Understanding Java Abstraction

Abstraction:

“Abstraction is a process of hiding the implementation details and showing only functionality to the user”.

Another way, it shows only important things to the user and hides the internal details for example sending a WhatsApp message, we just type the text and send the message. We don't know the internal processing about the message delivery. Abstraction lets you focus on what the object does instead of how it does it.

Ways to achieve ‘Abstraction’:

- In general there are two ways to achieve Abstraction:

✓Abstract class (0 to 100%)

✓Interface (100%)

Understanding ‘Abstract Method’

- An abstract method should end with semi colon(;).
- It should not have any method body (or) method implementation.
- An abstract method should be over ridden to provide implementation.
- If we can’t inherit a method that method can’t be an abstract method.

Syntax

```
abstract return_type <method_name>();//no braces{}
```

Understanding ‘Abstract Class’

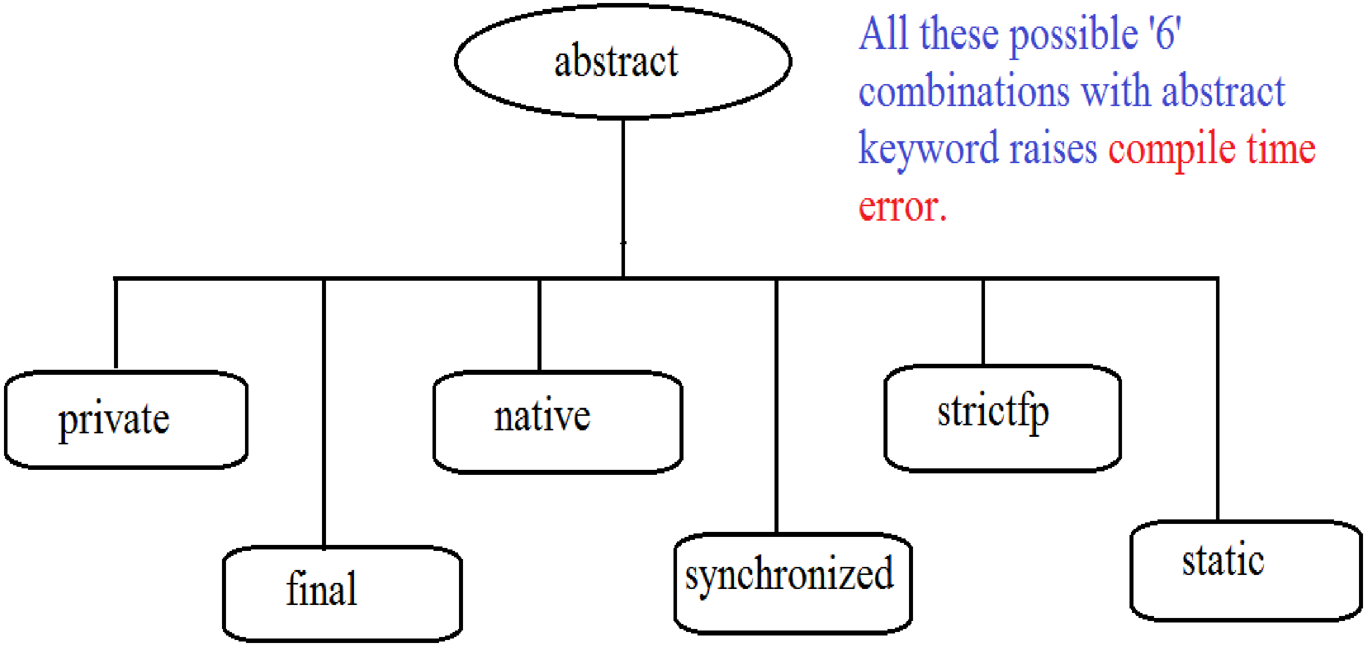
- A class that is declared as abstract is known as **abstract class**.

  abstract class <class_name>{}

- It needs to be extended for its methods (abstract) implemented.
- Abstract class cannot be instantiated, i.e. we can’t create an object for the abstract class either directly or indirectly.
- An abstract class can have data member, abstract method, method body, constructor and even main() method.

- If there is any abstract method in a class, that class must be abstract.
- If you are extending any abstract class that have abstract method, you must either provide the implementation of the method or make this class abstract.
- Abstract Class can have one or none abstract methods.
- Variables, blocks & Constructors can’t be declared as abstract.

Invalid combinations with ‘abstract’



abstract

private

final

native

synchronized

strictfp

static

All these possible '6' combinations with abstract keyword raises compile time error.

Questions on Abstract Class

- Can abstract class have constructors?
- Can abstract class be final in Java?
- Can you create instance of abstract class?
- Abstract class must have only abstract methods.(T/F)?
- Can abstract class contains main method in Java?
- Can main method be abstract?
- Is it compulsory for a class which is declared as abstract to have at least one abstract method?
- Can we use “abstract” keyword with constructor?

- Can we instantiate a class which does not have even a single abstract methods but declared as abstract?
- Can we use public, protected and default modifiers with abstract method?
- Can we declare abstract method In Non-abstract class?
- Can there be any abstract method without abstract class?