# CSE111

| | Normal Class | Abstract Class | Interface | Final class |
|---|---|---|---|---|
| **Normal Class** | CAN EXTEND<br>CANNNOT IMPLEMENT | CAN EXTEND<br>CANNNOT IMPLEMENT | CANNOT EXTEND<br>CAN IMPLEMENT | CANNOT EXTEND<br>CANNNOT IMPLEMENT |
| **Abstract Class** | CAN EXTEND<br>CANNNOT IMPLEMENT | CAN EXTEND<br>CANNNOT IMPLEMENT | CANNOT EXTEND<br>CAN IMPLEMENT | CANNOT EXTEND<br>CANNNOT IMPLEMENT |
| **Interface** | CANNOT EXTEND<br>CANNNOT IMPLEMENT | CANNOT EXTEND<br>CANNNOT IMPLEMENT | CAN EXTEND<br>CANNOT IMPLEMENT | CANNOT EXTEND<br>CANNNOT IMPLEMENT |
| **Final class** | CAN EXTEND<br>CANNNOT IMPLEMENT | CAN EXTEND<br>CANNNOT IMPLEMENT | CANNOT EXTEND<br>CAN IMPLEMENT | CANNOT EXTEND<br>CANNNOT IMPLEMENT |

## Main class

- that has the static main method

**public static void main (String [] args)**

- can create instances of only normal and final classes…!
- cannot create instances of an abstract of interface class

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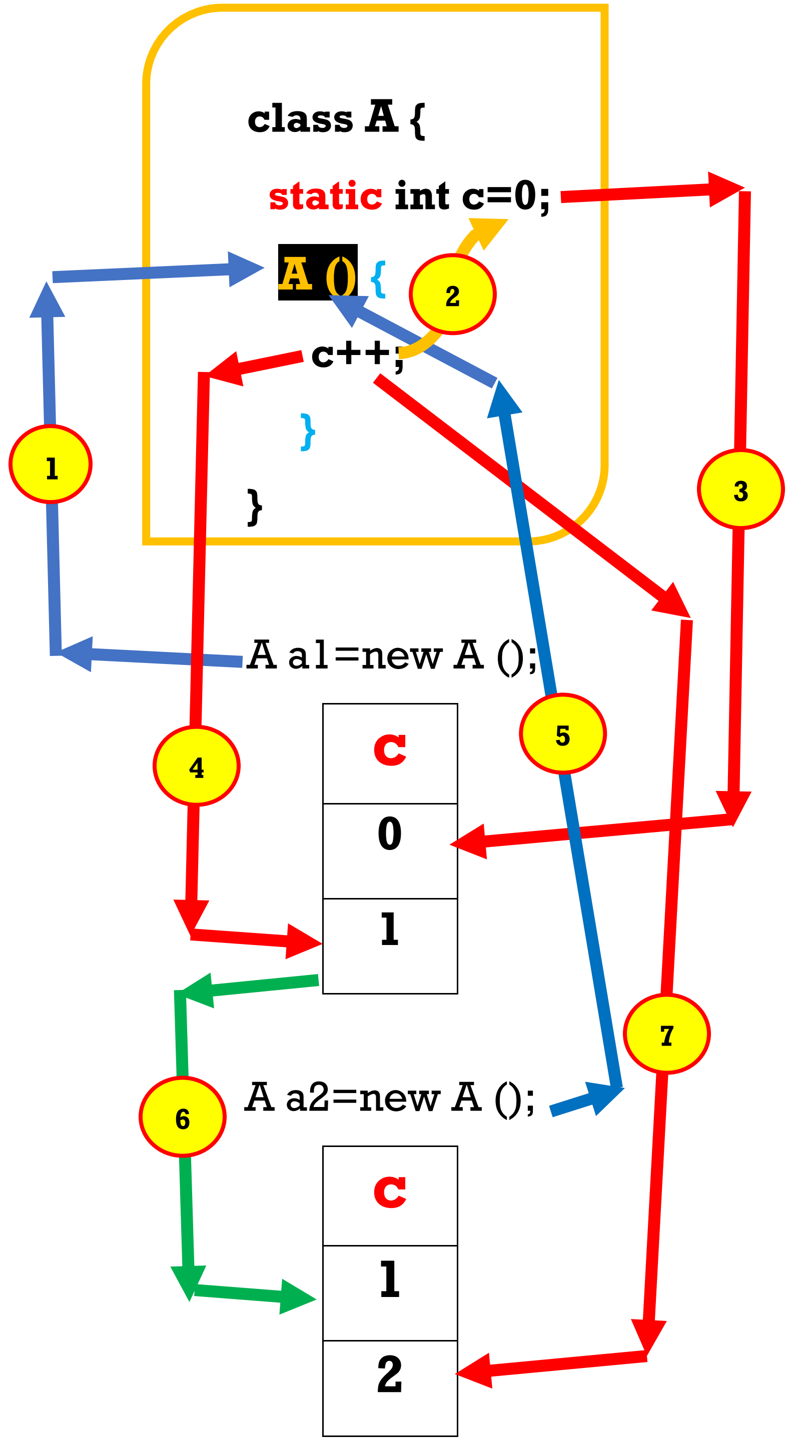

```
class A {
  static int c=0;
  A () {
    c++;
    }
}
```

A a1=new A ();

c

0

1

A a2=new A ();

c

1

2

Static method: calls and occupies only static methods and attributes

Non-Static method: calls and occupies both static and non-static methods and attributes

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# WHERE TO USE?

| | class | constructor | attribute | method |
|---|---|---|---|---|
| final | before | 🟨 | before | before |
| static | 🟨 | 🟨 | before | before |
| abstract | before | 🟨 | 🟨 | before |
| interface | before | 🟨 | 🟨 | 🟨 |
| extends | In between | 🟨 | 🟨 | 🟨 |
| implements | In between | 🟨 | 🟨 | 🟨 |
| return | 🟨 | 🟨 | 🟨 | At the end |
| void | 🟨 | 🟨 | 🟨 | before |
| public | before | before | before | before |
| protected | before | before | before | before |
| private | before | before | before | before |

| Method overload | Method override | Abstract method |
|---|---|---|
| ▪ In same class<br>▪ Same name+ different parameters/ parameters' count/ return type | ▪ From child class<br>▪ Same name+ parameters+ parameters' count+ return type as parent class's method | ▪ Partially implemented<br>▪ No body "{ }"<br>▪ Ended with " ; " |

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| super | this |
|---|---|
| Access global variable of the class inherited…! | Access global variable of the class itself…! |
| Used to call the constructor of Parent class or inherited class from the Child class…! | Used to call the constructor of the class itself…! |
| Used to call the methods of the parent class when the methods are overridden in the child class and you need to specify your selection between the parent and the child class from the child class…! | Used to call the methods of the child class when the methods are overridden in the child class and you need to specify your selection between the parent and the child class from the child class…! |

| Global Variable/Attribute/ Property | Local Variable/Attribute/ Property |
|---|---|
| Located(initiated) **outside of the methods** and every method gets access to those. | Located(initiated) **inside the methods** or in the parameters of the methods and only the specific method itself has access to those. |

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# Some Golden Rule

## Multiple inheritance

- One class cannot have multiple inheritance
- One class can be inherited by multiple class (Single in heritance+ Hierarchical/Level wise inheritance)

## Cyclic inheritance involving→not possible

A extends B

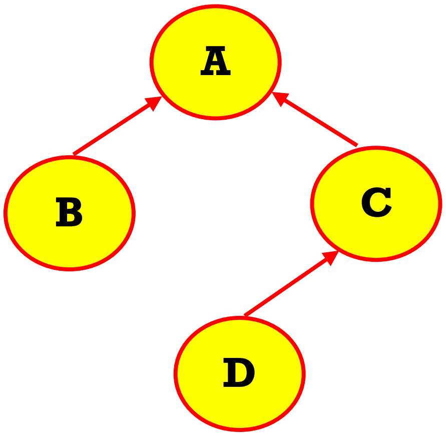
B extends A

## Hierarchical/Level wise inheritance

D extends C

C extends A

B extends A



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## Create instance/object or reference of a class

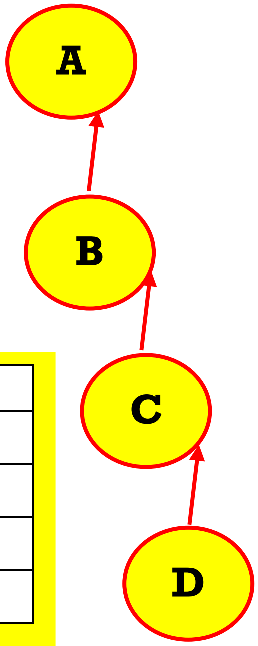
```
If (normal class or final class or parent class), then
    call (): the specific constructor…!
```

```
else if (child class), then
    call (): default constructor of the immediate parent class…!
    call (): the specific constructor of child class…!
```

```
else //abstract or interface class
    msg (): cannot create instance
```

## Level wise access

D extends C
C extends B
B extends A



| Will get | The attributes and methods of | | | |
|---|---|---|---|---|
| A | A | | | |
| B | A | B | | |
| C | A | B | C | |
| D | A | B | C | D |

if

Public or Protected

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