

V.V.I

interface

Page No. : _____

Date : / /

Q. What is interface? full explanation.

Ans → Interface is just like a class, which contains Only abstract method.

To achieve interface java provides a keyword called 'implements'.

Note :- i) Interface methods are by default public & abstract.

interface definition
S

SUBSCRIBE

To achieve interface Java provides a keyword called `implements`.

Note:- i) Interface methods are by default public & abstract.

interface client
s

. void. mill,

ii) Interface Variables are by default public + static + final. ?

iii) Interface method must be overidden inside the implementing

iv) Interface nothing

ii) Interface Variables are by default public + static + final. $\{ \text{int } a \}$

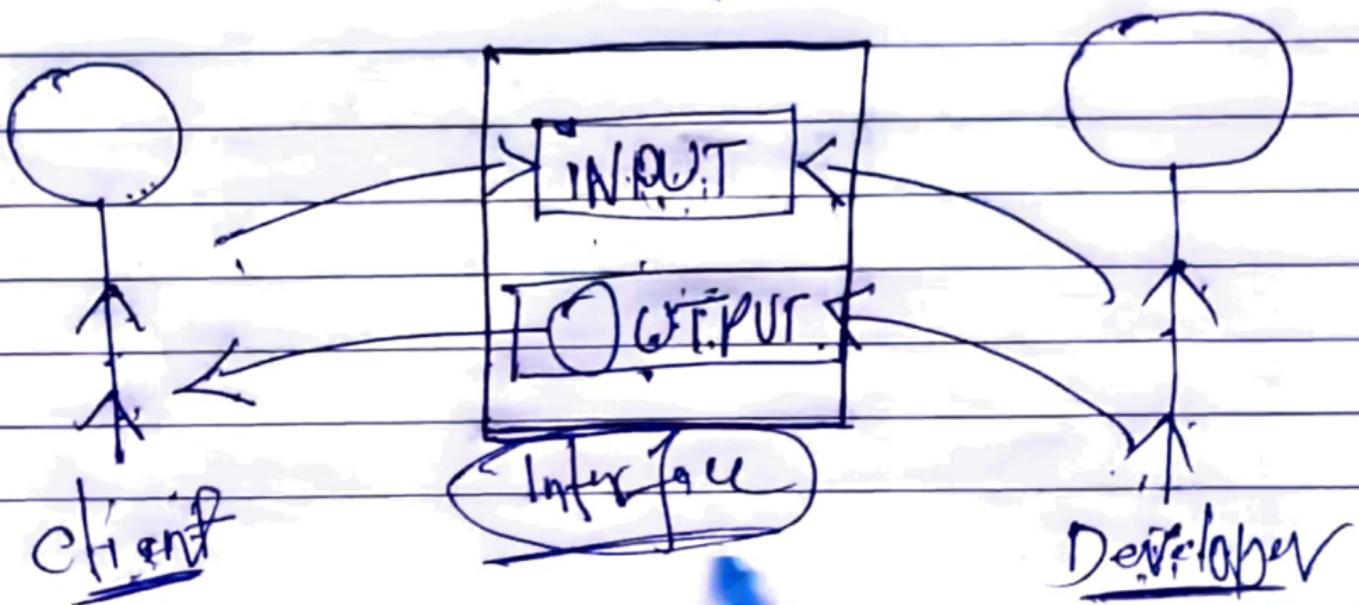
iii) Interface method must be overridden inside the implementing classes.

iv) Interface nothing but deals between client & developer.



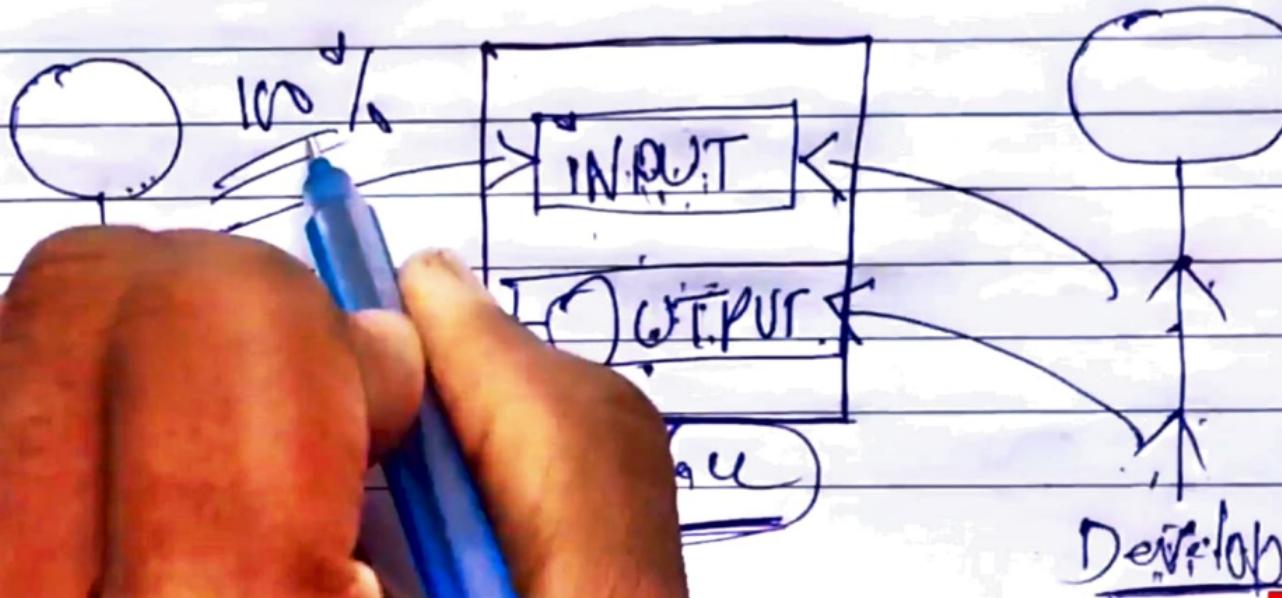
iii) Interface method must be overridden inside the implementing classes.

iv) Interface nothing but deals between client & developer.



iii) Interface method must be overridden inside the implementing class.

iv) Interface nothing but deals between client & developer.



SUBSCRIBE

Raju.java

```
1  /* interface introduction */  
2  import java.util.Scanner;  
3  interface client  
4  {  
5      void input(); //public+abstract  
6      void output(); //public+abstract  
7  }  
8  class Raju implements client  
9  {  
10     String name; double sal;  
11     void input()  
12     {  
13         Scanner r=new Scanner(System.in);  
14         System.out.println("Enter Username: ");  
15         name=r.nextLine();  
16     }  
17 }
```



```
Raju.java
  void output(); //pure interface
7 }
8 class Raju implements client
9 {
10     String name; double sal;
11     void input()
12     {
13         Scanner r=new Scanner(System.in);
14         System.out.println("Enter Username: ");
15         name=r.nextLine();
16
17         System.out.println("Enter Salary: ");
18         sal=r.nextDouble();
19     }
20     void output()
21     {
22         s
23     }
24 }
```

```
1          /* interface introduction */  
2 import java.util.Scanner;  
3 interface client  
4 {  
5     void input();//public+abstract  
6     void output();//public+abstract  
7 }  
8 class Raju implements client  
9 {  
10    String name; double sal;  
11    void input()  
12    {  
13        Scanner r=new Scanner(System.in);  
14        System.out.println("Enter Username: ");  
15        name=r.nextLine();  
16  
17        System.out.println("Enter Salary: ");  
18        sal=r.nextDouble();  
19    }  
20    void output()  
21    {  
22        System.out.println(name+" "+sal);  
23    }  
24    public static void main(String[] args) {  
25        client c=new Raju();  
26        c.input(); c.output();  
27    }  
}
```

Command Prompt

C:\Users\WIN10\Desktop>



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84 08:43 Tab Size: 4 Java
19-02-2021 ENG 1

```
C:\Users\WIN10\Desktop>javac Raju.java
Raju.java:20: error: output() in Raju cannot implement output() in client
    void output()
        ^
attempting to assign weaker access privileges; was public
Raju.java:11: error: input() in Raju cannot implement input() in client
    void input()
        ^
attempting to assign weaker access privileges; was public
2 errors

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



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08:44 19-02-2021

Raju.java

```
4 {
5     void input(); //public+abstract
6     void output(); //public+abstract
7 }
8 class Raju implements client
9 {
10    String name; double sal;
11    public void input()
12    {
13        Scanner r=new Scanner(System.in);
14        System.out.println("Enter Username: ");
15        name=r.nextLine();
16
17        System.out.println("Enter Salary: ");
18        sal=r.nextDouble();
19    }
20    public void output()
21    {
22        System.out.println(name+" "+sal);
23    }
}
```

Command Prompt

blic
2 errors

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

C:\Users\WIN10\Desktop>



```
4 {
5     void input(); //public+abstract
6     void output(); //public+abstract
7 }
8 class Raju implements client
9 {
10    String name; double sal;
11    public void input()
12    {
13        Scanner r=new Scanner(System.in);
14        System.out.println("Enter Username: ");
15        name=r.nextLine();
16
17        System.out.println("Enter Salary: ");
18        sal=r.nextDouble();
19    }
20    public void output()
21    {
22        System.out.println(name+" "+sal);
23    }
}
```

Command Prompt

blic
2 errors

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

C:\Users\WIN10\Desktop>java Raju
Enter Username:
ankit
Enter Salary:
50000.345
ankit 50000.345

C:\Users\WIN10\Desktop>

```
1      /* interface introduction */
2  import java.util.Scanner;
3  interface client
4  {
5      void input(); //public+abstract
6      void output(); //public+abstract
7  }
8  class Raju implements client
9  {
10     String name; double sal;
11     public void input()
12     {
13         Scanner r=new Scanner(System.in);
14         System.out.println("Enter Username: ");
15         name=r.nextLine();
16
17         System.out.println("Enter Salary: ");
18         sal=r.nextDouble();
19     }
20     public void output()
21     {
22         System.out.println(name+" "+sal);
23     }
24     public static void main(String[] args) {
25         client c=new Raju();
```

Select Command Prompt

blic

2 errors

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

C:\Users\WIN10\Desktop>java Raju

Enter Username:

ankit

Enter Salary:

50000.345

ankit 50000.345

C:\Users\WIN10\Desktop>

```
1      /* Interface Variables */
2 interface customerRaj
3 {
4     int amt; // public + static + final
5     void purchase(); // public + abstract
6 }
7 class sellerSanju
8 {
9     @Override
10    public void purchase()
11    {
12        System.out.println("Raj needs "+amt+" Kg rice");
13    }
14 }
15 class Check
16 {
17     public static void main(String[] args) {
18         customerRaj c=new sellerSanju();
19     }
20 }
```

```
1          /* Interface Variable  
2 interface customerRaj  
3 {  
4     int amt=5; // public + static + final  
5     void purchase(); // public + abstract  
6 }  
7 class sellerSanju  
8 {  
9     @Override  
10    public void purchase()  
11    {  
12        System.out.println("Raj needs "+amt+" 3 errors  
13    }  
14 }  
15 class Check  
16 {  
17     public static void main(String[] args) {  
18         customerRaj c=new sellerSanju();  
19         c.purchase();  
20     }  
21 }
```

```
Command Prompt  
Check.java:12: error: cannot find symbol  
                                System.out.println("Raj n  
g rice");  
  
                                symbol:   variable amt  
                                location: class sellerSanju  
Check.java:18: error: incompatible types:  
annot be converted to customerRaj  
                                customerRaj c=new sellerS  
                                ^  
C:\Users\WIN10\Desktop>
```

```
1  /*  
2  interface customerRaj  
3  {  
4      int amt=5; // public +  
5      void purchase(); // Intent a method from a supertype  
6  }  
7  class sellerSanju  
8  {  
9      @Override  
10     public void purchase() {  
11         System.out.println("Raj needs "+amt+" Kgs of rice");  
12     }  
13 }  
14 }  
15 class Check  
16 {  
17     public static void main(String[] args) {  
18         customerRaj c=new sellerSanju();  
19         c.purchase();  
20     }  
}
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>javac Check.java  
Check.java:9: error: method does not override or implement  
void purchase(); // Intent a method from a supertype  
                           ^  
Check.java:12: error: cannot find symbol  
System.out.println("Raj needs "+amt+" K  
                           ^  
symbol:   variable amt  
location: class sellerSanju  
Check.java:18: error: incompatible types: sellerSanju c  
          ^
```

```
1          /* Interface Variables */  
2 interface customerRaj  
3 {  
4     int amt=5; // public + static + final  
5     void purchase(); // public + abstract  
6 }  
7 class sellerSanju implements customerRaj  
8 {  
9     @Override  
10    public void purchase()  
11    {  
12        amt=7;  
13        System.out.println("Raj needs "+amt+" Kg rice");  
14    }  
15 }  
16 class Check  
17 {  
18     public static void main(String[] args) {  
19         customerRaj c=new sellerSanju();  
20         c.purchase();  
21     }  
22 }
```

Select Command Prompt

C:\Users\WIN10\Desktop>javac

C:\Users\WIN10\Desktop>java C
Raj needs 5 Kg riceC:\Users\WIN10\Desktop>javac
Check.java:12: error: cannot
variable amtamt=7;
^

1 error

C:\Users\WIN10\Desktop>

Check.java

```
1      /* Interface Variables */
2  interface customerRaj
3  {
4      int amt=5; // public + static + final
5      public abstract void purchase(); // public + abstract
6  }
7  class sellerSanju implements customerRaj
8  {
9      @Override
10     public void purchase()
11     {
12         //amt=5 final
13         System.out.println("Raj needs "+amt+" Kg rice");
14     }
15 }
16 class Check
17 {
18     public static void main(String[] args) {
19         customerRaj c=new sellerSanju();
20         c.purchase();
```

Check.java

```
1      /* Interface Variables */
2 interface customerRaj
3 {
4     int amt=5; // public + static + final
5     public abstract void purchase(); // public + abstract
6 }
7 class sellerSanju implements customerRaj
8 {
9     @Override
10    public void purchase()
11    {
12        //amt=5 final
13        System.out.println("Raj needs "+amt+" Kg rice");
14    }
15 }
16 class Check
17 {
18     public static void main(String[] args) {
19         customerRaj c=new sellerSanju();
20         c.purchase();
```

```
1      /* Interface Variables */
2 interface customerRaj
3 {
4     int amt=5; // public + static + final
5     void purchase(); // public + abstract
6 }
7 class sellerSanju implements customerRaj
8 {
9     @Override
10    public void purchase()
11    {
12        //amt=5 final
13        System.out.println("Raj needs "+amt+" Kg rice");
14    }
15 }
16 class Check
17 {
18     public static void main(String[] args) {
19         customerRaj c=new sellerSanju();
20         c.purchase();
21         System.out.println(customerRaj.amt); //static
22     }
23 }
```

```
1          /* Interface Methods */  
2 interface Client  
3 {  
4     void webdesign(); // public + abstract  
5     void webdevelope(); // public + abstract  
6 }  
7 class RajTech implements Client  
8 {  
9     @Override  
10    void webdesign()  
11    {  
12        System.out.println("Green, top menu, three dot button");  
13    }  
14 }  
15 class Check  
16 {  
17     RajTech r=new RajTech();  
18     r.webdesign();  
19 }
```

```
1      /* Interface Methods */
2 interface Client
3 {
4     void webdesign(); // public + abstract
5     void webdevelop(); // public + abstract
6 }
7 class RajTech implements Client
8 {
9     @Override
10    void webdesign()
11    {
12        System.out.println("Green, top menu");
13    }
14 }
15 class Check
16 {
17     public static void main(String[] args)
18     {
19         RajTech r=new RajTech();
20         r.webdesign();
21     }
22 }
```

Command Prompt

```
Check.java:7: error: RajTech is not abstract
or override abstract method webdevelop() in
class RajTech implements Client
^
Check.java:10: error: webdesign() in RajTech
llement webdesign() in Client
        void webdesign()
                       ^
attempting to assign weaker access privilege
public
2 errors
```

C:\Users\WIN10\Desktop>



```
1      /* Interface Methods */
2 interface Client
3 {
4     void webdesign(); // pu^
5     void webdevelope(); // pu^
6 }
7 class RajTech implements Client
8 {
9     @Override
10    void webdesign()
11    {
12        System.out.println("C")
13    }
14 }
15 class Check
16 {
17     public static void main(String[] args) {
18
19         RajTech r=new RajTech();
20         r.webdesign();
```

Select Command Prompt

Check.java:10: error: webdesign() in RajTech cannot implement webdesign() in Client

void webdesign()
^

attempting to assign weaker access privileges; was public
2 errors

C:\Users\WIN10\Desktop>



```
1          /* Interface Methods */
2 interface Client
3 {
4     void webdesign(); // public + abstract
5     void webdevelop(); // public + abstract
6 }
7 abstract class RajTech implements Client
8 {
9     @Override
10    public void webdesign()
11    {
12        System.out.println("Green, top menu, three dot button");
13    }
14 }
15 abstract class RahulTech implements Client
16 {
17     @Override
18     public void webdesign()
19     {
20         System.out.println("Green, top menu, three dot button");
21     }
22 }
```

```
1      /* Interface Methods */  
2  interface Client  
3  {  
4      void webdesign(); // public + abstract  
5      void webdevelop(); // public + abstract  
6  }  
7  abstract class RajTech implements Client  
8  {  
9      @Override  
10     public void webdesign()  
11     {  
12         System.out.println("Green, top menu, three dot button");  
13     }  
14 }  
15 class RahulTech extends RajTech  
16 {  
17     @Override  
18     public void webdesign()  
19     {  
20         System.out.println("Green, top menu, three dot button");  
21     }  
22 }
```



```
4     void webdesign(); // public + abstract
5     void webdevelop(); // public + abstract
6 }
7 abstract class RajTech implements Client
8 {
9     @Override
10    public void webdesign()
11    {
12        System.out.println("Gree
13    }
14 }
15 class RahulTech extends RajTech
16 {
17     @Override
18     public void webdevelop()
19     {
20         System.out.println("HTML
21     }
22 }
23 class Check
24 {
25     public static void main(String[] args) {
```

Command Prompt

2 errors

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

Check.java:7: error: RajTech is not abstract and does not override abstract method webdevelop() in Client
class RajTech implements Client

1 error

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

C:\Users\WIN10\Desktop>

```
1      /* Interface Methods */
2  interface Client
3  {
4      void webdesign(); // public + abstract
5      void webdevelop(); // public + abstract
6  }
7  abstract class RajTech implements Client
8  {
9      @Override
10     public void webdesign()
11     {
12         System.out.println("Green, top menu, three dot button");
13     }
14 }
15 class RahulTech extends RajTech
16 {
17     @Override
18     public void webdevelop()
19     {
20         System.out.println("HTML, CSS, JAVASCRIPT");
21     }
22 }
23 class Check
24 {
25     public static void main(String[] args) {
```

Select Command Prompt

```
Check.java:7: error: RajTech is not
ot override abstract method webdevel
class RajTech implements Client
^
1 error
```

```
C:\Users\WIN10\Desktop>javac Check.j
```

```
C:\Users\WIN10\Desktop>java Check
Green, top menu, three dot button
HTML, CSS, JAVASCRIPT
```

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



```
1      /* Interface Methods */  
2  interface Client  
3  {  
4      void webdesign(); // public + abstract  
5      void webdevelope(); // public + abstract  
6  }  
7  abstract class RajTech implements Client  
8  {  
9      @Override  
10     public void webdesign()  
11     {  
12         System.out.println("Green, top menu, three dot button");  
13     }  
14 }  
15 class RahulTech extends RajTech  
16 {  
17     @Override  
18     public void webdevelope()  
19     {  
20         System.out.println("HTML, CSS, JAVASCRIPT");  
21     }  
22 }
```



```
Check.java  ×  
1  /* Interface Methods */  
2  interface Client  
3  {  
4      void webdesign(); // public + abstract  
5      void webdevelop(); // public + abstract  
6  }  
7  abstract class RajTech implements Client  
8  {  
9      @Override  
10     public void webdesign()  
11     {  
12         System.out.println("Green, top menu, three dot button");  
13     }  
14 }  
15 class RahulTech extends RajTech  
16 {  
17     @Override  
18     public void webdevelop()  
19     {  
20         System.out.println("HTML, CSS, JAVASCRIPT");  
21     }  
22 }  
23 class Check  
24 {  
25     public static void main(String[] args) {  
26           
27         RahulTech r=new RahulTech();  
28         r.webdesign();  
29         r.webdevelop();  
30     }  
31 }
```

5 lines, 89 characters selected

Tab Size: 4

Java



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19:23
22-02-2021

MULTIPLE INHERITANCE

Q. multiple inheritance using interface ?

Ans → We can achieve multiple inheritance through interfaces because interface contains only abstract method, which implementation is provided by the sub classes.

Note:- class C extends A, B

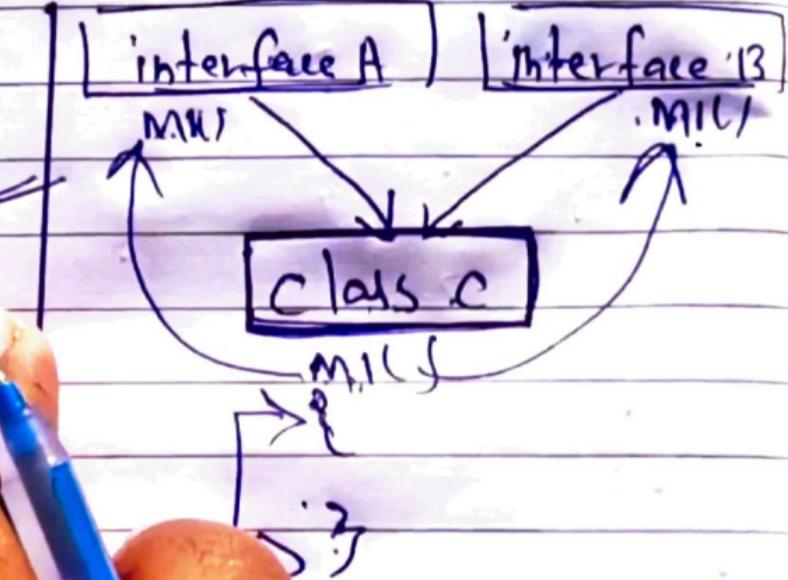
class C implements



only abstract methods, which implementation
is provided by the sub classes.

Note:- class C extends A, B ✗

class C implements A, B ✓



```
1      /* Multiple Inheritance */
2  class A
3  {
4      void show()
5      {
6          System.out.println("This is class A");
7      }
8  }
9  class B
10 {
11     void show()
12     {
13         System.out.println("This is class B");
14     }
15 }
16 class Multiple extends A,B
17 {
18     public static void main(String[] args) {
19         Multiple m=new Multiple();
20         m.show();
```

Multiple.java

```
4     void show()
5     {
6         System.out.println("This is class A");
7     }
8 }
9 class B
10 {
11     void show()
12     {
13         System.out.println("This is class B");
14     }
15 }
16 class Multiple extends A,B
17 {
18     public static void main(String args[])
19     {
20         Multiple m=new Multiple();
21         m.show();
22     }
23 }
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>javac Multiple.java
Multiple.java:16: error: '{' expected
class Multiple extends A,B
                           ^
1 error
C:\Users\WIN10\Desktop>
```



Type here to search



```
1      /* Multiple Inheritance */  
2  interface A  
3  {  
4      void show();  
5  }  
6  interface B  
7  {  
8      void show();  
9  }  
10 class Multiple implements A,B  
11 {  
12     void show()  
13     {  
14         System.out.println("Interface A & B");  
15     }  
16     public static void main(String[] args) {  
17         Multiple m=new Multiple();  
18         m.show();  
19     }  
20 }
```

Multiple.java

```
1      /* Multiple Inheritance */
2  interface A
3  {
4      void show();
5  }
6  interface B
7  {
8      void show();
9  }
10 class Multiple implements A,B
11 {
12     void show()
13     {
14         System.out.println("Int1 error");
15     }
16     public static void main(String[] args)
17     {
18         Multiple m=new Multiple();
19         m.show();
20     }
}
```

Select Command Prompt

1 error

```
C:\Users\WIN10\Desktop>javac Multiple.java
Multiple.java:12: error: show() in Multiple cannot implement show() in A
        void show()
```

^

```
attempting to assign weaker access privileges; was public
```



```
1          /*  Multiple Inheritance */
2 interface A
3 {
4     void show(); // public + abstract
5 }
6 interface B
7 {
8     void show(); // public + abstract
9 }
10 class Multiple implements A,B
11 {
12     public void show()
13     {
14         System.out.println("Interface A & B");
15     }
16     public static void main(String[] args) {
17         Multiple m=new Multiple();
18         m.show();
19     }
20 }
```

Select Command Prompt

```
ement show() in A
    void show()
    ^
attempting to assign weaker access
blic
1 error
```

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

```
C:\Users\WIN10\Desktop>java Multiple
Interface A & B
```

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



```
4     void Show(); // public + abstract
```

```
5 }
```

```
6 interface B
```

```
7 {
```

```
8     void Disp(); // public + abstract
```

```
9 }
```

```
10 class Multiple implements A,B
```

```
11 {
```

```
12     public void Show()
```

```
13     {
```

```
14         System.out.println("Interface A");
```

```
15     }
```

```
16     public void Show()
```

```
17     {
```

```
18         System.out.println("Interface A & B");
```

```
19     }
```

```
20     public static void main(String[] args) {
```

```
21         Multiple m=new Multiple();
```

```
22         m.show();
```

```
23     }
```

Line 14, Column 40

Tab Size: 4

Java

09:33

23-02-2021



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```
7 {
8     void Disp(); // public + abst
9 }
10 class Multiple implements A,B
11 {
12     public void Show()
13     {
14         System.out.println("Inte
15     }
16     public void Disp()
17     {
18         System.out.println("Inte
19     }
20     public static void main(Stri
21         Multiple m=new Multiple(
22             m.Show(); m.Disp();
23     }
24 }
```

Command Prompt

```
C:\Users\WIN10\Desktop>java Multiple
Interface A & B
```

```
C:\Users\WIN10\Desktop>javac Multiple.java
Multiple.java:22: error: cannot find symbol
        m.show(); m.Disp();
                           ^
symbol:   method show()
location: variable m of type Multiple
```

```
1 error
```

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



```
1      /* Extending Interface */
2  interface Gill
3  {
4      void add();
5  }
6  interface Raj extends Gill
7  {
8      void sub();
9  }
10 class Ankit implements Raj
11 {
12     @Override
13     public void add()
14     {
15         int a=10,b=20,c;
16         c=a+b;
17         System.out.println("Addtion "+c);
18     }
19 }
```

```
>Main.java
1  /*  Extending Interface  */
2  interface Gill
3  {
4      void add();
5  }
6  interface Raj extends Gill
7  {
8      void sub();
9  }
10 class Ankit implements Raj
11 {
12     @Override
13     public void add()
14     {
15         int a=10,b=20,c;
16         c=a+b;
17         System.out.println("Addtion "+c);
18     }
19     @Override
20     public void sub()
21     {
22         int a=20,b=10,c;
23         c=a-b;
24         System.out.println("Subtraction "+c);
25     }
26 }
27 class |
```



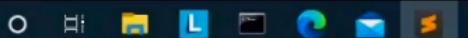
```
2 interface Gill
3 {
4     void add();
5 }
6 interface Raj extends Gill
7 {
8     void sub();
9 }
10 class Ankit implements Raj
11 {
12     @Override
13     public void add()
14     {
15         int a=10,b=20,c;
16         c=a+b;
17         System.out.println("Addtion "+c);
18     }
19     @Override
20     public void sub()
21     {
22         int a=20,b=10,c;
23         c=a-b;
24         System.out.println("Subtraction "+c);
25     }
26 }
```

1 characters selected

Tab Size: 4 Java



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18:58 23-02-2021

```
1          /* Extending Interface */  
2 interface Gill  
3 {  
4     void add();  
5 }  
6 interface Raj extends Gill  
7 {  
8     void sub();  
9 }  
10 class Ankit implements Gill  
11 {  
12     @Override  
13     public void add()  
14     {  
15         int a=10,b=20,c;  
16         c=a+b;  
17         System.out.println("Addtion "+c);  
18     }  
19     @Override  
20     public void sub()  
21     {  
22         int a=20,b=10,c;  
23         c=a-b;  
24         System.out.println("Subtraction "+c);  
25     }  
}
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>javac Main.java  
Main.java:19: error: method does not override or implement a method from a supertype  
        @Override  
                  ^  
Main.java:31: error: cannot find symbol  
        r.add(); r.sub();  
                           ^  
symbol:   method sub()  
location: variable r of type Gill  
2 errors
```

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



V.V.I interface JDK 1.8

- Before JDK 1.8, interface can only have abstract methods and all the abstract methods of interface must be overridden in implementing class as well as methods are public & abstract by default.

Example:- interface A

Example:-

interface A

{

void a1(); // public + abstract
void a2(); // public + abstract

}

Class B implements A

{

Class C implements A

{

Class D implements A

{

?

?

SUBSCRIBE

Example:-

Interface A

{

void. q1(); // public + abstract
void q2(); // public + abstract
void q3(); // public + abstract

}

class B implements A

{

public void q1()
{
}

}

class C implements A

{

public void q1()
{
}

}

class D implements A

{

q1();
q2();
q3();

}

SUBSCRIBE

example:- interface A.

{

[int. void fun(); } before 1.8V
void disp();]

+

default void show(); } from 1.8V

static void out(); }

}

```
1          /* Interface Default Method (JDK 1.8) */
2 interface A
3 {
4     void a1(); // public + abstract
5     void a2(); // public + abstract
6 }
7 class B implements A
8 {
9     public void a1()
10    {
11         System.out.println("Class B a1()");
12     }
13     public void a2()
14     {
15         System.out.println("Class B a2()");
16     }
17 }
```

```
Main.java
13     public void a2()
14     {
15         System.out.println("Class B a2()");
16     }
17 }
18 class C implements A
19 {
20     public void a1()
21     {
22         System.out.println("Class C a1()");
23     }
24     public void a2()
25     {
26         System.out.println("Class C a2()");
27     }
28 }
29 
```

```
Main.java
35     public void a2()
36     {
37         System.out.println("Class D a2()");
38     }
39 }
40 class Main
41 {
42     public static void main(String[] args)
43     {
44         B b=new B();
45         b.a1(); b.a2();
46         C c=new C();
47         c.a1(); c.a2();
48         D d=new D();
49         d.a1(); d.a2();
50     }
51 }
```

Main.java

```
35     public void a2()
36     {
37         System.out.println("Class D a2()");
38     }
39 }
40 class Main
41 {
42     public static void main(String[] args)
43     {
44         B b=new B();
45         b.a1(); b.a2();
46
47         C c=new C();
48         c.a1(); c.a2();
49
50         D d=new D();
51         d.a1(); d.a2();
52     }
53 }
```

Select Command Prompt

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

C:\Users\WIN10\Desktop>java Main

Class B a1()

Class B a2()

Class C a1()

Class C a2()

Class D a1()

Class D a2()

C:\Users\WIN10\Desktop>



```
1          /* Interface Default Method (JDK 1.8) */
2 interface A
3 {
4     void a1(); // public + abstract
5     void a2(); // public + abstract
6     void a3(); // public + abstract
7 }
8 class B implements A
9 {
10    public void a1()
11    {
12        System.out.println("Class B a1()");
13    }
14    public void a2()
15    {
16        System.out.println("Class B a2()");
17    }
18 }
```

2 characters selected



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08:11 24-02-2021

Tab Size: 4

Java



```
1      /* Interface Default Method (JDK 1.8) */  
2 interface A  
3 {  
4     void a1(); // public  
5     void a2(); // public  
6     void a3(); // public  
7 }  
8 class B implements A  
9 {  
10    public void a1()  
11    {  
12        System.out.println("Class B a1()");  
13    }  
14    public void a2()  
15    {  
16        System.out.println("Class B a2()");  
17    }  
18 }
```

Class D a1()
Class D a2()

Main.java:8: error: B is not abstract and does not override abstract method a3() in A
class B implements A
^

Main.java:19: error: C is not abstract and does not override abstract method a3() in A
class C implements A
^

Main.java:30: error: D is not abstract and does not override abstract method a3() in A
class D implements A
^



```
1      /* Interface Default Method (JDK 1.8) */
2  interface A
3  {
4      void a1(); // public + abstract
5      void a2(); // public + abstract
6
7      default void a3()
8      {
9          System.out.println("may or may not Override in implementing classes");
10     }
11 }
12 class B implements A
13 {
14     public void a1()
15     {
16         System.out.println("Class B a1()");
17     }
18     public void a2()
19     {
20         System.out.println("Class B a2()");
21     }
}
```

```
37     {
38         System.out.println("Class D a1()");
39     }
40     public void a2()
41     {
42         System.out.println("Class D a2()");
43     }
44 }
45 class Main
46 {
47     public static void main(String[] args) {
48         B b=new B();
49         b.a1(); b.a2(); b.a3();
50
51         C c=new C();
52         c.a1(); c.a2(); c.a3();
53
54         D d=new D();
55         d.a1(); d.a2(); id.a3()
56     }
57 }
```

```
4     void a1(); // public + abstract
5     void a2(); // public + ab
6
7     default void a3()
8     {
9         System.out.println("maC:\Users\WIN10\Desktop>java Main
Class B a1()
Class B a2()
may or may not Override in implementing classes
Class C a1()
Class C a2()
may or may not Override in implementing classes
Class D a1()
Class D a2()
may or may not Override in implementing classes
C:\Users\WIN10\Desktop>
10    }
11 }
12 class B implements A
13 {
14     public void a1()
15     {
16         System.out.println("Cl
17     }
18     public void a2()
19     {
20         System.out.println("Class B a2()");
21     }
22 }
23 class C implements A
24 {
```



```
8     {
9         System.out.println("may or may not override in implementing classes");
10    }
11 }
12 class B implements A
13 {
14     public void a1()
15     {
16         System.out.println("Class B a1()");
17     }
18     public void a2()
19     {
20         System.out.println("Class B a2()");
21     }
22     public void a3()
23     {
24         System.out.println("Override in implementing class B");
25     }
26 }
27 class C implements A
28 {
```

```
8      {
9          System.out.println("main() of class A");
10     }
11 }
12 class B implements A
13 {
14     public void a1()
15     {
16         System.out.println("Class B a1()");
17     }
18     public void a2()
19     {
20         System.out.println("Class B a2()");
21     }
22     public void a3()
23     {
24         System.out.println("Override in implementing class B");
25     }
26 }
27 class C implements A
28 {
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>java Main
Class B a1()
Class B a2()
Override in implementing class B
Class C a1()
Class C a2()
may or may not Override in implementing classes
Class D a1()
Class D a2()
may or may not Override in implementing classes
C:\Users\WIN10\Desktop>
```

V.V.I

interface Jdk 1.8

- * From Jdk 1.8 onwards interface can have default & static methods.

Example:- interface A

{

with

m()

}

before 1.8 ✓

m() { }] from 1.8 ✓

m() { }

default & static methods.

Example:- interface A.

{
 ~~void fun();~~ } before 1.8 ✓
 void disp(); }
 +
 {
 ~~default void show();~~ } from 1.8 ✓
 ~~static void out();~~ }

purpose

-public void ↪

public static void show()

2

```
Test.java
1      /* interface static methods */
2  interface A
3  {
4      public static void Show()
5      {
6          System.out.println("can't Override interface static methods");
7      }
8  }
9 class Test
10 {
11     public static void main(String[] args) {
12         A.Show();
13     }
14 }
15
```



```
Test.java *  
1  /* interface static methods */  
2  interface A  
3  {  
4      public static void Show()  
5      {  
6          System.out.println("can't Override interf");  
7      }  
8  }  
9  class Test  
10 {  
11     public static void main(String[] args) {  
12         A.Show();  
13     }  
14 }  
15
```

Select Command Prompt

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

C:\Users\WIN10\Desktop>java Test
can't Override interface static methods

C:\Users\WIN10\Desktop>

```
Test.java
1      /* interface static methods */
2  interface A
3  {
4      public static void Show()
5      {
6          System.out.println("can't Override interface static methods");
7      }
8  }
9  class Demo implements A
10 {
11     @Override
12     public static void Show()
13     {
14         System.out.println("can't Override interface static methods");
15     }
16 }
17 class Test
18 {
19     public static void main(String[] args) {
20         A.Show();
21     }
}
```

```
4  public static void Show()
5  {
6      System.out.println("can't override interface static methods");
7  }
8 }
9 class Demo implements A
10 {
11     @Override
12     public static void Show()
13     {
14         System.out.println("Errors");
15     }
16 }
17 class Test
18 {
19     public static void main(String[] args) {
20         A.Show(); I
21         Demo d=new Demo();
22         d.Show();
23     }
24 }
```

```
Test.java
7     }
8 }
9 class Demo implements A
10 {
11     @Override
12     public static void ShcC:\Users\WIN10\Desktop>javac Test.java
13     {
14         System.out.println
15     }
16 }
17 class Test
18 {
19     public static void maiA.Show();           1 error
20         Demo d=new Demo();
21         d.Show();
22     }
23 }
24 }
25 }
```

Select Command Prompt
C:\Users\WIN10\Desktop>javac Test.java
can't Override interface static methods
C:\Users\WIN10\Desktop>java Test
Test.java:11: error: static methods cannot be annotated
with @Override
 @Override
 ^
C:\Users\WIN10\Desktop>

```
1      /* interface static methods */
2  interface A
3  {
4      public static void Show()
5      {
6          System.out.println("can't Override interface");
7      }
8  }
9  class Demo implements A
10 {
11     @Override
12     public static void Show()
13     {
14         System.out.println("Errors");
15     }
16 }
17 class Test
18 {
19     public static void main(String[] args) {
20         A.Show();
21         Demo d=new Demo();
```

```
C:\Users\WIN10\Desktop>javac Test.java
Test.java:11: error: static methods can
with @Override
        @Override
                  ^
1 error

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

```
Test.java
```

```
/* interface static methods */
1 interface A
2 {
3     public static void Show()
4     {
5         System.out.println("can't Override interface static");
6     }
7 }
8 class Demo implements A
9 {
10    @Override
11    public static void Show()
12    {
13        System.out.println("Errors");
14    }
15 }
16 class Test
17 {
18     public static void main(String[] args) {
19         A.Show();
20         Demo d=new Demo();
21     }
22 }
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>javac Test.java
Test.java:11: error: static method Show() in interface A cannot be
overridden by a non-static method in class Demo
        @Override
        ^
1 error
```

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



Testjava

```
1      /* interface static methods */
2  interface Test
3  {
4      public static void main(String[] args) {
5          System.out.println("Learn Coding");
6      }
7  }
8
9
10
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>javac Test.java
Test.java:11: error: static methods can't be annotated with @Override
        @Override
                  ^
1 error
```

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



Test.java

```
1      /* interface static methods */
2  interface A
3  {
4      public static void Show()
5      {
6          System.out.println("can't Override interface static methods");
7      }
8  }
9  class Demo implements A
10 {
11     @Override
12     public static void Show()
13     {
14         System.out.println("Errors");
15     }
16 }
17 class Test
18 {
19     public static void main(String[] args) {
20         A.Show();
21         Demo d=new Demo();
```

12 characters selected



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Tab Size: 4

Java

08:13

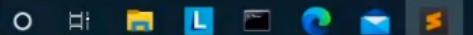
25-02-2021

C:\Users\WIN10\Desktop\Test.java • - Sublime Text (UNREGISTERED) File Edit Selection Find View Goto Tools Project Preferences Help

```
Test.java
1      /* interface static methods. */
2  interface A
3  {
4      public static void Show()
5      {
6          System.out.println("can't Override interface static methods");
7      }
8  }
9 class Test
10{
11    public static void main(String[] args) {
12        A.Show();
13    }
14}
15
```

Line 12, Column 18

 Type here to search



88 8 8 ENG 08:14 25-02-2021

~~V.V.I~~

interface JDK 1.9

- From JDK 1.9 onwards interface can have private methods also, and we can declare this private method as a static or non-static.

Ex->1) interface A

(Before 1.8 v)

();

;

non-static .

Ex-> i) interface A (Before 1.8 v)

```
void m1(); // public + abstract  
int a=10;  
{
```

ii) interface (After 1.8 v)

```
vo  
in  
+  
de
```

SUBSCRIBE

Ex-> i) interface A (Before 1.8 v)

19/5/2014

```
void m1(); // public + abstract  
int a=10; // public + static + final  
{  
}
```

ii) interface A (From 1.8 v)

```
void m1();  
int a=10;  
+  
default void m2();  
static void m3()  
{  
}
```

SUBSCRIBE

ii) interface A (From 1.8 v)

Void m1();

int a=10;

+

default void m2(); }
static void m3(); }

}

SUBSCRIBE

③ iii) interface A (from 1.9 V)

{

void m1(); 1.7 V

int a=10;
+

default void m2(); } 1.8 V

static void m3(); }
+

private void m4(); }

}

SUBSCRIBE

⑥ iii) Interface A (from 1.9V)

```
void m1(); 1.7V  
int a=10;  
+  
default void m2(); } 1.6V  
static void m3(); }  
+  
private void m4(); } 1.9V
```

}

```
1          /* Interface Private Method */  
2 interface A  
3 {  
4     private void add(int x,int y)  
5     {  
6         System.out.println("Sum of Two Numbers: "+(x+y));  
7     }  
8 }  
9 class B implements A  
10 {  
11     public void sub(int x,int y)  
12     {  
13         System.out.println("Sub of Two Numbers: "+(x-y));  
14     }  
15 }  
16 class Test  
17 {  
18     public static void main(String[] args) {  
19         B b=new B();  
20     }  
21 }
```



Test.java

```
1      /* Interface Private Method */  
2  interface A  
3  {  
4      private void add(int x,int y) -  
5      {  
6          System.out.println("Sum of Two Numbers: "  
7      }  
8  }  
9  class B implements A  
10 {  
11     public void sub(int x,int y)  
12     {  
13         System.out.println("Sub of Two Numbers: '  
14     }  
15 }  
16 class Test  
17 {  
18     public static void main(String[] args) {  
19         B b=new B();  
20         b.add(20,10);  b.sub(200,100);  
21     }  
22 }
```

Command Prompt - javac Test.java

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

Test.java

```
/* Interface Private Method */  
interface A  
{  
    private void add(int x,int y)  
    {  
        System.out.println("Sum of Two  
    }  
}  
class B implements A  
{  
    public void sub(int x,int y)  
    {  
        System.out.println("Sub of Two  
    }  
}  
class Test  
{  
    public static void main(String[] args)  
    {  
        B b=new B();  
        b.add(20,10); b.sub(200,100);  
    }  
}
```

Select Command Prompt

```
C:\Users\WIN10\Desktop>javac Test.java  
Test.java:20: error: cannot find symbol  
    b.add(20,10); b.sub(200,100);  
          ^
```

```
symbol:   method add(int,int)  
location: variable b of type B  
1 error
```

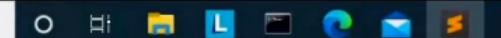
```
C:\Users\WIN10\Desktop>
```



Test.java

```
1      /* Interface Private Method */  
2  interface A  
3  {  
4      default void call()  
5      {  
6          add(10,20);  
7      }  
8      private void add(int x,int y)  
9      {  
10         System.out.println("Sum of Two Numbers: "+(x+y));  
11     }  
12 }  
13 class B implements A  
14 {  
15     public void sub(int x,int y)  
16     {  
17         System.out.println("Sub of Two Numbers: "+(x-y));  
18     }  
19 }  
20 class Test  
21 {  
22     public static void main(String[] args) {
```

```
Test.java
1      /* Interface Private Method */
2  interface A
3  {
4      default void call()
5      {
6          add(10,20)
7      }
8      private void add(int x,int y)
9      {
10         System.out.println("Sum of Two Numbers: "+(x+y));
11     }
12 }
13 class B implements A
14 {
15     public void sub(int x,int y)
16     {
17         System.out.println("Sub of Two Numbers: "+(x-y));
18     }
19 }
20 class Test
21 {
22     public static void main(String[] args) {
23         B b=new B();
24         b.call(); b.sub(200,100);
25     }
26 }
```



```
Test.java
1      /* Interface Private Method */
2 interface A
3 {
4     default void call()
5     {
6         add(10,20);
7     }
8     private void add(int x,int y)
9     {
10        System.out.println("Sum of Two Numbers: " + (x+y));
11    }
12 }
13 class B implements A
14 {
15     public void sub(int x,int y)
16     {
17         System.out.println("Sub of Two Numbers: " + (x-y));
18     }
19 }
20 class Test
21 {
22     public static void main(String[] args) {
23         B b=new B();
24     }
25 }
```

C:\Users\WIN10\Desktop>java Test
Sum of Two Numbers: 30
Sub of Two Numbers: 100



```
Test.java
1          /* Interface Private Method */
2 interface A
3 {
4     public static void call()
5     {
6         add(10,20);
7     }
8     private static void add(int x,int y)
9     {
10        System.out.println("Sum of Two Numbers: "+(x+y));
11    }
12 }
13 class B implements A
14 {
15     public void sub(int x,int y)
16     {
17         System.out.println("Sub of Two Numbers: "+(x-y));
18     }
19 }
20 class Test
21 {
22     public static void main(String[] args) {
23         B b=new B();
```



```
Test.java
1      /* Interface Private Method */
2  interface A
3  {
4      public static void call()
5      {
6          add(10,20);
7      }
8      private static void add(int x,int y)
9      {
10         System.out.println("Sum of Two Numbers: "+(x+y));
11     }
12 }
13 class B implements A
14 {
15     public void sub(int x,int y)
16     {
17         System.out.println("Sub of Two Numbers: "+(x-y));
18     }
19 }
20 class Test
21 {
22     public static void main(String[] args) {
23         B b=new B();
24         A.call(); b.sub(200,100);
25     }
26 }
```

Command Prompt

```
C:\Users\WIN10\Desktop>java Test
Sum of Two Numbers: 30
Sub of Two Numbers: 100
```

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

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