

LAB 2

Q.1. Write a program that takes a student's score as input and outputs the corresponding grade based on the following scale:

A: 90-100

B: 80-89

C: 70-79

D: 60-69

Program:

```
package demo;
import java.util.Scanner;
public class student_score {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner s=new Scanner(System.in);//creating the Scanner object
        int n1,n2,n3,total;
        float avg;
        System.out.println("Enter score of Subject 1 ");
        n1=s.nextInt();//taking first score as an input
        System.out.println("Enter score of Subject 2 ");
        n2=s.nextInt();//taking second score as an input
        System.out.println("Enter score of Subject 3 ");
        n3=s.nextInt();//taking third score as an input
        total=n1+n2+n3;// calculating the sum of three scores of student
        System.out.println("Total Score is "+total+" out of 300");
        avg=total/3;// calculating the average of three scores of student
        System.out.println("Your Average is: "+avg);
        if(avg>=90 && avg<=100)//checking whether average is greater and
equal to 90 and less than to 100
        {
            System.out.println("You scored A Grade");
        }
        else if(avg>=80 && avg<=89)//checking whether average is greater and
equal to 80 less than to 89
        {
            System.out.println("You scored B Grade");
        }
        else if(avg>=70 && avg<=79)//checking whether average is greater and
equal to 70 less than to 79
        {
            System.out.println("You scored C Grade");
        }
        else if(avg>=60 && avg<=69)//checking whether average is greater and
equal to 60 less than to 69
        {
            System.out.println("You scored B Grade");
        }
    }
}
```

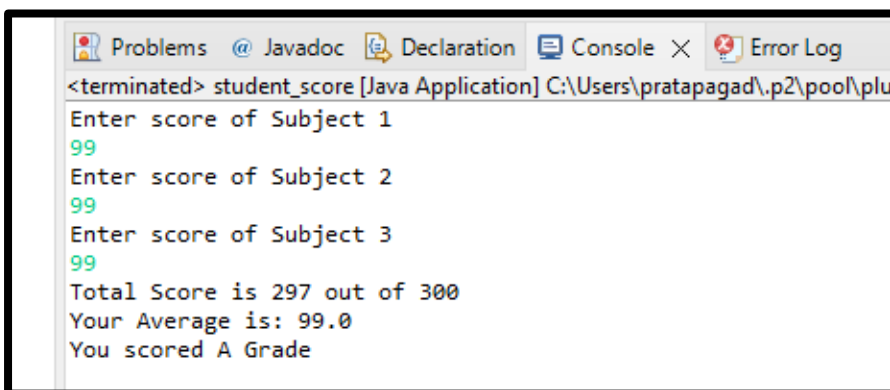
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```
else//checking whether average is greater and equal to 50 less than  
to 59  
{  
  
    System.out.println("Sorry!! you are failed in this exam");  
}  
  
}  
  
}
```

Output:



```
<terminated> student_score [Java Application] C:\Users\pratapagad\.p2\pool\plu  
Enter score of Subject 1  
99  
Enter score of Subject 2  
99  
Enter score of Subject 3  
99  
Total Score is 297 out of 300  
Your Average is: 99.0  
You scored A Grade
```

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Q.2. Write a program to check if a given year is a leap year. (A year is a leap year if it is divisible by 4 but not by 100, or it is divisible by 400.)

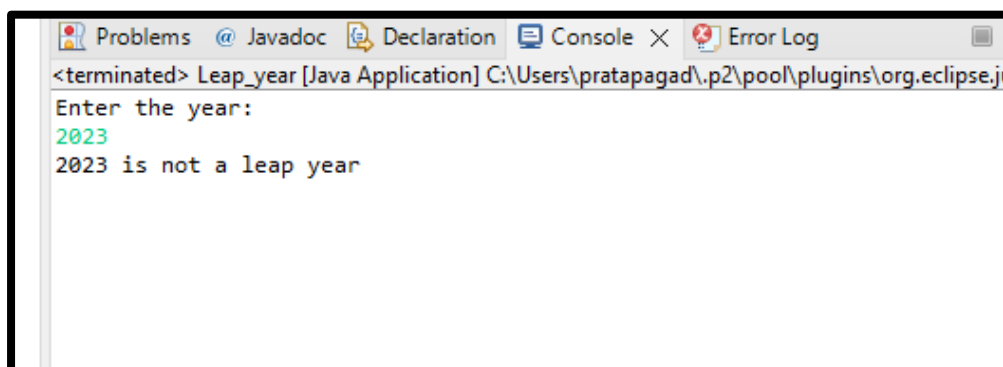
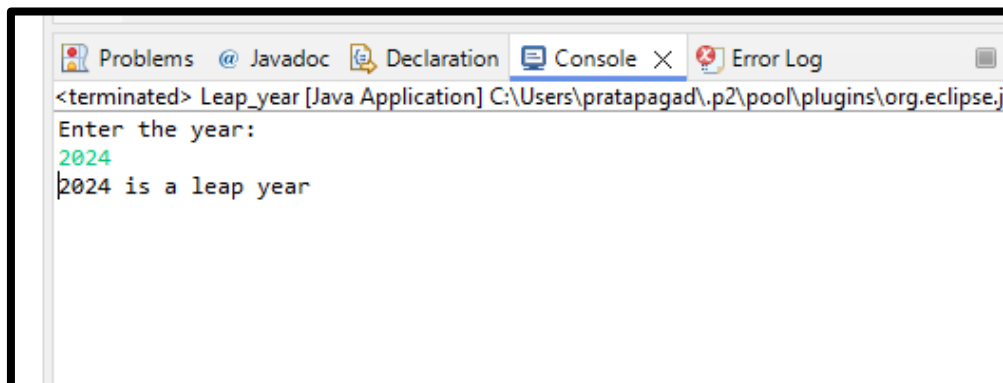
Program:

```
package demo;
import java.util.Scanner;

public class Leap_year {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner s=new Scanner(System.in);/Creating the Scanner object
        int year;//declaring the variables
        System.out.println("Enter the year: ");
        year=s.nextInt();//taking a year as an input
        if(year%4==0)//checking whether remainder of entered no. is equal to
0 or not
        {
            System.out.println(year+" is a leap year");
        }
        else
        {
            System.out.println(year+" is not a leap year");
        }
    }
}
```

Output:



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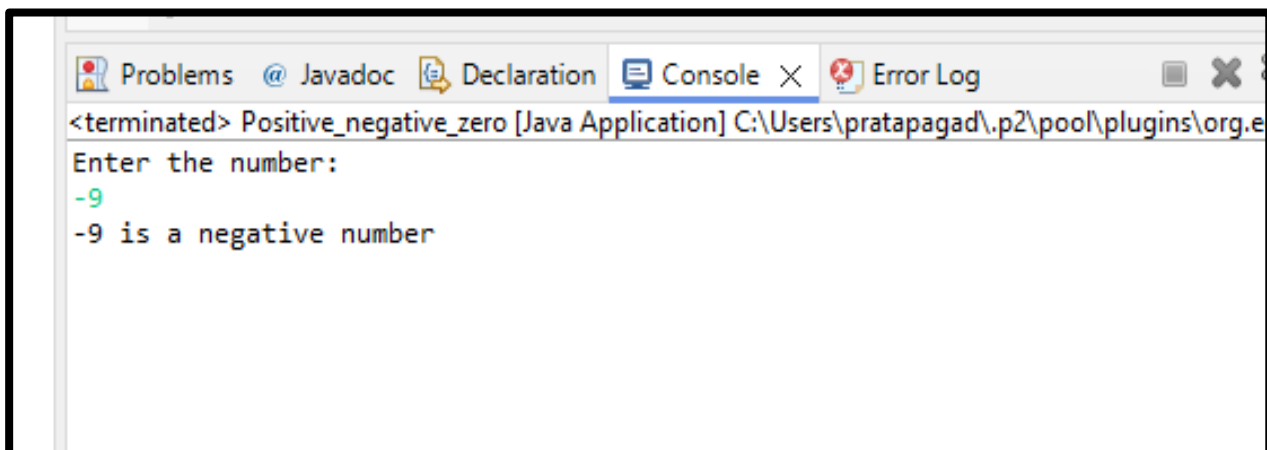
Q.3. Write a program that takes an integer as input and checks if it is positive, negative, or zero.

Program:

```
package demo;
import java.util.Scanner;
public class Positive_negative_zero {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner s=new Scanner(System.in);//creating the Scanner object
        int n;//declaring the variable
        System.out.println("Enter the number: ");
        n=s.nextInt();//taking the number as an input
        if(n>0)//checking whether the no. is positive
        {
            System.out.println(n+" is a positive number");
        }
        else if(n<0)//checking whether the no. is negative
        {
            System.out.println(n+" is a negative number");
        }
        else//the no. is Zero
        {
            System.out.println("The number is Zero");
        }
    }
}
```

Output:

A screenshot of a Java IDE's console window. The window has tabs for 'Problems', 'Javadoc', 'Declaration', 'Console', and 'Error Log'. The 'Console' tab is active, showing the output of the program. The text in the console is: '<terminated> Positive_negative_zero [Java Application] C:\Users\pratapagad\.p2\pool\plugins\org.e', 'Enter the number:', '-9', and '-9 is a negative number'. The input '-9' is shown in green, indicating it was entered by the user. The output '-9 is a negative number' is shown in black.

Q.4. Write a program that prints numbers from 1 to 10 using a loop.

Program:

```
package demo;

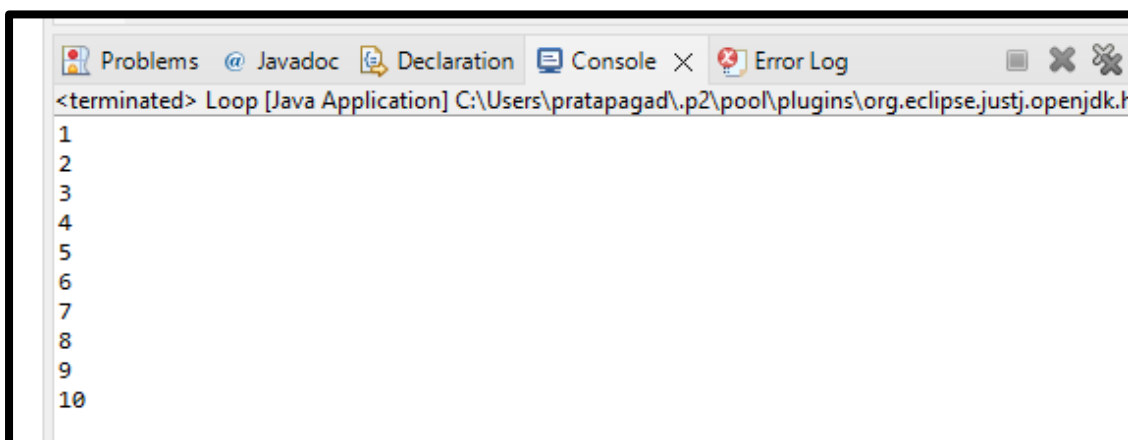
public class Loop {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        int i=1;//decaring the varaible
        while(i<=10)//for(i=1;i<=10;i++)//It will rotate the loop 10 times
        for printing the value of i
        {
            System.out.println(i);
            i++;
        }

    }

}
```

Output:

A screenshot of the Eclipse IDE's Console window. The window title bar shows 'Problems', 'Javadoc', 'Declaration', 'Console', and 'Error Log'. The console output shows the numbers 1 through 10, each on a new line, indicating the successful execution of the while loop program. The text '<terminated> Loop [Java Application] C:\Users\pratapagad\.p2\pool\plugins\org.eclipse.justj.openjdk.h' is visible at the top of the console area.

```
<terminated> Loop [Java Application] C:\Users\pratapagad\.p2\pool\plugins\org.eclipse.justj.openjdk.h
1
2
3
4
5
6
7
8
9
10
```

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Q.5. Write a program that takes an integer N as input and calculates the sum of entered numbers.

Program:

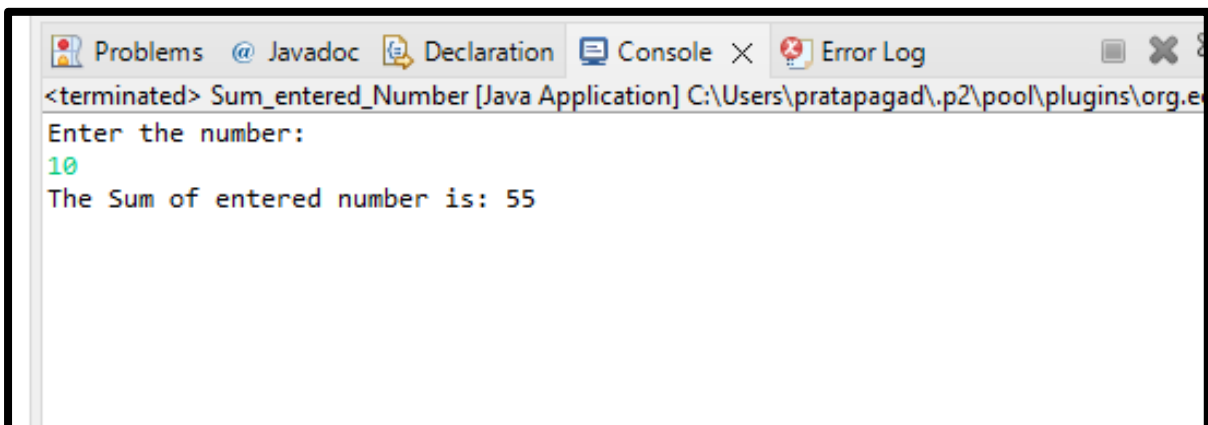
```
package demo;
import java.util.Scanner;
public class Sum_entered_Number {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner s=new Scanner(System.in);//declaring the Scanner Object
        int n,sum=0,i;//declaring the variables
        System.out.println("Enter the number: ");
        n=s.nextInt();//taking the no. as an input
        for(i=1;i<=n;i++)//it will rotate the loop for 10 times to change
the value of i
        {
            sum+=i;//it will calculate the total of value of n
        }
        System.out.print("The Sum of entered number is: "+sum);

    }

}
```

Output:



```
<terminated> Sum_entered_Number [Java Application] C:\Users\pratapagad\.p2\pool\plugins\org.e
Enter the number:
10
The Sum of entered number is: 55
```

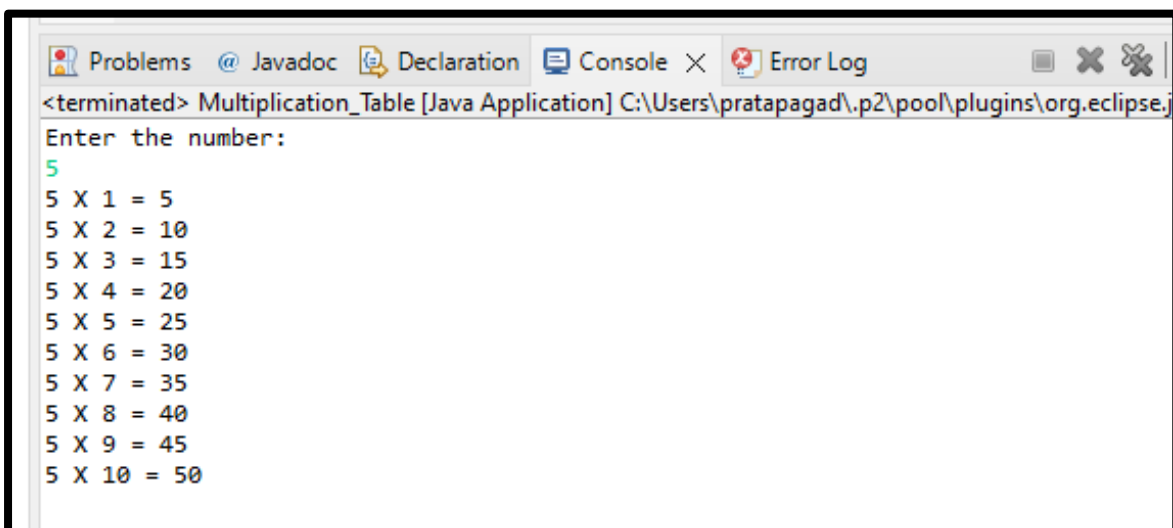
Q.6. Write a program that takes an integer as input and prints its multiplication table up to 10.

Program:

```
package demo;
import java.util.Scanner;
public class Multiplication_Table {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner s=new Scanner(System.in);//declaring the Scanner Object
        int n,i=1,ans;//declaring the variables
        System.out.println("Enter the number: ");
        n=s.nextInt();//taking the no. as an input
        while(i<=10)//It will rotate the loop for 10 times
        {
            ans=n*i;//product of n and i
            System.out.println(n+" X "+i+" = "+ans);//printing the output
            i++;//update!!! it will increase the value of i by 1
        }
    }
}
```

Output:



```
<terminated> Multiplication_Table [Java Application] C:\Users\pratapagad\p2\pool\plugins\org.eclipse.j
Enter the number:
5
5 X 1 = 5
5 X 2 = 10
5 X 3 = 15
5 X 4 = 20
5 X 5 = 25
5 X 6 = 30
5 X 7 = 35
5 X 8 = 40
5 X 9 = 45
5 X 10 = 50
```

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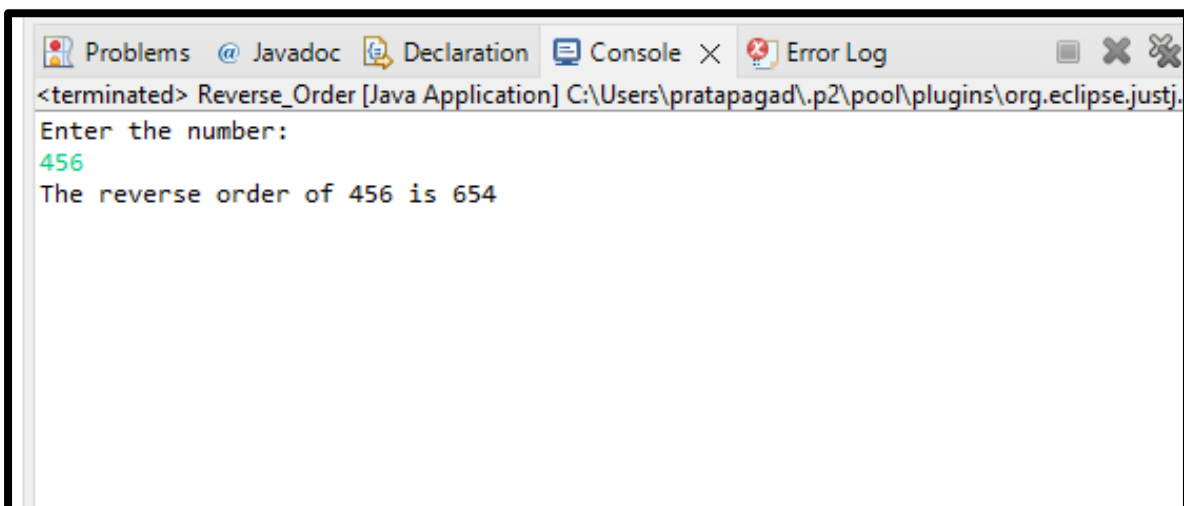
Q.7. Write a program that takes a positive integer as input and prints its digits in reverse order.

Program:

```
package demo;
import java.util.Scanner;
public class Reverse_Order {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner s=new Scanner(System.in);//declaring the Scanner Object
        int n,rev=0,remainder;//declaring the variables
        System.out.println("Enter the number: ");
        n=s.nextInt();//taking the no. as an input
        int m=n;//Assigning the value of n in m
        while(n>0)//It will rotate the loop for 10 times till the value of n
            {
                remainder=n%10; //calculates the remainder of n
                rev=rev*10+remainder;//calculates the reverse with the help of
                n=n/10;//it helps to pruning/cut down one digit from n
            }
        System.out.println("The reverse order of "+m+" is "+rev);//printing
    }
}
```

Output:

A screenshot of the Eclipse IDE's Console window. The window has tabs for 'Problems', 'Javadoc', 'Declaration', 'Console', and 'Error Log'. The 'Console' tab is active, showing the output of a Java application named 'Reverse_Order'. The output text is: '<terminated> Reverse_Order [Java Application] C:\Users\pratapagad\.p2\pool\plugins\org.eclipse.justj'. Below this, the program's prompts and user input are shown: 'Enter the number:' followed by the user input '456' on a new line. The final output line is 'The reverse order of 456 is 654'.

Q.8. Create a class Animal with a method makeSound() that prints "Some generic animal sound". Create another class Dog that extends Animal and overrides the makeSound() method to print "Bark". Write a main method to demonstrate calling the makeSound() method on an Animal reference holding a Dog object.

Program:

```
package demo;
class Animal //declaring the Animal class
{
    public void makeSound() //declaring the makeSound method
    {
        System.out.println("Hmmm");//printing some sound
    }
}

class Dog extends Animal //declaring the dog class which inherit to Animal class
{
    @Override
    public void makeSound() //declaring the makeSound method which overrides to
the method of parent class
    {
        System.out.println("Bark");//printing the sound of Dog
    }
}

public class Main
{
    public static void main(String[] args)
    {
        // Creating an Animal reference holding a Dog object
        Animal animal = new Dog();

        // Calling the makeSound() method
        animal.makeSound();
    }
}
```

Output:

