**LAB ASSIGNMENT SOLUTION DAY 4 EXERCISES-Submitted By Rupali Tripathi  
  
  
Q29**package Shapes;

/\*\*

\* Create a package called shapes. Create some classes in the package representing some

common geometric shapes like Square, Triangle, Circle and so on. Create a class called

TestShapes and create objects for all the shapes and print corresponding messages.

Execute the TestShapes class.

\*

\*/

//This is the Square class. It will print length.

class Square{

int lengthSquare;

public Square(int lengthSquare) {

super();

this.lengthSquare = lengthSquare;

}

void display() {

System.out.println("The length of the square is "+ lengthSquare+ " cm" );

}

}

//This is the triangle class.It will print length.

class Triangle{

int lengthTriangle;

public Triangle(int lengthTriangle) {

super();

this.lengthTriangle = lengthTriangle;

}

void display() {

System.out.println("The length of the square is "+ lengthTriangle+ " cm" );

}

}

//This is the circle class. It will print length.

class Circle{

int lengthCircle;

public Circle(int lengthCircle) {

super();

this.lengthCircle = lengthCircle;

}

void display() {

System.out.println("The radius of the circle is "+ lengthCircle + " cm");

}

}

//This class contains the main method. We will get info of other class/shapes using this generic class

public class TestShapes {

/\*\*

\* @param args

\*/

public static void main(String[] args) {

// TODO Auto-generated method stub

Square s=new Square(4);

s.display();

Triangle t =new Triangle(7);

t.display();

Circle c =new Circle(5);

c.display();

}

}

**Q30  
  
PROJECT ANIMALS:**package hsbc.animals.org;

/\*\*

\* 1. Create a new project in which create a package named org.animals.

\* In that create various classes like Lion, Tiger, Deer, Monkey, Elephant and Giraffe. In each class

\* create data members like color, weight,age etc. Create methods like isVegetarian, canClimb, sound etc

\* 2. Create another project and in that create a package called zoo and create a class called VandalurZoo

\* and create objects for the animals that are existing in zoo and print the characteristic of each animal.

\*

\*/

class Lion{

int age;

String color;

int weight;

public Lion(int age, String color, int weight) {

super();

this.age = age;

this.color = color;

this.weight = weight;

}

@Override

public String toString() {

return "Lion [age=" + age + ", color=" + color + ", weight=" + weight + "]";

}

public void isVegetarian() {

System.out.println("Yes,vegetarian!");

}

public void canClimb()

{

System.out.println("No cant climb!");

}

}

class Tiger{

int age;

String color;

int weight;

public Tiger(int age, String color, int weight) {

super();

this.age = age;

this.color = color;

this.weight = weight;

}

@Override

public String toString() {

return "Tiger [age=" + age + ", color=" + color + ", weight=" + weight + "]";

}

public boolean isVegetarian() {

return false;

}

public void canClimb()

{

System.out.println("No cant climb!");

}

}

class Elephant{

int age;

String color;

int weight;

public Elephant(int age, String color, int weight) {

super();

this.age = age;

this.color = color;

this.weight = weight;

}

@Override

public String toString() {

return "Elephant [age=" + age + ", color=" + color + ", weight=" + weight + "]";

}

public void isVegetarian() {

System.out.println("Yes,vegetarian!");

}

public void canClimb()

{

System.out.println("No cant climb!");

}

}

class Monkey{

int age;

String color;

int weight;

public Monkey(int age, String color, int weight) {

super();

this.age = age;

this.color = color;

this.weight = weight;

}

@Override

public String toString() {

return "Monkey [age=" + age + ", color=" + color + ", weight=" + weight + "]";

}

public void isVegetarian() {

System.out.println("Yes,vegetarian!");

}

public void canClimb()

{

System.out.println("Yes can climb!");

}

}

class Giraffe{

int age;

String color;

int weight;

public Giraffe(int age, String color, int weight) {

super();

this.age = age;

this.color = color;

this.weight = weight;

}

@Override

public String toString() {

return "Giraffe [age=" + age + ", color=" + color + ", weight=" + weight + "]";

}

public void isVegetarian() {

System.out.println("Yes,vegetarian!");

}

public void canClimb()

{

System.out.println("No cant climb!");

}

}

class Deer{

int age;

String color;

int weight;

public Deer(int age, String color, int weight) {

super();

this.age = age;

this.color = color;

this.weight = weight;

}

@Override

public String toString() {

return "Deer [age=" + age + ", color=" + color + ", weight=" + weight + "]";

}

public void isVegetarian() {

System.out.println("Yes,vegetarian!");

}

public void canClimb()

{

System.out.println("No cant climb!");

}

}

**PROJECT ZOO:**package hsbc.zoo;

import hsbc.animals.org.\*;

/\*\*

\* 1. Create a new project in which create a package named org.animals.

\* In that create various classes like Lion, Tiger, Deer, Monkey, Elephant and Giraffe. In each class

\* create data members like color, weight,age etc. Create methods like isVegetarian, canClimb, sound etc

\* 2. Create another project and in that create a package called zoo and create a class called VandalurZoo

\* and create objects for the animals that are existing in zoo and print the characteristic of each animal.

\*

\*

\*/  
//This class has the main class

public class VandalurZoo {

/\*\*

\* @param args

\*/

public static void main(String[] args) {

Lion l=new Lion(9,"orche",9);

l.toString();

l.canClimb();

l.isVegetarian();

Elephant e =new Elephant(9,"Blue",9);

e.toString();

e.canClimb();

e.isVegetarian();

Tiger t=new Tiger(9,"Yellow",9);

t.toString();

t.canClimb();

t.isVegetarian();

Deer d=new Deer(9,"Yellow",9);

d.toString();

d.canClimb();

d.isVegetarian();

Monkey m= new Monkey(9,"Golden",9);

l.toString();

l.canClimb();

l.isVegetarian();

}

}

**Q31**/\*\*

\*

\*/

package day4.hsbc.com;

import java.util.Locale;

/\*\*

\*Create a class which displays the following about the JVM.

1. Version of Java

2. Vendor for Java

3. Class Path

4. Installed home directory

5. OS name on which it is installed with version

\*

\*/  
//Class to print properties.

public class JVMDetails31 {

/\*\*

\* @param args

\*/

public static void main(String[] args) {

// TODO Auto-generated method stub

String os = System.getProperty("os.name", "generic").toLowerCase(Locale.ENGLISH);

String version = System.getProperty("java.runtime.version", "generic").toLowerCase(Locale.ENGLISH);

String vendor = System.getProperty("java.vm.vendor", "generic").toLowerCase(Locale.ENGLISH);

String classPath = System.getProperty("java.class.path", "generic").toLowerCase(Locale.ENGLISH);

String homeDirectory = System.getProperty("user.dir", "generic").toLowerCase(Locale.ENGLISH);

System.out.println("The OS is: " + os);

System.out.println("The Version is: " + version);

System.out.println("The Vendor is: " + vendor);

System.out.println("The Class Path is: " + classPath);

System.out.println("The Home Directory is: " + homeDirectory);

}

}

**Q32**/\*\*

\*

\*/

package day4.hsbc.com;

import java.util.Scanner;

/\*\*

\* Create a class called Student. Get the details like name, degree, age, total marks and

percentage from the user and display the same.

\*

\*/  
//Class to demonstrate the use of scanner class for taking input

public class ScannerClass32 {

/\*\*

\* @param args

\*/

static int age,totalMarks; static double percentage;

static String name,degree;

static public void display(){

System.out.println("\t"+name+"\t"+degree+"\t"+age+"\t"+totalMarks+"\t"+ percentage);

}

public static void main(String[] args) {

Scanner scan = new Scanner(System.in);

System.out.println("Enter the required student details in the sequence of Name, Degree, Age, Total Marks and Percentage");

name=scan.next();

degree=scan.next();

age=scan.nextInt();

totalMarks=scan.nextInt();

percentage=scan.nextDouble();

//This method will be printing the details of the student.

display();

}

}

**Q33  
  
HALL.JAVA**/\*\*

\*

\*/

package house;

import static java.lang.System.\*;

/\*\*

\* Create a Package called house. Create 2 classes namely Hall and Kitchen.

1. In the Hall class print the message “This is the first room while entering the house” without using the class name System explicitly in the println statement.

2. In the Kitchen class create an array called appliances and initialize with values and print the same.

3. After printing copy that array into a different array.

4. Invoke garbage collector explicitly for the Kitchen class.

\*

\*/

public class Hall {

/\*\*

\* @param args

\*/

public static void main(String[] args) {

// TODO Auto-generated method stub

out.println("This is the first room while entering the house");

}

}

**KITCHEN.JAVA**/\*\*

\*

\*/

package house;

/\*\*

\*Create a Package called house. Create 2 classes namely Hall and Kitchen.

1. In the Hall class print the message “This is the first room while entering the house” without using the class name System explicitly in the println statement.

2. In the Kitchen class create an array called appliances and initialize with values and print the same.

3. After printing copy that array into a different array.

4. Invoke garbage collector explicitly for the Kitchen class.

\*

\*/

public class Kitchen {

/\*\*

\* @param args

\*/

public static void main(String[] args) {

String s[]= {"Oven", "Grinder", "Toaster", "Induction"};

for(int i=0;i<s.length;i++)

System.out.println(s[i]);

String s1[]=s;

//WE can explicitly call Garbage Collector via 2 ways.

//we will implement one way and the next one is mentioned in comments

Kitchen k=null;

System.gc();}

//Method 2

//Runtime.getRuntime().gc();

public void finalize(){

System.out.println("Garbage Collected");

}

}

**Q51**package day4.hsbc.com;

/\*

\* Syntax51

\* Here we will specifically show String Index Out of Bounds Exception

\*/

public class Syntax51 {

public static void main(String[] args) {

// TODO Auto-generated method stub

String s = "The quick brown fox jumps over the lazy dog";;

try {

System.out.println("The character at 12th place is " + s.charAt(121));

System.out.println("'is' exists in the string 's' : " + s.contains("is"));

s = s + " and killed it";

System.out.println("The new string is :" + s);

System.out.println("The string ends with 'dogs' :" + s.endsWith("dogs"));

String s1 = "The quick brown Fox jumps over the lazy Dog";

if(s1.equals(s))

System.out.println("The strings are equal");

else

System.out.println("The strings are not equal");

String s2 = "THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG";

if(s2.equals(s))

System.out.println("The strings are equal");

else

System.out.println("The strings are not equal");

System.out.println("The index position of first occurence of 'a' is: " + s.indexOf("a"));

System.out.println("The index position of last occurence of 'e' is: " + s.lastIndexOf("e"));

System.out.println("Length of string 's' is: " + s.length());

String s3 = "The quick brown Fox jumps over the lazy Dog";

if(s3.equals(s))

System.out.println("The strings are equal");

else

System.out.println("The strings are not equal");

s = s.replaceAll("The","A");

System.out.println("The new string is: " + s);

String sp1 = s.substring(0, 28);

String sp2 = s.substring(28);

System.out.println(sp1 + " | " + sp2);

String[] sl = s.split(" ");

System.out.println("The animal names are : " + sl[3] + " and " + sl[8]);

System.out.println(s.toLowerCase());

System.out.println(s.toUpperCase());

System.out.println("Since we are progressing towards the end of the program here we will make String s null and we will see null pointer exception.");

s=null;

System.out.println(s.charAt(8));

}

catch(Exception e) {

System.out.println("This is called String Index Out of Bounds Exception. You are trying to access content of a String at a position whose location is not allotted.");

System.out.println("This is called Null pointer Exception. You are trying to access content of a StringThat has been already declared as null");

e.printStackTrace();

}

}

}

**Q52**  
  
package day4.hsbc.com;

/\*\*

\*SYNTAX

\*///Here we will show Various types of Exceptions that are encountered while working with the Strings.

public class Syntax52 {

public static void main(String[] args) {

// TODO Auto-generated method stub

String s = "The quick brown fox jumps over the lazy dog";;

try {

System.out.println("The character at 12th place is " + s.charAt(121));

}

catch(Exception e) {

e.printStackTrace();

System.out.println("This is called String Index Out of Bounds Exception. You are trying to access content of a String at a position whose location is not allotted.");

}

try {

System.out.println("'is' exists in the string 's' : " + s.contains("is"));

s = s + " and killed it";

System.out.println("The new string is :" + s);

System.out.println("The string ends with 'dogs' :" + s.endsWith("dogs"));

String s1 = "The quick brown Fox jumps over the lazy Dog";

if(s1.equals(s))

System.out.println("The strings are equal");

else

System.out.println("The strings are not equal");

String s2 = "THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG";

if(s2.equals(s))

System.out.println("The strings are equal");

else

System.out.println("The strings are not equal");

System.out.println("The index position of first occurence of 'a' is: " + s.indexOf("a"));

System.out.println("The index position of last occurence of 'e' is: " + s.lastIndexOf("e"));

System.out.println("Length of string 's' is: " + s.length());

String s3 = "The quick brown Fox jumps over the lazy Dog";

if(s3.equals(s))

System.out.println("The strings are equal");

else

System.out.println("The strings are not equal");

s = s.replaceAll("The","A");

System.out.println("The new string is: " + s);

String sp1 = s.substring(0, 28);

String sp2 = s.substring(28);

System.out.println(sp1 + " | " + sp2);

String[] sl = s.split(" ");

System.out.println("The animal names are : " + sl[3] + " and " + sl[8]);

System.out.println(s.toLowerCase());

System.out.println(s.toUpperCase());

System.out.println("Since we are progressing towards the end of the program here we will make String s null and we will see null pointer exception.");

s=null;

System.out.println(s.charAt(8));

}

catch(NullPointerException e) {

e.printStackTrace();

System.out.println("This is called Null pointer Exception. You are trying to access content of a StringThat has been already declared as null");

}

}

}

**Q54**/\*\*

\*

\*/

package day4.hsbc.com;

import java.util.Scanner;

/\*\*

\* By using multiple catch blocks, write a class to demonstrate the order of the execution of the

catch blocks usingNegativeArraySizeException,ArrayIndexOutOfBoundsException,

StringIndexOutOfBoundsException, IndexOutOfBoundsException, NullPointerException,

ArithmeticException and print the stack trace for each exception.

\*

\*/

public class MultipleCatchMethods54 {

/\*\*

\* @param args

\*/

public static void main(String[] args) {

// TODO Auto-generated method stub

Scanner scan =new Scanner(System.in);

boolean checkb=true;  
 int check=1;

while(checkb) {

int n=scan.nextInt();

try {

int array[]=new int[n];

for(int i=0;i<array.length;i++)

array[i]=scan.nextInt();

System.out.println("Enter a location to access value.");

int m=scan.nextInt();

System.out.println(array[m-1]);

String str = "RUPALI";

System.out.println("Enter a location value in String.");

int k=scan.nextInt();

System.out.println("Length of the String is: " + str.length());

System.out.println("The substring is: " + str.substring(k));

System.out.println("Enter a divisor.");

int divisor=scan.nextInt();

int s=5/divisor;

array=null;

System.out.println(array[9]);

/\*int s=5/0;

int array[]=new int[n];

//for(int i=0;i<array.length;i++)

//array[i]=scan.nextInt();

//int m=array[n+1];

/\*String str = "RUPALI";

System.out.println("Length of the String is: " + str.length());

System.out.println("Length of the substring is: " + str.substring(7));\*/

// int s=5/0;

//array=null;\*/

}

catch(ArithmeticException ex){

System.out.println("Division by 0 not possible, enter non zero value for divisor");

ex.printStackTrace();

System.out.println("wanna see more type of exceptions? Press 1, else 0");

check=scan.nextInt();

if(check==0)

checkb=false;

else

checkb=true;

}

catch(NegativeArraySizeException ex){

System.out.println("Can't declare an array of negative size");

ex.printStackTrace();

System.out.println("wanna see more type of exceptions? Press 1, else 0");

check=scan.nextInt();

if(check==0)

checkb=false;

else

checkb=true;

}

catch(ArrayIndexOutOfBoundsException ex){

System.out.println("You are trying to access a location that is not initialized/allocated.");

ex.printStackTrace();

System.out.println("wanna see more type of exceptions? Press 1, else 0");

check=scan.nextInt();

if(check==0)

checkb=false;

else

checkb=true;

}

catch(StringIndexOutOfBoundsException ex){

System.out.println("You are trying to access a location that is not initialized/allocated.");

ex.printStackTrace();

System.out.println("wanna see more type of exceptions? Press 1, else 0");

check=scan.nextInt();

if(check==0)

checkb=false;

else

checkb=true;

}

catch(IndexOutOfBoundsException ex){

System.out.println("You are trying to access a location that is not initialized/allocated.");

ex.printStackTrace();

System.out.println("wanna see more type of exceptions? Press 1, else 0");

check=scan.nextInt();

if(check==0)

checkb=false;

else

checkb=true;

}

catch(NullPointerException ex){

System.out.println("We assigned the array to null because we are proceeding towards the end of program!.");

ex.printStackTrace();

System.out.println("wanna see these type of exceptions again? Press 1, else 0");

check=scan.nextInt();

if(check==0)

checkb=false;

else

checkb=true;

}

}

}

}

**Q56**package day4.hsbc.com;

/\*\*

\* Create a class such that it resets the value of the objects it used to null after its usage in all

cases.

\*

\*/

class DemoFinally{

String result;

int intArray[]= {1,2,3,4},j,m;

public DemoFinally( int j) {

super();

this.j = j;

try {

m=10/j;

result=result + j;

System.out.println(result);

}

catch(Exception e){

j=0;

System.out.println("Inserted Value not acceptable as a divisor. Hence printing default exit code. Unsuccessful request. Returning exit code" + j );

}

finally {

for(int i=0;i<intArray.length;i++)

System.out.println(intArray[i]);

result=null;

intArray=null;

System.out.println(result);

System.out.println(intArray);

System.out.println("We can see that the object values are now null after its usage!!!");

}

}

}

public class Finally56 {

/\*\*

\* @param args

\*/

public static void main(String[] args) {

// TODO Auto-generated method stub

new DemoFinally(7);

}

**Q57**package day4.hsbc.com;

/\*\*

\* Create a class such that a method uses the try catch block with the return type of String.

\*

\*/  
//This class contains a method that will return String message

class Test{

int divisor,j=0;

String result="The result is ",s;

@SuppressWarnings("finally")

public String customMethod(int divisor) {

//super();

this.divisor = divisor;

try {

j=10/divisor;

result=result + j;

System.out.println(result);

}

catch(Exception e){

j=0;

System.out.println("Inserted Value not acceptable as a divisor. Hence printing default exit code. Unsuccessful request. Returning exit code" + j );

}

finally {

s="The Execution is finished now. HAve a GOOD DAy and do remember to learn something";

return s;

}

}

}  
//This class contains the main method

public class Finally57 {

/\*\*

\* @param args

\*/

public static void main(String[] args) {

Test t1=new Test();

t1.customMethod(2);

Test t2=new Test();

t2.customMethod(0);

}

}

**Q58**/\*\*

\*

\*/

package day4.hsbc.com;

import java.util.ArrayList;

/\*\*

\* Create a class called Employee which asks the user to input the name and the age of a

employee. Raise a custom defined exception when the user enters an employee name

that has been already entered and raise another exception if the age is negative or less

than 18 or greater than 60

\*

\*/

//This class contains method to display custom exceptions in case of age range fails or name is taken again

class CustomException extends Exception{

public void display1(){

System.out.println("Age should be in the range of 18-60");

}

public void display2(){

System.out.println("This username is not available. Please enter another");

}

}  
  
//This class contains the main method

public class Employee58 {

/\*\*

\* @param args

\* @param eName

\* @param eAge

\*/

int eAge;

String eName;

private static ArrayList <String> al=new ArrayList<String>();

//Here we will check for age and name restrictions

public Employee58(int eAge, String eName) {

//super();

if((eAge>18 && eAge<60)&&(!al.contains(eName))) {

this.eAge = eAge;

this.eName = eName;

al.add(eName);

System.out.println(eAge + "\t" + eName);

}

else{

if((eAge<18||eAge>60))

try {

throw new CustomException();

}

catch(CustomException ex){

ex.display1();

}

if(al.contains(eName)){

try {

throw new CustomException();

}

catch(CustomException ex){

ex.display2();

}}

}

}

public static void main(String[] args) {

// TODO Auto-generated method stub

//Employee58 e1 =

// ArrayList<String> al = new ArrayList<String>();

new Employee58(62,"Rupali");

// e1.display();

//Employee58 e2 =

new Employee58(-12,"Rupali");

//e2.display();

//Employee58 e3 =

new Employee58(22,"Rupali");

//e3.display();

//Employee58 e4 =

new Employee58(25,"Rupali");

//e4.display();

}

}