
class MyException extends Exception {  
    public MyException(String message) {  
        super(message);  
    }  
}  
  
class Test {  
    static void check() throws MyException {  
        throw new MyException("Custom Exception Occurred");  
    }  
  
    public static void main(String[] args) {  
        try {  
            check();  
        } catch (Exception e) {  
            System.out.println(e.getMessage());  
        }  
    }  
}
```

**Answer**

Custom Exception Occurred

**Status : Correct**

**Marks : 1/1**

15. what is the output of the following code?

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

```
}

class Test {
    public static void main(String[] args) {
        try {
            throw new MyException("Error occurred");
        } catch (MyException e) {
            System.out.println(e);
        }
    }
}
```

**Answer**

MyException: Error occurred

**Status :** Correct

**Marks :** 1/1