JAC444 - Lecture 1

Introduction to

Java Programming Language

Segment 3

Classes and Objects

In this segment you will be learning about:

- Class Definition
- Objects and References
- System Memory and Objects
- Identifiers and Java Naming Conventions

Classes and Objects

- Each class has three kinds of members:
  - Fields are data variables of a class that store results of computations performed by class's methods.
  - Methods contain the executable code, built from statements.
  - Classes and interfaces can in the same time be members of a class.

- Every object in Java has a state and a behavior.

```
class Point {
     /* the state of object is defined by values of its data */
     private double x_ = 0;
      private double y_ = 0;

     /*  the behaviors of an object is defined by its methods */
     public void movePoint(double x, double y) {
           x_ = x; y_ = y;
     }
}
```

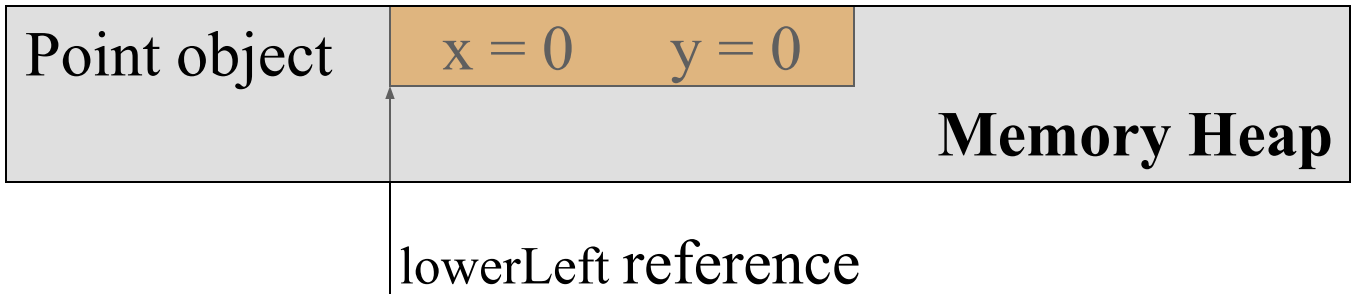
Creating Objects

- Objects are created using an expression containing the ***new*** keyword.

```
Point lowerLeft = new Point();
```

- All objects are allocated within an area of system memory known as Heap and are accessed only via an object reference

  Each Point object is unique and has its own copy of x and y fields.



Identifiers

- The name you choose for anything in java is called a java *identifier.*
- Identifiers must start with a letter, an underscore (_) or a dollar sign ($) followed by letters or digits.
- There is no limit for the length of identifiers and they are composed from the Unicode charter set.

  Ex: ***toStart*** ***_color*** ***$accountÉvalué*** ***übung*** ***μαθαίνω***

- Java language keywords cannot be used as identifiers.

Literals

- Each type in Java has literals, which are the way that constant values of that type are written.
  - **Integer constants** are string of octal, decimal, hexadecimal digits.

  Ex: decimal ***58L****, octal* ***027****, hexadecimal* ***0x8AF***

  - **Floating-point numbers** are decimal numbers optional followed by an exponent.

  Ex: double ***18. .234E3 1.8e-1****; float* ***1.234f 0.2e-5F***

  - **Characters literals** appear between single quotes. Any valid Unicode character can appear between the quotes. Certain special characters are represented as ***escape sequence.***

  Ex: ***'J', 'A', 'V', 'A'*** *'* ***\n*** *newline '* ***\u000A'*** *'* ***\t*** *'tab '* ***\u0009'***

  \ddd *a char by octal value d 0-7*
  - **String literals** appear between double quote. *Ex:* ***"JAVA"***