BeginwithJava

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Programming Questions and Exercises : Loops

Question 1

Write a program to print numbers from 1 to 10.

Show the answer.

```
public class PrintNumbers
{
    public static void main(String[] args)
    {
        for(int i=1; i<=10; i++)
        {
            System.out.println(i);
        }
    }
}
```

Question 2

Write a program to calculate the sum of first 10 natural number.

Show the answer.

```
public class SumNumbers
{
    public static void main(String[] args)
    {
        int sum = 0;
        for(int i=1; i<=10; i++)
        {
            sum += i;
```

Question 3

Write a program that prompts the user to input a positive integer. It should then print the multiplication table of that number.

Show the answer.

```
import java.util.Scanner;

public class Table
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);
        int num;

        System.out.print("Enter any positive integer: ");
        num = console.nextInt();

        System.out.println("Multiplication Table of " + num);

        for(int i=1; i<=10; i++)
        {
            System.out.println(num +" x " + i + " = " + (num*i) );
        }
    }
}
```

Question 4

Write a program to find the factorial value of any number entered through the keyboard.

Show the answer.

```
import java.util.Scanner;

public class FactorialDemo1
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);
        int num; // To hold number
        int fact = 1; // To hold factorial
```

```
        {
            fact *= i;
        }

        System.out.println("Factorial: "+ fact);
    }
}
```

Question 5

Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another. (Do not use Java built-in method)

Show the answer.

```
import java.util.Scanner;

public class PowerDemo
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int base;
        int power;
        int result = 1;

        System.out.print("Enter the base number ");
        base = console.nextInt();

        System.out.print("Enter the power ");
        power = console.nextInt();

        for(int i = 1; i <= power; i++)
        {
            result *= base;
        }

        System.out.println("Result: "+ result);
    }
}
```

Question 6

```
import java.util.Scanner;

public class ReverseNumber
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number;
        int reverse = 0;

        System.out.print("Enter the number ");
        number = console.nextInt();

        int temp = number;
        int remainder = 0;

        while(temp>0)
        {
            remainder = temp % 10;
            reverse = reverse * 10 + remainder;
            temp /= 10;
        }

        System.out.println("Reverse of " + number + " is " + reverse);
    }
}
```

Question 7

Write a program that reads a set of integers, and then prints the sum of the even and odd integers.

Show the answer.

```
import java.util.Scanner;

public class ReadSetIntegers
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number;
        char choice;
```

```
        {
            System.out.print("Enter the number ");
            number = console.nextInt();

            if( number % 2 == 0)
            {
                evenSum += number;
            }
            else
            {
                oddSum += number;
            }

            System.out.print("Do you want to continue y/n? ");
            choice = console.next().charAt(0);

        }while(choice=='y' || choice == 'Y');

        System.out.println("Sum of even numbers: " + evenSum);
        System.out.println("Sum of odd numbers: " + oddSum);
    }
}
```

Question 8

Write a program that prompts the user to input a positive integer. It should then output a message indicating whether the number is a prime number.

Show the answer.

```
import java.util.Scanner;

public class TestPrime
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number;

        System.out.print("Enter the positive integer ");
        number = console.nextInt();

        boolean flag = true;
```

```
                flag = false;
                break;
            }
        }

        if(flag && number > 1)
        {
            System.out.println("Number is prime");
        }
        else
        {
            System.out.println("Number is not prime");
        }

    }
}
```

Question 9

Write a program to calculate HCF of Two given number.

Show the answer.

```
import java.util.Scanner;

public class FindHcf
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int dividend, divisor;
        int remainder, hcf = 0;

        System.out.print("Enter the first number ");
        dividend = console.nextInt();

        System.out.print("Enter the second number ");
        divisor = console.nextInt();

        do
        {
            remainder = dividend % divisor;

            if(remainder == 0)
```

```
            {
                dividend = divisor;
                divisor = remainder;
            }

        }while(remainder != 0);

        System.out.println("HCF: " + hcf);
    }
}
```

Question 10

Write a do-while loop that asks the user to enter two numbers. The numbers should be added and the sum displayed. The loop should ask the user whether he or she wishes to perform the operation again. If so, the loop should repeat; otherwise it should terminate.

Show the answer.

```
import java.util.Scanner;

public class SumAgain
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number1, number2;
        char choice;

        do
        {
            System.out.print("Enter the first number ");
            number1 = console.nextInt();

            System.out.print("Enter the second number ");
            number2 = console.nextInt();

            int sum = number1 + number2;
            System.out.println("Sum of numbers: " + sum);

            System.out.print("Do you want to continue y/n? ");
            choice = console.next().charAt(0);
```

```
    }
}
```

Question 11

Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.

Show the answer.

```
import java.util.Scanner;


public class CountNumbers
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number,
            countPositive = 0,
            countNegative = 0,
            countZero = 0;

        char choice;

        do
        {
            System.out.print("Enter the number ");
            number = console.nextInt();

            if(number > 0)
            {
                countPositive++;
            }
            else if(number < 0)
            {
                countNegative++;
            }
            else
            {
                countZero++;
            }

            System.out.print("Do you want to continue y/n? ");
```

```
        System.out.println("Positive numbers: " + countPositive);
        System.out.println("Negative numbers: " + countNegative);
        System.out.println("Zero numbers: " + countZero);
    }
}
```

Question 12

Write a program to enter the numbers till the user wants and at the end the program should display the largest and smallest numbers entered.

Show the answer.

```
import java.util.Scanner;

public class FindMaxMin
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number;
        int max = Integer.MIN_VALUE;  // Intialize max with minimum value
        int min = Integer.MAX_VALUE;  // Intialize min with maximum value

        char choice;

        do
        {
            System.out.print("Enter the number ");
            number = console.nextInt();

            if(number > max)
            {
                max = number;
            }

            if(number < min)
            {
                min = number;
            }

            System.out.print("Do you want to continue y/n? ");
            choice = console.next().charAt(0);
```

```
    }
}
```

Question 13

Write a program to print out all Armstrong numbers between 1 and 500. If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number.
For example, 153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3)

Show the answer.

```
public class ArmstrongNumber
{
    public static void main(String[] args)
    {
        int digit1,  // To hold first digit (Ones) of number
            digit2,  // To hold second digit (Tens) of number
            digit3;  // To hold third digit (Hundreds) of number

        for(int number = 1; number <= 500; number++)
        {
            int temp = number;
            digit1 = temp % 10;

            temp = temp / 10;
            digit2 = temp % 10;

            temp = temp / 10;
            digit3 = temp % 10;

            if(digit1*digit1*digit1 + digit2*digit2*digit2 + digit3*digit3*digi
            {
                System.out.println(number);
            }
        }
    }
}
```

Question 14

Write a program to print Fibonacci series of n terms where n is input by user : 0 1 1 2 3 5 8 13 24 .....

Show the answer.

```
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number;  // To hold number of terms

        int firstTerm = 0,
            secondTerm = 1,
            thirdTerm;

        System.out.print("Enter number of terms of series : ");
        number = console.nextInt();

        System.out.print(firstTerm + " " + secondTerm + " ");

        for(int i = 3; i <= number; i++)
        {
            thirdTerm = firstTerm + secondTerm;
            System.out.print(thirdTerm + " ");
            firstTerm = secondTerm;
            secondTerm = thirdTerm;
        }
    }
}
```

Question 15

Write a program to calculate the sum of following series where n is input by user.
1 + 1/2 + 1/3 + 1/4 + 1/5 +.....1/n

Show the answer.

```
import java.util.Scanner;

public class SumOfSeries
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number;  // To hold number of terms

        double sum = 0;
```

```
        for(int i = 1; i <= number; i++)
        {
            sum += 1.0/i;
        }

        System.out.println("sum: " + sum);
    }
}
```

Question 16

Compute the natural logarithm of 2, by adding up to n terms in the series
1 - 1/2 + 1/3 - 1/4 + 1/5 -... 1/n
where n is a positive integer and input by user.

Show the answer.

```
import java.util.Scanner;

public class Ln2
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number;  // To hold number of terms

        System.out.print("Enter number of terms of series : ");
        number = console.nextInt();

        double sum = 0;
        int sign = 1;

        for(int i = 1; i <= number; i++)
        {
            sum += (1.0 * sign) / i;
            sign *= -1;
        }

        System.out.println("log2: " + sum);
    }
}
```

Question 17

program should use a loop that repeats until the user correctly guesses the random number.

Show the answer.

```
import java.util.Scanner;

public class GuessMyNumber
{
    public static void main(String[] args)
    {
        Scanner console = new Scanner(System.in);

        int number, // To hold the random number
            guess,  // To hold the number guessed by user
            tries = 0; // To hold number of tries

        number = (int) (Math.random() * 100) + 1; // get random number between 1

        System.out.println("Guess My Number Game");
        System.out.println();

        do
        {
            System.out.print("Enter a guess between 1 and 100 : ");
            guess = console.nextInt();

            tries++;

        if (guess > number)
        {
            System.out.println("Too high! Try Again");
        }
        else if (guess < number)
        {
            System.out.println("Too low! Try Again");
        }
        else
        {
            System.out.println("Correct! You got it in " + tries + " guesses!");
        }

        }while (guess != number);
    }
}
```

Write a program to print following :

i)
```
**********
**********
**********
**********
```

ii)
```
*
**
***
****
*****
```

iii)
```
    *
   **
  ***
 ****
*****
```

iv)
```
    *
   ***
  *****
 *******
*********
```

v)
```
    1
  222
 33333
4444444
555555555
```

vi)
```
    1
  212
 32123
4321234
543212345
```

Question 19

Write a program to compute sinx for given x. The user should supply x and a positive integer n. We compute the sine of x using the series and the computation should use all terms in the series up through the term involving x^n

$\sin x = x - x^3/3! + x^5/5! - x^7/7! + x^9/9! .....$

Question 20

Write a program to compute the cosine of x. The user should supply x and a positive integer n. We compute the cosine of x using the series and the computation should use all terms in the series up through the term involving x^n

$\cos x = 1 - x^2/2! + x^4/4! - x^6/6! .....$

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