

EXERCISE
EC 4070
DATA STRUCTURES AND ALGORITHMS

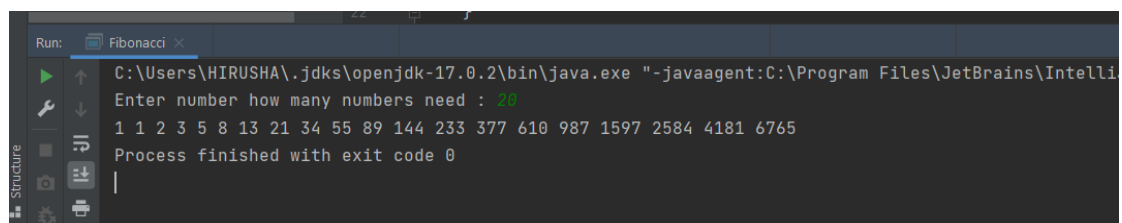
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REGISTRATION NO. : 2019/E/166
SEMESTER : SEMESTER 04
DATE ASSIGNED : 08 MARCH 2022

01.

Code:-

```
import java.util.Scanner;
public class Fibonacci {
    static void fibonacci(int n)
    {
        int total = 0;
        int n1 = 1;
        int n2 = 1;
        for(int i =0; i<n;i++)
        {
            if(i <2)
            {
                total = n1;
            }
            else
            {
                total = n1+n2;
                n1=n2;
                n2=total;
            }
            System.out.print(total + " ");
        }
    }
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter number how many numbers need : ");
        int number = scanner.nextInt();
        fibonacci(number);
    }
}
```

Outputs:-



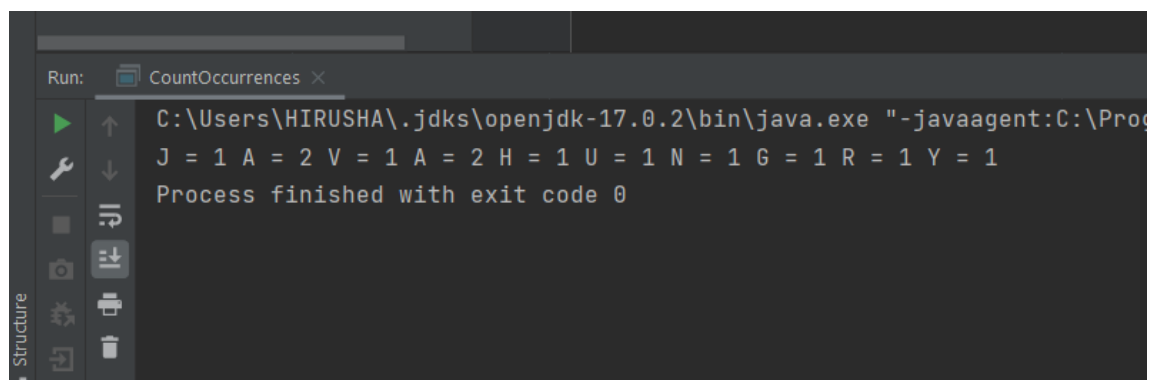
```
Run: Fibonacci x
C:\Users\HIRUSHA\.jdk\openjdk-17.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\Intelli
Enter number how many numbers need : 20
1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765
Process finished with exit code 0
```

02.

Code:

```
public class CountOccurrences {
    static void countCharactersInString(String word)
    {
        char[] characters = new char[word.length()];
        for(int i =0; i<word.length();i++)
        {
            characters[i] = word.charAt(i);
        }
        for(int j =0; j <characters.length; j++)
        {
            int n = 1;
            for(int k = j+1; k < characters.length; k++)
            {
                if(characters[j] == characters[k])
                {
                    n++;
                }
            }
            System.out.print(characters[j] +" = "+ n +" ");
        }
    }
    public static void main(String[] args) {
        countCharactersInString("JAVA HUNGRY");
    }
}
```

Output:-



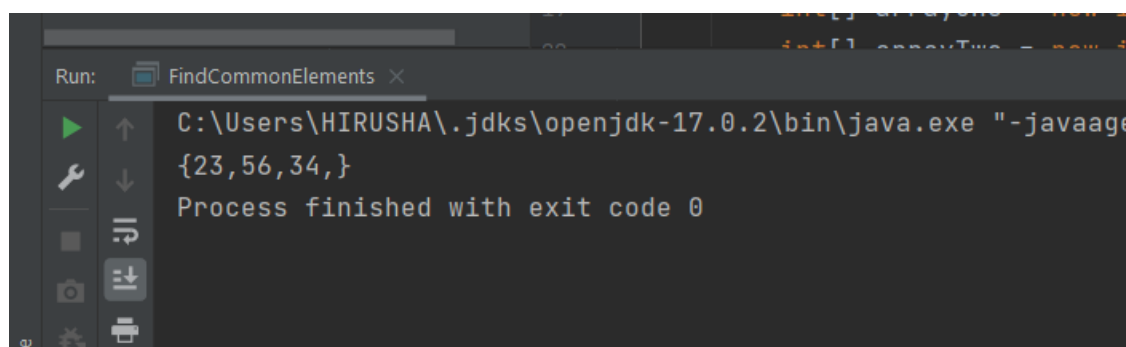
```
Run: CountOccurrences X
C:\Users\HIRUSHA\.jdk\openjdk-17.0.2\bin\java.exe "-javaagent:C:\Pro
J = 1 A = 2 V = 1 A = 2 H = 1 U = 1 N = 1 G = 1 R = 1 Y = 1
Process finished with exit code 0
```

03.

Code:-

```
public class FindCommonElements {
    static void searchCommonElements(int[] arrayOne, int[] arrayTwo)
    {
        System.out.print("{}");
        int[] equalElements = new int[5];
        for(int i =0; i<arrayOne.length; i++)
        {
            for(int j = 0; j < arrayTwo.length; j++)
            {
                if(arrayOne[i] == arrayTwo[j])
                {
                    System.out.print(arrayOne[i] + ",");
                }
            }
        }
        System.out.print("");
    }
    public static void main(String[] args) {
        int[] arrayOne = new int[]{23,56,34,12,67};
        int[] arrayTwo = new int[]{56,78,65,34,23};
        searchCommonElements(arrayOne, arrayTwo);
    }
}
```

Output:



```
Run: FindCommonElements x
C:\Users\HIRUSHA\.jdk\openjdk-17.0.2\bin\java.exe -javaage
{23,56,34,}
Process finished with exit code 0
```

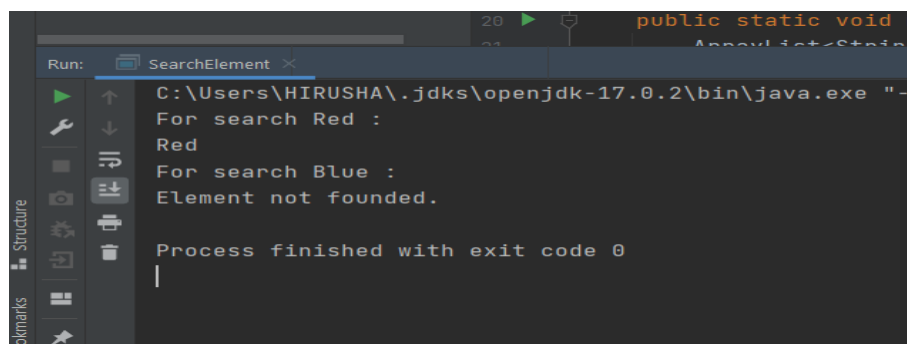
04.

Code:-

```
import java.util.ArrayList;
public class SearchElement {
    static void searchElementsInArray(ArrayList<String> arrayList, String searchElement)
    {
        boolean isFound = false;
        for(int i=0; i<arrayList.size();i++)
        {
            if(arrayList.get(i) == searchElement)
            {
                System.out.println(searchElement);
                isFound = true;
            }
        }
        if(isFound == false)
        {
            System.out.println("Element not founded.");
        }
    }

    public static void main(String[] args) {
        ArrayList<String> arrayListElement = new ArrayList<String>();
        arrayListElement.add("Red");
        arrayListElement.add("Green");
        arrayListElement.add("Orange");
        arrayListElement.add("White");
        arrayListElement.add("Black");
        System.out.println("For search Red : ");
        searchElementsInArray(arrayListElement, "Red");
        System.out.println("For search Blue : ");
        searchElementsInArray(arrayListElement, "Blue");
    }
}
```

Output:-



```
Run: SearchElement
C:\Users\HIRUSHA\.jdk\openjdk-17.0.2\bin\java.exe "-j
For search Red :
Red
For search Blue :
Element not founded.
Process finished with exit code 0
```

05.

Code:-

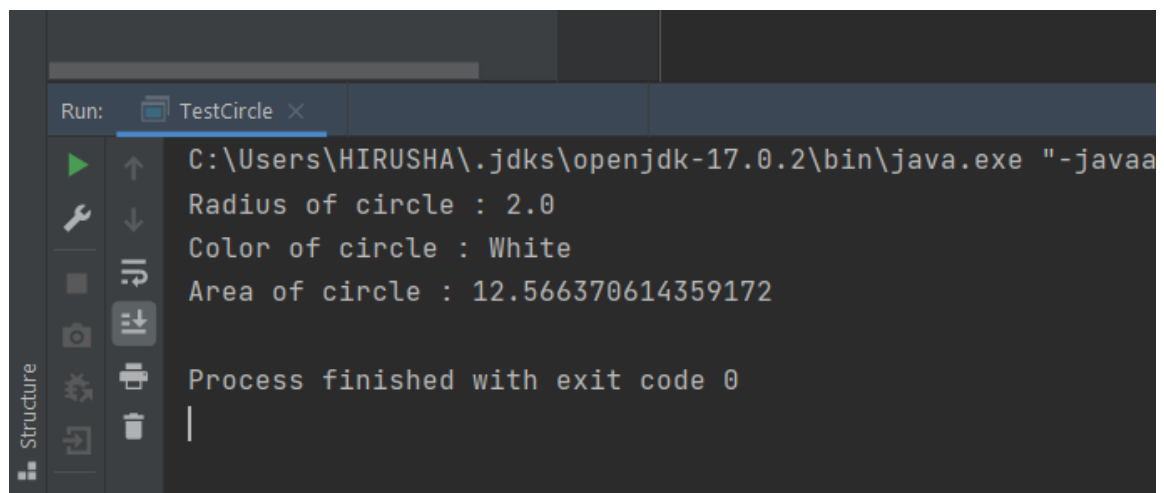
```
public class Circle {
    private double radius; // Define radius as private variable.
    private String color; // Define color as private variable.
    public double area; // Define area variable.
    //final double piValue = 22/7; // Define pi value as non changing value.

    // Overload constructor.
    public Circle()
    {
        radius = 2;
        color = "White";
    }
    // Constructor build with radius and default color.
    public Circle(double radius)
    {
        this.radius = radius;
        color = "White";
    }
    // Constructor build with user values.
    public Circle(double radius , String color)
    {
        this.radius = radius;
        this.color = color;
    }
    public double getRadius()
    {
        return radius;
    }
    public String getColor()
    {
        return color;
    }
    public double getArea()
    {
        area = Math.PI*radius*radius;
        return area;
    }
}
```

Main class:

```
public class TestCircle {  
    public static void main(String[] args) {  
        Circle circle01 = new Circle();  
        System.out.println("Radius of circle : " + circle01.getRadius());  
        System.out.println("Color of circle : " + circle01.getColor());  
        System.out.println("Area of circle : " + circle01.getArea());  
    }  
}
```

Output:-



```
Run: TestCircle x  
C:\Users\HIRUSHA\.jdk\openjdk-17.0.2\bin\java.exe "-javaa  
Radius of circle : 2.0  
Color of circle : White  
Area of circle : 12.566370614359172  
Process finished with exit code 0  
|
```