1. Write a program that tries to access an element outside the bounds of an array and handles the ArrayIndexOutOfBoundsException by printing a user-friendly message.

Program :-

**package** mypackage;

**public** **class** ArrayAccess {

**public** **static** **void** main(String[] args) {

**int**[] array = {1, 2, 3};

**try** {

**int** element = array[5];

} **catch** (ArrayIndexOutOfBoundsException e) {

System.***out***.println("Error: Tried to access an element outside the bounds of the array.");

}

}

}

Code:-

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1. Write a program that attempts to divide a number by zero and handles the ArithmeticException by printing a message that division by zero is not allowed.

Program:-

**package** mypackage;

**public** **class** DivisionByZero {

**public** **static** **void** main(String[] args) {

**try** {

**int** result = 10 / 0; // Division by zero

} **catch** (ArithmeticException e) {

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

}

}

}

Code:-

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1. Write a Java program that reads an integer input from the user and throws an IllegalArgumentException if the input is negative. Display an appropriate message when the exception is caught.

Program:-

**package** mypackage;

**import** java.util.Scanner;

**public** **class** NegativeInteger {

**public** **static** **void** main(String[] args) {

Scanner scanner = **new** Scanner(System.***in***);

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

**int** input = scanner.nextInt();

**try** {

**if** (input < 0) {

**throw** **new** IllegalArgumentException("Negative integer is not allowed.");

}

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

} **catch** (IllegalArgumentException e) {

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

}

}

}

Code:-

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1. Define a custom exception called InvalidAgeException. Write a Java program that throws this exception if the age provided is less than 18. Handle the exception and display an appropriate message.

Program:-

**package** mypackage;

**class** InvalidAgeException **extends** Exception {

**public** InvalidAgeException(String message) {

**super**(message);

}

}

Code:-

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Program:-

**package** mypackage;

**public** **class** AgeValidation {

**public** **static** **void** main(String[] args) {

**int** age = 16; // Example age

**try** {

*validateAge*(age);

} **catch** (InvalidAgeException e) {

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

}

}

**public** **static** **void** validateAge(**int** age) **throws** InvalidAgeException {

**if** (age < 18) {

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

}

System.***out***.println("Age is valid.");

}

}

Code:-

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1. Write a Java program that has a method to validate a user's email address. The method should throw a custom exception InvalidEmailException if the email does not contain @ and .. Handle the exception in the main method.

Program:-

**package** mypackage;

**class** InvalidEmailException **extends** Exception {

**public** InvalidEmailException(String message) {

**super**(message);

}

}

Code:-

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Program:-

**package** mypackage;

**public** **class** EmailValidation {

**public** **static** **void** main(String[] args) {

String email = "example.com"; // Example email

**try** {

*validateEmail*(email);

} **catch** (InvalidEmailException e) {

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

}

}

**public** **static** **void** validateEmail(String email) **throws** InvalidEmailException {

**if** (!email.contains("@") || !email.contains(".")) {

**throw** **new** InvalidEmailException("Invalid email address.");

}

System.***out***.println("Email is valid.");

}

}

Code:-

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