

Abstraction in Java

- **Abstraction** is one of the four pillars of OOP Concept.
- **Abstraction** is a process of hiding the implementation details and showing only functionality to the user.
- In java Abstraction is achieved by using abstract class and interface.
- Abstract class and interface are something which is not concrete or incomplete.

Ways to achieve Abstraction

There are two ways to achieve abstraction in java:

- **Abstract class (0 to 100%)**
- **Interface (100%)**

Abstract class in Java

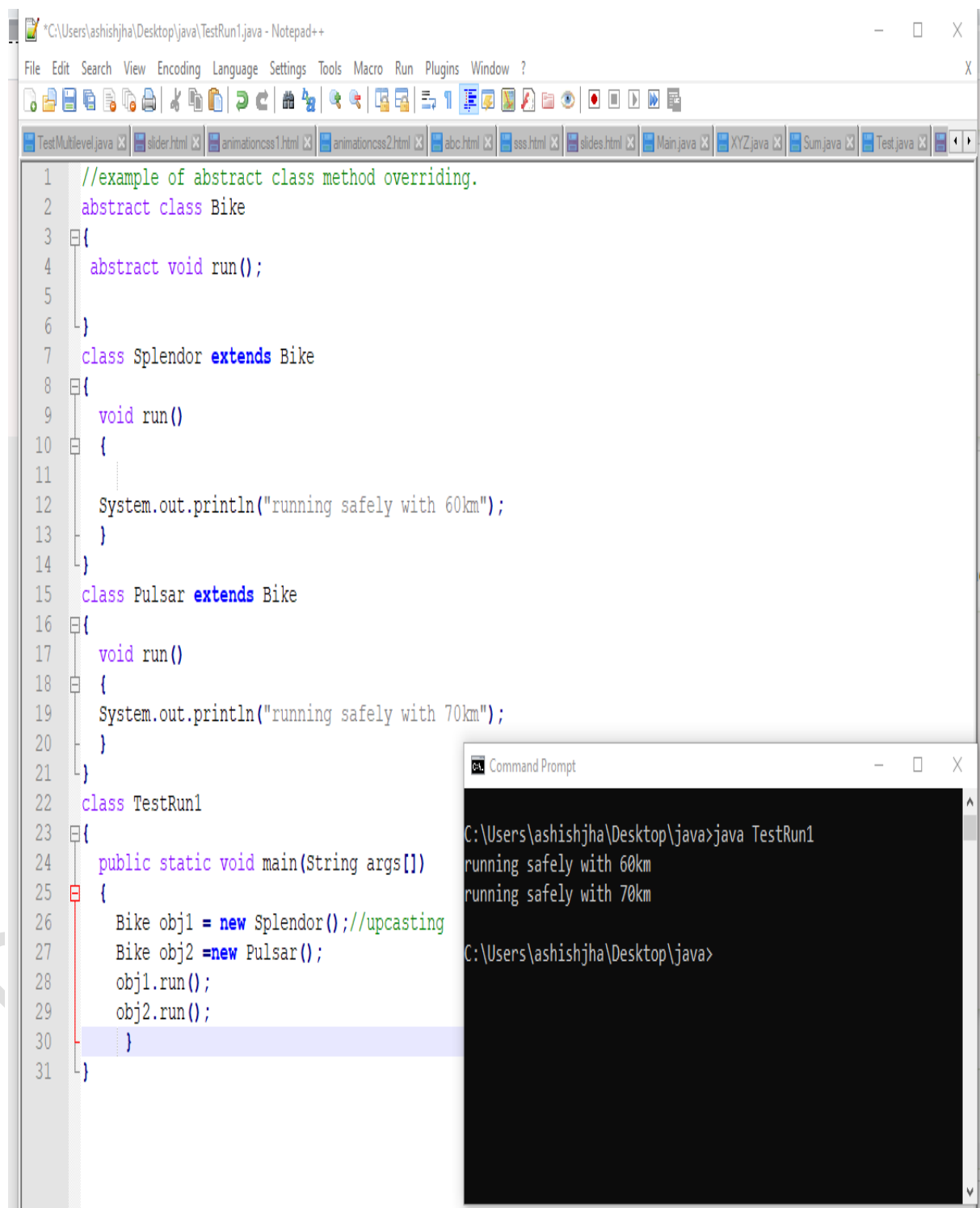
- A class which is declared as abstract is known as an abstract class.
- It can have abstract and non-abstract methods.
- It needs to be extended and its method implemented.
- It cannot be instantiated.

Syntax:

```
abstract class Classname
{
    abstract type methodname(); //only declaration

    type methodname()
    {
        //Body
    }
}
```

Example:



The image shows a Notepad++ window with the following Java code:

```
1 //example of abstract class method overriding.
2 abstract class Bike
3 {
4     abstract void run();
5 }
6
7 class Splendor extends Bike
8 {
9     void run()
10    {
11        System.out.println("running safely with 60km");
12    }
13 }
14
15 class Pulsar extends Bike
16 {
17     void run()
18    {
19        System.out.println("running safely with 70km");
20    }
21 }
22
23 class TestRun1
24 {
25     public static void main(String args[])
26     {
27         Bike obj1 = new Splendor();//upcasting
28         Bike obj2 =new Pulsar();
29         obj1.run();
30         obj2.run();
31     }
32 }
```

The Command Prompt window shows the output of the program:

```
C:\Users\ashishjha\Desktop\java>java TestRun1
running safely with 60km
running safely with 70km
C:\Users\ashishjha\Desktop\java>
```

Abstract classes and Abstract methods for important points:

- An abstract class is a class that is declared with abstract keyword.
- An abstract method is a method that is declared without an implementation.
- An abstract class may or may not have all abstract methods. Some of them can be concrete methods
- A method defined abstract must always be redefined in the subclass, thus making overriding compulsory OR either make subclass itself abstract.
- Any class that contains one or more abstract methods must also be declared with abstract keyword.
- There can be no object of an abstract class. that is, an abstract class can not be directly instantiated with the new operator.
- An abstract class can have parametrized constructors and default constructor is always present in an abstract class.