**Name: Ashish Kothari** **Subject: Java Programming Lab**

**Section: D1** **Course: BCA**

**Roll No: 17**

Q12. Create an abstract class shape having following abstract methods.

i). abstract void drawTriangle(int n); .This function will print the following pattern.

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

ii). abstract void drawInvertedTriangle(int n); .This will print the following pattern.

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

Now create a child DrawPattern which will provide the definition for its parent class.

Create a TestPattern class and test the functionality of your program.

```
package java_practice_sets;
import java.util.Scanner;
abstract class shape
{
   abstract void drawtriangle(int n);
   abstract void drawinvertedtriangle(int n);
}
class drawpattern extends shape
{
   void drawtriangle(int n)
```

```
{
    for(int i=1;i<=n;i++)
    {
        for(int j=1;j<=n-i;j++)
        {
            System.out.print(" ");
        }
        for(int k=1; k<=2*i-1; k++)
        {
            System.out.print("*");
        }
        System.out.println();
    }
    System.out.println();
}
void drawinvertedtriangle(int n)
{
    for(int i=n; i>=1; i--)
    {
        for(int j=1; j<=n-i; j++)
        {
            System.out.print(" ");
        }
        for(int k=1;k<=2*i-1;k++)
        {
            System.out.print("*");
        }
```

```
            System.out.println();
        }
        System.out.println();
    }
}
class TestPattern{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        drawpattern d = new drawpattern();
        System.out.print("Enter size for pyramid : ");
        int s = sc.nextInt();
        System.out.println("Triangle : ");
        d.drawtriangle(s);
        System.out.println("Inverted Triangle : ");
        System.out.println();
        d.drawinvertedtriangle(s);
    }
}
```

Output:

```
Enter size for pyramid : 5
Triangle :
    *
   **
  *****
 *******
*********

Inverted Triangle :

*********
 *******
  *****
   ***
    *


Process finished with exit code 0
```

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Q13. Write an program to create an interface “Circle_Functions” with the final instance variable as PI and radius. Declare two methods circumference() and area(). Now create a class “Circle” which implements interface “Circle_Functions”. Now create a Test class and test the functionality of “Circle”.

```
package java_practice_sets;

interface circle_functions
{
   final double pi=3.14;
   final int radius=4;
   void circumference();
   void area();
}
class circle implements circle_functions
{
   public void circumference()
   {
      double cf=pi*radius*2;
      System.out.println("Circumference : "+ cf);
   }
   public void area()
   {
      double ar=pi*radius*radius;
      System.out.println("Area : "+ar);
   }
```

```
}
public class Practice_Question_13
{
    public static void main(String[] args) {
        circle obj = new circle();
        obj.circumference();
        obj.area();
    }
}
```

Output:

```
Circumference : 25.12
Area : 50.24

Process finished with exit code 0
```

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Q14. WAP to create array of 10 element now ask user to enter elements for array using Scanner class. After that calculate the sum of even elements only.

```
package java_practice_sets;

import java.util.Scanner;

class Practice_Question_14

{

   public static void main(String []args)

   {

      int []arr = new int[10];

      Scanner sc = new Scanner(System.in);

      int i = 0;

      int sum = 0;

      for (i = 0;i< 10; i++)

      {

         System.out.println("Enter element: ");

         arr[i] = sc.nextInt();

         if ((arr[i] % 2) == 0)

         {

            sum = sum + arr[i];

         }

      }

      System.out.println("Sum of all the even element is: "+ sum);

   }

}
```

Output:

```
Enter element:
2
Enter element:
3
Enter element:
4
Enter element:
5
Enter element:
6
Enter element:
7
Enter element:
8
Enter element:
9
Enter element:
10
Enter element:
11
Sum of all the even element is: 30

Process finished with exit code 0
```

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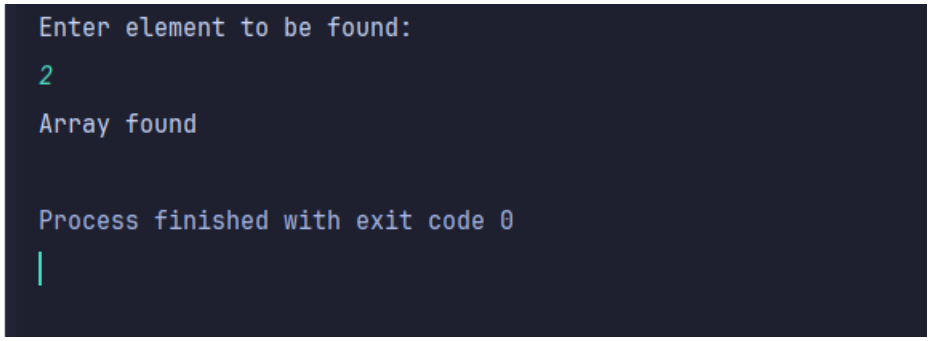
Q15. Write a java program to find an element in an array if found then print array found.

```
package java_practice_sets;
import java.util.Scanner;
public class Practice_Question_15
{
   public static void main(String []args)
   {
      int flag = 0;
      int i = 0;
      int []arr = {2, 3, 6, 7, 8, 0, 23, 32, 33, 56};
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter element to be found: ");
      int n = sc.nextInt();
      for (i = 0;i< 10; i++)
      {
         if (n == arr[i])
         {
            flag++;
         }
      }
      if(flag > 0)
      {
         System.out.println("Array found");
```

```
    }
  }
}
```

Output:


Enter element to be found:
2
Array found
Process finished with exit code 0

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Q16. Write a java program to delete an element from an array.

```
package java_practice_sets;
import java.util.Scanner;
public class Practice_Question_16
{
   public static void main(String[] args)
   {
      Scanner sc = new Scanner(System.in);
      int[] array = {1, 2, 3, 4, 5};
      System.out.println("Enter element for deletion: ");
      int elementToDelete = sc.nextInt();

      // Find the index of the element to delete
      int index = 0;
      for (int i = 0; i < array.length; i++) {
         if (array[i] == elementToDelete) {
            index = i;
            break;
         }
      }

      // Delete the element at the index
      deleteElement(array, index);
```

```
        // Print the updated array
        System.out.println("Updated array: ");
        for (int element : array) {
            System.out.print(element + " ");
        }
        System.out.println();
    }

    private static void deleteElement(int[] array, int index) {
        for (int i = index; i < array.length - 1; i++) {
            array[i] = array[i + 1];
        }
        // Reduce the size of the array by one
        array[array.length - 1] = 0;
    }
```

Output:

```
Enter element for deletion:
4
Updated array:
1 2 3 5 0

Process finished with exit code 0
```

}