**R. CONCEICAO RODRIGUES COLLEGE OF ENGINEERIG**

**Department of Computer Engineering**

**Experiment 8- Based on Exception Handling**

1. **Course Details:**

| **Academic Year** | **2023 - 24** | **Estimated Time** | **Experiment No. 8– 02 Hours** |
| --- | --- | --- | --- |
| **Course & Semester** | **S.E. (COMP) – Sem. III** | **Subject Name** | **Skill based lab Course-OOP with Java** |
| **Module No.** | **05** | **Chapter Title** | **Exception Handling and multithreading** |
| **Experiment Type** | **Software Performance** | **Subject Code** | **CSL304** |
|  |  |  |  |

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| --- | --- | --- | --- |
| **Date of**  **Performance:** | 04/10/23 | **Date of Submission:** | 13/10/23 |
| **CO Mapping** | **CSL304.4 Implement the concept of inheritance, exception handling and multithreading** | | |

| **Timeline**  **(2)** | **Preparedness**  **(2)** | **Effort**  **(3)** | **Result**  **(3)** | **Total (10)** |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |

**Problem statement:**

1. Write a Java program to create a method that takes a string as input and throws an exception if the string does not contain vowels.

CODE:

import java.util.Scanner;

public class Vowel\_Check {

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

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

System.out.**print**("Enter the string:\t");

try {

String text = scan.**nextLine**();

System.out.**println**("Original string: " + text);

**checkVowels**(text);

*// the next line will execute only if there are vowels*

System.out.**println**("String contains vowels.");

} catch (NoVowelsException *e*) {

*// print error*

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

}

}

public static void **checkVowels**(String *text*) throws NoVowelsException {

boolean containsVowels = false;

String vowels = "aeiouAEIOU";

*// disintegrate the string and check if any character of the string is a vowel*

for (int i = 0; i < *text*.**length**(); i++) {

char ch = *text*.**charAt**(i);

if (vowels.**contains**(String.**valueOf**(ch))) {

containsVowels = true;

break;

}

}

*// if no vowels then throw error*

if (!containsVowels) {

throw new **NoVowelsException**("String does not contain any vowels.");

}

}

}

*// custom exception class*

class NoVowelsException extends Exception {

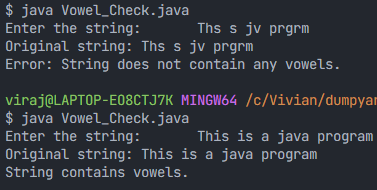
public **NoVowelsException**(String *message*) {

super(*message*);

}

}

OUTPUT:



1. For a given String (say "56a31"), extract individual character and print in word format, for example for above given input, print Five, Six, and so on & wherever a non-digit character is encountered throw an Exception.

CODE:

import java.util.HashMap;

import java.util.Scanner;

public class Main {

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

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

try {

System.out.**print**("Enter the number:\t");

String input = scan.**nextLine**();

**extractWords**(input);

System.out.**println**("\nThe string only consists of numbers");

} catch (NonDigitCharacterException *e*) {

System.out.**println**(e.**getMessage**());

}

}

public static void **extractWords**(String *input*) throws NonDigitCharacterException {

*// Define a HashMap of words for each digit.Works kinda like a 1:1 2D array but*

*// with mostly O(1) fetching time.*

HashMap<Character, String> words = new **HashMap**<>();

words.**put**('0', "Zero");

words.**put**('1', "One");

words.**put**('2', "Two");

words.**put**('3', "Three");

words.**put**('4', "Four");

words.**put**('5', "Five");

words.**put**('6', "Six");

words.**put**('7', "Seven");

words.**put**('8', "Eight");

words.**put**('9', "Nine");

*// Iterate over each character in the input string*

for (char c : *input*.**toCharArray**()) {

*// Check if the character is a digit*

if (Character.**isDigit**(c)) {

*// Convert the digit to its word format*

String word = words.**get**(c);

*// Print the word format of the digit*

System.out.**print**(word + " ");

} else {

*// Throw a custom exception if the character is not a digit*

throw new **NonDigitCharacterException**("\nInvalid input: non-digit character encountered");

}

}

}

}

class NonDigitCharacterException extends Exception {

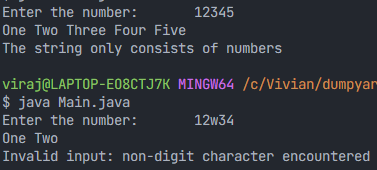
public **NonDigitCharacterException**(String *message*) {

super(*message*);

}

}

OUTPUT:



1. Write a java program that reads basic salary of an employee and finds the gross salary.

Create a user defined Exception class known as “PayOutOfBoundsException”. The organisation does not offer a basic salary of less than 8000. If entered salary is less than 8000 the program should create an Exception of type PayOutOfBoundsException,

The program should calculate gross salary by considering salary parameters such as Dearness Allowance (DA), HRA, Travelling Allowance (TA), Professional Tax (PT), TDS. (Gross salary =basic\_salary+DA+HRA+TA-PT-TDS). All inputs are taken from the user.

CODE:

import java.util.Scanner;

public class Main {

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

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

*// Read the basic salary from the user*

System.out.**print**("Enter the basic salary: ");

int basicSalary = sc.**nextInt**();

try {

*// Calculate the gross salary*

int grossSalary = **calculateGrossSalary**(basicSalary);

System.out.**println**("Gross salary: " + grossSalary);

} catch (PayOutOfBoundsException *e*) {

System.out.**println**(e.**getMessage**());

}

}

public static int **calculateGrossSalary**(int *basicSalary*) throws PayOutOfBoundsException {

*// Check if the basic salary is less than 8000*

if (*basicSalary* < 8000) {

*// Throw a custom exception if the basic salary is less than 8000*

throw new **PayOutOfBoundsException**("Basic salary cannot be less than 8000");

}

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

System.out.**print**("Enter the Dearness Allowance : ");

int da = sc.**nextInt**();

System.out.**print**("Enter the House Rent Allowance: ");

int hra = sc.**nextInt**();

System.out.**print**("Enter the Travelling Allowance : ");

int ta = sc.**nextInt**();

System.out.**print**("Enter the Professional Tax : ");

int pt = sc.**nextInt**();

System.out.**print**("Enter the TDS(Tax Deducted at source): ");

int tds = sc.**nextInt**();

*// Calculate the gross salary using the given formula*

int grossSalary = *basicSalary* + da + hra + ta - pt - tds;

return grossSalary;

}

}

class PayOutOfBoundsException extends Exception {

public **PayOutOfBoundsException**(String *message*) {

super(*message*);

}

}

OUTPUT:

