CS5000: Foundations of Programming

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Abstract classes

- An abstract class contains abstract methods
- Abstract method
  - The method has a head, but no method body
  - The method is implemented in the subclass.
- Postpone the definition of a method until a subclass is defined
Abstract classes

- For example, sort classes
  - variables and methods in common
  - Different algorithms in a sort method

Diagram:

```
Sort
  └── Selection Sort
  └── Insertion Sort
  └── Bubble Sort
  └── Quick Sort
```
Abstract Methods

- Define methods without method body
- Cannot be private
- Use ‘abstract’ modifier in its both class and method heading

```java
public abstract class ClassName
{
    public abstract void methodName(...);
}
```
Abstract classes

- Cannot instantiate, but only can be sub-classed
- If a derived class of an abstract class adds to or does not define all of the abstract methods, then it is abstract class too (but with abstract modifier)
Abstract classes

- An object of an abstract class cannot be created
- However, the abstract class can be used a reference variable