

# Design Defects and Restructuring

Lecture 3

Sat, Sep 25, 2021

# Objects and Classes

Object  
Recognition

Class  
Creation

Top-Down  
Approach

Bottom-Up  
Approach

Abstraction

Dependency

# Object Dependency

We need to find

- which class is creating an object
- when the object is being created, and
- where it is being created

We need to understand 3 factors

- Scope
- Creator class
- Location and event of creation

# Object Dependency

## Scope

- The object is declared at the class level
- The object is declared at the method level

## Creation

- The class is creating the object where it is declared
- Another class is creating the object and the reference is provided to the class where the object is declared

## Location of creation

- At the constructor
- Within the method

# Object Dependency Examples

```
class ClassA
{
    private ClassB classB = new ClassB();
}
```

# Object Dependency Examples

```
class ClassA
{
    private ClassB classB;

    public ClassA()
    {
        classB = new ClassB();
    }
}
```

# Object Dependency Examples

```
class ClassA
{
    private ClassB classB;

    public ClassA()
    {
    }

    public void processClassB()
    {
        classB = new ClassB();
    }
}
```

# Object Dependency Examples

```
class ClassA
{
    private ClassB classB;

    public ClassA()
    {
        classB = Factory.GetClassB();
    }
}
```



# Object Dependency Examples

```
class ClassA
{
    private ClassB classB;

    public ClassA()
    {
    }

    public void processClassB()
    {
        classB = Factory.GetClassB();
    }
}
```

# Object Dependency Examples

```
class ClassA
{
    private ClassB classB;

    public ClassA(ClassB objClassB)
    {
        classB = objClassB;
    }
}
```

# Object Dependency Examples

```
class ClassA
{
    private ClassB classB;

    public ClassA()
    {
    }

    public void processClassB(ClassB objClassB)
    {
        classB = objClassB;
    }
}
```

# Object Dependency Examples

```
class ClassA
{
    public ClassA()
    {
    }

    public void processClassB()
    {
        ClassB classB;

        classB = new ClassB();
    }
}
```

# Object Dependency Examples

```
class ClassA
{
    public ClassA()
    {
    }

    public void processClassB()
    {
        ClassB classB;

        classB = Factory.GetClassB();
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}
```

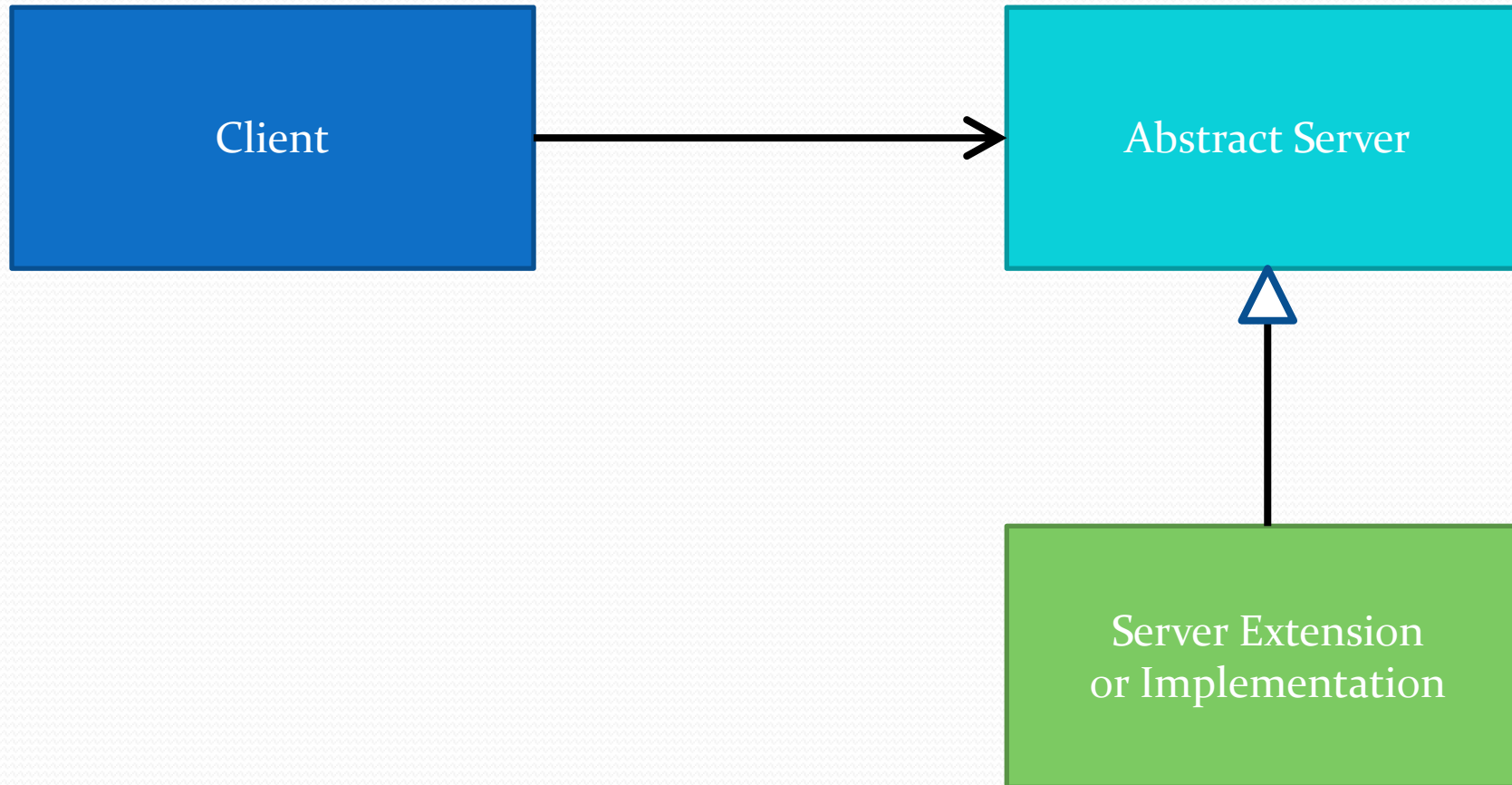
# Object Dependency Examples

```
class ClassA
{
    public ClassA()
    {
    }

    public void processClassB(ClassB objClassB)
    {
        ClassB classB;

        classB = objClassB;
    }
}
```

# Common Design Practice



# Class Exercise

- Quadratic Roots
- Game of Tic-Tac-Toe