ASSIGNMENT

B. LIKHITHA

Section 1: Variables & Operators

1. Write a Java program to declare two integers and print their sum, difference, product, and quotient.

Main.java

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online

public class Main {
    public static void main(String[] args) {
        int a = 20, b = 10;

        System.out.println("Sum = " + (a + b));
        System.out.println("Difference = " + (a - b));
        System.out.println("Product = " + (a * b));
        System.out.println("Quotient = " + (a / b));
    }
}
```

Output

```
Sum = 30
Difference = 10
Product = 200
Quotient = 2

=== Code Execution Successful ===
```

2. Write a program to swap two numbers:

- Using a temporary variable

Main.java

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online

public class Main {
    public static void main(String[] args) {
        int a = 5, b = 10;

        int temp = a;
        a = b;
        b = temp;

        System.out.println("a = " + a + ", b = " + b);
    }
}
```

Output

```
a = 10, b = 5

=== Code Execution Successful ===
```

- Without using a temporary variable

Main.java

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online

public class Main {
    public static void main(String[] args) {
        int a = 5, b = 10;

        a = a + b;
        b = a - b;
        a = a - b;

        System.out.println("a = " + a + ", b = " + b);
    }
}
```

Output

```
a = 10, b = 5

=== Code Execution Successful ===
```

3. Write a program to calculate simple interest.

Main.java

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online

public class Main {
    public static void main(String[] args) {
        double p = 1000, r = 5, t = 2;
        double si = (p * r * t) / 100;
        System.out.println("Simple Interest = " + si);
    }
}
```

Output

```
Simple Interest = 100.0

=== Code Execution Successful ===
```

4. Write a program to calculate area and perimeter of a rectangle.

Main.java

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online

public class Main {
    public static void main(String[] args) {
        int length = 10, breadth = 5;

        System.out.println("Area = " + (length * breadth));
        System.out.println("Perimeter = " + 2 * (length + breadth));
    }
}
```

Output

```
Area = 50
Perimeter = 30

=== Code Execution Successful ===
```

5. Write a program to convert:

o Celsius to Fahrenheit

Main.java

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online

public class Main {
    public static void main(String[] args) {
        double c = 37;
        double f = (c * 9/5) + 32;
        System.out.println("Fahrenheit = " + f);
    }
}
```

Output

```
Fahrenheit = 98.6

=== Code Execution Successful ===
```

o Kilometers to Miles

Main.java

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online

public class Main {
    public static void main(String[] args) {
        double km = 10;
        double miles = km * 0.621371;
        System.out.println("Miles = " + miles);
    }
}
```

Output

```
Miles = 6.21371

=== Code Execution Successful ===
```

Section 2: Conditional Statements (if, if-else, switch)

6. Write a program to check whether a number is positive, negative, or zero.

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

8. Write a program to check whether a year is a leap year.

9. Write a program to find the largest of three numbers.

10. Write a program to calculate student grade based on marks:

o ≥ 90 → A

o ≥ 75 → B

o ≥ 60 → C

o Else → Fail

Main.java

Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
        int marks = 82;

        if(marks >= 90) System.out.println("A");
        else if(marks >= 75) System.out.println("B");
        else if(marks >= 60) System.out.println("C");
        else System.out.println("Fail");
    }
}
```

```
B

=== Code Execution Successful ===
```

11. Write a program using switch-case to create a simple calculator.**Section 3: Loops (for, while, do-while)**

Main.java

Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
        int a = 10, b = 5;
        char op = '*';

        switch(op) {
            case '+': System.out.println(a + b); break;
            case '-': System.out.println(a - b); break;
            case '*': System.out.println(a * b); break;
            case '/': System.out.println(a / b); break;
            default: System.out.println("Invalid Operator");
        }
    }
}
```

```
50

=== Code Execution Successful ===
```

12. Print numbers from 1 to 100.

Main.java

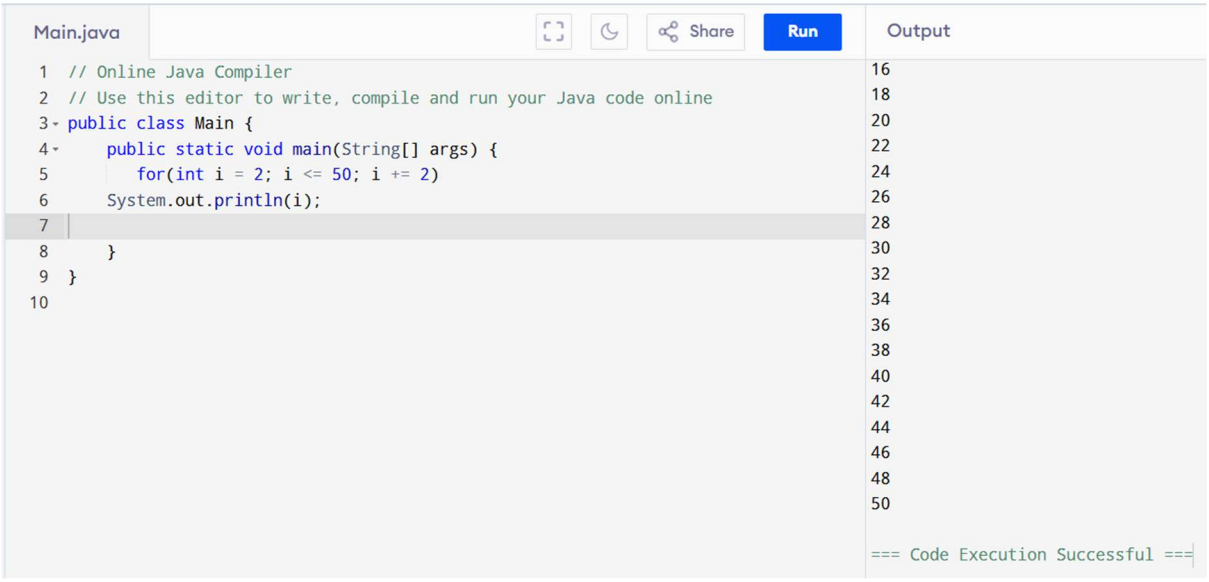
Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
        for(int i = 1; i <= 100; i++)
        System.out.println(i);

        }
}
```

```
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
```

13. Print all even numbers between 1 and 50.



14. Write a program to calculate factorial of a number.

15. Write a program to print the multiplication table of a given number.

16. Write a program to calculate the sum of digits of a number.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int n = 1234;
int sum = 0;

while(n > 0){
    sum += n % 10;
    n /= 10;
}

System.out.println(sum);

    }
}
```

```
10

=== Code Execution Successful ===
```

17. Write a program to reverse a number.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int n = 1234, rev = 0;

while(n > 0){
    rev = rev * 10 + n % 10;
    n /= 10;
}

System.out.println(rev);

    }
}
```

```
4321

=== Code Execution Successful ===
```

18. Write a program to check whether a number is a palindrome.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int n = 121, temp = n, rev = 0;

while(n > 0){
    rev = rev * 10 + n % 10;
    n /= 10;
}

if(temp == rev) System.out.println("Palindrome");
else System.out.println("Not Palindrome");

    }
}
```

```
Palindrome

=== Code Execution Successful ===
```

19. Write a program to print Fibonacci series up to n terms.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int n = 10, a = 0, b = 1;

for(int i = 1; i <= n; i++){
    System.out.println(a);
    int c = a + b;
    a = b;
    b = c;
}

    }
}
```

```
0
1
1
2
3
5
8
13
21
34

=== Code Execution Successful ===
```

20. Write a program to check whether a number is prime.

Main.java Share Run Output

```java
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int n = 17;
boolean isPrime = true;

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

if(isPrime) System.out.println("Prime");
else System.out.println("Not Prime");

    }
}
```

```
Prime

=== Code Execution Successful ===
```

Section 4: Arrays

21. Write a program to store 5 integers in an array and print them.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int[] arr = {5, 10, 15, 20, 25};

for(int num : arr)
    System.out.println(num);

    }
}
```

```
5
10
15
20
25

=== Code Execution Successful ===
```

22. Write a program to find the sum and average of array elements.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int[] arr = {10, 20, 30, 40, 50};
int sum = 0;

for(int n : arr)
    sum += n;

System.out.println("Sum = " + sum);
System.out.println("Average = " + (sum / arr.length));


    }
}
```

```
Sum = 150
Average = 30

=== Code Execution Successful ===
```

23. Write a program to find the largest and smallest element in an array.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int[] arr = {10, 5, 30, 2, 15};
int max = arr[0], min = arr[0];

for(int n : arr){
    if(n > max) max = n;
    if(n < min) min = n;
}

System.out.println("Max = " + max);
System.out.println("Min = " + min);


    }
}
```

```
Max = 30
Min = 2

=== Code Execution Successful ===
```

24. Write a program to count even and odd numbers in an array.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int[] arr = {1, 2, 3, 4, 5};
int e = 0, o = 0;

for(int n : arr){
    if(n % 2 == 0) e++;
    else o++;
}

System.out.println("Even = " + e + ", Odd = " + o);


    }
}
```

```
Even = 2, Odd = 3

=== Code Execution Successful ===
```

25. Write a program to reverse an array.

Main.java Share Run Output

```java
// Online Java Compiler
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int[] arr = {1, 2, 3, 4, 5};

for(int i = arr.length - 1; i >= 0; i--)
    System.out.println(arr[i]);


    }
}
```

```
5
4
3
2
1

=== Code Execution Successful ===
```

26. Write a program to search an element using:

• Linear Search

Main.java Share Run Output

```java
// Use this editor to write, compile and run your Java code online
public class Main {
    public static void main(String[] args) {
int[] arr = {10, 20, 30, 40, 50};
int key = 30;
boolean found = false;

for(int n : arr){
    if(n == key){
        found = true;
        break;
    }
}

if(found) System.out.println("Found");
else System.out.println("Not Found");

    }
}
```

```
Found

=== Code Execution Successful ===
```

27. Write a program to sort an array in ascending order.

Main.java Share Run Output

```java
public class Main {
    public static void main(String[] args) {
int[] arr = {50, 10, 40, 30, 20};

for(int i = 0; i < arr.length; i++){
    for(int j = i + 1; j < arr.length; j++){
        if(arr[j] < arr[i]){
            int temp = arr[i];
            arr[i] = arr[j];
            arr[j] = temp;
        }
    }
}

for(int n : arr)
    System.out.println(n);
}
}
```

```
10
20
30
40
50

=== Code Execution Successful ===
```

Section 5: Strings (without classes like StringBuilder)

28. Write a program to count vowels and consonants in a string.

Main.java

Share Run

Output

```
public class Main {
    public static void main(String[] args) {
String s = "Hello World";
int v = 0, c = 0;

s = s.toLowerCase();

for(char ch : s.toCharArray()){
    if(ch >= 'a' && ch <= 'z'){
        if("aeiou".indexOf(ch) != -1) v++;
        else c++;
    }
}

System.out.println("Vowels = " + v);
System.out.println("Consonants = " + c);

}
}
```

```
Vowels = 3
Consonants = 7

=== Code Execution Successful ===
```

29. Write a program to reverse a string.

Main.java

Share Run

Output

```
public class Main {
    public static void main(String[] args) {
String s = "hello";
String rev = "";

for(int i = s.length() - 1; i >= 0; i--)
    rev += s.charAt(i);

System.out.println(rev);


}
}
```

```
olleh

=== Code Execution Successful ===
```

30. Write a program to check whether a string is a palindrome.

Main.java

Share Run

Output

```
public class Main {
    public static void main(String[] args) {
        String s = "madam";
String rev = "";

for(int i = s.length() - 1; i >= 0; i--)
    rev += s.charAt(i);

if(s.equals(rev)) System.out.println("Palindrome");
else System.out.println("Not Palindrome");

    }
}
```

```
Palindrome

=== Code Execution Successful ===
```

31. Write a program to count number of words in a sentence.

Main.java

Share Run Output

```java
public class Main {
    public static void main(String[] args) {
String s = "Hello world this is Java";
String[] words = s.split(" ");

System.out.println("Words = " + words.length);

    }
}
```

```
Words = 5

=== Code Execution Successful ===
```

32. Write a program to find duplicate characters in a string.33. Write a program to convert:

• Lowercase to Uppercase

• Uppercase to Lowercase

Main.java

Share Run Output

```java
public class Main {
    public static void main(String[] args) {
String s = "Hello World";

System.out.println(s.toLowerCase());
System.out.println(s.toUpperCase());

    }
}
```

```
hello world
HELLO WORLD

=== Code Execution Successful ===
```

Section 6: Methods (Non-OOP style – static methods)

34. Write a program with a method to check even or odd.

Main.java

Share Run Output

```java
public class Main {

    static void checkEvenOdd(int n){
        if(n % 2 == 0) System.out.println("Even");
        else System.out.println("Odd");
    }

    public static void main(String[] args) {
        checkEvenOdd(10);
    }
}
```

```
Even

=== Code Execution Successful ===
```

35. Write a method to find factorial of a number.

Main.java

Share Run Output

```java
public class Main {

    static int factorial(int n){
        int f = 1;
        for(int i = 1; i <= n; i++)
            f *= i;
        return f;
    }

    public static void main(String[] args) {
        System.out.println(factorial(5));
    }
}
```

```
120

=== Code Execution Successful ===
```

36. Write a method to check prime number.

Main.java

Share Run Output

```java
public class Main {

    static boolean isPrime(int n){
        if(n < 2) return false;

        for(int i = 2; i <= n/2; i++){
            if(n % i == 0)
                return false;
        }
        return true;
    }

    public static void main(String[] args) {
        System.out.println(isPrime(17));
    }
}
```

```
true

=== Code Execution Successful ===
```

37. Write a method to find maximum of two numbers.

Main.java

Share Run Output

```java
public class Main {

    static int max(int a, int b){
        return (a > b) ? a : b;
    }

    public static void main(String[] args) {
        System.out.println(max(10, 20));
    }
}
```

```
20

=== Code Execution Successful ===
```

38. Write a method to calculate simple interest.

Main.java

Share Run Output

```java
public class Main {

    static double simpleInterest(double p, double r, double t){
        return (p * r * t) / 100;
    }

    public static void main(String[] args) {
        System.out.println(simpleInterest(1000, 5, 2));
    }
}
```

```
100.0

=== Code Execution Successful ===
```