

Object Oriented Programming (CS-32102)

Assignment - 1

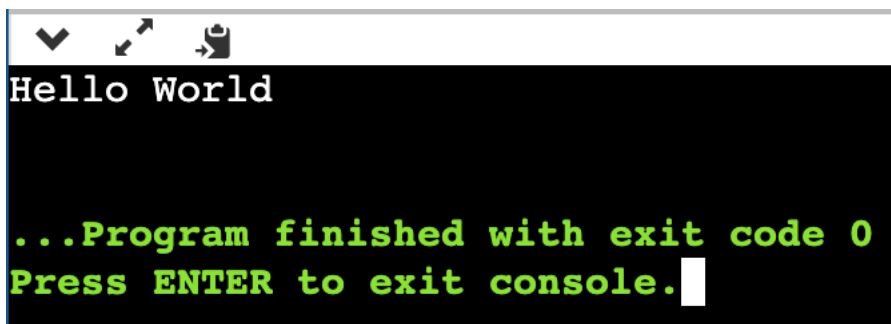
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Reg.No. – 2021CA094

1. Write a java program to print "HelloWorld".

Program:

```
class FirstClass
{
    public static void main(String[] args)
    {
        System.out.println("Hello World");
    }
}
```

Output:



```
▼ ↗ 📄
Hello World

...Program finished with exit code 0
Press ENTER to exit console.
```

2. Write a java program to print integer entered by a user.

Program:

```
import java.util.*;
public class Main
{
```

```

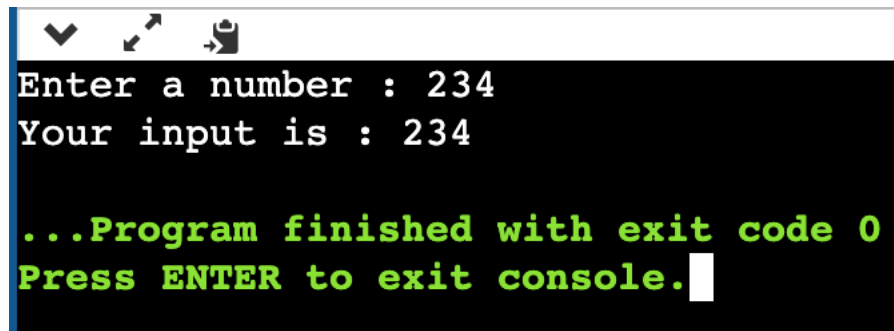
public static void main(String[] args) {

    System.out.print("Enter a number : ");
    Scanner sc=new Scanner(System.in);
    int a = sc.nextInt();
    System.out.print("Your input is : "+a);

}
}

```

Output:



```

Enter a number : 234
Your input is : 234

...Program finished with exit code 0
Press ENTER to exit console.

```

3. Write a java program to check whether a number is prime or not.

Program:

```

import java.util.*;
import java.lang.*;
public class Main
{
    public static void main(String[] args)
    {
        Scanner s=new Scanner(System.in);
        int a,i;
        System.out.print("Enter a no. : ");
        a = s.nextInt();
        for(i=2;i<a;i++)
        {
            if(a%i==0)
            {
                break;
            }
        }
    }
}

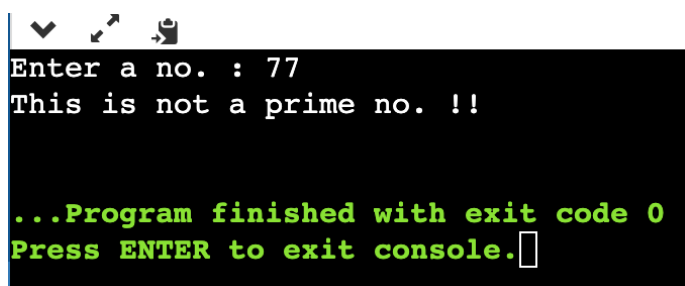
```

```

    }
}
if(a==i)
{
    System.out.println("This is a prime no. !!");
}
else
{
    System.out.println("This is not a prime no. !!");
}
}
}
}

```

Output:

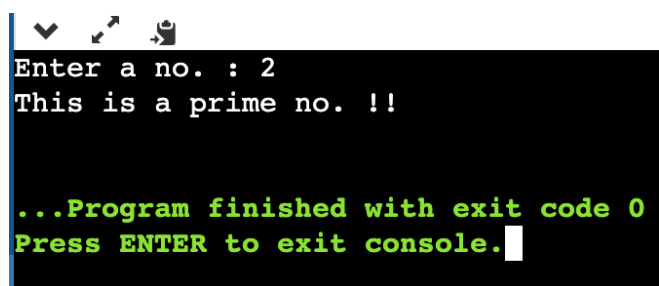


```

Enter a no. : 77
This is not a prime no. !!

...Program finished with exit code 0
Press ENTER to exit console.

```



```

Enter a no. : 2
This is a prime no. !!

...Program finished with exit code 0
Press ENTER to exit console.

```

4. Write a java program to display Fibonacci series up to n.

Program:

```

import java.util.*;
import java.lang.*;
public class Main
{
    public static void main(String[] args)
    {
        Scanner s=new Scanner(System.in);
        int a=0,b=1,c,n,i=1;
        System.out.print("Enter N to print Fibonacci series up to
        N terms : ");
        n = s.nextInt();
    }
}

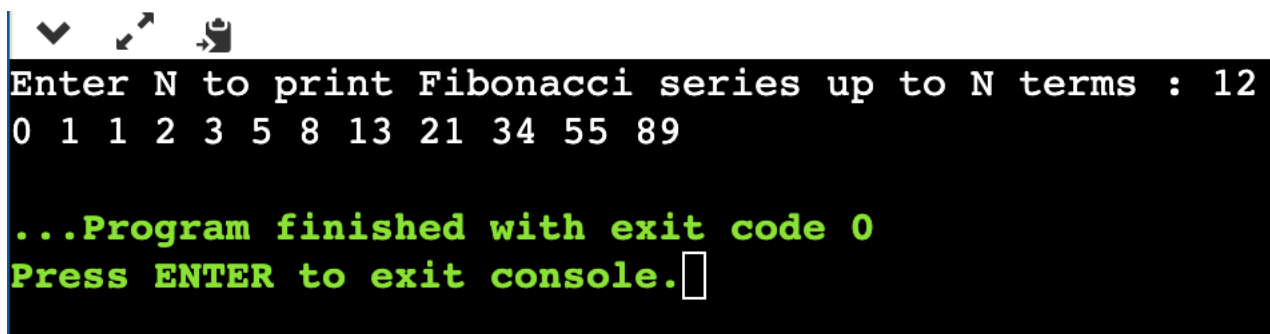
```

```

        System.out.print(a+" ");
        System.out.print(b+" ");
    do
    {
        System.out.print((a+b)+" ");
        c=b;
        b=a+b;
        a=c;
        i++;
    }while(i<n-1);
    }
}

```

Output:



```

Enter N to print Fibonacci series up to N terms : 12
0 1 1 2 3 5 8 13 21 34 55 89

...Program finished with exit code 0
Press ENTER to exit console.

```

5. Write a java program to display the following pattern.

```

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

```

Program:

```
public class Five {  
    public static void main(String[] args) {  
        int temp = 0;  
        for (int i=1; i<=6*2-1; i++)  
        {  
            if(i<=6)  
                temp++;  
            else  
                temp--;  
            for(int j=1; j<=temp; j++)  
            {  
                System.out.print("* ");  
            }  
            System.out.println();  
        }  
    }  
}
```

Output:



```
*  
* *  
* * *  
* * * *  
* * * * *  
* * * * * *  
* * * * *  
* * * *  
* * *  
* *  
*  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

6. Write a java program to check whether a number is palindrome or not.

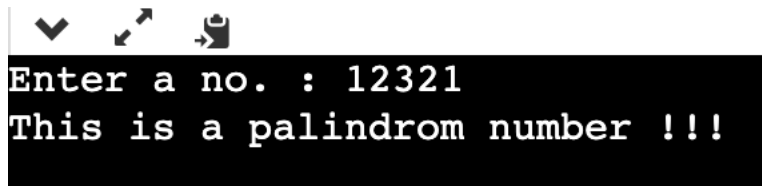
Program:

```

import java.util.*;
public class Main
{
    public static void main(String[] args)
    {
        Scanner s=new Scanner(System.in);
        int n,r,sum=0;
        System.out.print("Enter a no. : ");
        n=s.nextInt();
        int temp=n;
        while(n>0){
            r=n%10; //getting remainder
            sum=(sum*10)+r;
            n=n/10;
        }
        if(temp==sum)
        {
            System.out.println("This is a palindrom number !!!");
        }
        else
        {
            System.out.println("This is not a plindrom number
!!!");
        }
    }
}

```

Output:



```

Enter a no. : 12321
This is a palindrom number !!!

```

7. Write a java program to find GCD of two numbers.

8. Write a java program to search a number from an array using linear search.
9. Write a java program to search a number from a sorted array using binary search.
10. Write a java program to implement quick sort.
11. Write a java program to display prime numbers between two intervals

Program:

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

```
public class Main {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter lower limit of prime: ");  
        int l = sc.nextInt();  
        System.out.println("Enter upper limit of prime : ");  
        int u = sc.nextInt();  
        System.out.println("Prime numbers between "+l+" and "+u);  
  
        boolean flag;  
  
        for (int i=l; i<=u; i++)  
        {  
            flag = true;  
            for (int j=2; j<=Math.sqrt(i); j++){  
                if(i%j==0){  
                    flag = false;  
                    break;  
                }  
            }  
            if (flag)  
                System.out.print(i+" ");  
        }  
    }  
}
```

Output:

```
Enter lower limit of prime:
12
Enter upper limit of prime :
100
Prime numbers between 12 and 100
13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97

...Program finished with exit code 0
Press ENTER to exit console.
```

12. Write a java program to check whether a number can be expressed as sum of two prime numbers.

Program:

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a number : ");
        int number = sc.nextInt();
        boolean flag = false;
        for (int i = 2; i <= number / 2; ++i) {

            if (checkPrime(i)) {

                if (checkPrime(number - i)) {

                    System.out.println(number + " = " + i + " + " +
(number - i));
                    flag = true;
                }
            }
        }
    }
}
```



```

    }

    if (!flag)
        System.out.println(number + " cannot be expressed as
the sum of two prime numbers.");
    }

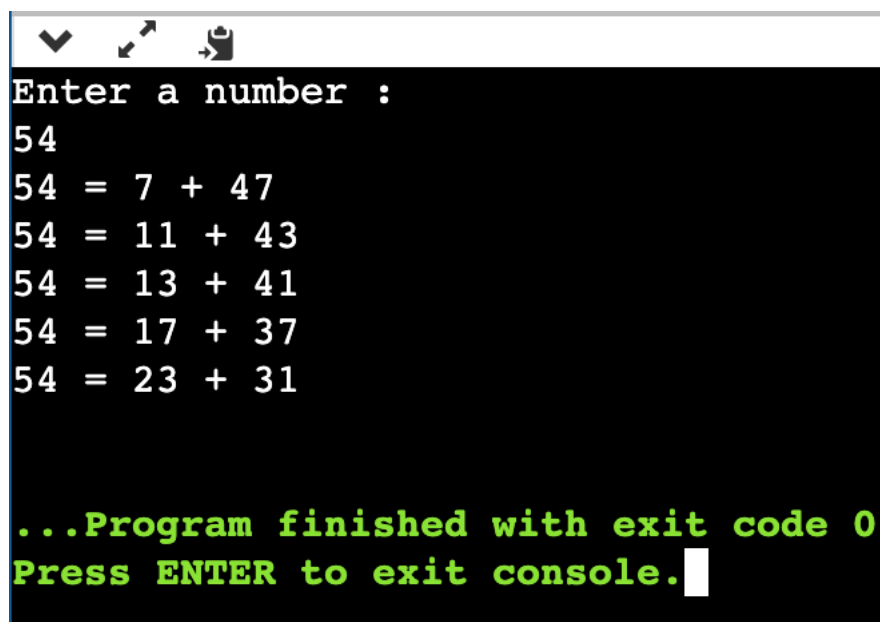
    static boolean checkPrime(int num) {
        boolean isPrime = true;

        for (int i = 2; i <= num / 2; ++i) {
            if (num % i == 0) {
                isPrime = false;
                break;
            }
        }

        return isPrime;
    }
}

```

Output:



```

Enter a number :
54
54 = 7 + 47
54 = 11 + 43
54 = 13 + 41
54 = 17 + 37
54 = 23 + 31

...Program finished with exit code 0
Press ENTER to exit console.

```

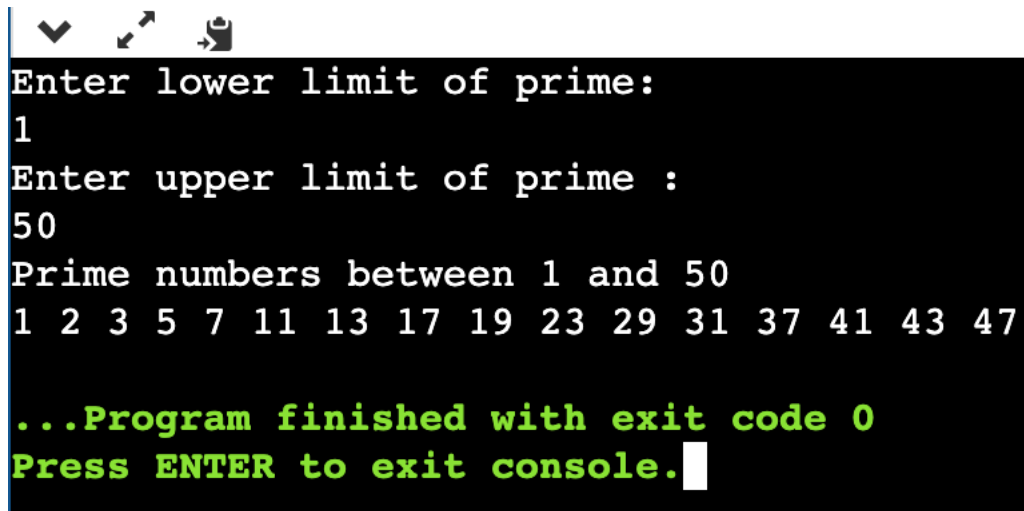
13. Write a java program to display prime numbers between intervals using method.

Program:

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

```
public class Main {  
    void prime(int l,int u){  
        boolean flag;  
  
        for (int i=l; i<=u; i++)  
        {  
            flag = true;  
            for (int j=2; j<=Math.sqrt(i); j++){  
                if(i%j==0){  
                    flag = false;  
                    break;  
                }  
            }  
            if (flag)  
                System.out.print(i+" ");  
        }  
    }  
  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        Main a = new Main();  
        System.out.println("Enter lower limit of prime: ");  
        int l = sc.nextInt();  
        System.out.println("Enter upper limit of prime : ");  
        int u = sc.nextInt();  
        System.out.println("Prime numbers between "+l+" and "+u);  
        a.prime(l,u);  
    }  
}
```

Output:

A terminal window with a black background and white text. At the top, there are three small icons: a downward arrow, a magnifying glass, and a document. The text in the terminal reads: "Enter lower limit of prime:", "1", "Enter upper limit of prime :", "50", "Prime numbers between 1 and 50", "1 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47", "...Program finished with exit code 0", and "Press ENTER to exit console." followed by a cursor.

```
Enter lower limit of prime:
1
Enter upper limit of prime :
50
Prime numbers between 1 and 50
1 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47

...Program finished with exit code 0
Press ENTER to exit console.
```

14. Write a java program to check whether a number is Armstrong number or not.

Program:

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

```
public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a number : ");
        int num = sc.nextInt();
        int temp=num;
        int sum=0;
        while(temp>0)
        {
            int rem=temp%10;
            sum+=rem*rem*rem;
            temp/=10;
        }
        if(sum==num)
            System.out.println("Number is armstrong ");
        else
            System.out.println("Number is not armstrong ");
    }
}
```

Output:

<pre>Enter a number : 370 Number is armstrong ...Program finished with exit code 0 Press ENTER to exit console.</pre>	<pre>Enter a number : 1234321 Number is not armstrong ...Program finished with exit code 0 Press ENTER to exit console.</pre>
--	--

15. Write a java program to display factors of a number.

Program:

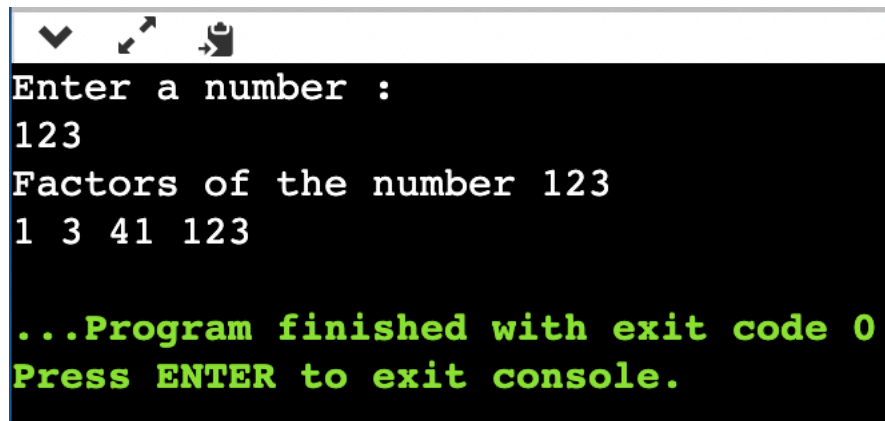
```
import java.util.Scanner;

public class Main {
    void factor(int n){
        for (int i=1; i<=n; i++){
            if (n%i==0)
                System.out.print(i+" ");
        }
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        Main a = new Main();
        System.out.println("Enter a number : ");
        int num = sc.nextInt();

        System.out.println("Factors of the number "+num);
        a.factor(num);
    }
}
```

Output:

A screenshot of a Java IDE's console window. The window has a dark background with white and green text. At the top, there are three small icons: a downward arrow, a double-headed arrow, and a document icon. The text in the console reads: "Enter a number :", "123", "Factors of the number 123", "1 3 41 123", "...Program finished with exit code 0", and "Press ENTER to exit console." in green.

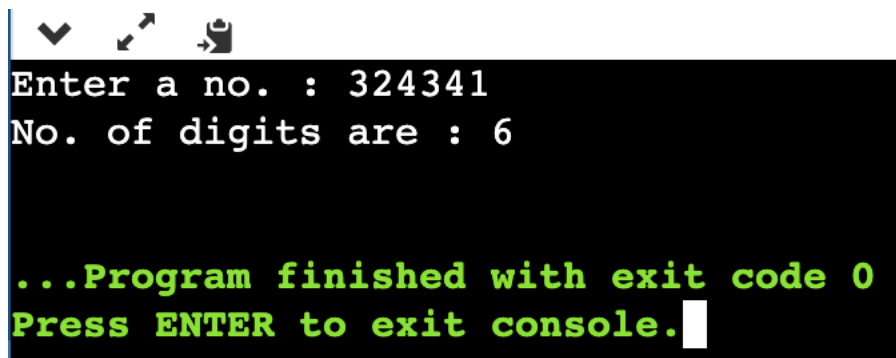
```
Enter a number :  
123  
Factors of the number 123  
1 3 41 123  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

16. Write a java program to count number of digits in an integer.

Program:

```
import java.util.*;  
{  
    public static void main(String[] args)  
    {  
        Scanner s=new Scanner(System.in);  
        int n,count=0;  
        System.out.print("Enter a no. : ");  
        n=s.nextInt();  
        while(n>0)  
        {  
            count++;  
            n=n/10;  
        }  
        System.out.println("No. of digits are : "+count);  
    }  
}
```

Output:

A terminal window with a black background and white and green text. At the top, there are three icons: a downward arrow, a magnifying glass, and a document icon. The text in the terminal reads: "Enter a no. : 324341", "No. of digits are : 6", "...Program finished with exit code 0", and "Press ENTER to exit console." with a white cursor at the end.

```
Enter a no. : 324341
No. of digits are : 6

...Program finished with exit code 0
Press ENTER to exit console.
```

17. Write a java program to check whether a number is even or odd.

Program:

```
import java.util.*;
public class Main
{
    public static void main(String[] args) {

        System.out.print("Enter a number : ");
        Scanner sc=new Scanner(System.in);
        int a = sc.nextInt();
        if(a%2==0)
        {
            System.out.println("This is even number !!");
        }
        else
        {
            System.out.println("This is an odd number !!");
        }
    }
}
```

Output:



```
Enter a number : 12  
This is even number !!
```

```
...Program finished with exit code 0  
Press ENTER to exit console.█
```



```
Enter a number : 733  
This is an odd number !!
```

```
...Program finished with exit code 0  
Press ENTER to exit console.█
```