

Chapter 4

Introducing Classes, Objects and Methods

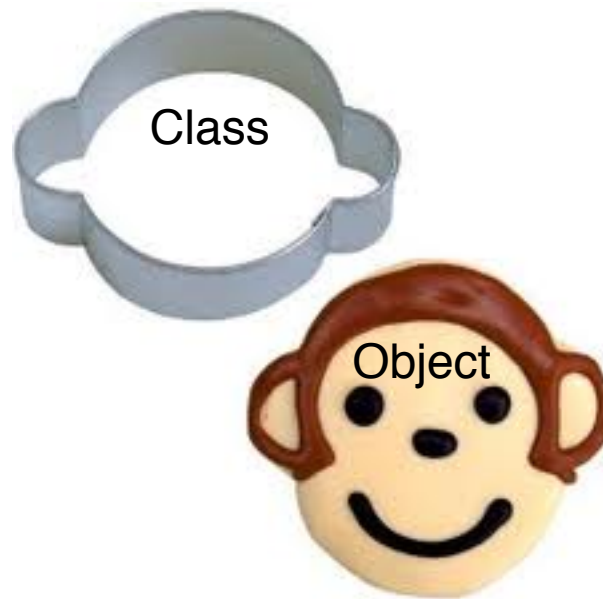
Based on the course literature:
Java: A beginner's guide
Sixth Edition
Herbert Schildt

What we'll cover

- Class fundamentals
- Object creation
- Referencing variables
- Methods

Classes

- A template that specify how to build an object.
- Variables and methods of a class are called “members” of the class.



A Class should represent an entity.

```
class ClassName {  
    // declare instance variables  
    type var1;  
    type var2;  
  
    type method(parameters){  
    }  
  
    type method2(parameters){  
    }  
}
```

Demo1 - create a class

Methods

```
void myMethod(int height, byte age) {  
    return; // one or more return is optional  
}
```

```
int myMethod(int height, byte age) {  
    return height * age;  
}
```


Object creation

- By reference
- `Vehicle sportsCar;`
- `sportsCar = new Vehicle();`

Constructor

- The constructor method is a method that is triggered when an object is created.
- It is used to initiate an object. Initiation is often setting instance variables but it can be much more than that.

```
class Vehicle {  
    int passengers;  
    int fuelcap;  
    int liters100km;  
    // A constructor method for vehicle  
    Vehicle(int fuelcap){  
        int liters100km = 10;  
        this.fuelcap = fuelcap;  
        this.liters100km = liters100km;  
    }  
    double range(){  
        return ((double)fuelcap / (double)liters100km) * 100);  
    }  
}
```

Memory and variables

Garbage Collection

- A computer has a finite amount of memory.
- Java recycles memory, the process that releases memory is called the garbage collector.
- The Garbage collector is called when needed as it uses processor power.
- It is hard to predict therefor when it will occur.
- It releases memory from objects with no references left to them.

Finalize

- Finalize is a method that is invoked when an object is recycled.
- It is used as a backup, if you need to tidy up after an object e.g. you have opened and locked a file to be used by an object. When the object dies the lock should be released.
- It may never be called, as garbage collection is not certain.

Demo 2 - garbage collection and finalize()