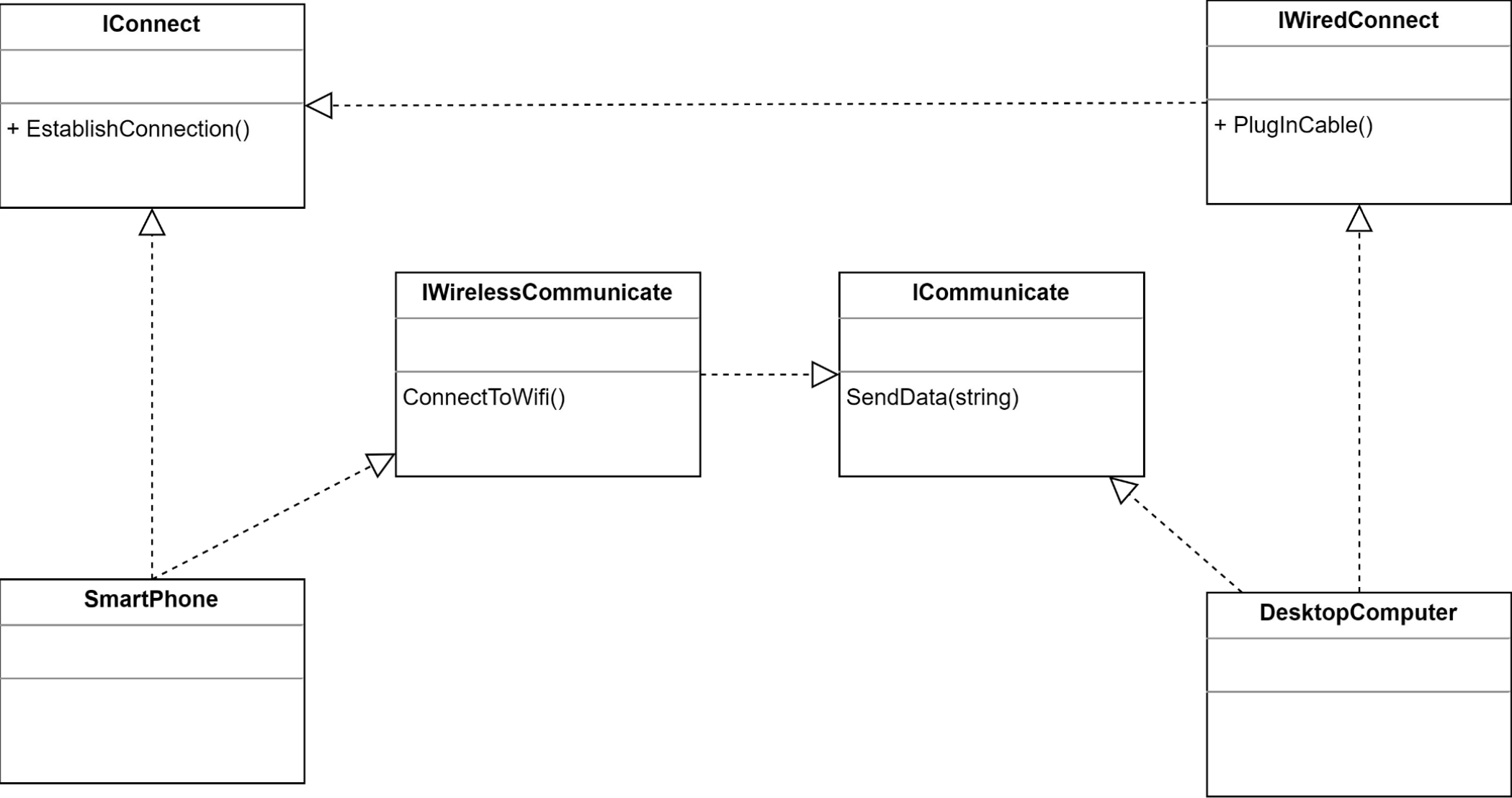# Labs: Interfaces (Week 5)

LCSCI5202: Object Oriented Design Week 5

Dr. Waleed Iqbal

Task 1

- Implement the following UML class diagram.
  - Add a new device, such as a Tablet, which can use both WiFi and a wired connection. How
  - Would you implement multiple inheritance to accommodate this new device?

IConnect

+ EstablishConnection()

IWiredConnect

+ PlugInCable()

IWirelessCommunicate

ConnectToWifi()

ICommunicate

SendData(string)

SmartPhone

DesktopComputer

Expected Use

```csharp
// Using SmartPhone
SmartPhone smartPhone = new SmartPhone();
smartPhone.ConnectToWiFi();
smartPhone.EstablishConnection();
smartPhone.SendData("Hello from SmartPhone!");
Console.WriteLine();

// Using DesktopComputer
DesktopComputer desktopComputer = new DesktopComputer();
desktopComputer.PlugInCable();
desktopComputer.EstablishConnection();
desktopComputer.SendData("Hello from Desktop Computer!");
```

Task 2

You are tasked with developing a simple inventory system for a game. The system should be able to store items, manage different types of items, and interact with an inventory manager that handles the overall state of the inventory. Use abstract classes, inheritance, generics, interfaces and singleton where appropriate. Before proceeding with coding, create a UML class diagram outlining your approach.

- Item Base Class:
  - Each item should have properties like Name, Weight, and Value.
  - Include a method Use() that defines how the item is used.

- Specific item classes
  - Create at least three types of items (e.g. weapons and potions).

- Interfaces
  - Some items should cause damage to the enemy when used, some items should be single use.

- Inventory Manager
  - It should be possible to add/remove items to/from inventory, use items and show inventory.