

**SDM College of Engineering and Technology**

Dhavalagiri , Dharwad-580002. Karnataka State. India.

Email: [principal@sdmcet.ac.in](mailto:principal@sdmcet.ac.in), [cse.sdmcet@gmail.com](mailto:cse.sdmcet@gmail.com)

Ph: 0836-2447465/ 2448327 Fax: 0836-2464638 Website: [sdmcet.ac.in](http://sdmcet.ac.in)

**Department  
of  
COMPUTER SCIENCE AND ENGINEERING**

**ASSIGNMENT-1**

**[18UCSE508- ADVANCED OBJECT ORIENTED PROGRAMMING]**

**Course Teacher: Prof. Indira R Umarji**



**2022- 2023**

Submitted

By

**Ms. Spandana Sridhar Joglekar**

**2SD20CS108**

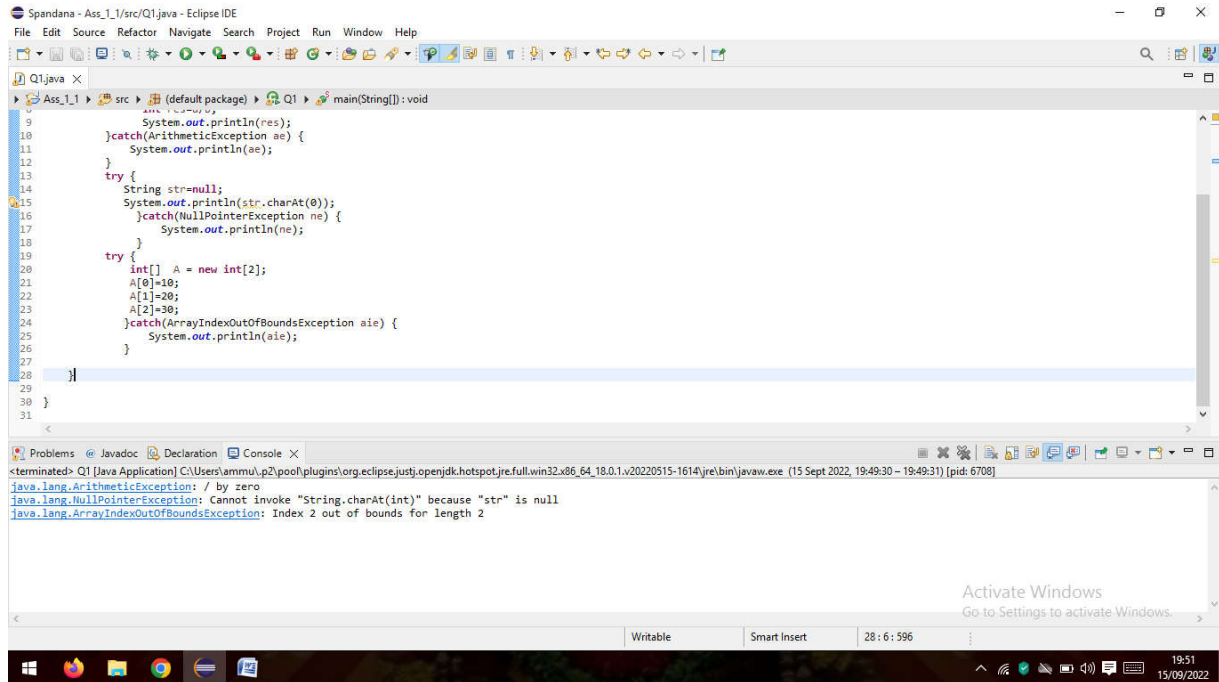
**5<sup>th</sup> Semester B division**

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

// 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:



The screenshot shows the Eclipse IDE interface. The main editor displays a Java file named `Q1.java` with the following code:

```
9      System.out.println(res);
10    } catch (ArithmeticException ae) {
11      System.out.println(ae);
12    }
13  }
14  try {
15    String str=null;
16    System.out.println(str.charAt(0));
17    } catch (NullPointerException ne) {
18      System.out.println(ne);
19    }
20  }
21  try {
22    int[] A = new int[2];
23    A[0]=10;
24    A[1]=20;
25    A[2]=30;
26    } catch (ArrayIndexOutOfBoundsException aie) {
27      System.out.println(aie);
28    }
29  }
30 }
31 }
```

The console window at the bottom shows the output of the program:

```
<terminated> Q1 [Java Application] C:\Users\anmu\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
```

The status bar at the bottom indicates the cursor is at line 28, column 6, with a file size of 596 bytes. The system tray shows the date and time as 19:51 on 15/09/2022.

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

```
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

```
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();
    }
}
}

```

OUTPUT:

The screenshot shows the Eclipse IDE interface. The left sidebar displays the Project Explorer with a tree view of the project structure, including packages like 'Ass\_1\_1', 'Ass\_1\_2', and 'Ass\_1\_3'. The main editor window shows the source code for 'Q2.java'. The code includes a 'primeCheck' method that checks for prime numbers and a 'main' method that uses a 'Scanner' to take user input. The code is as follows:

```

1 import java.util.Scanner;
2 public class Q2 {
3     static int primeCheck(int n) {
4         boolean flag=false;
5         for(int i=2;i<=n/2;i++) {
6             if(n%i==0){
7                 flag=true;
8                 break;
9             }
10        }
11        if(!flag)
12            return 1;
13        else
14            return 0;
15    }
16    public static void main(String[] args) throws Exception {
17        // TODO Auto generated method stub
18        Scanner sc=new Scanner(System.in);
19        System.out.println("Enter an integer");
20        int n=sc.nextInt();
21
22        if(n<0)
23            throw new NegativeNumberNotAllowedException();
24        else {
25            int a=primeCheck(n);
26            if(a==1)
27                System.out.println("Prime number");
28            else
29                throw new NumberNotPrimeException();
30        }
31    }
32 }
33
34
35
36
37

```

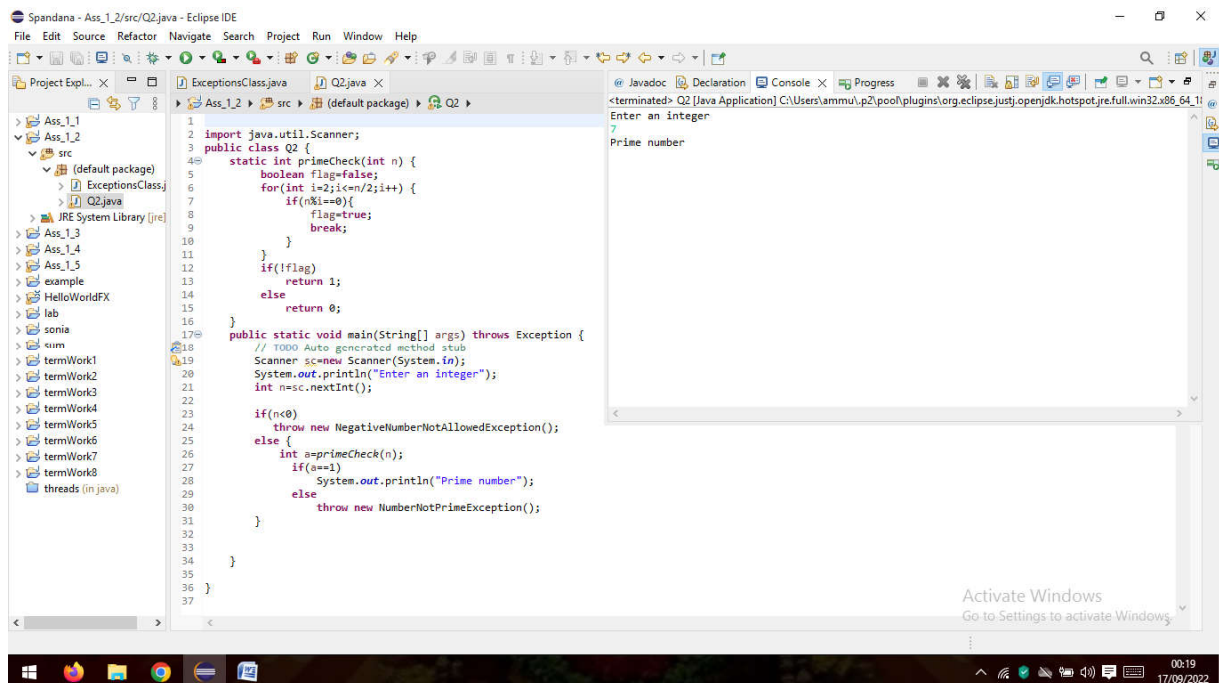
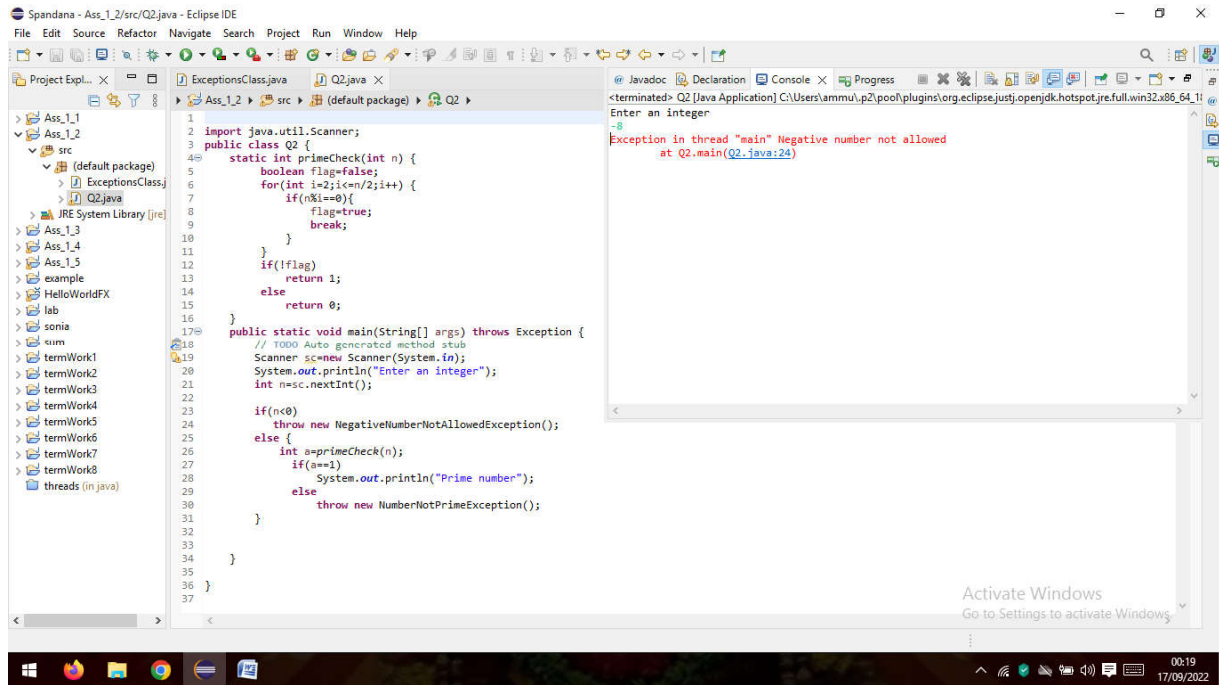
The right sidebar shows the Console view with the following output:

```

Enter an integer
10
Exception in thread "main" Number entered is not prime
at Q2.main(Q2.java:30)

```

The bottom status bar of the IDE shows the date and time as 00:16 on 17/09/2022.



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

//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;
```

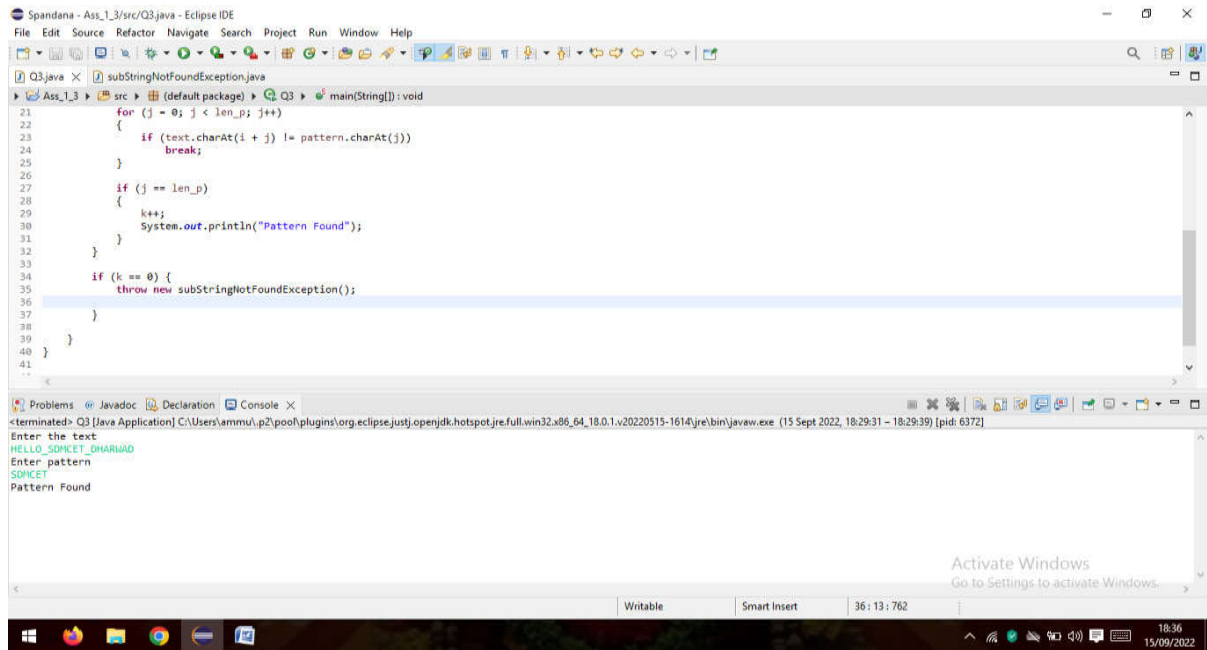
```
        }

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

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

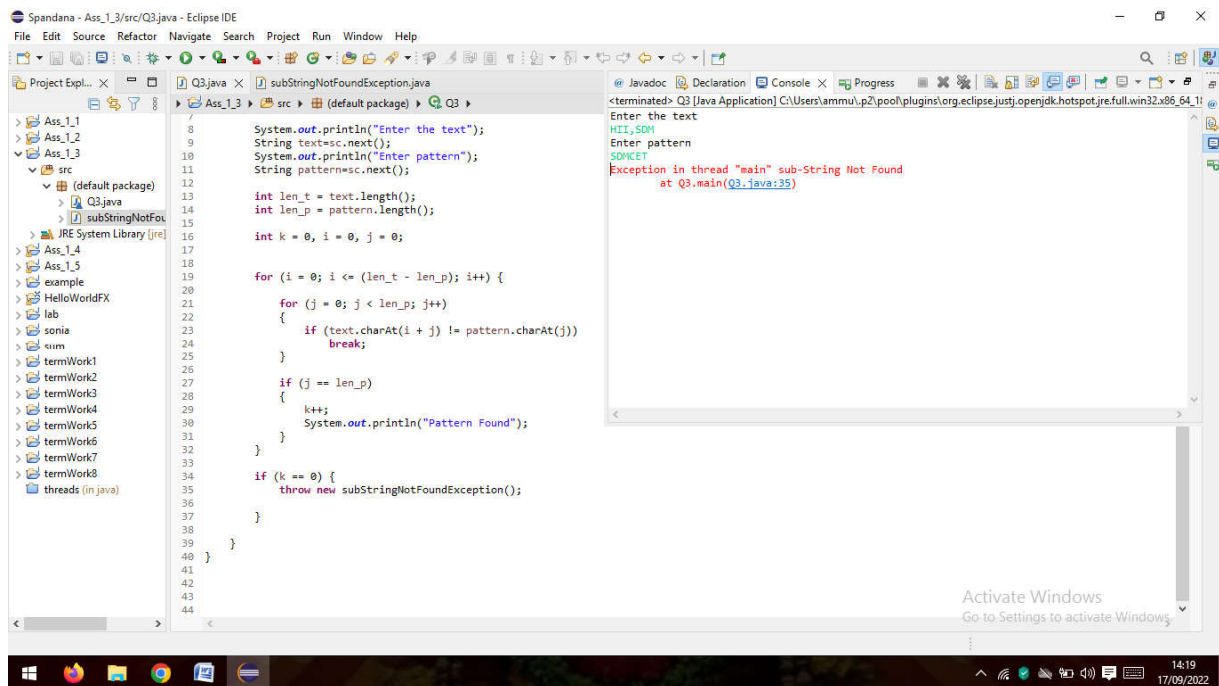


## OUTPUT:



The screenshot shows the Eclipse IDE interface. The main editor displays the code for `subStringNotFoundException.java`. The console window at the bottom shows the following output:

```
<terminated> Q3 [Java Application] C:\Users\ammul.p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_18.0.1.v20220515-1614\jre\bin\javaw.exe (15 Sept 2022, 18:29:31 - 18:29:39) [pid: 6372]  
Enter the text  
HELLO_SDNCET_DHARUAD  
Enter pattern  
SDNCET  
Pattern Found
```



The screenshot shows the Eclipse IDE interface. The main editor displays the code for `subStringNotFoundException.java`. The console window at the bottom shows the following output:

```
<terminated> Q3 [Java Application] C:\Users\ammul.p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_18.0.1.v20220515-1614\jre\bin\javaw.exe (15 Sept 2022, 18:29:31 - 18:29:39) [pid: 6372]  
Enter the text  
HII,SDM  
Enter pattern  
SDNCET  
Exception in thread "main" sub-String Not Found  
at Q3.main(Q3.java:35)
```

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

//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:

