ASSESSMENT 1

CSE2007 /JAVA

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ANISH SHRESTHA
20BCE2893

Assessment 1

Questions:

Day1:

1. Read the radius and print the area of a circle
2. Read the number and check whether it is divisible by 3 and 5.
3. Display Subject Name based on room number. If the user enters 604 then display Java Programming , If the user enters 605 then display Python programming for any other input display Invalid input to the user
4. Print the sum of first n numbers. If n is 3 then print the sum of 1+2+3 to the user. Get n from the user
5. Print the sum of the series $1^2+2^2+3^2$ up to n terms
6. Print the multiplication table by getting the n from the user.
7. Provide the option of adding two numbers to the user until the user wants to exit.
8. Print this pattern for n lines

(a)

```
*
**
***
****
```

(b)

```
1234
123
12
1
```

(c)

```
1
12
123
1234
1234
123
12
1
```

Answers:

Qno1:

Code:

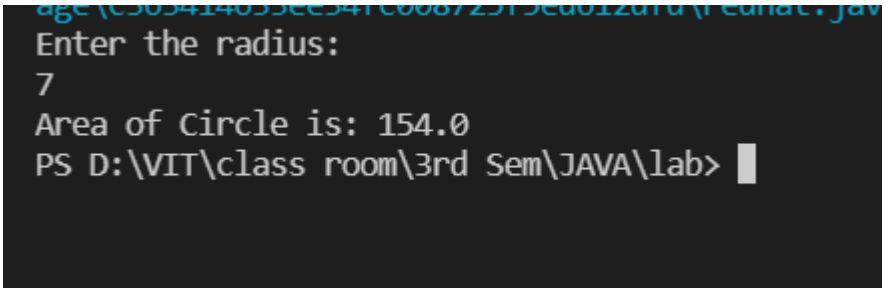
```java
import java.util.Scanner;

class AreaOfCircle {
    public static void main(String args[]) {

        Scanner s = new Scanner(System.in);

        System.out.println("Enter the radius:");
        double r = s.nextDouble();
        double area = (22 * r * r) / 7;
        System.out.println("Area of Circle is: " + area);
    }
}
```

Output:



Qno2:

Code:

```java
import java.util.Scanner;

public class divisible {
    public static void main(String[] args) {
        int num;
        Scanner n=new Scanner(System.in);
        System.out.println("Enter a number: ");
        num =n.nextInt();
        if (num%3==0 && num%5==0){
            System.out.println("The number is divisible by 3 and 5");
        }
        else{
            System.out.println("The number is not divisible by 3 and 5");
        }
    }
}
```

Output:

```
Enter a number:
15
The number is divisible by 3 and 5
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno3:

Code:

```java
import java.util.Scanner;

public class SubjectName {
    public static void main(String[] args) {
        int room_num;
        Scanner n = new Scanner(System.in);
        System.out.println("Enter a number: ");
        room_num = n.nextInt();
        if (room_num == 604) {
            System.out.println("Java Programming");
        } else if (room_num == 605) {
            System.out.println("Python Programming");
        } else {
            System.out.println("Invalid input");
        }
    }
}
```

Output:

```
Enter a number:
604
Java Programming
PS D:\VIT\class room\3rd Sem\JAVA\lab>  d:; cd 'd:\VIT\class ro
e\extensions\vscjava.vscode-java-debug-0.35.0\scripts\launcher.
va.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMess
\acer\AppData\Roaming\Code\User\workspaceStorage\c363414633ee34
b4174\bin' 'SubjectName'
Enter a number:
605
Python Programming
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno4:

Code:

```java
import java.util.Scanner;

public class sum {
    public static void main(String[] args){
        int num,sum=0;
        Scanner n=new Scanner(System.in);
        System.out.println("Enter a number: ");
        num=n.nextInt();
        for (int i=1;i<=num;i++){
            sum=sum+i;
        }
        System.out.println("The sum of "+ num+ "natural numbers is: "+sum);

    }
}
```

Output:

```
b4174\bin' 'sum'
Enter a number:
10
The sum of 10natural numbers is: 55
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno5:

Code:

```java
import java.util.Scanner;

public class seriessum {
    public static void main(String[] args){
        int num,sum=0;
        Scanner n=new Scanner(System.in);
        System.out.println("Enter a number: ");
        num=n.nextInt();
        for (int i=1;i<=num;i++){
            sum=sum+(i*i);
        }
        System.out.println("The sum of square of "+ num + " natural numbers is: "
+sum);

    }
}
```

Output:

```
b4174\bin' 'seriessum'
Enter a number:
8
The sum of square of 8 natural numbers is: 204
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno6:

Code:

```java
import java.util.Scanner;
public class multable {
    static public void main(String[] args)
    {
        int num;
        Scanner n=new Scanner(System.in);
        System.out.println("Enter a number: ");
        num=n.nextInt();
        for (int i=1;i<=10;i++)
        {
            System.out.println(num+" x "+ i +" = "+ (i*num));
        }

    }
}
```

Output:

```
Enter a number:
7
7 x 1 = 7
7 x 2 = 14
7 x 3 = 21
7 x 4 = 28
7 x 5 = 35
7 x 6 = 42
7 x 7 = 49
7 x 8 = 56
7 x 9 = 63
7 x 10 = 70
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno7:

Code:

```java
import java.util.Scanner;
public class SumCont
{
    public static void main(String [] args)
    {
        Scanner n=new Scanner(System.in);
        int choice=1;
        while(choice==1)
        {
            System.out.println("enter 1 numbers");
            int a=n.nextInt();
            System.out.println("enter 2 numbers");
            int b=n.nextInt();
            System.out.println("The sum of "+a+ " and "+ b+ " is " + (a+b));
            System.out.println();
            System.out.println("Enter you choice :\n 1 : Continue \n 0 : Stop");
            choice=n.nextInt();
        }
    }
}
```

Output:

```
enter 1 numbers
9
enter 2 numbers
20
The sum of 9 and 20 is 29

Enter you choice :
 1 : Continue
 0 : Stop
1
enter 1 numbers
56
enter 2 numbers
34
The sum of 56 and 34 is 90

Enter you choice :
 1 : Continue
 0 : Stop
0
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno8:

Code:

1.
```java
import java.util.*;


public class asterikseries {
    static public void main(String[] args) {
        int num;
        Scanner n = new Scanner(System.in);
        System.out.println("Enter the number of rows: ");
        num = n.nextInt();
        for (int i = 0; i < num; i++) {
            for (int j = 0; j < i; j++) {
                System.out.print("*");
            }
            System.out.println();
        }
    }

}
```

2.
```java
import java.util.Scanner;


public class numseries {
    static public void main(String[] args) {
        int num;
        Scanner n = new Scanner(System.in);
        System.out.println("Enter the number of rows: ");
        num = n.nextInt();
        for (int i = num; i > 0; i--) {
            for (int j = 1; j <= i; j++) {
                System.out.print(j);
            }
            System.out.println();
        }
    }
}
```

3.
```java
import java.util.Scanner;


public class seriescomb {
    static public void main(String[] args) {
        int num;
        Scanner n = new Scanner(System.in);
        System.out.println("Enter the number of rows: ");
        num = n.nextInt();
        for (int i = 1; i <= num; i++) {
            for (int j = 1; j < i + 1; j++) {
                System.out.print(j);
            }
            System.out.println();
        }
        for (int i = num; i > 0; i--) {
            for (int j = 1; j <= i; j++) {
                System.out.print(j);
            }
            System.out.println();
        }

    }
}
```

Outputs:

1.

```
b4174\bin' 'asterikseries'
Enter the number of rows:
6

*
**
***
****
*****
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

2.

```
b4174\bin' 'numseries'
Enter the number of rows:
5
12345
1234
123
12
1
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

3.

```
b4174\bin' 'seriescomb'
Enter the number of rows:
7
1
12
123
1234
12345
123456
1234567
1234567
123456
12345
1234
123
12
1
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

DAY2 problems:

1. Sort an array of element using bubble sort
2. Remove duplicate elements from a sorted array
3. Reverse the contents inside an array.
4. Search for an element inside the array using linear search

Qno1:

Code:

```
public class BubbleSort {
    static void bubbleSort(int[] arr) {
        int n = arr.length;
        int temp = 0;
        for (int i = 0; i < n; i++) {
            for (int j = 1; j < (n - i); j++) {
                if (arr[j - 1] > arr[j]) {
                    // swap elements
                    temp = arr[j - 1];
                    arr[j - 1] = arr[j];
                    arr[j] = temp;
                }

            }
        }

    }

    public static void main(String[] args) {
        int arr[] = { 39, 68, 31, 2, 45, 200, 59 };

        System.out.println("Array Before Bubble Sort");
        for (int i = 0; i < arr.length; i++) {
            System.out.print(arr[i] + " ");
        }
        System.out.println();

        bubbleSort(arr);// sorting array elements using bubble sort
```

```
        System.out.println("Array After Bubble Sort");
        for (int i = 0; i < arr.length; i++) {
            System.out.print(arr[i] + " ");
        }

    }
}
```

Output:

```
b4174\bin' 'BubbleSort'
Array Before Bubble Sort
39 68 31 2 45 200 59
Array After Bubble Sort
2 31 39 45 59 68 200
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno2:

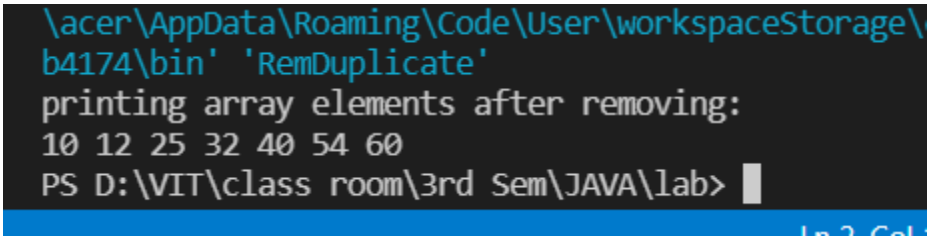
Code:

```
public class RemDuplicate {
    public static int removeDuplicateElements(int arr[], int n) {
        if (n == 0 || n == 1) {
            return n;
        }
        int[] temp = new int[n];
        int j = 0;
        for (int i = 0; i < n - 1; i++) {
            if (arr[i] != arr[i + 1]) {
                temp[j++] = arr[i];
            }
        }
        temp[j++] = arr[n - 1];
        // Changing original array
        for (int i = 0; i < j; i++) {
            arr[i] = temp[i];
        }
        return j;
    }

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

```
        int arr[] = { 10, 12, 25, 25, 32, 32, 40, 54, 54, 60, 60 };
        int length = arr.length;
        length = removeDuplicateElements(arr, length);
        System.out.println("printing array elements after removing: ");
        for (int i = 0; i < length; i++)
            System.out.print(arr[i] + " ");
    }
}
```

Output:



Qno3:

Code:

```
public class ReverseArray {
    public static void reverse(int arr[], int n) {
        int[] temp = new int[n];
        int j = n - 1;
        for (int i = 0; i < n; i++) {
            temp[j] = arr[i];
            j = j - 1;
        }
        System.out.println("printing array elements after reversing: ");
        for (int i = 0; i < temp.length; i++)
            System.out.print(temp[i] + " ");
    }

    public static void main(String[] args) {
        int arr[] = { 10, 12, 25, 32, 40, 54, 60 };
        int length = arr.length;
        reverse(arr, length);
```

```
    }
}
```

Output:

```
printing array elements after reversing:
60 54 40 32 25 12 10
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno4:

Code:

```
import java.util.Scanner;

public class LinearSearch {

    public static int linearSearch(int[] arr, int key) {
        for (int i = 0; i < arr.length; i++) {
            if (arr[i] == key) {
                return i;
            }
        }
        return -1;
    }

    public static void main(String[] args) {
        int num, key;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter no. of element in array:");
        num = scan.nextInt();
        int arr[] = new int[num];
        System.out.println("Enter the elements of the array: ");
        for (int i = 0; i < arr.length; i++) {
            arr[i] = scan.nextInt();

        }
        System.out.println("Enter the Key to be searched in the array: ");
        key = scan.nextInt();
        System.out.println(key + " is found at index: " + linearSearch(arr, key))
;
```

```
    }

}
```

Output:

```
Enter no. of element in array:7
Enter the elements of the array:
20 30 40 50 6 8 9
Enter the Key to be searched in the array:
50
50 is found at index: 3
PS D:\VIT\class room\3rd Sem\JAVA\lab>  d:; cd 'd
```

DAY3: Programs on array:

Exercise programs Based on Array

1. Write a Java program to sort an array of positive integers of an given array, in the sorted array the value of the first element should be maximum, second value should be minimum value, third should be second maximum, fourth second be second minimum and so on.
2. Write a Java program to separate even and odd numbers of an given array of integers. Put all even numbers first, and then odd numbers.
3. Write a Java program to remove the duplicate elements of a given array and return the new length of the array.
4. Write a Java program to find the sum of the two elements of a given array which is equal to a given integer.
5. Display the sum of rows in a matrix
6. Display the transpose of a matrix

Qno.1

Code:

```
import java.util.*;

public class Rearrange {

    static int[] rearrange(int[] arr, int n) {
        int temp[] = new int[n];

        int small = 0, large = n - 1;
        boolean flag = true;

        for (int i = 0; i < n; i++) {
            if (flag)
                temp[i] = arr[large--];
            else
                temp[i] = arr[small++];

            flag = !flag;
        }

        return temp;
    }

    public static void main(String[] args) {
        int num;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter no. of element in ascending array:");
        num = scan.nextInt();
        int arr[] = new int[num];
        System.out.println("Enter the elements of the array: ");
        for (int i = 0; i < arr.length; i++) {
            arr[i] = scan.nextInt();

        }
        int result[];

        System.out.println("Original Array ");
        System.out.println(Arrays.toString(arr));

        result = rearrange(arr, arr.length);

        System.out.println("New Array ");
```

```
        System.out.println(Arrays.toString(result));

    }
}
```

Output:

```
Enter no. of element in ascending array:10
Enter the elements of the array:
10
20
30
40
50
60
70
80
90
100
Original Array
[10, 20, 30, 40, 50, 60, 70, 80, 90, 100]
New Array
[100, 10, 90, 20, 80, 30, 70, 40, 60, 50]
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno2:

Code:

```
import java.util.Scanner;

public class OddEven {
    static void rearrangeEvenAndOdd(int arr[], int n) {
        int j = -1, temp;
        for (int i = 0; i < n; i++) {
            if (arr[i] % 2 == 0) {
                j++;
                temp = arr[i];
```

```
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }

    public static void main(String args[]) {
        int num;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter no. of element in ascending array:");
        num = scan.nextInt();
        int arr[] = new int[num];
        System.out.println("Enter the elements of the array: ");
        for (int i = 0; i < arr.length; i++) {
            arr[i] = scan.nextInt();

        }
        int n = arr.length;

        rearrangeEvenAndOdd(arr, n);

        for (int i = 0; i < n; i++)
            System.out.print(arr[i] + " ");
    }
}
```

Output:

```
Enter no. of element in ascending array:4
Enter the elements of the array:
10
5
2
7
10 2 5 7
PS D:\VIT\class room\3rd Sem\JAVA\lab\3rd day problems>
```

Qno3:

Code

```java
import java.util.Scanner;

public class RemoveD {
    public static int removeDuplicateElements(int arr[], int n) {
        if (n == 0 || n == 1) {
            return n;
        }
        int[] temp = new int[n];
        int j = 0;
        for (int i = 0; i < n - 1; i++) {
            if (arr[i] != arr[i + 1]) {
                temp[j++] = arr[i];
            }
        }
        temp[j++] = arr[n - 1];
        // Changing original array
        for (int i = 0; i < j; i++) {
            arr[i] = temp[i];
        }
        return j;
    }

    public static void main(String[] args) {
        int num;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter no. of element in ascending array:");
        num = scan.nextInt();
        int arr[] = new int[num];
        System.out.println("Enter the elements of the array: ");
        for (int i = 0; i < arr.length; i++) {
            arr[i] = scan.nextInt();

        }
        int length = arr.length;
        length = removeDuplicateElements(arr, length);
        System.out.println("printing array elements after removing: ");
        for (int i = 0; i < length; i++)
            System.out.print(arr[i] + " ");
    }

}
```

Output:

```
dhat.java\jdt_ws\lab_5b1b4174\bin' 'RemoveD'
Enter no. of element in ascending array:7
Enter the elements of the array:
20
30
30
45
45
60
70
printing array elements after removing:
20 30 45 60 70
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno4:

Code:

```
import java.util.*;

public class SumOfEl {
    public static ArrayList<Integer> two_sum_array_target(final List<Integer> a,
int b) {

        HashMap<Integer, Integer> my_map = new HashMap<Integer, Integer>();
        ArrayList<Integer> result = new ArrayList<Integer>();
        result.add(0);
        result.add(1);
        for (int i = 0; i < a.size(); i++) {
            if (my_map.containsKey(a.get(i))) {
                int index = my_map.get(a.get(i));
                result.set(0, index);
                result.set(1, i);
                break;
            } else {
                my_map.put(b - a.get(i), i);
```

```
            }
        }

        return result;
    }

    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        ArrayList<Integer> my_array = new ArrayList<Integer>();
        System.out.println("Array elements are: ");
        for (int i = 0; i < 10; i++) {
            my_array.add(scan.nextInt());

        }
        System.out.println("target is:");
        int target = scan.nextInt();
        ArrayList<Integer> result = two_sum_array_target(my_array, target);
        for (int i : result)
            System.out.print("Index: " + i + " ");
    }
}
```

Output:

```
8' '-cp' 'C:\Users\acer\AppData\Roaming\Code\Us
dhat.java\jdt_ws\lab_5b1b4174\bin' 'SumOfEl'
Array elements are:
6 7 2 3 8 1 5
2
4
7
target is:
6
Index: 5 Index: 6
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Qno5:

Code

```java
import java.util.*;

public class SumRows {
    public static void main(String[] args) {
        int rows, cols, sumRow;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter no. of rows:");
        rows = scan.nextInt();
        System.out.print("Enter no. of columns:");
        cols = scan.nextInt();
        int arr[][] = new int[rows][cols];
        System.out.println("Enter the elements of the array: ");
        for (int i = 0; i < rows; i++) {
            System.out.println("Enter the elements of" + i + " th row: ");
            for (int j = 0; j < cols; j++) {
                arr[i][j] = scan.nextInt();
            }
        }
        // Calculates sum of each row of given matrix
        for (int i = 0; i < rows; i++) {
            sumRow = 0;
            for (int j = 0; j < cols; j++) {
                sumRow = sumRow + arr[i][j];
            }
            System.out.println("Sum of " + (i + 1) + " row: " + sumRow);
        }

    }
}
```

Output:

```
Enter no. of element in ascending array:3
3
Enter the elements of the array:
12
3
4
2
4
7
9
0
1
Sum of 1 row: 19
Sum of 2 row: 13
Sum of 3 row: 10
```

Qno6:

Code:

```java
import java.util.*;

public class Transpose {
    public static void main(String[] args) {
        int rows, cols, sumRow;
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter no. of rows:");
        rows = scan.nextInt();
        System.out.print("Enter no. of columns:");
        cols = scan.nextInt();
        int arr[][] = new int[rows][cols];
        int transpose[][] = new int[rows][cols];
        System.out.println("Enter the elements of the array: ");
        for (int i = 0; i < rows; i++) {
            System.out.println("Enter the elements of " + (i + 1) + " th row: ");
            for (int j = 0; j < cols; j++) {
                arr[i][j] = scan.nextInt();
            }
        }
        // Calculates sum of each row of given matrix
        for (int i = 0; i < rows; i++) {
```

```
            for (int j = 0; j < cols; j++) {
                transpose[i][j] = arr[j][i];
            }
        }
        System.out.println("Printing Matrix without transpose:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                System.out.print(arr[i][j] + " ");
            }
            System.out.println();// new line
        }
        System.out.println("Printing Matrix After Transpose:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                System.out.print(transpose[i][j] + " ");
            }
            System.out.println();// new line
        }

    }
}
```

Output:

```
Enter no. of rows:4
Enter no. of columns:4
Enter the elements of the array:
Enter the elements of 1 th row:
1
2
3
4
Enter the elements of 2 th row:
4
5
6
7
8
9
1
2
Enter the elements of 4 th row:
3
4
5
6
Printing Matrix without transpose:
1 2 3 4
4 5 6 7
8 9 1 2
3 4 5 6
Printing Matrix After Transpose:
1 4 8 3
2 5 9 4
3 6 1 5
4 7 2 6
```