



Data Structures and algorithms

GENERICS AND INTERFACES

WEEK 1

LECTURER: DR ANWARUL PATWARY

Outline

- ▶ What are Generics in java?
- ▶ Advantages of using Generics.
- ▶ What are Interfaces?
- ▶ Advantages of Interfaces.

Generics

- ▶ Generics enable types to be parameters when defining classes, interfaces and methods.
- ▶ Advantages:
 - ▶ Code reuse: write a method/class/interface once use it for any type.
 - ▶ Type safety: stronger type checks at compile time instead of run time

Interfaces

- ▶ A java interface is a collection of abstract methods and constants.
- ▶ An abstract method is a method header without a method body.
- ▶ An abstract method can be declared using the modifier `abstract`, but because all methods in an interface are abstract, usually it is left off
- ▶ An interface is used to establish a set of methods that a class will implement

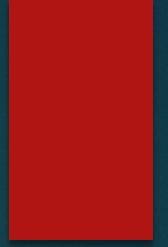
Interfaces

```
public interface Doable
{
    public void doThis();
    public int doThat();
    public void doThis2 (float value, char ch);
    public boolean doTheOther (int num);
}
```


Interface (Continue)

- ▶ An interface is not a class
 - ▶ Cannot be instantiated.
 - ▶ Incomplete specification
- ▶ Methods in an interface have public visibility by default.
- ▶ A class formally implements an interface by:
 - ▶ stating so in the class header
 - ▶ providing implementations for each abstract method in the interface

Interfaces



```
public class CanDo implements Doable
{
    public void doThis ()
    {
        // whatever
    }

    public void doThat ()
    {
        // whatever
    }

    // etc.
}
```