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SUBJECT : AOOP

1. Write a Java program to generate and handle any three built-in exceptions and display appropriate error messages.

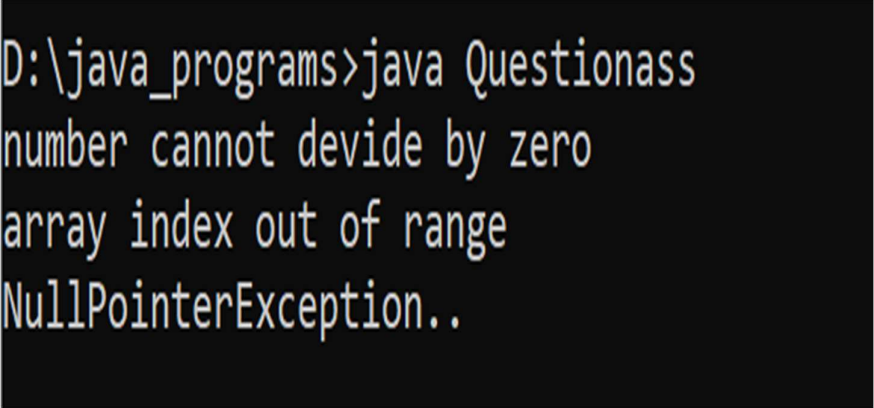
ANS :

```
import java.io.*;

class Question1 {
    public static void main(String args[]){
        try {
            int a=30,b=0;
            int c=a/b;
            System.out.println("result="+ c);
        }
        catch(ArithmeticException e){
            System.out.println("number cannot divide by zero");
        }
        try {
            int f[]=new int[5];
            f[6]=9;
        }
        catch( ArrayIndexOutOfBoundsException ed){
            System.out.println("array index out of range");
        }
        try {
            String a = null; // null value
            System.out.println(a.charAt(0));
        }
        catch (NullPointerException e)
```

```
        System.out.println("NullPointerException..");  
    }  
    }  
}
```

Output :

A screenshot of a command prompt window with a black background and white text. It shows the execution of a Java program named 'Questionass'. The output consists of four lines of error messages: 'number cannot divide by zero', 'array index out of range', and 'NullPointerException..'.

```
D:\java_programs>java Questionass  
number cannot divide by zero  
array index out of range  
NullPointerException..
```

2. Write a Java program to read an integer and check whether the number is prime or not. If negative number is entered, throw an exception `NegativeNumberNotAllowedException` and if entered number is not prime, then throw `NumberNotPrimeException`.

ANS :

```
import java.io.*;
```

```
import java.util.Scanner;
```

```
class NegativeNumberNotAllowedException extends Exception {
```

```
    NegativeNumberNotAllowedException(){
```

```
    }
```

```
    public String toString(){
```

```
        return "Negative num not allowed";
```

```
    }
```

```
}
```

```
class NumberNotPrimeException extends Exception {
```

```
    NumberNotPrimeException(){
```

```
    }
```

```
    public String toString(){
```

```
        return "not prime";
```

```
    }
```

```
}
```

```
class Myclass {
```

```
    public static void main(String args[]) throws Exception {
```

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

```
        System.out.println("enter a number");
```

```
        int a=sc.nextInt();
```

```
        int f=0;
```

```

        for(int i=2;i<a/2;i++){
            if(a%i==0){
                //System.out.println("not prime");
                f=1;    //throw new NumberNotPrimeException();
            }

        }

        try {
            if(f==1)
                throw new NumberNotPrimeException();
            else
                System.out.println(" prime");
        }catch(NumberNotPrimeException e){
            System.out.println("not prime");
        }

    }

    try{
        if(a<0)
            throw new NegativeNumberNotAllowedException();
    }catch(NegativeNumberNotAllowedException e){
        System.out.println("Negative num not allowed");
    }

}

```

Output :

```

D:\java_programs>java Myclass
enter a number
3
prime

D:\java_programs>java Myclass
enter a number
-5
prime
Negative num not allowed

D:\java_programs>java Myclass
enter a number
6
not prime

```

3. Write a Java program to perform the following operations:

- a) Read a line of text
- b) Search for a sub-string SDMCET (case insensitive search)
- c) If found, then print success message
- d) Otherwise throw an exception SubStringNotFoundException with appropriate message

ANS :

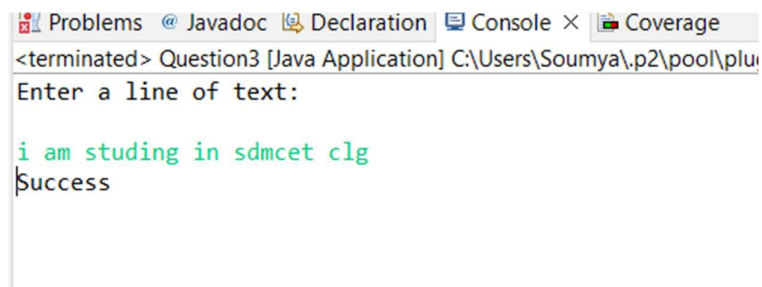
```
import java.util.Scanner;
```

```
class SubStringNotFoundException extends Exception {  
    String s;  
    SubStringNotFoundException (String s){  
        this.s=s;  
    }  
    public String toString() {  
        return "not present";  
    }  
}
```

```
public class Question3 {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter a line of text");  
        String s=sc.nextLine();  
        boolean val=s.contains("SDMCET");  
        boolean val1=s.contains("sdmcet");  
        try {  
            if(val || val1)  
                System.out.println("Success");  
        }  
    }  
}
```

```
        else
            throw new SubStringNotFoundException ("not found");
        }catch(SubStringNotFoundException e){
            System.out.println("not present");
        }
    }
}
```

Output :



The screenshot shows an IDE console window with the following tabs: Problems, Javadoc, Declaration, Console, and Coverage. The Console tab is active, displaying the output of a Java application. The text in the console is as follows:

```
<terminated> Question3 [Java Application] C:\Users\Soumya\.p2\pool\plu
Enter a line of text:
i am studing in sdmcet clg
Success
```

4. Write a Java program to perform the following operations:

- a) Create a file named Alphabets.txt and insert appropriate data into it
- b) Read the file and copy all the consonants into another file named Consonants.txt
- c) If vowel is encountered, throw an exception VowelNotAllowedException and continue until end of file

ANS :

```
import java.io.FileOutputStream;
import java.io.FileInputStream;

class VowelsNotAllowedException extends Exception {
    String s;
    VowelsNotAllowedException(String s){
        this.s=s;
    }
    public String toString() {
        return "vowels not allowed";
    }
}

public class program4 {
    public static void main(String args[]) throws Exception {
```

```

        FileInputStream fos1 = new FileInputStream("C:\\Users\\Soumya\\eclipse-
workspace\\program\\src\\alphabet.txt");

        FileOutputStream fis= new FileOutputStream("C:\\Users\\Soumya\\eclipse-
workspace\\program\\src\\consonent.txt");

        int s;

        while((s= fos1.read())!=-1)

            try {

                if(s=='a' || s=='e' || s=='i' || s=='o' || s=='u')

                    throw new VowelsNotAllowedException("vowels present");

                fis.write(s);

            }catch(VowelsNotAllowedException e) {

                System.out.println("vowels are present ");

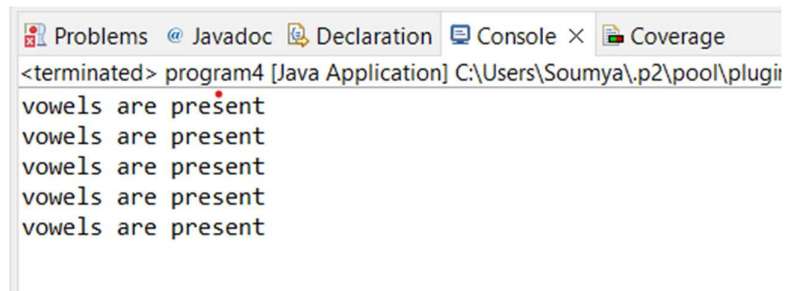
            }

        }

    }
}

```

Output :



The screenshot shows the Eclipse IDE's Console window. The title bar includes tabs for Problems, Javadoc, Declaration, Console (active), and Coverage. The console output shows the program has terminated and then printed "vowels are present" five times, each on a new line. The text is: <terminated> program4 [Java Application] C:\Users\Soumya\.p2\pool\plugi; vowels are present; vowels are present; vowels are present; vowels are present; vowels are present.

5. Write a Java program to implement the following scenario:

- a) Create a file named Integers.txt and insert n-random integers into it
- b) Create three threads T1, T2 and T3 that read $n/3$ integers in sequence of occurrence of numbers from the file and sort the read $n/3$ integers
- c) Thread T4 waits for all the threads T1, T2 and T3 to complete sorting, then sorts and outputs the entire list of sorted numbers to another file named SortedIntegers.txt

ANS :

```
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileWriter;
import java.io.IOException;
import java.util.Arrays;
import java.util.Scanner;
```