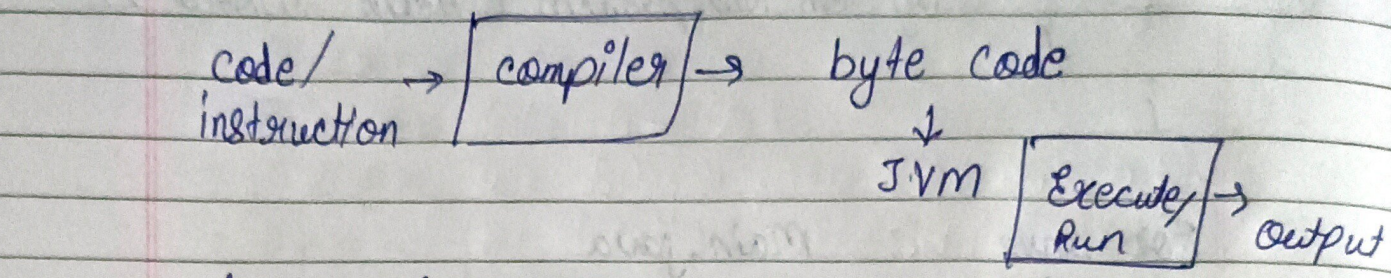
25.07.23

Byte code
WORA - Write once Run Anywhere
JVM - Java Virtual Machine
JDK - Java Developer Kit




```
class classname
{
    Property  → variable
    Behaviour → method
}
```

26.07.23 Structure of Java Program.

```
package package_name;
import package.classname;
class classname
{
    data type v1;
    :
    method1()
    { }
    method2()
    { }
    public static void main(String args[])
    { }
}
```

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

public - To call the ~~function~~ method outside the class
Static - To call the without creating a object
void - for no return value.
main - it is a main function.

To save the program : Filename.java
To compile : javac Filename.java
To run : java classname

* WAP to add, subtract, ~~delete~~ multiply and divide.

```
class Operation
{
    public static void main(String args[])
    {
        int a = 20, b = 10;
        System.out.println("Sum = " + (a+b));
        System.out.println("Subtract = " + (a-b));
        System.out.println("Multiply = " + (a*b));
        System.out.println("Divide = " + (a/b));
    }
}
```

* Command Line Argument

```
Class Operation
{
    public static void main (String args[])
    {
        int a, b;
        a = Integer.parseInt (args[0]);
        b = Integer.parseInt (args[1]);
        System.out.println ("Sum =" + (a+b));
    }
}
```

WAP to read a number from user, check weather it is positive, negative or zero.

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```
Class Number
{
    public static void main (String args[])
    {
        int n;
        System.out.println ("Enter a number:");
```

```
import java.util.Scanner;
Class Test
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        int a = sc.nextInt();   // scanf or cin.
        if (a>0)

        else if (a<0)

        else (a==0)

    }
}
```

* WAP to print a day associated with the number. [For example 0 (1- Sunday)]

```
import java.util.Scanner;
class Week
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter number");
        int n = sc.nextInt();
        if (n==1)
            System.out.println("You have selected
                                Sunday");

        else if (n==2)
```

```
            System.out.println("You have selected monday");
        else if (n==3)
            System.out.println("You have stelected Tuesday");
        else if (n==4)
            System.out.println("  "  wednesday");
        else if (n==5)
            System.out.println("  "  Thursday");
        else if (n==6)
            System.out.println("  "  Friday");
        else if (n==7)
            System.out.println("  "  Saturday");
        else
            System.out.println("Invalid number");
    }
}
```

* Write a java program to do basic arithmatic operation using switch case statement. the input should be given as from command prompt.

```
import java.util.Scanner;
Class Calculate
{
    public static void main(String args[])
    {
        int a, b;
        a = Integer.parseInt(args[0]);
        b = Integer.parseInt(args[2]);
        Switch(args[1])
        {
            case "+":
```

```
            System.out.println("Sum = " + (a+b)); break;
        case "-":
            System.out.println("Subtract = " + (a-b));
            break;
        case "/":
            System.out.println("Divide = " + (a/b));
            break;
        default:
            System.out.println("Invalid input");
            break;
        }
    }
}
```

* Loops

1. for (initialization ; condition ; inc/dec)
{
    block of statement
}

2. initialization;
while (condition)
{
    block of statement
}

3. do {
} while (condition);

* WAP to print a pattern.

```
import java.util.Scanner;
class Pattern
{
    public static void main(String args[])
    {
        System.out.print("Enter no of lines:");
        Scanner sc=new Scanner(System.in);
        int n=sc.nextInt();
        int i,j;
        for(i=0; i<n; i++)
        {
            for(j=0; j<=i; j++)
            {
                System.out.print("*");
            }
            System.out.println();
        }
    }
}
```

*
```
for(i=0; i<4; i++)
{
    for(j=0; j<=i; j++)
    {
        System.out.print(i+1);
    }
    System.out.println();
}
```

1
22
333
4444

```
* for (i=1; i<5; i++)
  {
      for (j=1; j<=i; j++)
      {
          System.out.print(j+" ");
      }
      System.out.println();
  }
```

```
1
1 2
1 2 3
1 2 3 4
```

```
* for(i=1; i<5; i++)
  {
      for(k=1; k<4-i; k++)
      {
          System.out.print("_");
      }
      for(j=1; j<i; j++)
      {
          System.out.print(i);
      }
      System.out.println();
  }
```

* WAP to find ~~addi~~ Submission, Average, maximum and minimum values from a one-dimensional array of size 10.

```
class Array
{
    public static void main(String args[])
    {
        ~~int~~ A[] = {~~30~~, 40, ~~20~~, 15, ~~35~~, ~~55~~, ~~60~~,
                       ~~75~~, 10, ~~8~~45};
        int A[] = new int[10];
int sum=0;  ~~int avg~~  for (int i=0; i<10; i++)
        {
            ~~System.out.println("En~~
            A[i] = sc.nextInt();
            Sum = Sum + A[i];
        }
        ~~or~~ System.out.print("Sum = " +Sum);
        float avg = Sum / 10.0;
        System.out.print("Average = " +avg);
        int max = A[0];
        int min = A[0];
        for (i=0; i<10; i++)
        {
            if (max < A[i+1])
                max = A[i+1];
            if (min > A[i+1])
                min = A[i+1];
        }
    }
}
```

print statment.

03.08.23

One-dimensional array

```
data type  array name[]=new  datatype [size];
int  A = new  int[10];
int  A[ ]= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};

datatype  array name[ ][ ] = new datatype [3][3];
import java.util.Scanner;
class Array
{
    public static void main (String args[ ])
    {
        Scanner sc = new Scanner (System.in);
        int A[ ][ ] = new int[3][3];
int z,o;
        for (int i=0 ; i<3; i++)
        {
            A[i] sc.nextInt();
        }
        for (int i=0; i<10; i++)
        {
            if A[i] for (int j=0 ; j<3 ; j++)
            {
                A[i][j] = sc.nextInt( );
                if (A[i][j] == 0 )
                    z++;
                else if (A[i][j] == 1 )
                    o++;
            }
        }
        System.out.println ("No. of zero = " +z);
        System.out.println (" No. of one =" +o);
    }
}
```

Q:1 WAP to add two matrices.

```
import java.util.Scanner;
class matrix
{
    public static void main(String args[])
    {
        int A[][] = new int[3][3];
        int B[][] = new int[3][3];
        Scanner Sc = new Scanner(System.in);
        System.out.println("Enter no. of first matrix:");
        for(int i=0 ; i<3; i++)
        {
            for(int j=0; j<3 ; j++)
            {
                A[i][j] = Sc.nextInt();
            }
        }
        System.out.println("Enter no. of second matrix");
        for(int i=0 ; i<3; i++)
        {
            for(int j=0; j<3; j++)
            {
                B[i][j] = Sc.nextInt();
            }
        }
        int c[][] = new int[3][3];
        c[i][j] = A i
        for(int i=0 ; i<3; i++)
        {
            for(int j=0; j<3; j++)
            {
```

```
            C[i][j] = A[i][j] + B[i][j];
        System.out.println("Sum = " + C[i][j]);
    }
    System.out.println();
  }
}
```

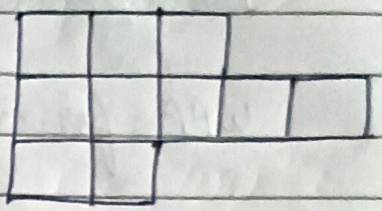
WAP for matrix multiplication.

```
import java.util.Scanner;
class matrixMul
{
    public static void main(String args[])
    {
        int A[][] = new int[3][3];
        int B[][] = new int[3][3];
        int C[][] = new int[3][3];
        int i, j, k;
        Scanner sc = new Scanner(System.in);
        for(i=0; i<3; i++)
        {
            for(j=0; j<3; j++)
            {
                for(k=0; k<3; k++)
                {
                    C[i][j] += A[i][k] * B[k][j];
                } System.out.print(" " C[i][j]);
            } System.out.println();
        }
    }
}
```

* Jagged Array

Syntax: datatype array[][] = new datatype[size][]
array[0] = new datatype[size];

```
int A[][] = new int[3][];
A[0] = new int[3];
A[1] = new int[5];
A[2] = new int[2];
```



For row: A.length
For column: A[0].length - 3
A[1].length - 5
A[2].length - 2

```
for (i=0; i < A.length ; i++)
{
    for ( j=0; j < A[i].length ; j++)
    { }
}
```

17.08.23.

String s = "hello";

→ String ()
String s1 = new String();

→ String (String s)
String s2 = new String (s);

→ String (char[] ch)
char ch = {'h', 'e', 'l', 'l', 'o'}

→ String (byte[] b)
String s3 = new String(ch);

* Methods: 1. length()
2. charAt()
3. indexOf()
4. substring()
5. contains()
6. toUpperCase()
7. toLowerCase()
8. split()
9. equal()
10. trim()

* WAP to find length of the string and print second half of the string.

```
Class Test
{
    public static void main (String args[])
    {
        String s = "hello How are you";
        int len = s.length();
        System.out.println("length = " +len);
        String s1 = s.substring (len/2);
        System.out.println("half of the string is " +s1);
    }
}
```

* WAP to count no. of vowels & consonant present in the string.

```
class
{
    public static void main (String args[])
    {
        int v=0, c=0;
        String s = "hello How are you";
        String s1 = s.toLowerCase();
        int len = s1.length();
        for (int i=0; i<len; i++)
        {
            char ch = s1.charAt(i);
            if (ch=='a' || ch=='e' || ch=='i' ...
                v++;
            else    c++;
        }
}
```

Character Static boolen. isUppercase(char.)

* WAP to count total no. of words and how many words start with Uppercase.

```
class count
{
    public static void main(String args[])
    {
        int c=0;
        String s="hello How Are YOU";
        for(int i=0, i<s.length(); i++)
        {
            char ch = s.charAt(i);
            if (character.isUppercase())
                c++;
        }
    }
}
```

```
if (ch==' ' && (Character.isUppercase
    (s.charAt(i+1))))
```