

**Lab 10**

**Course: SCD**

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**1. Exception Handling Tasks**

**Arithmetic Exception**

public class ArithmeticExceptionExample {

public static void main(String[] args) {

try {

int a = 10;

int b = 0;

int result = a / b; // This will throw ArithmeticException

System.out.println("Result: " + result);

} catch (ArithmeticException e) {

System.out.println("Error: Division by zero is not allowed.");

}

}

}

Output:

umask 0000; bash -c 'javac -cp \\* \*.java && java -cp \*:. ArithmeticExceptionExample' ; exit >/dev/null 2>&1

Error: Division by zero is not allowed.

**Array Index out of Bound Exception**

public class ArrayIndexOutOfBoundExample {

public static void main(String[] args) {

try {

int[] numbers = {1, 2, 3};

System.out.println(numbers[5]); // This will throw ArrayIndexOutOfBoundsException

} catch (ArrayIndexOutOfBoundsException e) {

System.out.println("Error: Array index is out of bounds.");

}

}

}

Output:

Error: Array index is out of bounds.

**Multiple catches**

public class MultipleCatchesExample {

public static void main(String[] args) {

try {

int[] numbers = {1, 2, 3};

System.out.println(numbers[5] / 0); // This will throw ArrayIndexOutOfBoundsException

} catch (ArithmeticException e) {

System.out.println("Arithmetic error occurred.");

} catch (ArrayIndexOutOfBoundsException e) {

System.out.println("Array index out of bounds error occurred.");

} catch (Exception e) {

System.out.println("Some other exception occurred.");

}

}

}

Output:

Array index out of bounds error occurred.

**Input Mismatch Exception**

import java.util.InputMismatchException;

import java.util.Scanner;

public class InputMismatchExample {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

try {

System.out.print("Enter an integer: ");

int num = scanner.nextInt(); // Throws InputMismatchException if input is not integer

System.out.println("You entered: " + num);

} catch (InputMismatchException e) {

System.out.println("Error: Input must be an integer.");

} finally {

scanner.close();

}

}

}

Output:

Enter an integer: r

Error: Input must be an integer.

**Custom Exception**

// Custom exception class

class InvalidAgeException extends Exception {

public InvalidAgeException(String message) {

super(message);

}

}

public class CustomExceptionExample {

static void validateAge(int age) throws InvalidAgeException {

if (age < 18) {

throw new InvalidAgeException("Age must be 18 or older.");

}

System.out.println("Valid age.");

}

public static void main(String[] args) {

try {

validateAge(15); // This will throw InvalidAgeException

} catch (InvalidAgeException e) {

System.out.println("Error: " + e.getMessage());

}

}

}

Output:

Error: Age must be 18 or older.

**2. Password Validation Test Cases**

1. **Valid Password**: "Secure@123"
   * Expected Result: Valid (meets all criteria)
2. **Too Short**: "Pass1!"
   * Expected Result: Invalid (less than 8 characters)
3. **Missing Uppercase**: "password123!"
   * Expected Result: Invalid (no uppercase letter)
4. **Missing Digit**: "Password@test"
   * Expected Result: Invalid (no numeric digit)
5. **Contains Space**: "Pass word@1"
   * Expected Result: Invalid (contains space)