Object Oriented Programming JAVA
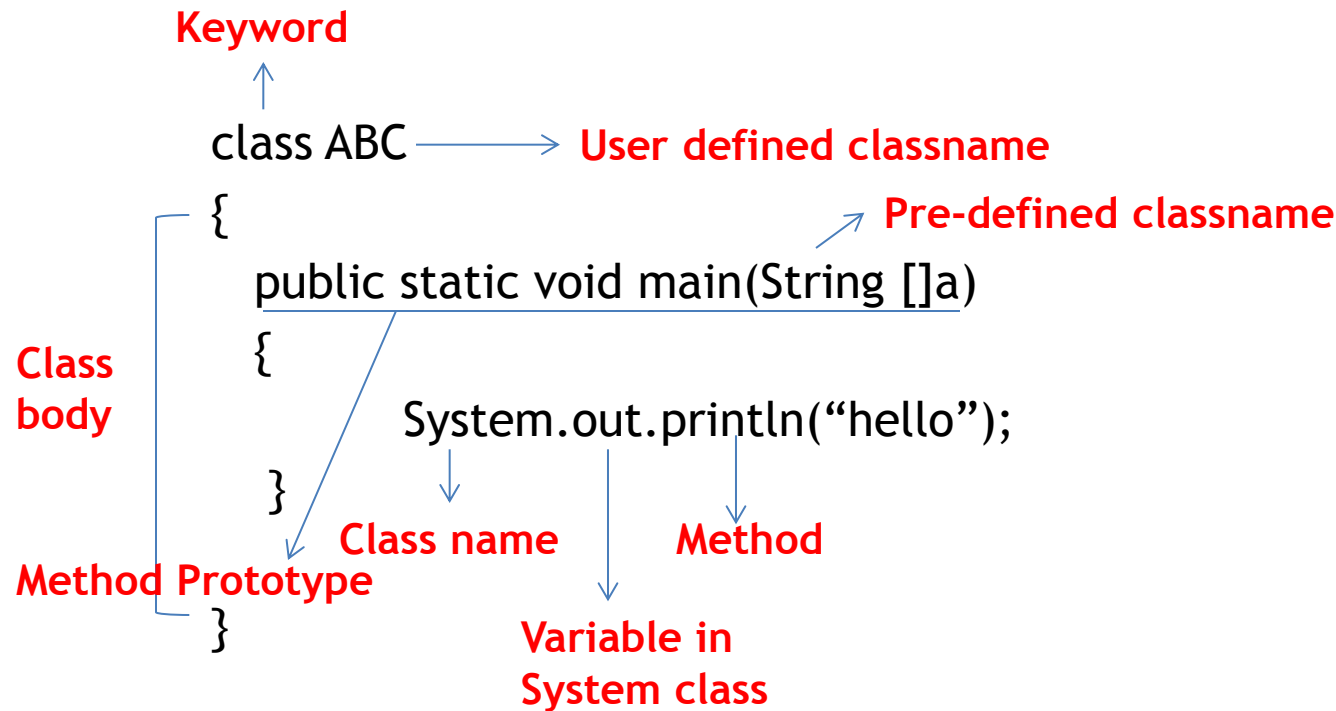
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LEADER ■ ENTREPRENEUR ■ INNOVATOR

ENCAPSULATION

Example:

Keyword

class ABC → **User defined classname**

{

    Pre-defined classname

    public static void main(String []a)

    {

        System.out.println("hello");

    }

}

Class body

Method Prototype

Class name

Method

Variable in System class

Suppose we have saved above program with ABC.java

Compilation & Execution process of JAVA

```
ABC.java  →  Java Compiler  →  Byte code ABC.class  →  JVM  →  Machine code
```

Byte code ABC.class ↓ **Machine Independent**

JVM ↓ **Machine Dependent**
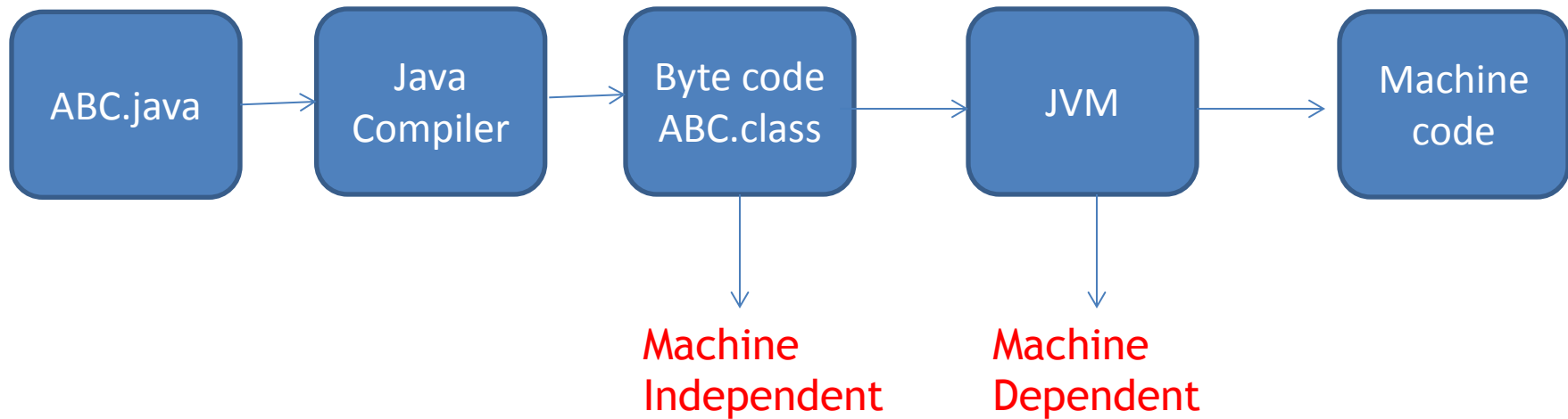
- **What is the responsibility of JVM?**

    It takes .class file and converts each byte code instruction into the machine code with respect to individual OS

Example for class:

Keyword

class Employee —— **User defined classname**

{

Class body

        int eid;

        String ename;   **Instance variables**

        double esal;

        static int empcount; —— **Static variable**

        void displayEmpDetails()

        {

Instance method   System.out.println(eid+" " +ename);

        }

        static void dispEmpCount()

        {

Static method   System.out.println(empcount); //eid,ename,esal can't be accessed

        }

}

Object

- **What is an Object?**
  - Object is an instance of a class
  - Object exist physically.[heap memory]

- **What is Instantiation?**
  Process of creation of an object.

- **How can we create an Object?**
  Using new keyword.

- **Syntax to create an Object**
  classname refname=new classname();

  To hold an object   **Object creation (4 Step Process)**

Example

Employee   e1 = new   Employee();

- Employee is a class name.
- e1 is a reference variable of type Employee, to hold employee object (RHS).
- In RHS, object will create (4 step process).

Alternate way to represent the same

        Employee   e1;
        e1   =   new   Employee();

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4 Step Object Creation Process

Ex:

```
class Sample
{
    int a=10;
    String s1;
    boolean b;
    public static void main(String []args)
    {
          Sample s=new Sample();
    }
}
```
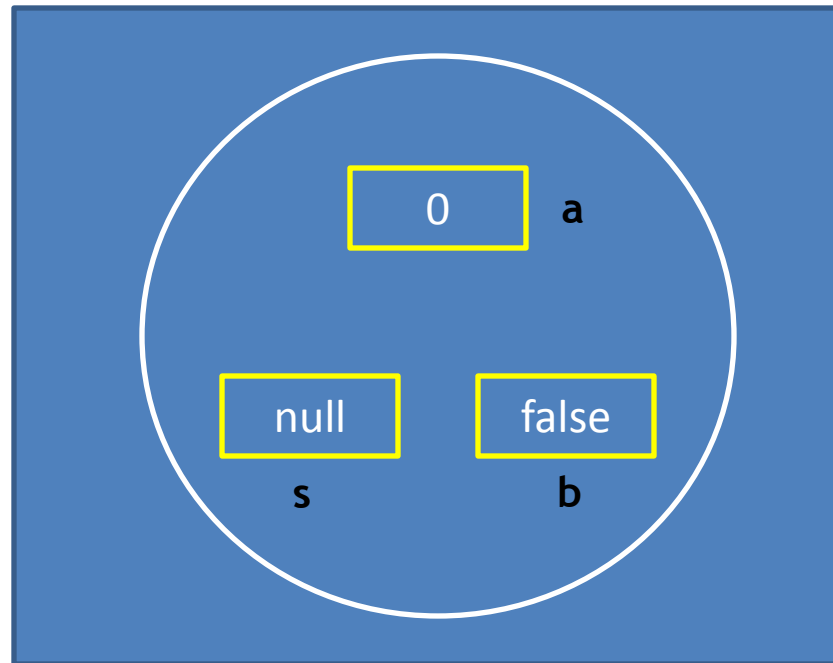
Object Creation Process

Step 1

Step 2

Step 3

Step 4

Step 1

In RHS, It will create memory for all instance variables and initializes with default values.
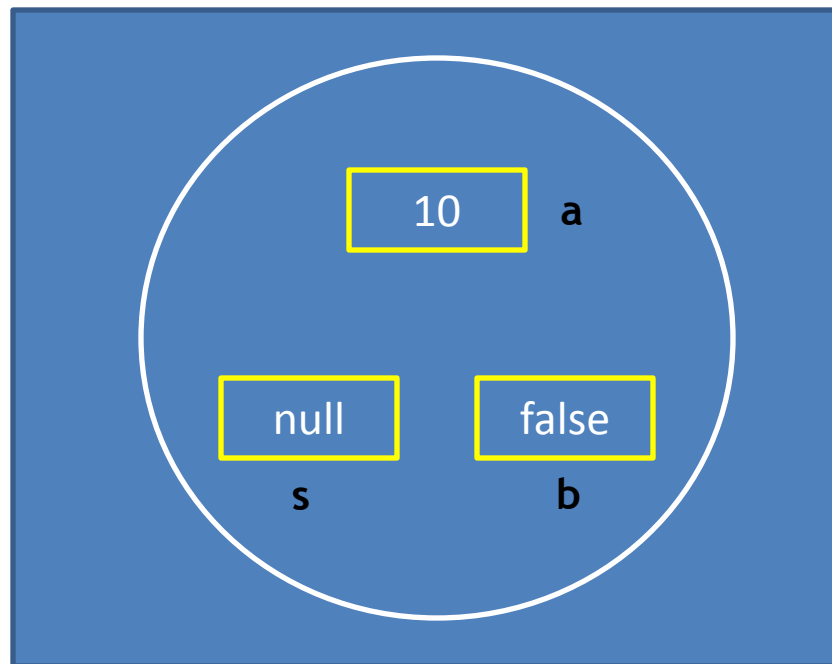
Representation of object in Memory :

Data Type	Default Value
int	0
float	0.0
double	0.0
string	Null
char	\u0000
boolean	false
Any class type variable	null

Step 2

Assign instance variable with given values

Representation in memory :

Step 3 & 4

3. Constructor will be called.

    - Constructor is a special method.

4. Last step returns memory reference/address.