Interface Segregation Principle

CSCI 2300

Object Oriented Design Principles Review

- Single Responsibility Principle (SRP)
  - Responsible to a single "user"
  - Single reason to change
- Liskov Substitution Principle (LSP)
  - Child class is a Parent class
  - Child class is **substitutable** for a parent class
- Open-Closed Principle (OCP)
  - Functionality can be extended without modifying the original code
  - Open for extension, closed for modification

Examples from your designs

- Examples of SRP, LSP, and OCP
- Examples of violations of SRP, LSP, and OCP
- Blackjack
  - Play against dealer
  - Play against dealer with another computer player
  - Review class diagram
- Battleship
  - Play against computer
  - Each player has 3 ships

Interface Segregation Principle (ISP)

- Clients should not be forced to depend on methods they do not use
- Clients should not implement methods if those methods are unused.

ISP Violation

```
public interface IMembership
{
  boolean Login(string username, string password);
  void Logout(string username);
  Guid Register(string username, string
                password, string email);
  void ForgotPassword(string username);
}
```

Improved Design

```
public interface ILogin
{
  boolean Login(String username, String password);
  void Logout(String username);
}

public interface IMembership extends ILogin
{
  Guid Register(String username, String password,
                String email);
  void ForgotPassword(string username);
}
```

```
public interface Movable{
   public void move();
   public void setSpeed(int speed);
}
```

```
public class Picture implements Movable{
   public void move()
   {
      // code for moving a
      //picture across the screen
   }
   public void setSpeed(int speed){return;}
}
```

A. This code violates ISP because Picture class has a “dummy” implementation of setSpeed()
B. This code violates ISP because Movable interface has more than one method
C. This code violates ISP because we should be able to control the speed at which Picture moves across the screen
D. This code does not violate ISP

ISP Design Principle Exersise