Recitation I: OOP Review

Tags	
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Object-Oriented Programming (OOP)

Reference: Chaper 2 of Goodrich

- Motivation
  - Modularity & Reusability
  - Encapsulation & Data Protection
  - Abstraction & code management
- Inheritance
  - Basic definitions
    - Inherit fields and methods from other classes
  - Access modifier
    - public:

      accessible by other classes
    - private:

      only internally accessible by the current class, excluding the children class
    - protected

      not accessible by other classes, but it is accessible by children class
  - Polymorphism
    - Dog is a subclass of Animal. Then the following is allowed

```
/*
Animal:
- feed

Dog:
- bark
- feed
*/

Animal ani = new Dog();
ani.feed(); // Correct
// ani.bark(); // Compile-time error
```

    - Dynamical dispatch
        - Following the previous example, at runtime, the method of the child class will be invoked

```
// Dog.feed will be called, even if
// ani is a class of Animal
ani.feed();
```

- Interface & Abstraction
    - Interface
        - By implementing an interface, the class needs to implement the methods of that interface
    - Abstraction
        - Abstract class can define abstract methods, which must be implemented by the child class (unless the child class is also abstract).
        - Abstract class cannot be instantiated.
- Exception
    - try and catch blocks to catch the exceptions thrown by the system.