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19BCE2105
Q-2

Q2 (a). Read the Register Number of a student. If the Register Number does not contain exactly 9 characters, throw user defined exception, if the Register Number contains any character other than digits and alphabets, throw user defined exception. If both are valid print 'Register Number is Valid' otherwise 'Register Number is Invalid'. [10 Marks]

(b). Write a Java program to perform the followings [30 Marks]

i.   Get any 10 strings(String should not contain any special characters) from user using Scanner class to store in an array called "Input_Array".

ii.   Consider the strings from "Input_Array" which contains at least one vowels(a,e,i,o,u) and store in "Filtered_Array".

iii. Find the length of each string from "Filtered_Array" and store the length in "Filtered_Array_Len" array.

iv.   Append the "Filtered_Array_Len" data into "Filtered_Array_Len.txt" file.

Note: Implement 2(b) part using static, method overloading and multiple inheritance. [10 Marks]

Solution:

Part (a)

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

public class UserInputDemo extends Exception
{
public static void main(String[] args)
{

Example e = new Example();
Scanner sc= new Scanner(System.in);    //System.in is a standard input stream
System.out.print("Enter Registration number- ");
String a= sc.nextLine();
try {
        if (a.length()!=9) {
            String msg = "Register Number is Invalid";
```

```java
            LengthDoesNotMatchException ex = new
LengthDoesNotMatchException(msg);
            throw ex;
          }
          else if (!e.check(a))
          {
              String msg = "Register Number is Invalid";
              LengthDoesNotMatchException ex = new
LengthDoesNotMatchException(msg);
              throw ex;
          }
          else{
              System.out.println("Registration Number is Valid");
          }
        }
        catch(LengthDoesNotMatchException ex) {
            ex.printStackTrace();
        }
    }
}

class Example {
    boolean check(String s) {
        if (s == null) // checks if the String is null
        {
            return false;
        }
        int len = s.length();
        for (int i = 0; i < len; i++) {
            // checks whether the character is neither a letter nor a digit
            // if it is neither a letter nor a digit then it will return false
            if ((Character.isLetterOrDigit(s.charAt(i)) == false)) {
                return false;
            }
        }
        return true;
    }
}
class LengthDoesNotMatchException extends Exception
{
    public LengthDoesNotMatchException (String str)
    {
        // calling the constructor of parent Exception
        super(str);
```

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```
        }
}
```

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Part (b)

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

interface stringArrayIntake{
  String[] inputArrayFill();
}

interface filterStringArray{
  int getCountFilterArray(String[] arr);
  String[] filterTheArray(String[] arr, int count);
  int[] filterTheArray(String[] arr);
}


public class Main implements stringArrayIntake, filterStringArray{

  public String[] inputArrayFill(){
    String[] arr = new String[10];

    Scanner sc = new Scanner(System.in);
    for(int i = 0; i < 10; i++){
      String tmp = sc.nextLine();
      arr[i] = tmp;
    }

    return arr;
  }

  public int getCountFilterArray(String[] arr){
    int count = 0;

    for(int i = 0; i < arr.length; i++){
        if(arr[i].indexOf('a') != -1 | arr[i].indexOf('e') != -1 |
arr[i].indexOf('i') != -1 | arr[i].indexOf('o') != -1 | arr[i].indexOf('u')
!= -1){
          count++;
        }

    }
    return count;
  }
```

```java
  public String[] filterTheArray(String[] arr, int count){
    String[] arr1 = new String[count];

    int c = 0;

    for(int i = 0; i < 10; i++){
     if(arr[i].indexOf('a') != -1 | arr[i].indexOf('e') != -1 |
arr[i].indexOf('i') != -1 | arr[i].indexOf('o') != -1 | arr[i].indexOf('u')
!= -1){
        arr1[c] = arr[i];
        c++;
        }
    }

    return arr1;
  }

  public int[] filterTheArray(String[] arr){
    int[] arr1 = new int[arr.length];

    for(int i = 0; i < arr.length; i++){
      arr1[i] = arr[i].length();
    }

    return arr1;
  }

  public static void FileWriter(int[] arr){
    try{
      PrintWriter fileout = new PrintWriter(new
FileWriter("./Filtered_Array_Len.txt"));

      for(int i = 0; i < arr.length; i++){
        fileout.println(arr[i]);
      }
      fileout.close();
      System.out.println("The data is written in the file.");
    } catch(Exception e){
      System.out.println(e);
    }
  }

  public static void main(String[] args){
```
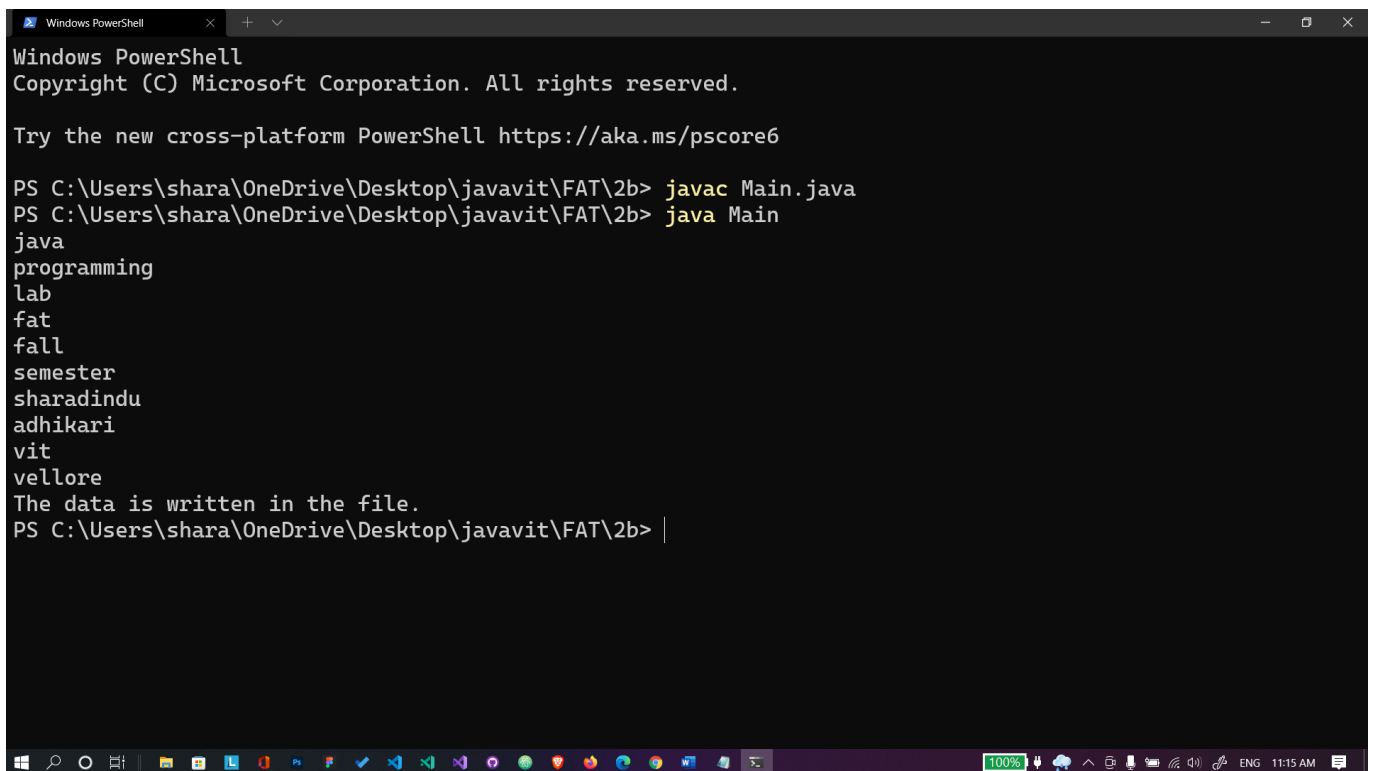
```java
        Main m = new Main();
        String[] Input_Array, Filtered_Array;
        int[] Filtered_Array_Len;

        Input_Array = m.inputArrayFill();
        int n = m.getCountFilterArray(Input_Array);
        Filtered_Array = m.filterTheArray(Input_Array, n);
        Filtered_Array_Len = m.filterTheArray(Filtered_Array);
        Main.FileWriter(Filtered_Array_Len);

    }
}
```
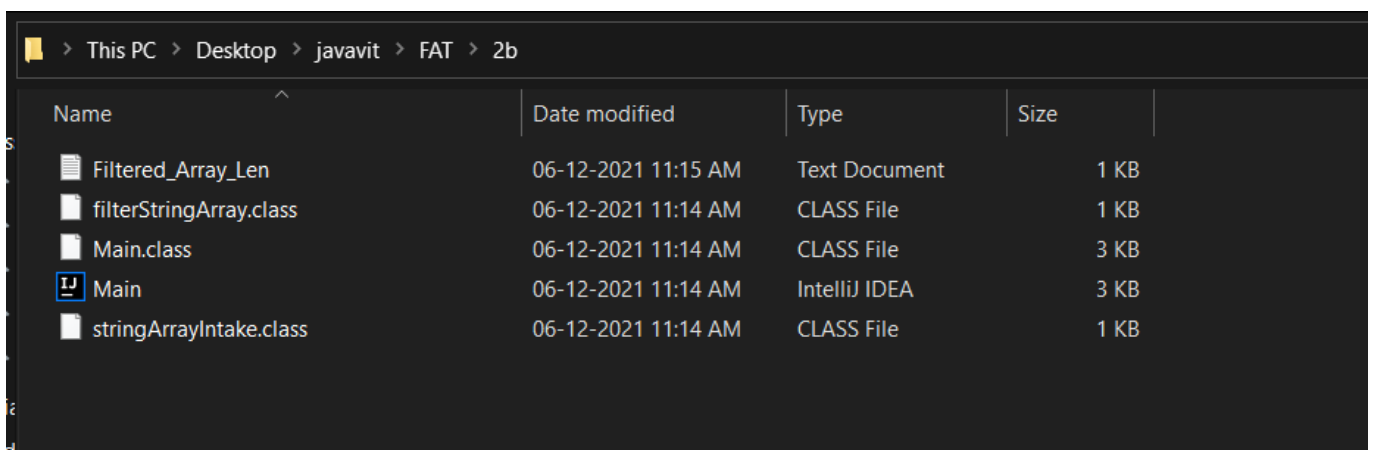
```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\shara\OneDrive\Desktop\javavit\FAT\2b> javac Main.java
PS C:\Users\shara\OneDrive\Desktop\javavit\FAT\2b> java Main
java
programming
lab
fat
fall
semester
sharadindu
adhikari
vit
vellore
The data is written in the file.
PS C:\Users\shara\OneDrive\Desktop\javavit\FAT\2b> |
```
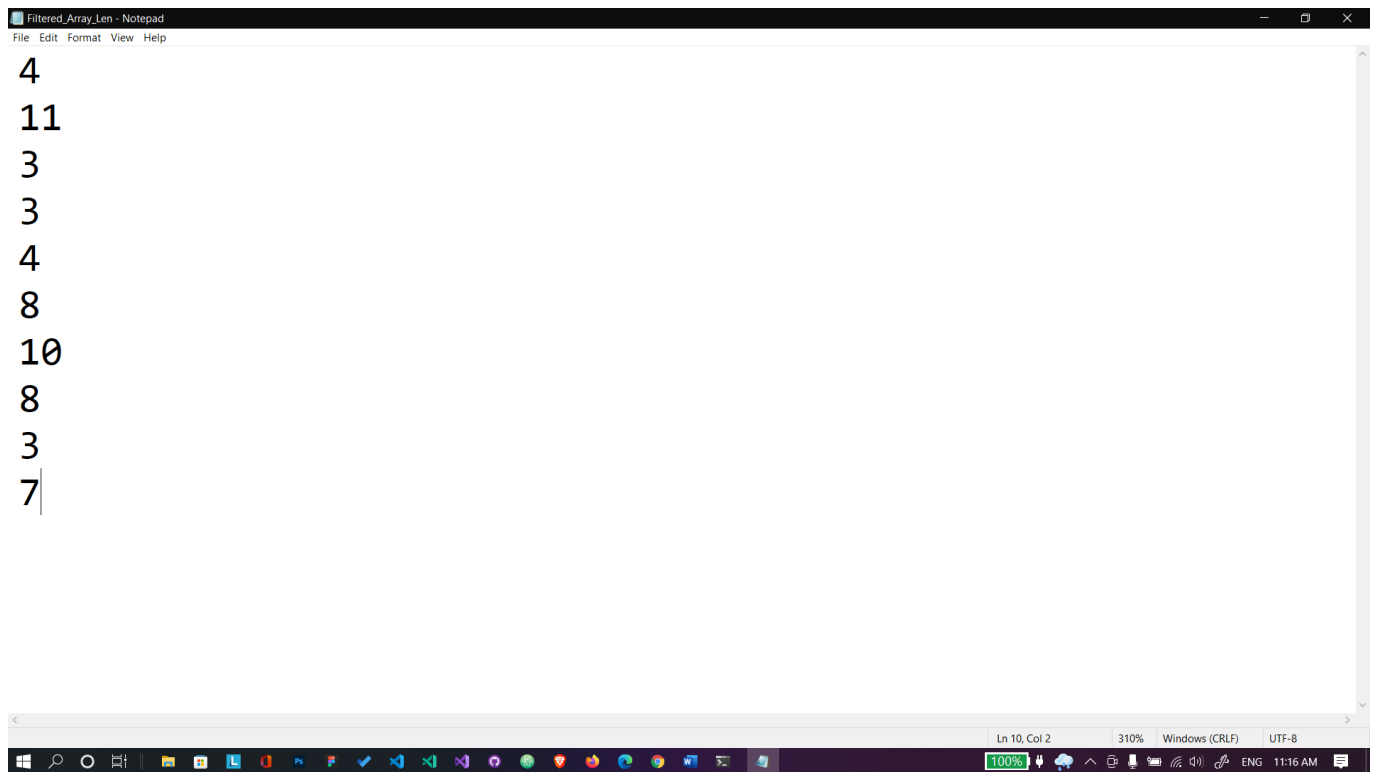
This PC > Desktop > javavit > FAT > 2b

Name	Date modified	Type	Size
Filtered_Array_Len	06-12-2021 11:15 AM	Text Document	1 KB
filterStringArray.class	06-12-2021 11:14 AM	CLASS File	1 KB
Main.class	06-12-2021 11:14 AM	CLASS File	3 KB
Main	06-12-2021 11:14 AM	IntelliJ IDEA	3 KB
stringArrayIntake.class	06-12-2021 11:14 AM	CLASS File	1 KB

Filtered_Array_Len - Notepad

File Edit Format View Help

```
4
11
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8
3
7
```

Ln 10, Col 2   310%   Windows (CRLF)   UTF-8