Java Basic Programs

1. Sum, Difference, Product, Quotient

```
package section1;
public class Program1 {
    public static void main(String[] args) {
        int a=10,b=5;
        System.out.println(a+b);
        System.out.println(a-b);
        System.out.println(a*b);
        System.out.println(a/b);
    }
}
```

Output:

```
15
5
50
2
```

2(a). Swap using temporary variable

```
package section1;
public class Program2a {
    public static void main(String[] args) {
        int a=10,b=20,temp;
        temp=a; a=b; b=temp;
        System.out.println(a+" "+b);
    }
}
```

Output:

```
20 10
```

2(b). Swap without temporary variable

```
package section1;
public class Program2b {
    public static void main(String[] args) {
        int a=10,b=20;
        a=a+b; b=a-b; a=a-b;
        System.out.println(a+" "+b);
    }
}
```

Output:

```
20 10
```

3. Simple Interest

```
package section1;
public class Program3 {
    public static void main(String[] args) {
        double p=1000,r=5,t=2;
        System.out.println((p*r*t)/100);
    }
}
```

Output:

```
100.0
```

4. Area and Perimeter of Rectangle

```
package section1;
public class Program4 {
    public static void main(String[] args) {
        int l=5,b=3;
        System.out.println(l*b);
        System.out.println(2*(l+b));
    }
}
```

Output:

```
15
16
```

5(a). Celsius to Fahrenheit

```
package section1;
public class Program5a {
    public static void main(String[] args) {
        double c=25;
        System.out.println((c*9/5)+32);
    }
}
```

Output:

```
77.0
```

5(b). Kilometer to Miles

```
package section1;
public class Program5b {
    public static void main(String[] args) {
        double km=10;
        System.out.println(km*0.621);
    }
}
```

Output:

```
6.21
```

6. Positive / Negative / Zero

```
package section2;
public class Program6 {
    public static void main(String[] args) {
        int n=10;
        if(n>0) System.out.println("Positive");
        else if(n<0) System.out.println("Negative");
        else System.out.println("Zero");
    }
}
```

Output:
```
Positive
```

7. Even or Odd

```
package section2;
public class Program7 {
    public static void main(String[] args) {
        int n=7;
        System.out.println(n%2==0?"Even":"Odd");
    }
}
```

Output:
```
Odd
```

8. Leap Year

```
package section2;
public class Program8 {
    public static void main(String[] args) {
        int y=2024;
        System.out.println(y%4==0?"Leap Year":"Not Leap Year");
    }
}
```

Output:
```
Leap Year
```

9. Largest of Three Numbers

```
package section2;
public class Program9 {
    public static void main(String[] args) {
        int a=10,b=20,c=15;
        System.out.println(Math.max(a,Math.max(b,c)));
    }
}
```

Output:
```
20
```

10. Student Grade

```
package section2;
public class Program10 {
    public static void main(String[] args) {
        int m=85;
        if(m>=90) System.out.println("A");
        else if(m>=75) System.out.println("B");
        else if(m>=60) System.out.println("C");
        else System.out.println("Fail");
    }
```

```
}
```

Output:

```
B
```

11. Calculator using switch (User Input)

```
package section2;
import java.util.Scanner;
public class Program11 {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int a=sc.nextInt();
        int b=sc.nextInt();
        char op=sc.next().charAt(0);
        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");
        }
    }
}
```

Output:

```
Input:
10 5 +
Output:
15
```

12. Print numbers from 1 to 100

```
package section3;
public class Program12 {
    public static void main(String[] args) {
        for(int i=1;i<=100;i++)
            System.out.print(i+" ");
    }
}
```

Output:

```
1 2 3 4 5 6 7 8 9 10 ... 100
```

13. Print even numbers from 1 to 50

```
package section3;
public class Program13 {
    public static void main(String[] args) {
        for(int i=2;i<=50;i+=2)
            System.out.print(i+" ");
    }
}
```

Output:

```
2 4 6 8 10 12 14 16 18 20 ... 50
```

14. Factorial of a number

```
package section3;
public class Program14 {
    public static void main(String[] args) {
        int n=5,f=1;
        for(int i=1;i<=n;i++) f*=i;
        System.out.println(f);
    }
}
```

Output:

```
120
```

15. Multiplication Table

```
package section3;
public class Program15 {
    public static void main(String[] args) {
        int n=5;
        for(int i=1;i<=10;i++)
            System.out.println(n*i);
    }
}
```

Output:

```
5
10
15
20
25
30
35
40
45
50
```

16. Sum of digits

```
package section3;
public class Program16 {
    public static void main(String[] args) {
        int n=123,sum=0;
        while(n>0){ sum+=n%10; n/=10; }
        System.out.println(sum);
    }
}
```

Output:

```
6
```

17. Reverse a number

```
package section3;
public class Program17 {
    public static void main(String[] args) {
        int n=123,rev=0;
        while(n>0){ rev=rev*10+n%10; n/=10; }
        System.out.println(rev);
    }
}
```

Output:

```
321
```

18. Palindrome number

```
package section3;
public class Program18 {
    public static void main(String[] args) {
        int n=121,t=n,rev=0;
        while(n>0){ rev=rev*10+n%10; n/=10; }
        System.out.println(t==rev);
    }
}
```

Output:

```
true
```

19. Fibonacci series

```
package section3;
public class Program19 {
    public static void main(String[] args) {
        int a=0,b=1;
        for(int i=1;i<=5;i++){
            System.out.print(a+" ");
            int c=a+b; a=b; b=c;
        }
    }
}
```

Output:

```
0 1 1 2 3
```

20. Prime number

```
package section3;
public class Program20 {
    public static void main(String[] args) {
        int n=7,c=0;
        for(int i=1;i<=n;i++) if(n%i==0) c++;
        System.out.println(c==2);
    }
```

```
}
```

Output:

```
true
```

21. Store and print array

```
package section4;
public class Program21 {
    public static void main(String[] args) {
        int[] a={1,2,3,4,5};
        for(int i:a) System.out.print(i+" ");
    }
}
```

Output:

```
1 2 3 4 5
```

22. Sum and Average of array

```
package section4;
public class Program22 {
    public static void main(String[] args) {
        int[] a={1,2,3,4};
        int sum=0;
        for(int i:a) sum+=i;
        System.out.println(sum);
        System.out.println(sum/a.length);
    }
}
```

Output:

```
10
2
```

23. Largest and Smallest in array

```
package section4;
public class Program23 {
    public static void main(String[] args) {
        int[] a={4,2,9,1};
        int max=a[0],min=a[0];
        for(int i:a){ if(i>max) max=i; if(i<min) min=i; }
        System.out.println(max+" "+min);
    }
}
```

Output:

```
9 1
```

24. Count even and odd in array

```
package section4;
public class Program24 {
    public static void main(String[] args) {
        int[] a={1,2,3,4};
        int e=0,o=0;
        for(int i:a){ if(i%2==0) e++; else o++; }
        System.out.println(e+" "+o);
    }
}
```

Output:

```
2 2
```

25. Reverse array

```
package section4;
public class Program25 {
    public static void main(String[] args) {
```

```
        int[] a={1,2,3};
        for(int i=a.length-1;i>=0;i--) System.out.print(a[i]+" ");
    }
}
```

Output:

```
3 2 1
```

26. Linear search

```
package section4;
public class Program26 {
    public static void main(String[] args) {
        int[] a={1,2,3};
        int key=2,flag=0;
        for(int i:a) if(i==key) flag=1;
        System.out.println(flag==1?"Found":"Not Found");
    }
}
```

Output:

```
Found
```

27. Sort array

```
package section4;
public class Program27 {
    public static void main(String[] args) {
        int[] a={3,1,2};
        for(int i=0;i<a.length;i++)
            for(int j=i+1;j<a.length;j++)
                if(a[i]>a[j]){
                    int t=a[i]; a[i]=a[j]; a[j]=t;
                }
        for(int i:a) System.out.print(i+" ");
    }
}
```

Output:

```
1 2 3
```

28. Count vowels and consonants

```
package section5;
public class Program28 {
    public static void main(String[] args) {
        String s="java";
        int v=0,c=0;
        for(char ch:s.toCharArray())
            if("aeiou".indexOf(ch)>=0) v++;
            else c++;
        System.out.println(v+" "+c);
    }
}
```

Output:

```
2 2
```

29. Reverse a string

```
package section5;
public class Program29 {
    public static void main(String[] args) {
        String s="java",r="";
        for(int i=s.length()-1;i>=0;i--) r+=s.charAt(i);
        System.out.println(r);
    }
}
```

Output:

```
avaj
```

30. Palindrome string

```
package section5;
public class Program30 {
    public static void main(String[] args) {
        String s="madam",r="";
        for(int i=s.length()-1;i>=0;i--) r+=s.charAt(i);
        System.out.println(s.equals(r));
    }
}
```

Output:

```
true
```

31. Count number of words

```
package section5;
public class Program31 {
    public static void main(String[] args) {
        String s="Java is easy";
        int count=1;
        for(char ch:s.toCharArray()) if(ch==' ') count++;
        System.out.println(count);
    }
}
```

Output:

```
3
```

32. Find duplicate characters

```
package section5;
public class Program32 {
    public static void main(String[] args) {
```

```
        String s="programming";
        for(int i=0;i<s.length();i++)
            for(int j=i+1;j<s.length();j++)
                if(s.charAt(i)==s.charAt(j)){
                    System.out.println(s.charAt(i));
                    break;
                }
    }
}
```

Output:

```
r
g
m
```

33(a). Lowercase to Uppercase

```
package section5;
public class Program33a {
    public static void main(String[] args) {
        String s="java",r="";
        for(char ch:s.toCharArray()) r+=(char)(ch-32);
        System.out.println(r);
    }
}
```

Output:

```
JAVA
```

33(b). Uppercase to Lowercase

```
package section5;
public class Program33b {
    public static void main(String[] args) {
        String s="JAVA",r="";
        for(char ch:s.toCharArray()) r+=(char)(ch+32);
        System.out.println(r);
    }
}
```

Output:

```
java
```

34. Method to check even or odd

```
package section6;
public class Program34 {
    static void check(int n){
        System.out.println(n%2==0?"Even":"Odd");
    }
    public static void main(String[] args) {
        check(10);
    }
}
```

Output:
```
Even
```

35. Method to find factorial

```
package section6;
public class Program35 {
    static int fact(int n){
        if(n==1) return 1;
        return n*fact(n-1);
    }
    public static void main(String[] args) {
        System.out.println(fact(5));
    }
}
```

Output:
```
120
```

36. Method to check prime

```
package section6;
public class Program36 {
    static boolean prime(int n){
        int c=0;
        for(int i=1;i<=n;i++) if(n%i==0) c++;
        return c==2;
    }
    public static void main(String[] args) {
        System.out.println(prime(7));
    }
}
```

Output:
```
true
```

37. Method to find maximum of two numbers

```
package section6;
public class Program37 {
    static int max(int a,int b){
        return a>b?a:b;
    }
    public static void main(String[] args) {
        System.out.println(max(10,20));
    }
}
```

Output:
```
20
```

38. Method to calculate Simple Interest

```
package section6;
public class Program38 {
    static double si(double p,double r,double t){
        return (p*r*t)/100;
    }
    public static void main(String[] args) {
        System.out.println(si(1000,5,2));
    }
}
```

Output:

```
100.0
```