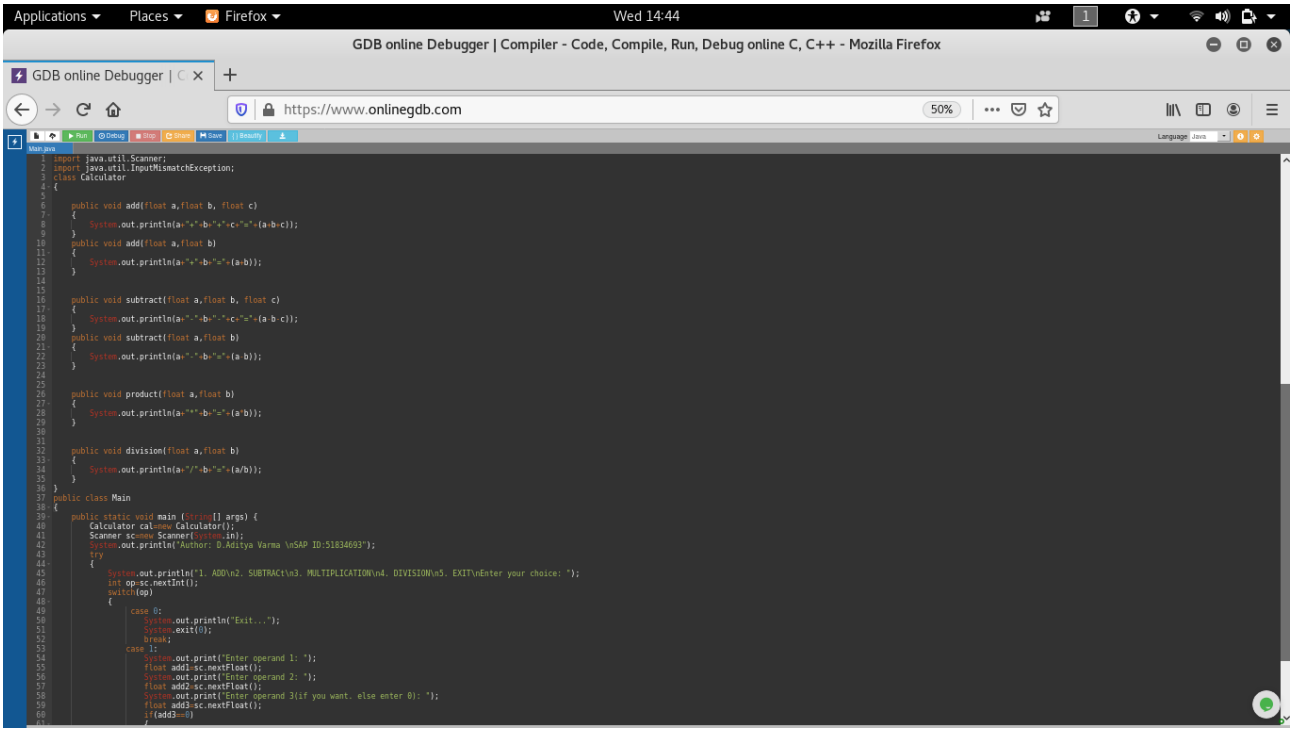
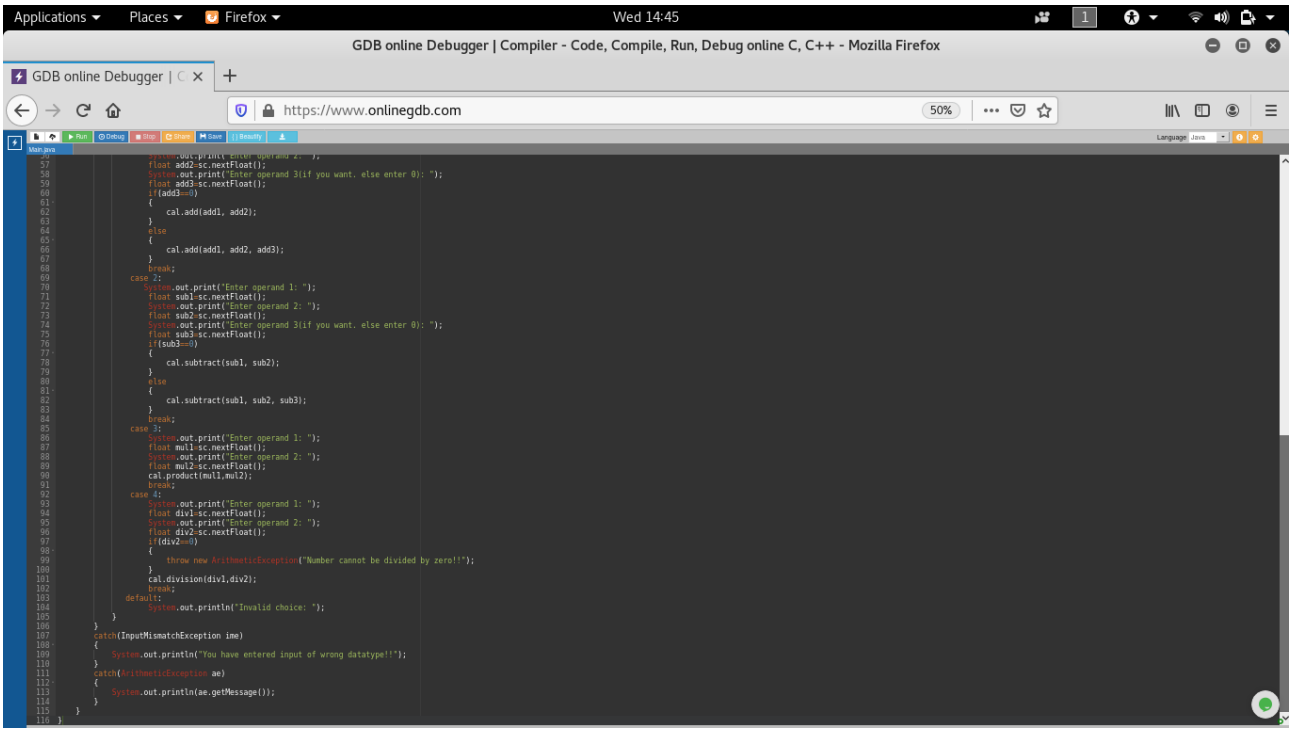
1)
```
import java.util.Scanner;
import java.util.InputMismatchException;
class Calculator
{

   public void add(float a,float b, float c)
   {
      System.out.println(a+"+"+b+"+"+c+"="+(a+b+c));
   }
   public void add(float a,float b)
   {
      System.out.println(a+"+"+b+"="+(a+b));
   }


   public void subtract(float a,float b, float c)
   {
      System.out.println(a+"-"+b+"-"+c+"="+(a-b-c));
   }
   public void subtract(float a,float b)
   {
      System.out.println(a+"-"+b+"="+(a-b));
   }


   public void product(float a,float b)
   {
      System.out.println(a+"*"+b+"="+(a*b));
   }


   public void division(float a,float b)
   {
      System.out.println(a+"/"+b+"="+(a/b));
   }
}
public class Main
{
   public static void main (String[] args) {
      Calculator cal=new Calculator();
      Scanner sc=new Scanner(System.in);
      System.out.println("Author: D.Aditya Varma \nSAP ID:51834693");
      try
      {
         System.out.println("1. ADD\n2. SUBTRACt\n3. MULTIPLICATION\n4. DIVISION\n5.
EXIT\nEnter your choice: ");
         int op=sc.nextInt();
         switch(op)
         {
            case 0:
              System.out.println("Exit...");
              System.exit(0);
```

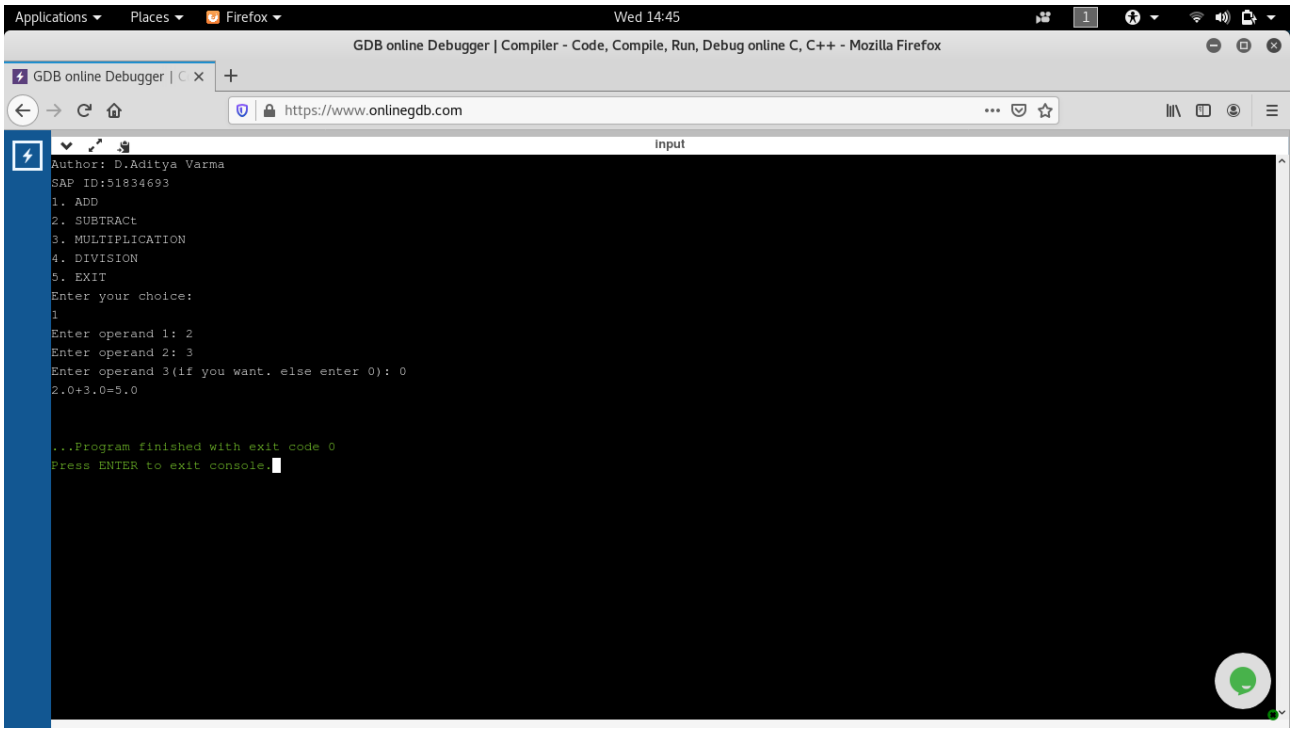
```
    break;
case 1:
    System.out.print("Enter operand 1: ");
    float add1=sc.nextFloat();
    System.out.print("Enter operand 2: ");
    float add2=sc.nextFloat();
    System.out.print("Enter operand 3(if you want. else enter 0): ");
    float add3=sc.nextFloat();
    if(add3==0)
    {
       cal.add(add1, add2);
    }
    else
    {
       cal.add(add1, add2, add3);
    }
    break;
case 2:
   System.out.print("Enter operand 1: ");
    float sub1=sc.nextFloat();
    System.out.print("Enter operand 2: ");
    float sub2=sc.nextFloat();
    System.out.print("Enter operand 3(if you want. else enter 0): ");
    float sub3=sc.nextFloat();
    if(sub3==0)
    {
       cal.subtract(sub1, sub2);
    }
    else
    {
       cal.subtract(sub1, sub2, sub3);
    }
    break;
case 3:
    System.out.print("Enter operand 1: ");
    float mul1=sc.nextFloat();
    System.out.print("Enter operand 2: ");
    float mul2=sc.nextFloat();
    cal.product(mul1,mul2);
    break;
case 4:
    System.out.print("Enter operand 1: ");
    float div1=sc.nextFloat();
    System.out.print("Enter operand 2: ");
    float div2=sc.nextFloat();
    if(div2==0)
    {
       throw new ArithmeticException("Number cannot be divided by zero!!");
    }
    cal.division(div1,div2);
    break;
default:
```

```
                System.out.println("Invalid choice: ");
            }
        }
        catch(InputMismatchException ime)
        {
            System.out.println("You have entered input of wrong datatype!!");
        }
        catch(ArithmeticException ae)
        {
            System.out.println(ae.getMessage());
        }
    }
}
```

**input screen:**





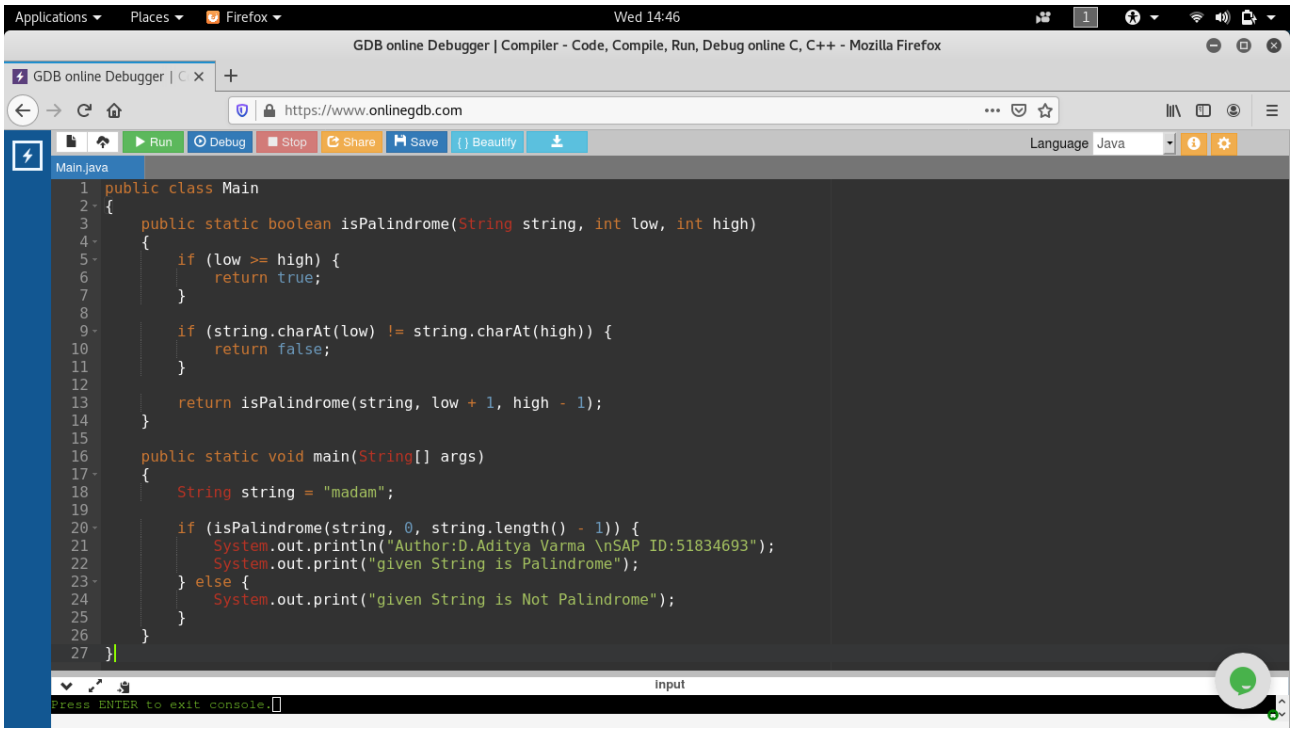

**Output Screen:**

2)

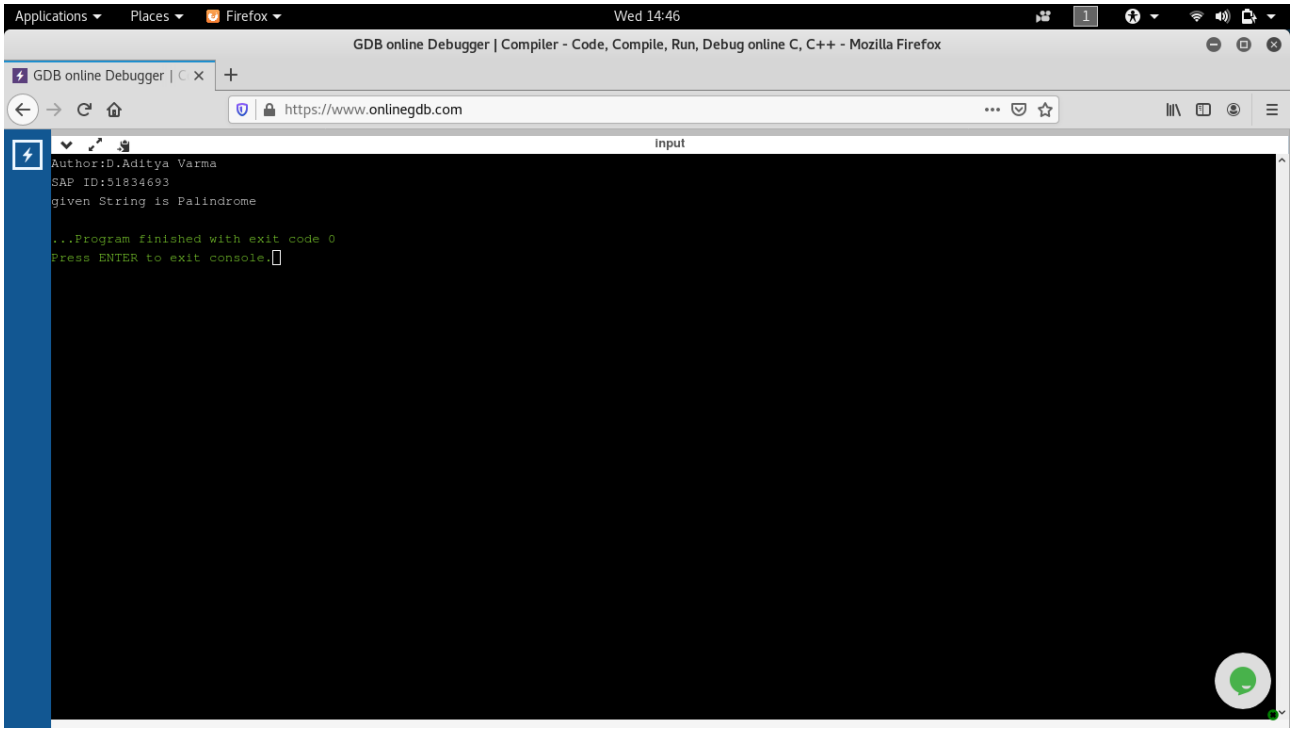
```
public class Main
{
	public static boolean isPalindrome(String string, int low, int high)
	{
		if (low >= high) {
			return true;
		}

		if (string.charAt(low) != string.charAt(high)) {
			return false;
		}

		return isPalindrome(string, low + 1, high - 1);
	}

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

```
        String string = "madam";


        if (isPalindrome(string, 0, string.length() - 1)) {
            System.out.println("Author:D.Aditya Varma \nSAP ID:51834693");
            System.out.print("given String is Palindrome");
        } else {
            System.out.print("given String is Not Palindrome");
        }
    }
}
```

**Input Screen:**



**Output Screen:**

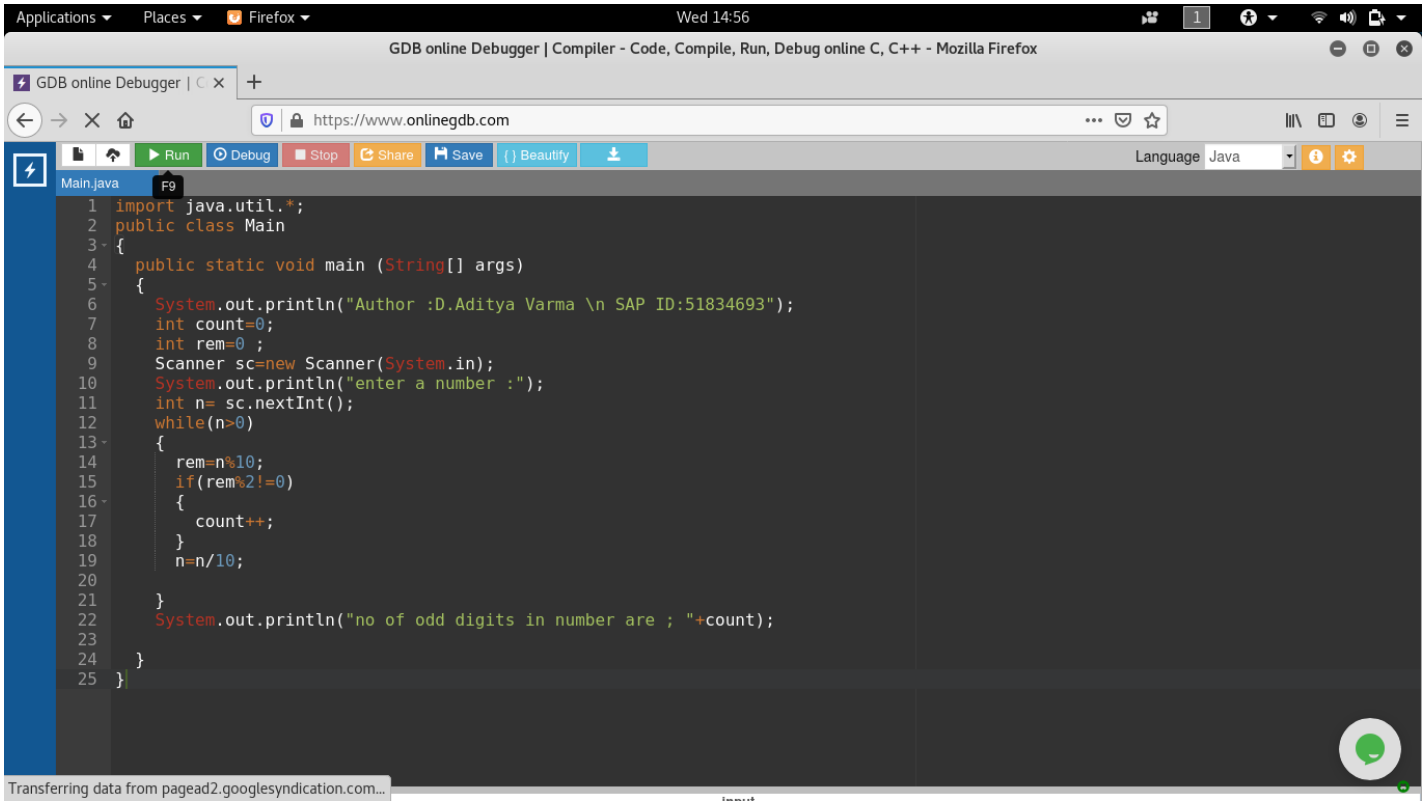



3)

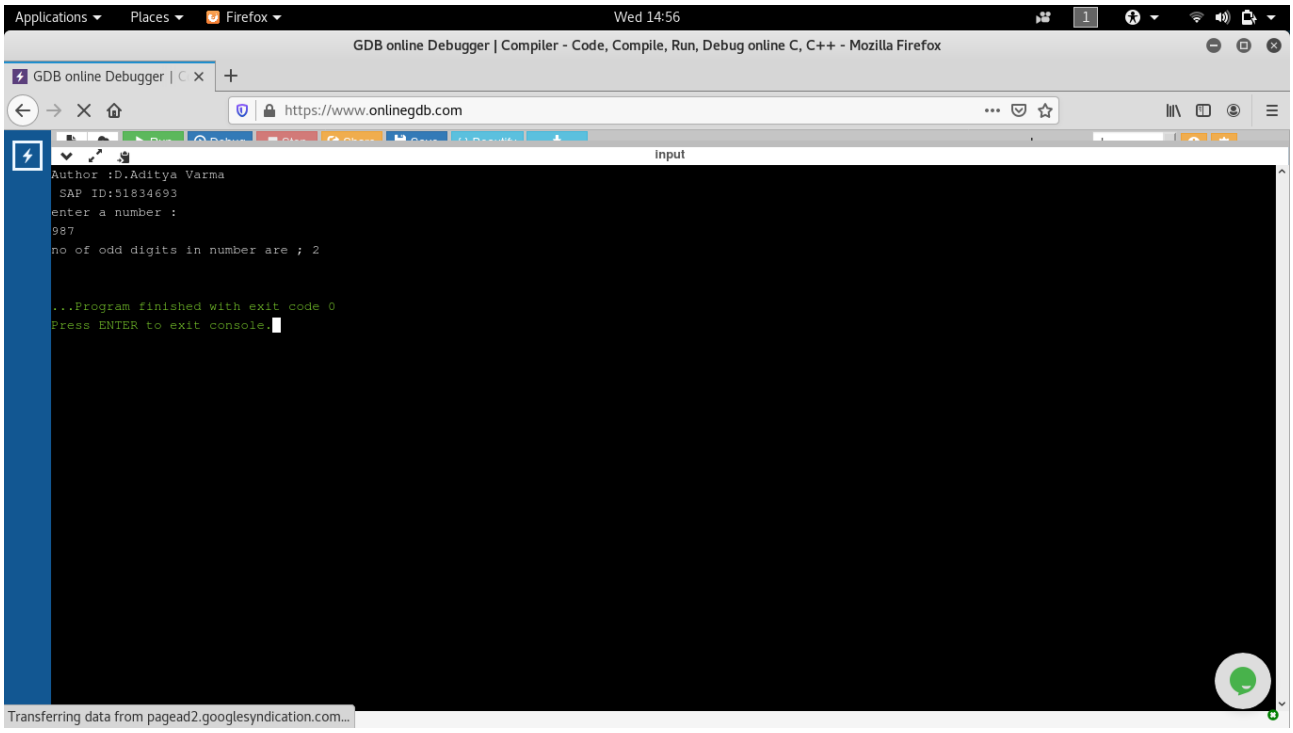
```
import java.util.*;
public class Main
{
  public static void main (String[] args)
  {
    System.out.println("Author :D.Aditya Varma \n SAP ID:51834693");
    int count=0;
    int rem=0 ;
    Scanner sc=new Scanner(System.in);
    System.out.println("enter a number :");
    int n= sc.nextInt();
    while(n>0)
    {
      rem=n%10;
      if(rem%2!=0)
```

```
    {
      count++;
    }
    n=n/10;

  }
  System.out.println("no of odd digits in number are ; "+count);

 }
}
```

**Input Screen:**



**Output Screen:**

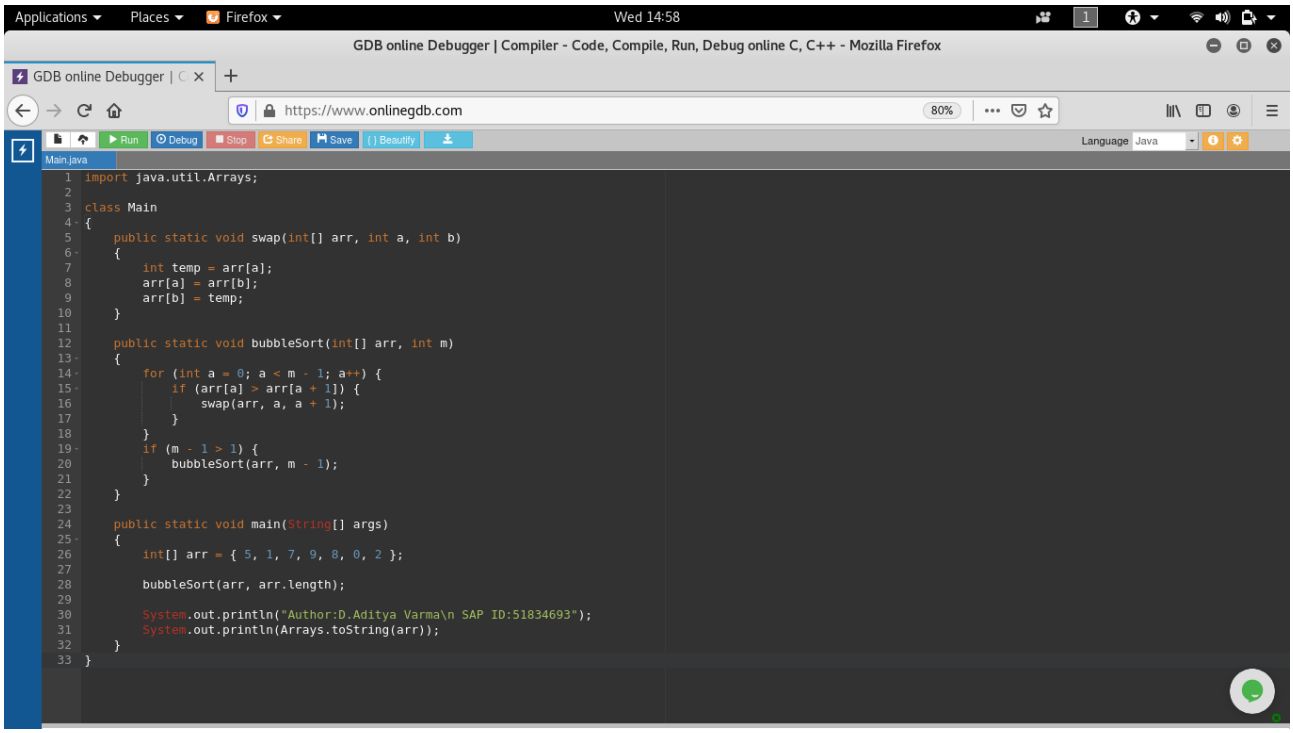



5)import java.util.Arrays;

```
class Main
{
	public static void swap(int[] arr, int a, int b)
	{
		int temp = arr[a];
		arr[a] = arr[b];
		arr[b] = temp;
	}

	public static void bubbleSort(int[] arr, int m)
	{
		for (int a = 0; a < m - 1; a++) {
			if (arr[a] > arr[a + 1]) {
```

```
                    swap(arr, a, a + 1);
                }
            }
            if (m - 1 > 1) {
                bubbleSort(arr, m - 1);
            }
        }

        public static void main(String[] args)
        {
            int[] arr = { 5, 1, 7, 9, 8, 0, 2 };

            bubbleSort(arr, arr.length);

            System.out.println("Author:D.Aditya Varma\n SAP ID:51834693");
            System.out.println(Arrays.toString(arr));
        }
}
```

**Input Screen:**



## Output Screen: