CISC 1115 – Introduction to Programming Using Java

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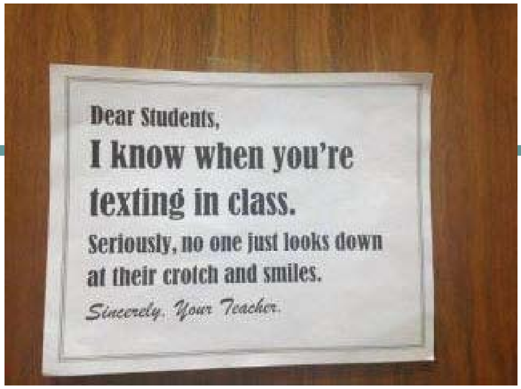
Office Hours

- Class Meets
  - T Th 10:10AM – 12:15PM, 525NE

- Office Hours
  - Tuesdays & Thursdays 12:30AM – 2:30PM (subject to meetings)

LET ME CALL YOU BACK, THE TEACHER IS DISTRACTING ME.
History
(c) 2002 George Wills

Teacher-
Mrs.Clancy
"I want you to text a thousand times-I will not text in class."



Dear Students,

I know when you're texting in class.

Seriously, no one just looks down at their crotch and smiles.

Sincerely, Your Teacher.

I WANT YOU
TO TURN OFF
YOUR CELL PHONE

Please...
TURN OFF YOUR
CELL PHONE

Required Texts

- Allen Downey and Chris Mayfield, **Think Java: How to Think Like a Computer Scientist**, Version 6.1.2, Green Tea Press, 2016, Creative Commons License.

  http://greenteapress.com/thinkjava6/thinkjava.pdf

- Yedidyah Langsam, **Workbook for Java**, First Edition

- Class Handouts

- Supplementary Text: **Introduction to Java Programming, Brief Edition**, Y. Daniel Lang, 11th edition, Person, 2017

Class Requirements

Two Exams	1/3
Final	1/3
Programs (6-8)	1/3

5 *point penalty for each class day an assignment is late*.

After 25 points are deducted the assignment will not be accepted!

Programs are to be an individual effort.

Course Workload

- There is a tremendous amount of work involved in learning how to program. You should be prepared to spend, on the average, two or more hours per day running your programs. This is in addition to time spent in class and time spent studying for the exams. If you don't have the time, don't kid yourself; drop the course.

Programming

- What is programming?
  - Giving the computer instructions to follow.

- Why not use natural languages?
  - English, French, Arabic, Hebrew, etc.

- Syntax
  - *Rules of grammar*
- Semantics
  - *Meaning of a statement*

Syntax

The woman ate the apple.

The apple ate the apple.

The apple ate the woman.

The woman ate the woman.

Ambiguous Semantics

I saw the woman with the telescope.

Time flies like an arrow.

Fruit flies like an arrow.

Put the box on the table in the kitchen.

The horse raced past the barn fell.

Programming languages

Natural Languages

high level

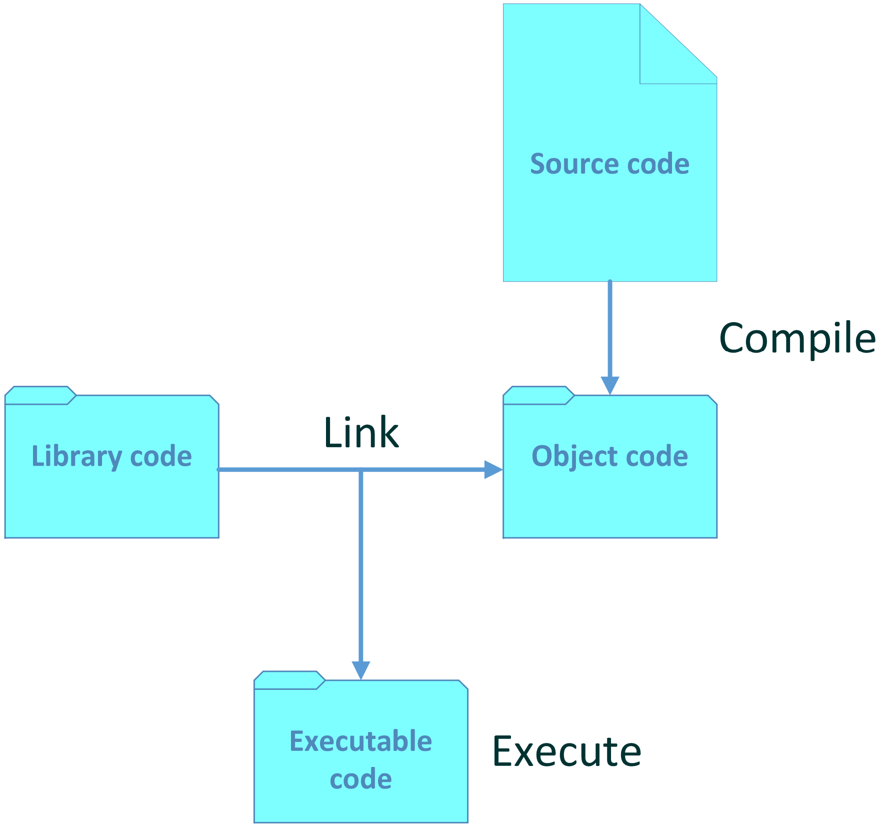
Programming Languages

Assembly Language

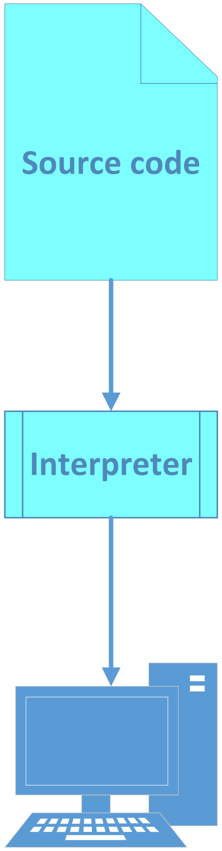
low level

Machine Language

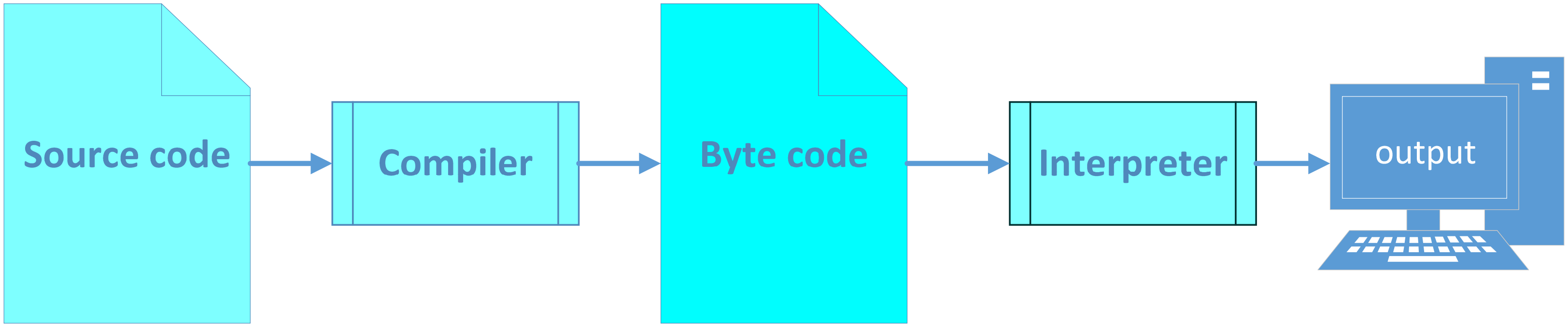
Compilation



Interpreter



Compiling & Running in Java



Hello.java

javac Hello.java

Hello.class

java Hello

Java Compilers & IDEs

- Compiler & Virtual Machine Runtime
  - javac and java http://www.oracle.com/technetwork/java/javase/downloads/index-jsp-138363.html
- IDE
  - Netbeans https://netbeans.org/downloads/
  - Eclipse http://www.eclipse.org/downloads/packages/eclipse-ide-java-ee-developers/marsr

Programming Steps

1. Develop an algorithm
2. Edit
3. Build (Compile, Link & Interpret)
4. Run

Programming Errors

- Compilation Errors
- Execution Errors
- Logic Errors

Characteristics of Java

- Java is standardized
- Java is ubiquitous
- Java is a general purpose language
- Java is “Write once run anywhere”
- Java is secure

Characteristics of Java - 2

- Strengths
  - Efficiency
  - Portability
  - Power
  - Flexibility
  - Object oriented
  - Platform independence
  - Clean syntax

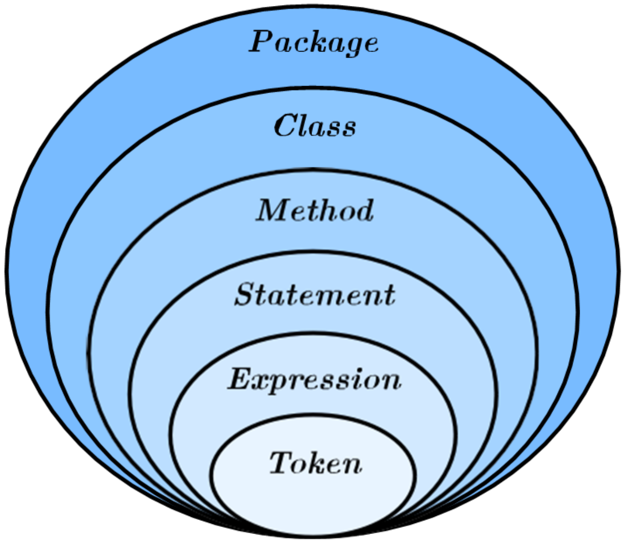
Characteristics of Java - 3

- Weaknesses
  - Java programs can be overly complex
  - Java programs can be difficult to understand
  - Java programs can be difficult to modify

```java
/**
 * @author Yedidyah Langsam
 * @since   11-06-2016
 * @version 1.0
 *
 * Description: This program simply displays "Hello
 * World!" to the standard output.
 */

package helloworld;

public class HelloWorld {

    public static void main(String[] args) {
        System.out.println("Hello World!");
        // Display the string.
    }

}
```

```java
/**
 * @author Yedidyah Langsam
 * @since 11-06-2016
 * @version 1.0
 *
 * Description: This is my first program and is to be handed in.
 */

package homework0;

import java.util.Scanner;

public class Homework0 {

    public static void main(String[] args) {
        String first, last;

        Scanner sc = new Scanner(System.in);

        System.out.println("Please enter your first and last name.");
        System.out.println("Do not forget to press the ENTER key.");

        first = sc.next();
        last = sc.next();

        System.out.println("\nThis is my first program!");
        System.out.println("My name is: " + first + " " + last);
    }

}
```

Java Organizational Units



```
helloworld
HelloWorld
main
System.out.println("Hello World!");
"Hello World!"
static
```

Algorithm

- A set of *well-defined steps* for the *solution of the problem* in a *finite number of steps*.

e.g.

How to bake a cake.

How to change a tire.

How to compute taxes.

Non-algorithmic Problems

- How to get a date.
- How to know if you are in love.
- Traveling Salesman problem
- Chess
- Halting Problem

Heuristic Methods

- A technique designed for solving a problem more quickly when classic methods are too slow, or for finding an approximate solution when classic methods fail to find any exact solution.
- This is achieved by trading optimality, completeness, accuracy, or precision for speed.

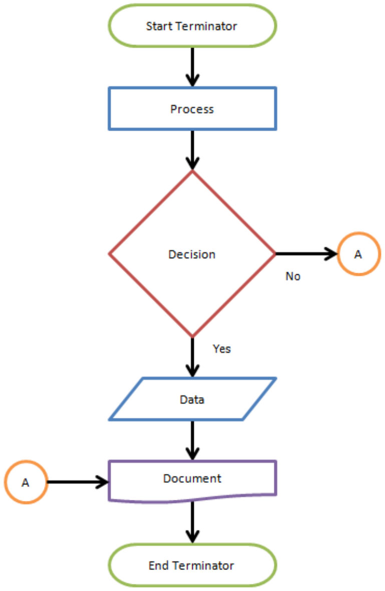
Heuristic Methods

- Artificial Intelligence
- Expert Systems

- *Non-algorithmic in nature*

Flowchart

- a graphical representation of a computer program in relation to its sequence of functions.


Start Terminator
Process
Decision
No
A
Yes
Data
A
Document
End Terminator