

# Software Academy

Back-end development: Java

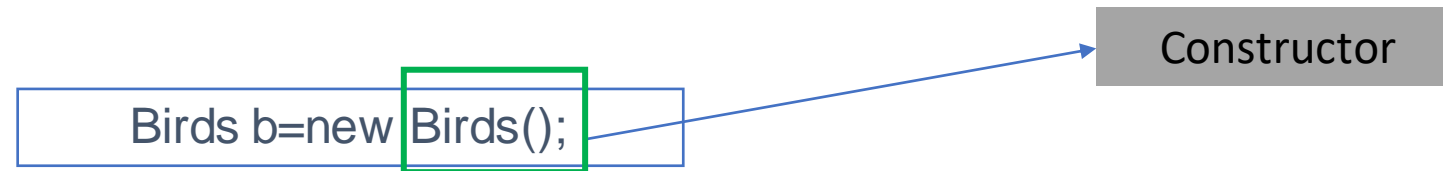


Session  
Objective

## Identifying the Building Blocks of a Java Program(Contd..)

**Object:** it is a class type variable

- To allocate memory to the object, you need to initialize the object by using the **new** operator.



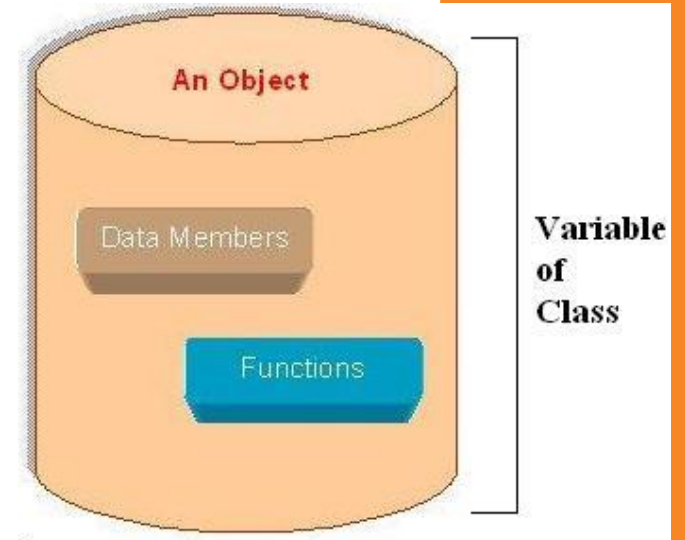
**classname** **objectname**;      \\ declaration of object.

**objectname** = **new** **classname**();

\\ allocate memory to object (define object).

or we can directly define object like this

**classname** **objectname** = **new** **classname**();



# Identifying the Building Blocks of a Java Program(Contd..)

```
class Rectangle  
{  
  Int length;  
  Int width ;  
}
```

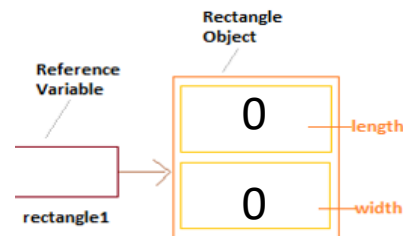
How to create object of Rectangle class

Diagram illustrating the syntax for creating a Rectangle object:

```
Rectangle myrect = new Rectangle();
```

Annotations:

- Class Name**: Points to `Rectangle`
- Name of an Object**: Points to `myrect`
- Dynamically Create Object using new**: Points to `new`
- Automatically Calls the Constructor**: Points to `Rectangle()`



## Identifying the Building Blocks of a Java Program(Contd..)

- 2 ways to initialize (assign values to class variables):
- Using Methods
- Using Constructor

# Identifying the Building Blocks of a Java Program(Contd..)

```
class Rectangle {  
    int length;  
    int width;  
    public void set(int l, int w)  
    {  
        length = l;  
        width = w;  
    }  
}
```

```
    public void display()  
    {  
        System.out.println(length*width);  
    }  
    public static void main(String[] args) {
```

```
        Rectangle myrect = new Rectangle();
```

```
        myrect.set(4, 5);
```

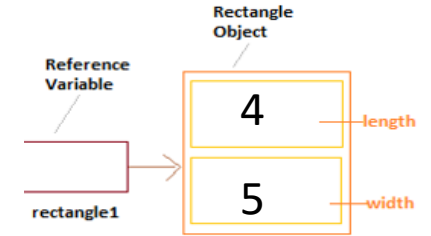
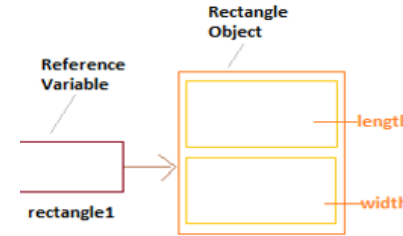
```
        myrect.display();
```

```
    }  
}
```

Method calling

20

Object initialization using  
**"Method"**



Create Object

Name of an Object

Automatically Calls the Constructor

```
Rectangle myrect = new Rectangle();
```

Class Name

Dynamically Create Object using new

# Identifying the Building Blocks of a Java Program(Contd..)

What is constructor

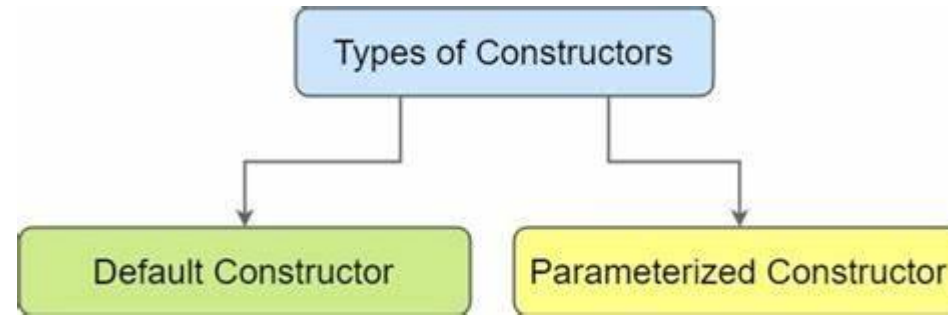


## Java Constructor

A constructor in Java is a **special method** that is used to initialize objects. The constructor is called when an object of a class is created. It can be used to set initial values for object attributes

In object-oriented languages, when you create an object of a class, **special methods known as constructors are called automatically**

## Identifying the Building Blocks of a Java Program(Contd..)





# Identifying the Building Blocks of a Java Program(Contd..)

## Default Constructor

- If there is no constructor in a class, compiler automatically creates a default constructor.
- **What is the Purpose of Default Constructor?**
  - Default constructor provides the default values to the object like 0, null etc. depending on the type.

```
class Rectangle
{
}
```

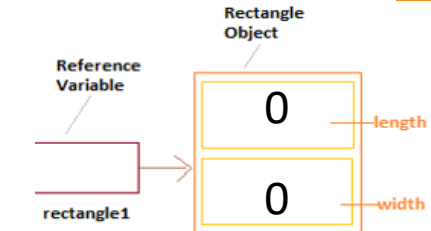
Rectangle.java

Compiler

```
class Rectangle
{
    Rectangle(){}
}
```

Rectangle.class

```
class Rectangle
{
    Int length;
    Int width ;
}
```



# Identifying the Building Blocks of a Java Program(Contd..)

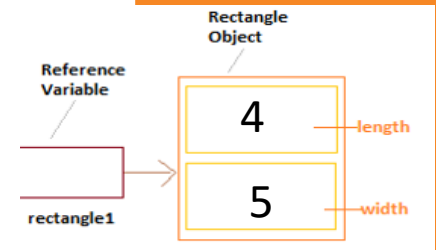
Constructor in Java
<ul style="list-style-type: none"><li>• <b>Java Parameterized Constructor</b></li><li>• A constructor that have parameters is known as parameterized constructor.</li><li>• <b>Why use Parameterized Constructor?</b><ul style="list-style-type: none"><li>• Parameterized constructor is used to provide different values to the distinct objects.</li></ul></li><li>• <b>Syntax of Parameterized Constructor</b></li></ul>
<pre>class_name(parameter_list) { }</pre>
<ul style="list-style-type: none"><li>• <b>Example</b></li></ul>
<pre>Rectangle (int len , int bre) { }</pre>

## Identifying the Building Blocks of a Java Program(Contd..)

```
class Rectangle {  
    int length;  
    int width;  
    public Rectangle(int l, int w)  
    {  
        length = l;  
        width = w;  
    }  
    public void display()  
    {  
        System.out.println(length*width);  
    }  
    public static void main(String[] args) {  
  
        Rectangle myrect = new Rectangle(4,5);  
  
        myrect.display();  
    }  
}
```

Object initialization using **Constructor**

calling "**Constructor**" with  
parameter 4 and 5



## Difference between Constructor and Method

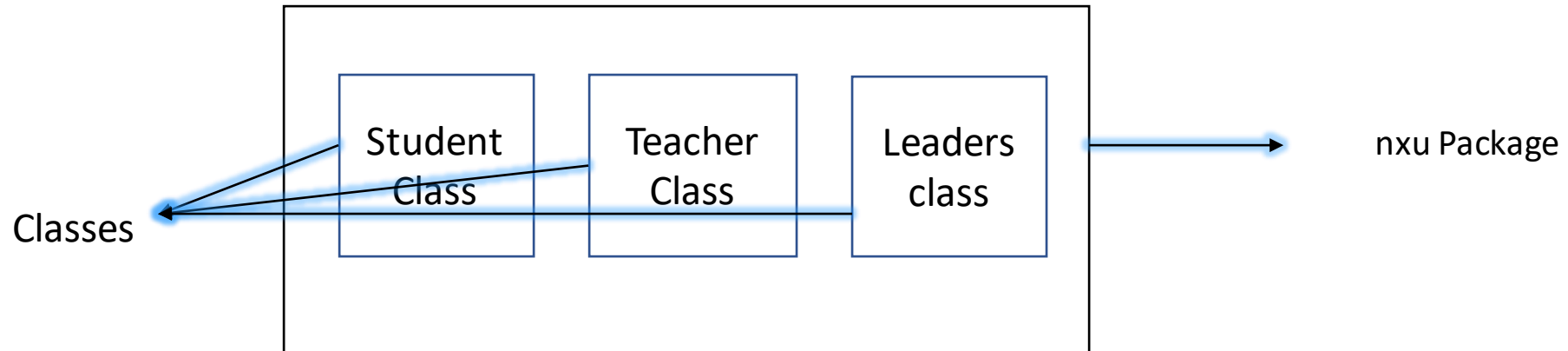
### Difference Between Constructor and Method

Java Constructor	Java Method
Constructor is used to initialize the state of an object.	Method is used to expose behaviour of an object.
Constructor must not have return type.	Method must have return type.
Constructor is invoked implicitly.	Method is invoked explicitly.
The java compiler provides a default constructor if you don't have any constructor.	Method is not provided by compiler in any case.
Constructor name must be same as the class name.	Method name may or may not be same as class name.

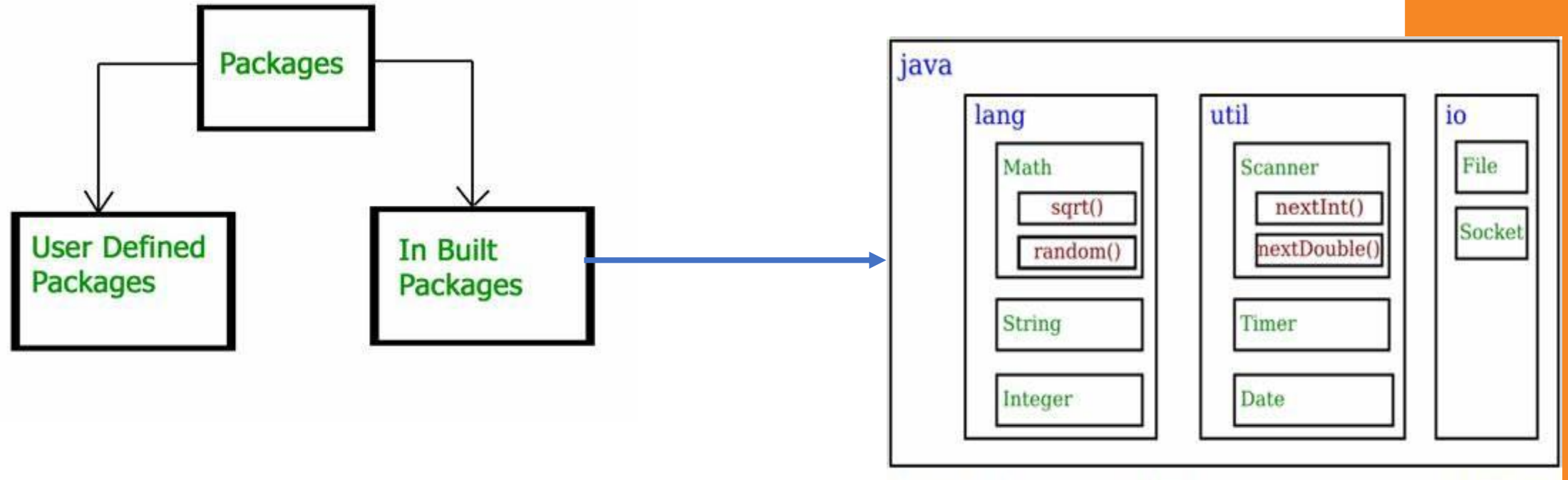
# Package in java

- **A package(FOLDER)(DIRECTORY):**
  - Is a collection of classes.
  - It is used to group the related classes together.
- The following syntax is used to define a package:

Example: `package nxu;`



## Identifying the Building Blocks of a Java Program(Contd..)



Package names are in small case like java.lang, java.util, java.io

# JAVA PROGRAM STRUCTURE

**Comments:-** To describe the code, comments are not read by the compiler. 2 types

1. Single line comments (//)
2. Multi line comments (/\* \*/)

Documentation Section	→ Suggested
Package Statement	→ Optional
Import Statement	→ Optional
Interface Statement	→ Optional
Class Definition	→ Optional
Main Method Class { //Main method defintion }	→ Essential Section

```
import java.io.*;
class ClassName
{
    int a=2;
    int b=3;
    void addition()
    {
        System.out.println("method");
    }
    public static void main(String args[])
    {
        int c=2;
        System.out.println(c);
    }
}
```

Package Details  
Class Name  
Data Member of Class  
User Define Method  
Main Method  
Data Member in main  
Block Statement  
it will print the value of c

## Just-a-Minute

1. Each operating system (OS) needs to have its own JVM to interpret and run bytecode. Identify the command that executes the JVM to run the bytecodes.

- a. Java
- b. Javac
- c. Javaw
- d. Javadoc

**Answer: a. java**

2. Which statements related to JAVA are true?

- i. Java has a feature called as Garbage Collection to automatically deallocating memory
  - ii. Java is not platform independent
  - iii. Java is an Object Oriented Programming Language
  - iv. Java is not secure
- a. i and ii
  - b. i, ii and iii
  - c. i and iii
  - d. All are true

**Answer: c. i and iii**



## Just-a-Minute

1. Which one of the following options is the correct extension of a Java source file?

- a. .jav
- b. .java
- c. .JAVA
- d. .class

**Answer: b . . java**

2. Identify the correct syntax of declaring a class in a Java program.

- a. class 123MyClass
- b. public class MyClass 123
- c. class break
- d. public class FinalClass

**Answer: d. public class FinalClass**

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