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Department
of
COMPUTER SCIENCE AND ENGINEERING

ASSIGNMENT-1

[18UCSE508- ADVANCED OBJECT ORIENTED PROGRAMMING]

Course Teacher: Prof. Indira R Umarji

2022- 2023

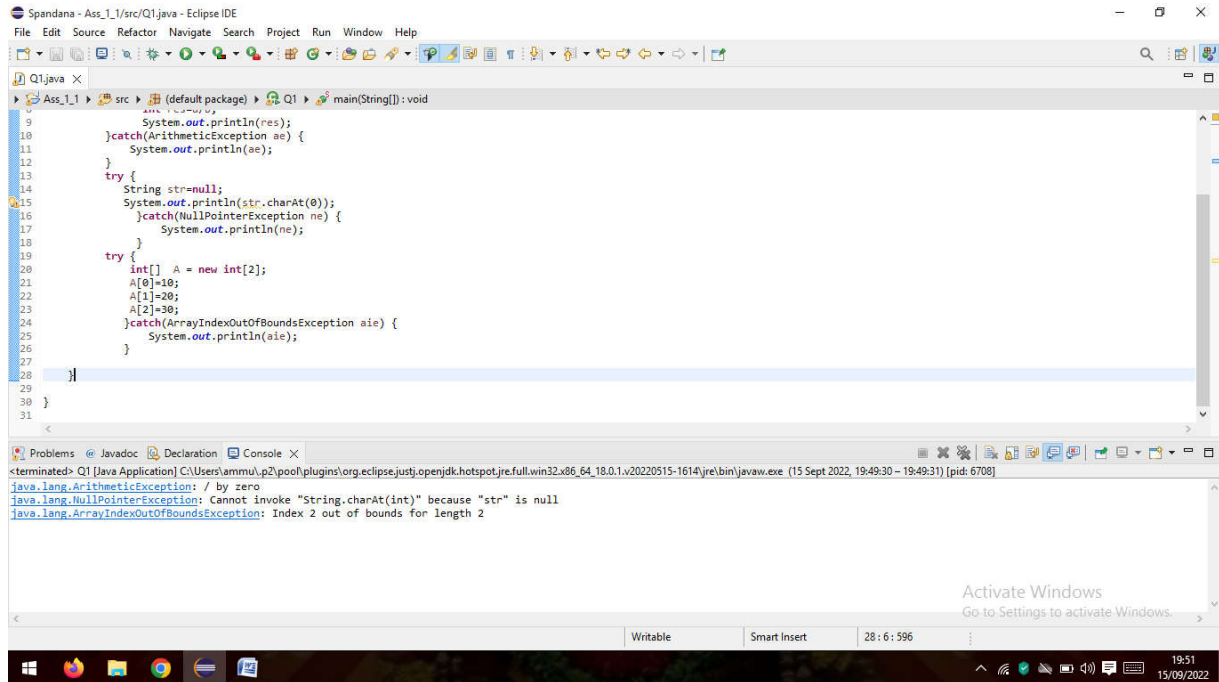Submitted

By

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2SD20CS108
5th Semester B division

Q1. Write a Java program to generate and handle any three built-in exceptions and display appropriate error messages.

```java
// Java program to  generate and handle any three built-in exceptions
public class Q1 {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        try {
            int a=10,b=0;
            int res=a/b;
            System.out.println(res);
        }catch(ArithmeticException ae) {
            System.out.println(ae);
        }
        try {
            String str=null;
            System.out.println(str.charAt(0));
        }catch(NullPointerException ne) {
            System.out.println(ne);
        }
        try {
            int[]  A = new int[2];
            A[0]=10;
            A[1]=20;
            A[2]=30;
        }catch(ArrayIndexOutOfBoundsException aie) {
            System.out.println(aie);
        }

    }

}
```

OUTPUT:


```
            System.out.println(res);
        }catch(ArithmeticException ae) {
            System.out.println(ae);
        }
    try {
        String str=null;
        System.out.println(str.charAt(0));
        }catch(NullPointerException ne) {
            System.out.println(ne);
        }
    try {
        int[]  A = new int[2];
        A[0]=10;
        A[1]=20;
        A[2]=30;
        }catch(ArrayIndexOutOfBoundsException aie) {
            System.out.println(aie);
        }

    }
}
```

Problems @ Javadoc Declaration Console ✕

<terminated> Q1 [Java Application] C:\Users\ammu\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_18.0.1.v20220515-1614\jre\bin\javaw.exe (15 Sept 2022, 19:49:30 – 19:49:31) [pid: 6708]

java.lang.ArithmeticException: / by zero
java.lang.NullPointerException: Cannot invoke "String.charAt(int)" because "str" is null
java.lang.ArrayIndexOutOfBoundsException: Index 2 out of bounds for length 2

Q2. 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.

//Exception Class

```java
class NegativeNumberNotAllowedException extends Exception{
        public String toString() {
                return "Negative number not allowed";
        }
}

        class NumberNotPrimeException extends Exception{
                public String toString() {
                        return "Number entered is not prime";
                }
        }
```

//Main class

```java
import java.util.Scanner;
public class Q2 {
        static int primeCheck(int n) {
                boolean flag=false;
                for(int i=2;i<=n/2;i++) {
                        if(n%i==0){
                                flag=true;
                                break;
                        }
                }
                if(!flag)
                        return 1;
                else
                        return 0;
        }
        public static void main(String[] args) throws Exception {
                // TODO Auto-generated method stub
                Scanner sc=new Scanner(System.in);
                System.out.println("Enter an integer");
                int n=sc.nextInt();

                if(n<0)
```

```java
            throw new NegativeNumberNotAllowedException();
        else {
            int a=primeCheck(n);
            if(a==1)
                    System.out.println("Prime number");
            else
                    throw new NumberNotPrimeException();
        }


    }

}
```

OUTPUT:

```java
import java.util.Scanner;
public class Q2 {
    static int primeCheck(int n) {
        boolean flag=false;
        for(int i=2;i<=n/2;i++) {
            if(n%i==0){
                flag=true;
                break;
            }
        }
        if(!flag)
            return 1;
        else
            return 0;
    }
    public static void main(String[] args) throws Exception {
        // TODO Auto generated method stub
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter an integer");
        int n=sc.nextInt();

        if(n<0)
            throw new NegativeNumberNotAllowedException();
        else {
            int a=primeCheck(n);
            if(a==1)
                System.out.println("Prime number");
            else
                throw new NumberNotPrimeException();
        }

    }
}
```
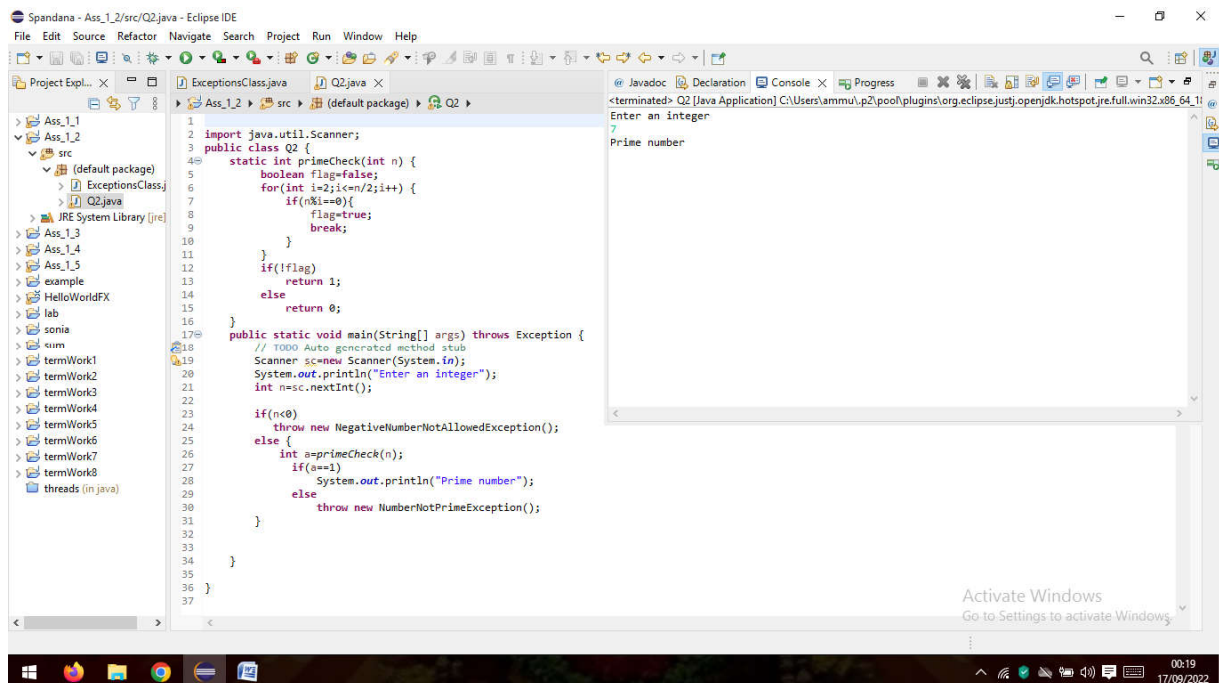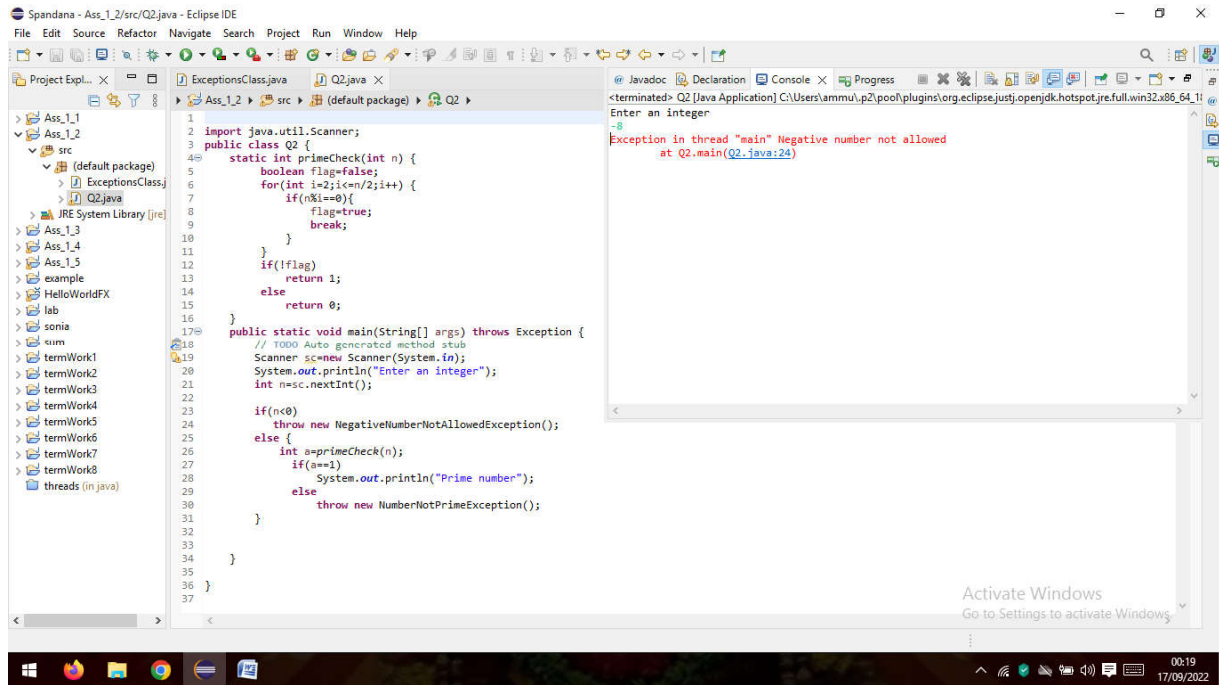
Console output (first run):
```
Enter an integer
-8
Exception in thread "main" Negative number not allowed
        at Q2.main(Q2.java:24)
```

Console output (second run):
```
Enter an integer
7
Prime number
```

Q3. 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

```java
//Exception class

public class subStringNotFoundException extends Exception{
    public String toString(){
        return "sub-String Not Found";
    }
}


//main class

import java.util.Scanner;

class Q3 {

    public static void main(String[] args)throws Exception {
        Scanner sc=new Scanner(System.in);

        System.out.println("Enter the text");
        String text=sc.next();

        System.out.println("Enter pattern");
        String pattern=sc.next();

    int len_t = text.length();
        int len_p = pattern.length();

        int k = 0, i = 0, j = 0;


        for (i = 0; i <= (len_t - len_p); i++) {

            for (j = 0; j < len_p; j++)
            {
                if (text.charAt(i + j) != pattern.charAt(j))
                    break;
```

```java
                    }

                    if (j == len_p)
                    {
                            k++;
                            System.out.println("Pattern Found");
                    }
            }

            if (k == 0) {
                    throw new subStringNotFoundException();

            }

        }
}
```
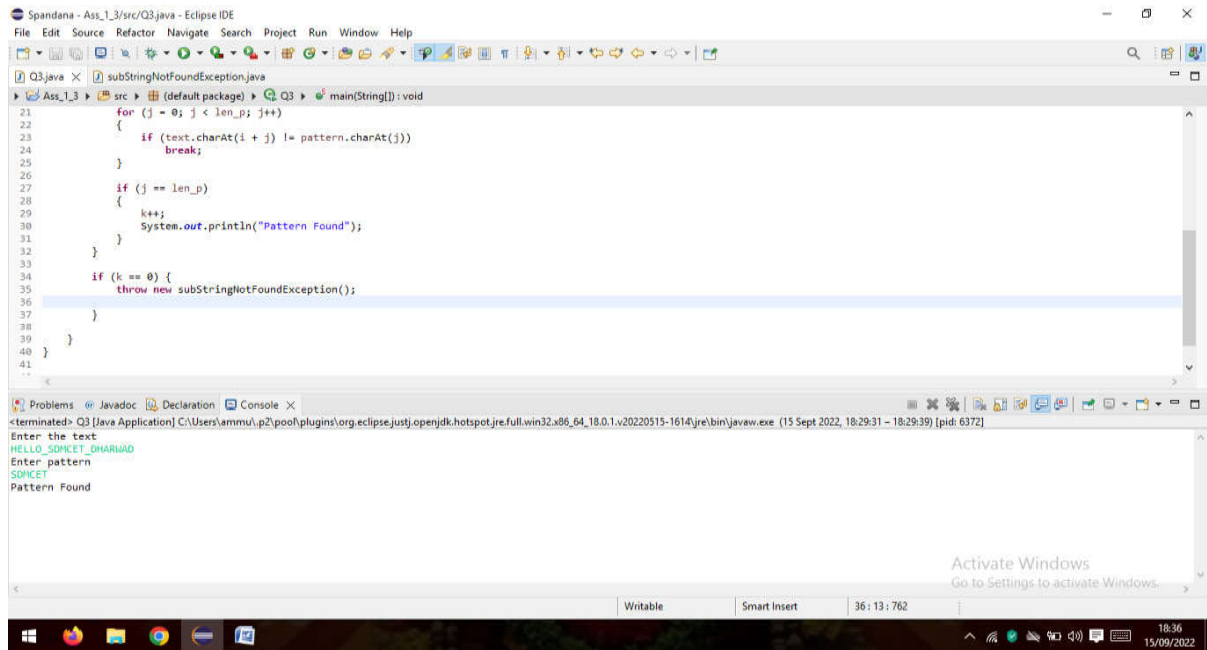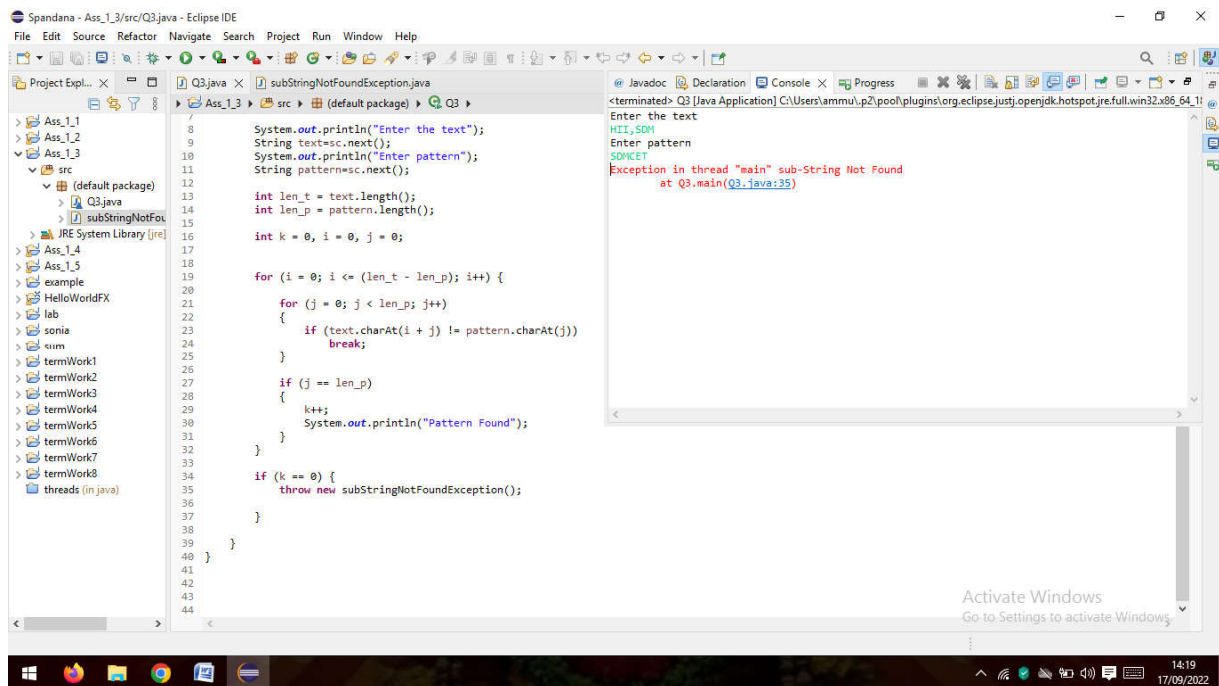
Q4. Write a Java program to perform the following operations:

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

```java
//Exception class

class VowelNotAllowedException extends Exception{

        public String toString() {

                return "Vowel,not allowed";

}
}


//main class

import java.io.FileInputStream;
import java.io.FileOutputStream;
public class Q4 {
  public static void main(String [] args)throws Exception{

                        FileInputStream fis = new
FileInputStream("C:\\Users\\joglekar\\Desktop\\Spandana\\Ass_1_4\\src\\Alphabets.txt");

                        FileOutputStream fos = new
FileOutputStream("C:\\Users\\joglekar\\Desktop\\Spandana\\Ass_1_4\\src\\Consonants.txt");

                                int c;
                                while((c=fis.read())!=-1) {
                                try {

if(c=='a'||c=='e'||c=='i'||c=='o'||c=='u'||c=='A'||c=='E'||c=='I'||c=='O'||c=='U') {
                                                throw new VowelNotAllowedException();
                                }
                                 fos.write(c);
                                }catch(Exception e) {
                                        System.out.println(e);
```

```
                                    }
                              }
                        }
                  }
```

OUTPUT: