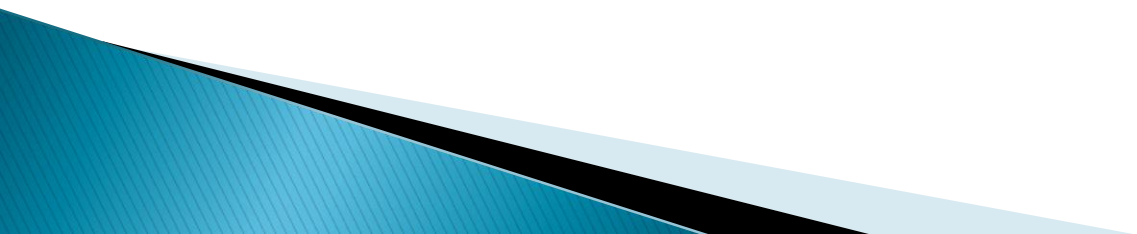
JAVA CLASSES



Defining a class:-

means defining state & behavior of basic program components known as *objects*

Class act like a *template* for an object

In class,
data items :-fields
Functions :-methods

1.Define a class
2.Field Declaration
    Scope of Variable
3.Method Declaration
4.Creating objects
5.Acessing Class Members

1.Define a class

Syntax:

```
class classname
[extends superclass]
[implements interface]
{
[Fields declaration]
[method declaration]
}
```

Everything inside [] is optional. That is following class is valid

```
Class ABC
{

}
```

This class contain nothing so can do nothing.

```
class ABC
{

}
class PQR
{
public static void main(String args[])
{
ABC obj=new ABC();
System.out.println("Empty");
}}
```

Output

```
C:\java>javac PQR.java

C:\java>java PQR
Empty
```

So empty class can be compiled and we can create object using it.

Extends is used for *inheritance*

Implements is used for *interface*

Object is super class of all created classes. So all class are subclass of Object class.

2.Field Declaration:

When we declare variables there is no storage space created for it.

Space is created only when object of the class is created.

Hence variable are called as instance variables

Scope of Variable

Java Variable are classified into two categories:-

1.Instance variable

2.Class variable

3.Local variable

1.Intance Variable(Member variable):-

1.Instance variable are created inside the class.

2.They are created when objects are instantiated & so they are associated with objects.

3.They take different value for each object.

2.Class Variable:-

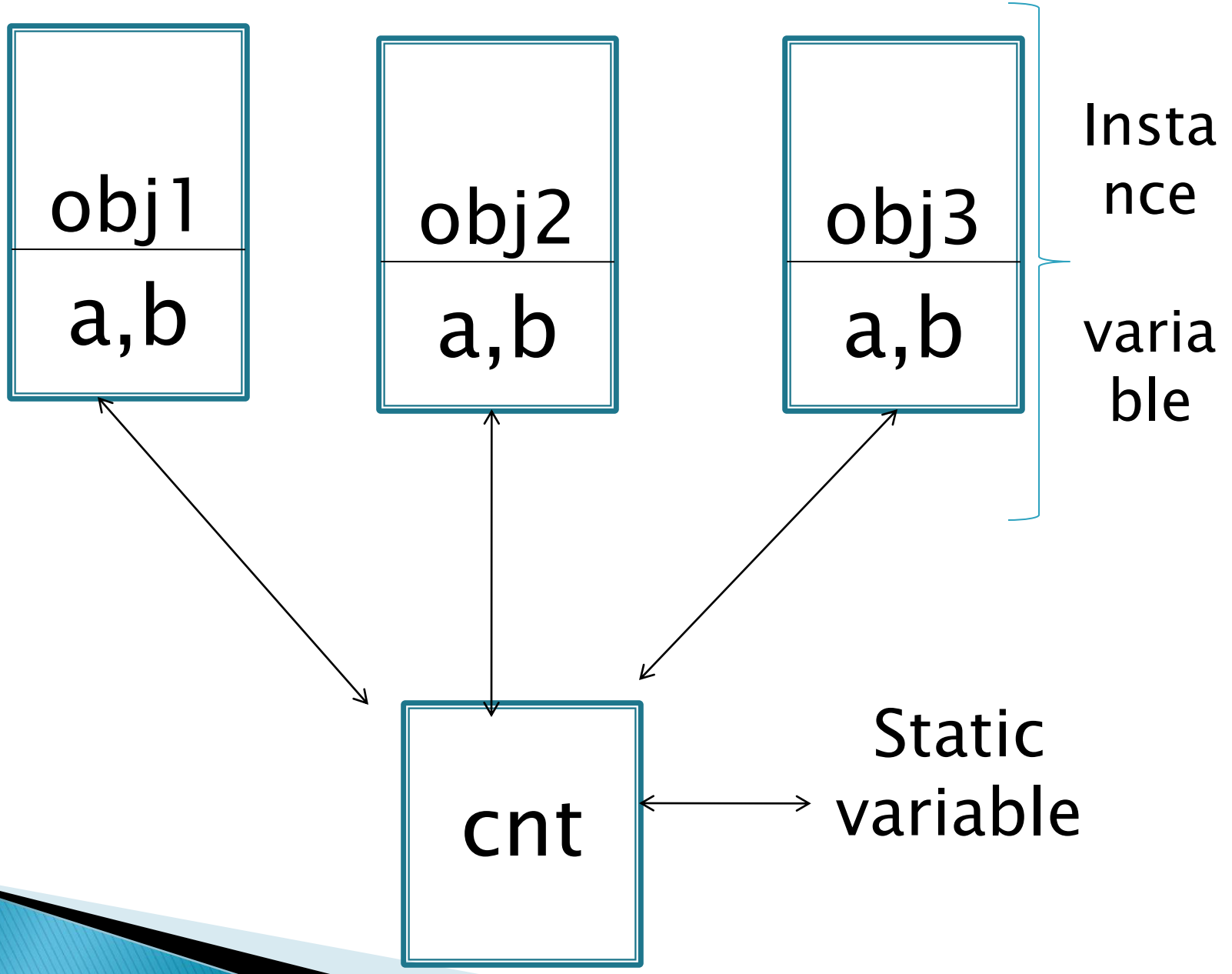
1.Class variables are global to a class .

2. And ,thus belong to the entire set of objects that are created.

3.Thus we say that it has only one copy i.e. only one memory location created for each class variable.

If the code is,

```
Class ABC
{
Int a,b;
Static int cnt;
}
Void main()
{
ABC obj1,obj2,obj3;
getch();
}
```


obj1
a,b
obj2
a,b
obj3
a,b
Instance
variable
cnt
Static variable

3.Local variable

Variables declared & used inside method are called local variable.

They are called so because they are not available outside the method definition i.e. outside the opening braces & closing braces.

Example of local variables

```
Void add()
{
Int a,x,y;

a=x+y;          //valid
}
a=9;            //invalid
```

3.Method Declaration:-

Variables declared are used by methods. If there are no methods, a class will be of no use. So we need to define methods.
Method declaration consist of 4 parts.

1.Returntype
2.Function name
3.Parameter list
4.Method body

```
returntype function-name (parameter list)
{

Method body

}
```

Creating Object:-

Object is said to be a memory space that contain instance variables.

Creating an object is also called as ***instantiating an object.***

Object are created using ***new*** *operator.*

New operator creates object of specified class & returns the reference of that object.

For eg.

```
Abc obj;                //declare object
obj=new Abc();          //instantiation of object
```

First statement declares variable to hold object reference(location).

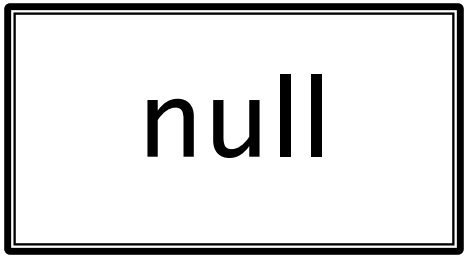
Second statement assigns object reference (location)to the variable.

Here Abc() is default constructor.

Statement

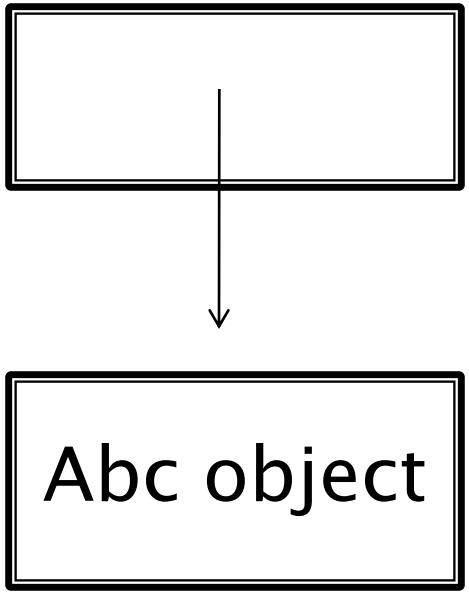
Result

Abc obj;



obj1

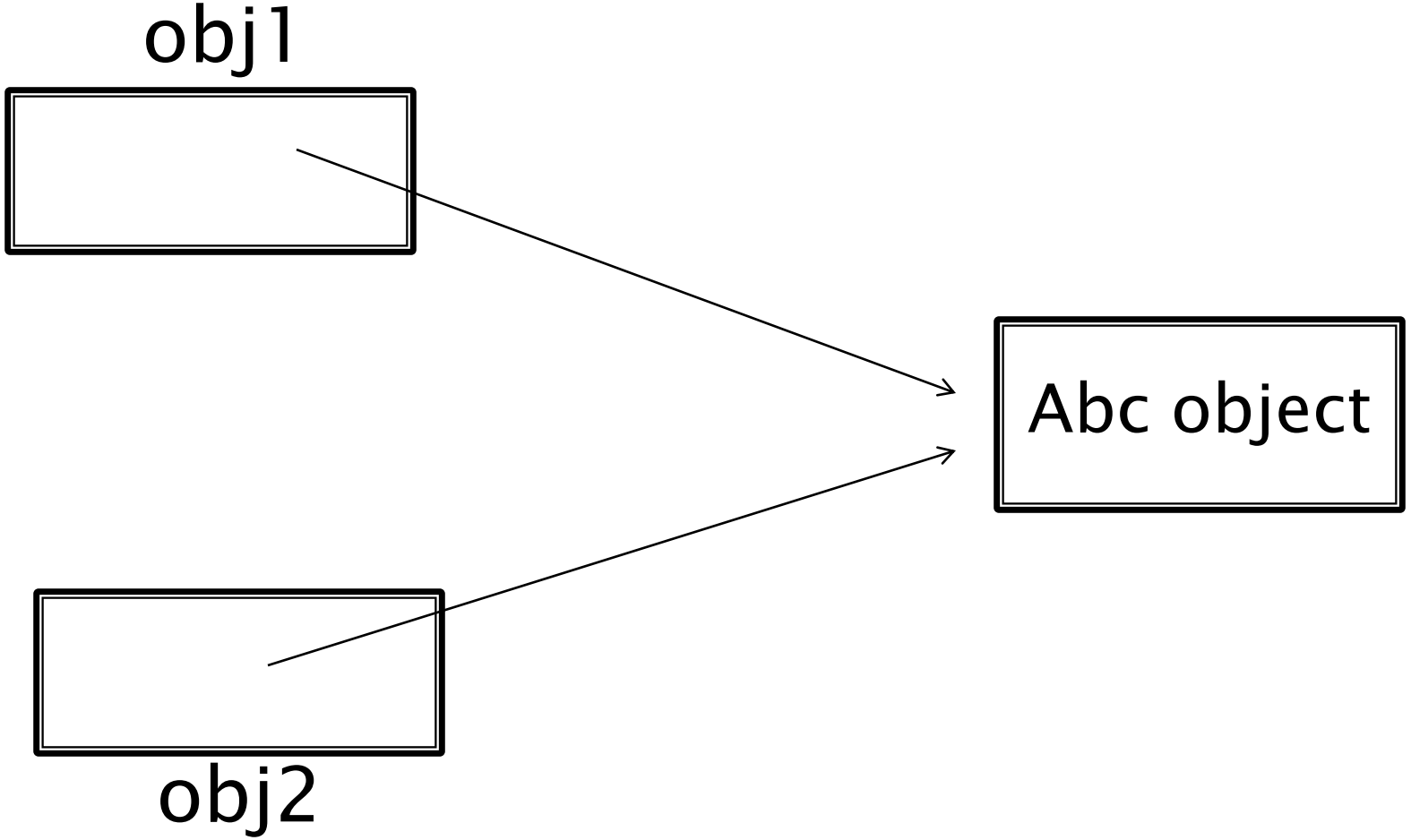
obj1=new Abc();



obj1

Obj1 is reference to Abc object

```
Abc obj=new Abc();
Abc obj2=obj1;
```



5. Accessing Class Members

1. Accessing Variables
2. Accessing method

program

Constructor

1. Java supports special type of methods for initialization of object as soon as there are created.
These methods are called *constructors.*

2.Name same as class.
3.No return type not even void.