Introduction to JAVA Programming

Rathindra Nath Dutta

Junior Research Fellow
Advanced Computing & Microelectronics Unit
Indian Statistical Institute, Kolkata

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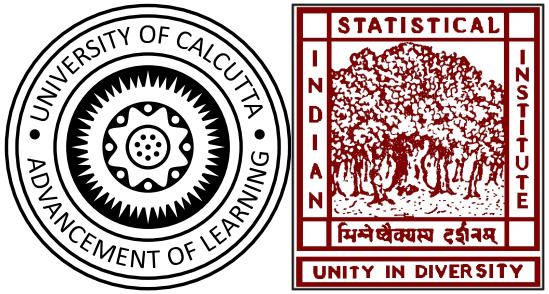

Outline

Inheritance

- A way to incorporate and extend the definition of one class(*superclass*) into another class(*subclass*)
- Hierarchical definition of classes reduces code size and makes it more manageable
- The `extends` keyword is used to inherit a class in Java

```
class BaseClass {
    //class body
}
```

```
class DerivedClass extends BaseClass {
    //class body
}
```

- Java does not allow mutiple inheritance: multiple superclasses inherited into a single subclass
- Multilevel inheritance is allowed
- All inheritable members (both data & methods) of base class are visible in the derived class
- A class declared as `final` cannot be inherited

Method Overriding

- If a method in a subclass has identical name and signature to some method in its superclass, then the method definition in the subclass *overrides* the method definition provided in the superclass
- Note that, if only method names are identical but the signatures are different, then method overloading happens, and both of them stays visible in derived class
- The older(superclass) definition gets suppressed by the newer(subclass) definition - normal invocations will execute the newer definition!

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- Question: can we access base class version of a method?

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- We can invoke a constructor of the immediate superclass by calling `super(args)`
- The call to the superclass constructor must always be the first statement executed inside a subclass constructor
- When we don't explicitly write a `super(args)` statement, Java implicitly calls the default parameterless constructor of the parentclass
- In case of multilevel hierarchy the execution of constructor calls is same as order of derivation

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- The new members introduced `DerivedClass` cannot be directly accessed without an explicit typecasting
- In case of overridden members, the derived class version gets attended
- We can call an overridden method though a base class variable holding reference of a derived class object

To be continued...