

V.N.I

Super Keyword

Q. Super keyword ? full explanation .

Ans → Super keyword refers to the objects of Super class, it is used when we want to call the Super class Variable, method & Constructor through Sub class Object .

Note:- i) Whenever the Super class & Sub class Variable and method name both are same than it can be used only .

SUBSCRIBE

Note:- i) Whenever the Super class & Sub class Variable and method name both are Same than it can be used only.

ii) To avoid the confusion between Super class and Sub classes Variables and methods that have same name we should use Super keyword.

methods that have same name we should use Super keyword.

Super

- i) Variable
- ii) method
- iii) Constructor



SUBSCRIBE

Syntax:- class A. // Super

A() {
}

2.

SUBSCRIBE

A()



B()

}

class B extends A

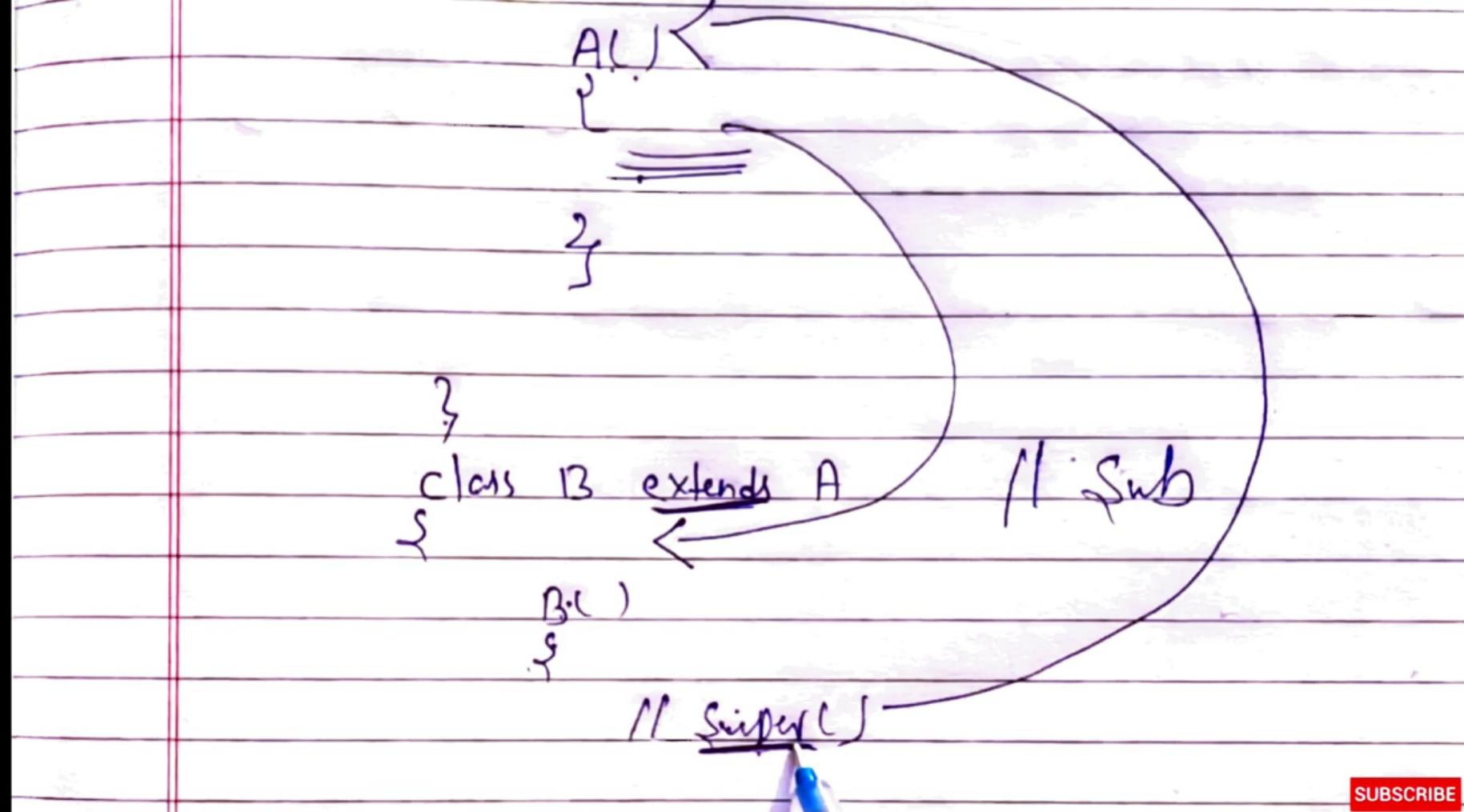
{

B()

{

{} Sub

SUBSCRIBE



SUBSCRIBE

```
2 class A
3 {
4     int a=10;
5 }
6 class B extends A
7 {
8     int a=20;
9     void show()
10    {
11        System.out.println(a);
12    }
13 }
14 class Test
15 {
16     public static void main(String[] args) {
17         B r=new B();
18         r.show();
19     }
20 }
```

Command Prompt

```
C:\Users\WIN10\Desktop>javac Test.java
```

```
C:\Users\WIN10\Desktop>java Test
20
```

```
C:\Users\WIN10\Desktop>
```



```
Test.java  
2 class A  
3 {  
4     int a=10;  
5 }  
6 class B extends A  
7 {  
8     int a=20;  
9     void show()  
10    {  
11        System.out.println(a);  
12        System.out.println(super.a);  
13    }  
14 }  
15 class Test  
16 {  
17     public static void main(String[] args) {  
18         B r=new B();  
19         r.show();  
20     }  
21 }
```

Command Prompt

```
C:\Users\WIN10\Desktop>javac Test.java
```

```
C:\Users\WIN10\Desktop>java Test  
20
```

```
C:\Users\WIN10\Desktop>javac Test.java
```

```
C:\Users\WIN10\Desktop>java Test  
20  
10
```

```
C:\Users\WIN10\Desktop>
```



```
5      {
6          System.out.println("Hello Viewer");
7      }
8  }
9 class B extends A
10 {
11
12     void show()
13     {
14         System.out.println("Hello Learner");
15     }
16 }
17 }
18 class Test
19 {
20     public static void main(String[] args) {
21         B r=new B();
22         r.show();
23     }
24 }
```

Select Command Prompt

C:\Users\WIN10\Desktop>javac Test.java

C:\Users\WIN10\Desktop>java Test
20
10

C:\Users\WIN10\Desktop>javac Test.java

C:\Users\WIN10\Desktop>java Test
Hello Learner

C:\Users\WIN10\Desktop>

```
Test.java
1      /* Super Keyword */
2 class A
3 {
4     void show()
5     {
6         System.out.println("Hello Viewer");
7     }
8 }
9 class B extends A
10 {
11     void show()
12     {
13         super.show();
14         System.out.println("Hello Learner");
15     }
16 }
17 }
18 }
19 class Test
20 {
21     public static void main(String[] args) {
```

Select Command Prompt

C:\Users\WIN10\Desktop>javac Test.java

C:\Users\WIN10\Desktop>java Test
Hello Learner

C:\Users\WIN10\Desktop>javac Test.java

C:\Users\WIN10\Desktop>java Test
Hello Viewer
Hello Learner

C:\Users\WIN10\Desktop>



```
Test.java  
4     A()  
5     {  
6         System.out.println("Hello Viewer");  
7     }  
8 } class B extends A  
9 {  
10    B()  
11    {  
12        super();  
13        System.out.println("Hello Learner");  
14    }  
15 } class Test  
16 {  
17     public static void main(String[] args) {  
18         B r=new B();  
19     }  
20 }
```

Command Prompt

```
C:\Users\WIN10\Desktop>java Test  
Hello Viewer  
Hello Learner
```

```
C:\Users\WIN10\Desktop>javac Test.java
```

```
C:\Users\WIN10\Desktop>java Test  
Hello Viewer  
Hello Learner
```

```
C:\Users\WIN10\Desktop>javac Test.java
```

```
C:\Users\WIN10\Desktop>
```



```
/* Super Keyword */  
class A  
{  
    A(int a)  
    {  
        System.out.println("Hello Viewer "+a);  
    }  
}  
class B extends A  
{  
    B()  
    {  
        //super();  
        System.out.println("Hello Learner");  
    }  
}  
class Test  
{  
    public static void main(String[] args) {  
        B r=new B();  
    }  
}
```

Command Prompt

```
C:\Users\WIN10\Desktop>javac Test.java  
Test.java:13: error: constructor A in c  
    applied to given types;  
    {  
      ^  
    required: int  
    found:   no arguments  
    reason: actual and formal argument li  
    ngth  
1 error
```

```
C:\Users\WIN10\Desktop>
```



```
Test.java
1      /* Super Keyword */
2 class A
3 {
4     A(int a)
5     {
6         System.out.println("Hello Viewer "+a);
7     }
8 }
9 class B extends A
10 {
11     B()
12     {
13         super(100);
14         System.out.println("Hello Learner");
15     }
16 }
17 }
18 class Test
19 {
20     public static void main(String[] args) {
21         B r=new B();
```

Select Command Prompt

```
required: int
found:    no arguments
reason: actual and formal argument length
1 error
```

```
C:\Users\WIN10\Desktop>javac Test.java
```

```
C:\Users\WIN10\Desktop>java Test
Hello Viewer 100
Hello Learner
```

```
C:\Users\WIN10\Desktop>
```



```
Test.java
1  /* Super Keyword */
2  class A
3  {
4      A(int a)
5      {
6          System.out.println("Hello Viewer "+a);
7      }
8  }
9  class B extends A
10 {
11
12     B()
13     {
14         System.out.println("Hello Learner");
15     }
16 }
17 class Test
18 {
19     public static void main(String[] args) {
20         B r=new B();
21     }
22 }
```

Q. What is this keyword? full explanation.

Ans → i) this keyword refers to the current object inside a method or constructor.

example:- class A
{

bqr1@45
A

}

A = new A();

ii) Whenever the name of instance & local variables both are same the runtime environment JVM gets confused which

```
1          /* this Keyword */
2 class A
3 {
4     void show()
5     {
6         System.out.println(this);
7     }
8     public static void main(String[]
9
10    A r=new A();
11    System.out.println(r);
12 }
13 }
```

Select Command Prompt

C:\Users\WIN10\Desktop>javac A.java

C:\Users\WIN10\Desktop>java A
A@7a81197d

C:\Users\WIN10\Desktop>

C:\Users\WIN10\Desktop\A.java - Sublime Text (UNREGISTERED)

File Edit Selection Find Goto Tools Project Preferences Help

Java

```
1 /* this Keyword */
2 class A
3 {
4     void show()
5     {
6         System.out.println(this);
7     }
8     public static void main(String[]
9
10        A r=new A();
11        System.out.println(r);
12        r.show();
13    }
14 }
```

Line 12, Column 18

Type here to search

Select Command Prompt

```
C:\Users\WIN10\Desktop>javac A.java
C:\Users\WIN10\Desktop>java A
A@7a81197d
C:\Users\WIN10\Desktop>javac A.java
C:\Users\WIN10\Desktop>java A
A@7a81197d
A@7a81197d
C:\Users\WIN10\Desktop>
```

Tab Size: 4 Java 09:30 13-02-2021

ii) Whenever the name of instance and local variables both are same then our runtime environment JVM gets confused that which one is local variable & which one is instance variable , to avoid this problem we should use this keyword .

example:- class ,
 { int a ; }

'IS instance variable , to avoid this problem
we should use this keyword .

example:- class A.

{ int a; // instance
A(int a) → // local

{ a= ;

S.O.F.);

?





```
1      /* this Keyword */
2 class A
3 {
4     int a;
5     A(int a)
6     {
7         a=a;
8     }
9     void show()
10    {
11        System.out.println(a);
12    }
13    public static void main(String[] args)
14    {
15        A r=new A(100);
16        r.show();
17    }
}
```

Command Prompt

```
C:\Users\WIN10\Desktop>javac A.java
```

```
C:\Users\WIN10\Desktop>java A
A@7a81197d
A@7a81197d
```

```
C:\Users\WIN10\Desktop>javac A.java
```

```
C:\Users\WIN10\Desktop>java A
0
```

```
C:\Users\WIN10\Desktop>
```

C:\Users\WIN10\Desktop\A.java - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

A.java

```
1  /*  this Keyword */
2 class A
3 {
4     int a;
5     A(int a)
6     {
7         this.a=a;
8     }
9     void show()
10    {
11        System.out.println(a);
12    }
13    public static void main(String[] args)
14    {
15        A r=new A(100);
16        r.show();
17    }
}
```

Line 9, Column 16

Type here to search

Select Command Prompt

A@7a81197d

C:\Users\WIN10\Desktop>javac A.java

C:\Users\WIN10\Desktop>java A

0

C:\Users\WIN10\Desktop>javac A.java

C:\Users\WIN10\Desktop>java A

100

C:\Users\WIN10\Desktop>

Tab Size: 4 Java 09:34 13-02-2021

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this Keyword

- 3) It is also used when we want to call the default constructor of its own class.

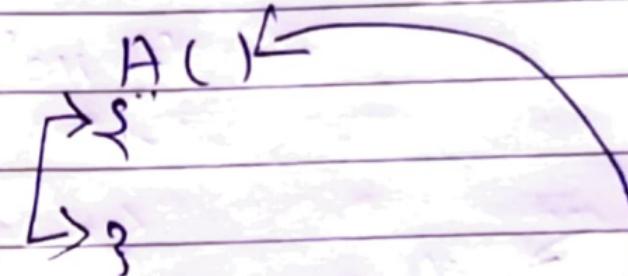
example:- class A

{
A()
}

}

(V.V.I)

example:- class A.



4)

Parameterized Constructor

```
1      /* this Keyword */  
2 class A  
3 {  
4     A()  
5     {  
6         System.out.print("Learn Coding");  
7     }  
8     A(int a)  
9     {  
10        this();  
11        System.out.print(a);  
12    }  
13    public static void main(String[] args)  
14    {  
15        A r=new A(100);  
16    }  
17 }
```

Command Prompt - javac A.java

C:\Users\WIN10\Desktop>javac A.java

C:\Users\WIN10\Desktop>java A
0

C:\Users\WIN10\Desktop>javac A.java

C:\Users\WIN10\Desktop>java A
100

C:\Users\WIN10\Desktop>javac A.java



```
A.java
```

```
1  /* this Keyword */  
2 class A  
3 {  
4     A()  
5     {  
6         System.out.print("Learn Coding");  
7     }  
8     A(int a)  
9     {  
10        this();  
11        System.out.print(a);  
12    }  
13    public static void main(String[] args)  
14    {  
15        A r=new A(100);  
16    }  
17 }
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>java A  
0
```

```
C:\Users\WIN10\Desktop>javac A.java
```

```
C:\Users\WIN10\Desktop>java A  
100
```

```
C:\Users\WIN10\Desktop>javac A.java
```

```
C:\Users\WIN10\Desktop>java A  
Learn Coding100  
C:\Users\WIN10\Desktop>
```



```
1          /* this Keyword */  
2 class A  
3 {  
4     A()  
5     {  
6         System.out.print("Learn Coding");  
7     }  
8     A(int a)  
9     {  
10        //this();  
11        System.out.print(a);  
12    }  
13    public static void main(String[] args) {  
14        A r=new A(100);  
15    }  
16 }  
17 }
```

4) It also called parametrized constructor
of its own class.

example:- class A.

{ A()

$\rightarrow \{$ this(10);
 $\rightarrow \}$

 A(int a)

$\rightarrow \{$

```
1          /* this Keyword */  
2 class A  
3 {  
4     A()  
5     {  
6         System.out.print("Learn Coding");  
7     }  
8     A(int a)  
9     {  
10        this();  
11        System.out.print(a);  
12    }  
13    public static void main(String[] args) {  
14        A r=new A(100);  
15    }  
16 }  
17 }
```

7 characters selected



Type here to search



Tab Size: 4 Java 09:36 13-02-2021



Ajava

```
1      /* this Keyword */
2 class A
3 {
4     A()
5     {
6         this(10);
7     }
8     A(int a)
9     {
10        System.out.print(a);
11    }
12    public static void main(String[] args)
13    {
14        A r=new A();
15    }
16 }
```

Line 9, Column 6



Type here to search



Tab Size: 4

Java






























































































































































































































































































































































```
Java
```

```
1      /* this Keyword */  
2 class A  
3 {  
4     A()  
5     {  
6         //this(10);  
7     }  
8     A(int a)  
9     {  
10        System.out.print(a);  
11    }  
12    public static void main(String[] args)  
13    {  
14        A r=new A();  
15    }  
16 }
```

The code demonstrates the use of the 'this' keyword. In line 10, 'this' is used to refer to the constructor's argument 'a'. When run, it prints '10'.

```
Command Prompt
```

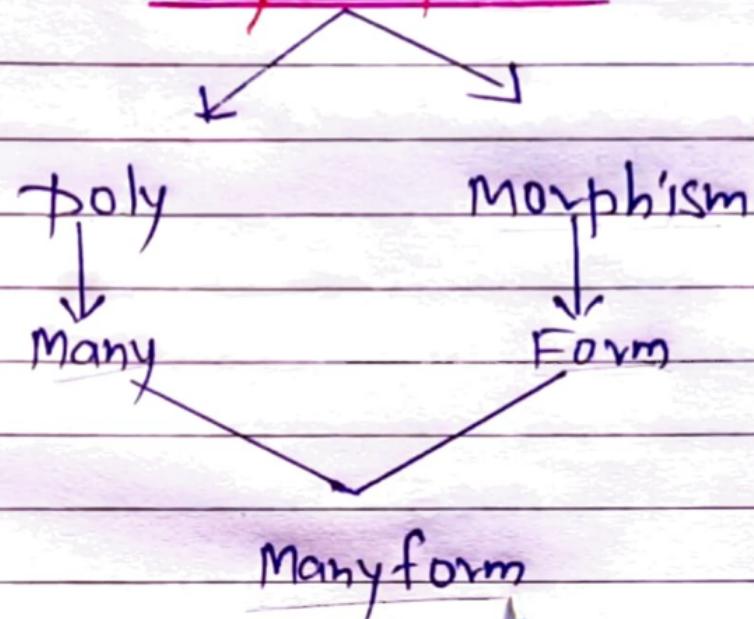
```
C:\Users\WIN10\Desktop>javac A.java  
C:\Users\WIN10\Desktop>java A  
100  
C:\Users\WIN10\Desktop>javac A.java  
  
C:\Users\WIN10\Desktop>java A  
10  
C:\Users\WIN10\Desktop>javac A.java  
  
C:\Users\WIN10\Desktop>java A  
  
C:\Users\WIN10\Desktop>
```

The command prompt shows the execution of the Java program. It first compiles the code ('javac A.java'), then runs it ('java A'). The output is '100' on the first run and '10' on the second run, demonstrating that the constructor's argument is passed to the object's own constructor.

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Date : / /

Polymorphism

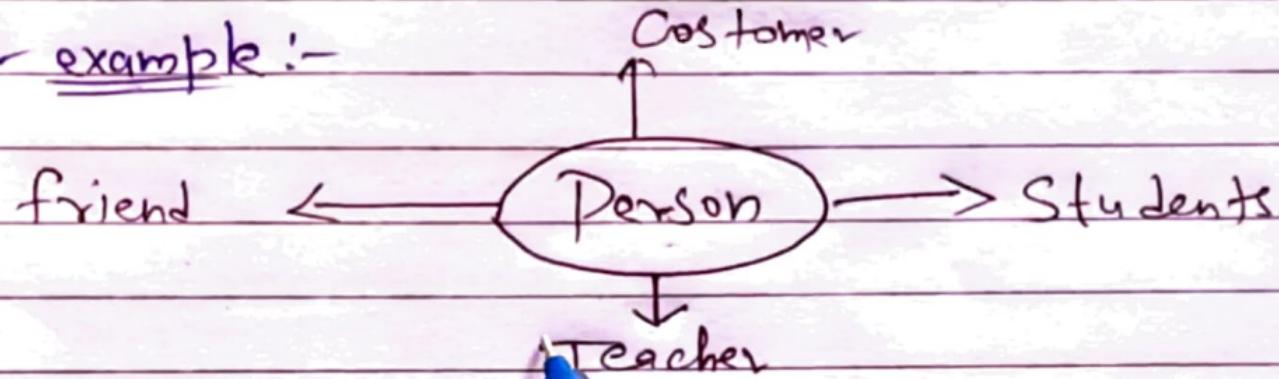


Polymorphism is the greek word whose meaning is "Same object having different

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Polymorphism is the greek word whose meaning is "Same object having different behaviour".

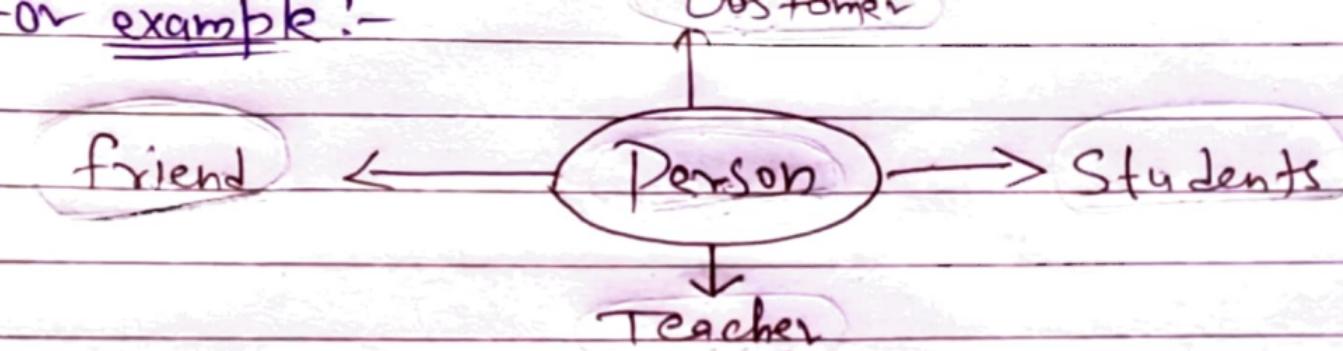
For example:-



- i) void person(Teacher)
- ii) void person(Students)
- iii) void person()

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for example:-



- i) void person (Teacher)
- ii) void person (Students)
- iii) void person (friend)
- iv) void person (customer)

Polymorphism

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Types

- Compile time polymorphism
- Runtime polymorphism

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Polymorphism

1) Compile time polymorphism :-

A polymorphism which exists at the time of compilation is called Compile time or early binding or static polymorphism.

example :- Method Overloading



In whenever a class

• early binding or static polymorphism.

example :- Method Overloading

In whenever a class contain more than one method with same name and different types of parameters called method overloading.

Syntax :- return-type method-name (para1);
return-type method-name (para, para);

example :- Method Overloading



In whenever a class contain more than one method with same name and different types of parameters called method overloading.

Syntax :- return-type method-name (param);
return-type method-name (param, param);

Ajava

```
1          /* Method Overloading */
2 class A
3 {
4     void add()
5     {
6         int a=10,b=20,c;
7         c=a+b;
8         System.out.println(c);
9     }
10    void add()
11    {
12        int a=10,b=20,c;
13        c=a+b;
14        System.out.println(c);
15    }
16 }
```

```
1      /* Method Overloading */  
2  class A  
3  {  
4      void add()  
5      {  
6          int a=10,b=20,c;  
7          c=a+b;  
8          System.out.println(c);  
9      }  
10     void add(int x,int y)  
11     {  
12         int c;  
13         c=x+y;  
14         System.out.println(c);  
15     }  
16     void add(int x,double y)  
17     {  
18         double c;  
19         c=x+y;  
20         System.out.println(c);  
21     }
```



```
4 void add()
5 {
6     int a=10,b=20,c;
7     c=a+b;
8     System.out.println(c);
9 }
10 void add(int x,int y)
11 {
12     int c;
13     c=x+y;
14     System.out.println(c);
15 }
16 void add(int x,double y)
17 {
18     double c;
19     c=x+y;
20     System.out.println(c);
21 }
22 public static void main(String[] args) {
23     A r=new A();
24     r.add();  r.add(100,200);  r.add(50,45.32);
```

Select Command Prompt

C:\Users\WIN10\Desktop>javac A.java

C:\Users\WIN10\Desktop>java A

30

300

95.32

C:\Users\WIN10\Desktop>

Ajava

```
4 void add()
5 {
6     int a=10,b=20,c;
7     c=a+b;
8     System.out.println(c);
9 }
10 void add(int x,int y)
11 {
12     int c;
13     c=x+y;
14     System.out.println(c);
15 }
16 void add(int x,double y)
17 {
18     double c;
19     c=x+y;
20     System.out.println(c);
21 }
22 public static void main(String[] args){
23     A r=new A();
24     r.add(100,200);  r.add(50,45.32);  r.add();
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>java A
30
300
95.32
```

```
C:\Users\WIN10\Desktop>javac A.java
```

```
C:\Users\WIN10\Desktop>java A
300
95.32
30
```

```
C:\Users\WIN10\Desktop>
```

```
1      /* Method Overloading */  
2  class A  
3  {  
4      int add()  
5      {  
6          int a=10,b=20,c;  
7          c=a+b;  
8          return c;  
9      }  
10     void add(int x,int y)  
11     {  
12         int c;  
13         c=x+y;  
14         System.out.println(c);  
15     }  
16     void add(int x,double y)  
17     {  
18         double c;  
19         c=x+y;  
20         System.out.println(c);  
21     }
```

```
7         c=a+b;
8         return c;
9     }
10    void add(int x,int y)
11    {
12        int c;
13        c=x+y;
14        System.out.println(c);
15    }
16    void add(int x,double y)
17    {
18        double c;
19        c=x+y;
20        System.out.println(c);
21    }
22    public static void main(String[] args) {
23        A r=new A();
24        r.add(100,200); r.add(50,45.32); int add=r.add();
25        System.out.println(add);
26    }
27 }
```

Command Prompt

```
C:\Users\WIN10\Desktop>java A
300
95.32
30
```

```
C:\Users\WIN10\Desktop>javac A.java
```

```
C:\Users\WIN10\Desktop>java A
300
95.32
30
```

```
C:\Users\WIN10\Desktop>
```



Runtime Polymorphism

Q. What is runtime polymorphism? in Detail.

Ans → A polymorphism which exists at the time of execution of program is called runtime polymorphism.

Example:— method overloading
↓

Whenever we call a method in such a way that it depends upon the context in which it is used.

polymorphism which exists at the time of execution of program is called runtime polymorphism.

Example:— method overriding.



Whenever we writing method in Super and Sub classes in such a way that method name and parameter must be same called method overriding.

Syntax:— class A

{
 void s1,

Syntax:- class A

 void Show()

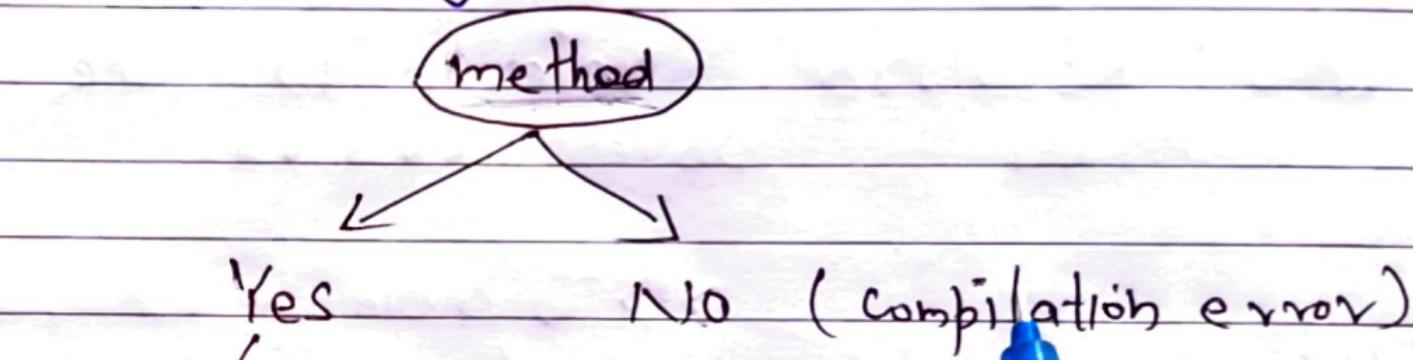
 }

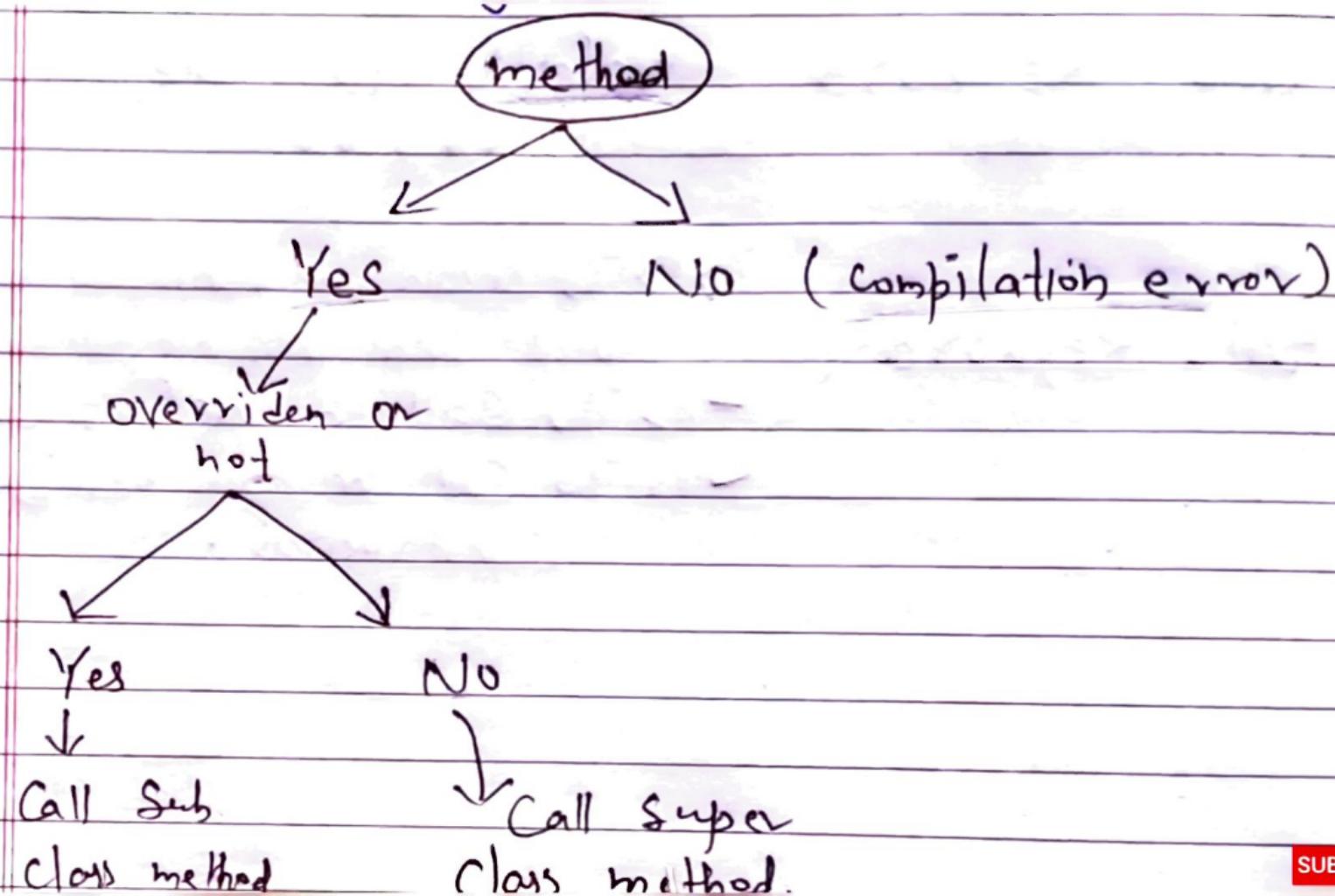
class B extends A

 void Show()

Polymorphism

- ① Method Overriding rules :-





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```
1          /* Method Overriding */  
2 class shape  
3 {  
4     void draw()  
5     {  
6         System.out.println("Can't Say shape Type");  
7     }  
8 }  
9 class square extends shape  
10 {  
11     void draw()  
12     {  
13         System.out.println("square shape");  
14     }  
15 }
```

```
1      /* Method Overriding */  
2  class shape  
3  {  
4      void draw()  
5      {  
6          System.out.println("Can't Say shape Type");  
7      }  
8  }  
9  class square extends shape  
10 {  
11     @Override  
12     void draw()  
13     {  
14         System.out.println("square shape");  
15     }  
16 }  
17 class Demo  
18 {  
19     public static void main(String[] args) {  
20         shape r=new square();  
21         r.draw();  
22     }  
}
```

```
Microsoft Windows [Version 10.0.18363.]  
(c) 2019 Microsoft Corporation. All ri
```

```
C:\Users\WIN10>cd desktop
```

```
C:\Users\WIN10\Desktop>javac Demo.java
```

```
C:\Users\WIN10\Desktop>java Demo  
square shape
```

```
C:\Users\WIN10\Desktop>
```

```
/* Method Overriding */  
class shape  
{  
    void draw()  
    {  
        System.out.println("Can't print a method from a supertype");  
    }  
}  
class square extends shape  
{  
    void draw2()  
    {  
        System.out.println("square");  
    }  
}  
class Demo  
{  
    public static void main(String[] args) {  
        shape r=new square();  
        r.draw();  
    }  
}
```

Select Command Prompt
C:\Users\WIN10\Desktop>javac Demo.java
Demo.java:11: error: method does not override or implement
@Override
^
1 error

C:\Users\WIN10\Desktop>javac Demo.java
C:\Users\WIN10\Desktop>java Demo
Can't Say shape Type

C:\Users\WIN10\Desktop>



```
1      /* Method Overriding */  
2  class shape  
3  {  
4      void draw()  
5      {  
6          System.out.println("Can't Say shape Type");  
7      }  
8  }  
9  class square extends shape  
10 {  
11     @Override  
12     void draw()  
13     {  
14         super.draw();  
15         System.out.println("square shape");  
16     }  
17 }  
18 class Demo  
19 {  
20     public static void main(String[] args) {  
21         shape r=new square();  
22         r.draw();  
23     }  
24 }
```

Select Command Prompt

C:\Users\WIN10\Desktop>javac Demo.java

C:\Users\WIN10\Desktop>java Demo
Can't Say shape Type

C:\Users\WIN10\Desktop>javac Demo.java

C:\Users\WIN10\Desktop>java Demo
Can't Say shape Type
square shape

C:\Users\WIN10\Desktop>



Q. What is Encapsulation? full explanation.

Ans → Encapsulation is a mechanism through which we can wrapping the data members and member methods of class in a single unit called encapsulation.

Note:- 1) Declare the class variables as private.

2) Declare the class methods as public.

members and "member methods of class in a single unit called encapsulation.

- Note:-
- 1) Declare the class variables as a private .
 - 2) Declare the class methods as a public .

Example:- class is the best example of encapsulation.

2) Declare the class methods as a public.

Example:- Class is the best example of encapsulation.



```
1          /* Java Encapsulation */  
2 class A  
3 {  
4     private int value; //data hiding  
5  
6     public void setValue()  
7     {  
8         I  
9     }  
10    public int getValue()  
11    {  
12    }  
13    }  
14 }  
15 }
```



```
10
11     public int getValue()
12     {
13         r|
14     }
15 }
16 class B
17 {
18     public static void main(String[] args) {
19
20         A r=new A();
21         r.value=100;
22         System.out.print();
23     }
24 }
```

```
B.java
```

```
1  /* Java Encapsulation */  
2  class A  
3  {  
4      private int value; //data hiding  
5  
6      public void setValue(int x)  
7      {  
8          value=x;  
9      }  
10     public int getValue()  
11     {  
12         return value;  
13     }  
14 }  
15 class B  
16 {  
17     public static void main(String[] args)  
18     {  
19         A r=new A();  
20         r.value=100;  
21         System.out.print(r.value);  
22     }  
23 }
```

```
Command Prompt
```

```
C:\Users\WIN10>cd desktop  
C:\Users\WIN10\Desktop>javac B.java  
B.java:21: error: value has private access in A  
        r.value=100;  
                           ^  
B.java:22: error: value has private access in A  
        System.out.print(r.value);  
                           ^  
2 errors
```

```
1          /* Java Encapsulation */  
2 class A  
3 {  
4     private int value;//data hiding  
5  
6     public void setValue(int x)//data abstraction  
7     {  
8         value=x;  
9     }  
10  
11    public int getValue()  
12    {  
13        return value;  
14    }  
15 }  
16 class B  
17 {  
18     public static void main(String[] args) {  
19  
20         A r=new A();  
21         r.setValue(100);  
22         System.out.print(r.getValue());
```

B.java

```
4  private int value;//data hiding
5
6  public void setValue(int x)//data abstraction
7  {
8      value=x;//value=100
9  }
10
11 public int getValue()
12 {
13     return ++value;
14 }
15 }
16 class B
17 {
18     public static void main(String[] args) {
19
20         A r=new A();
21         r.setValue(100);
22         System.out.print(r.getValue());
23     }
24 }
```

Command Prompt

```
B.java:22: error: value has private
System.out.print(r
^
```

```
2 errors
```

```
C:\Users\WIN10\Desktop>javac B.java
```

```
C:\Users\WIN10\Desktop>java B
```

```
100
```

```
C:\Users\WIN10\Desktop>javac B.java
```

```
C:\Users\WIN10\Desktop>javac B.java
```

