HARDWARE
HARDWARE

CPU

Memory
HARDWARE

RAM
HARDWARE

Secondary
<table>
<thead>
<tr>
<th>Addresses</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>256</td>
<td>01000001</td>
</tr>
<tr>
<td>260</td>
<td>01000010</td>
</tr>
<tr>
<td>264</td>
<td>01000010</td>
</tr>
<tr>
<td>268</td>
<td>01000001</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>
Running Software

Secondary

Main

CPU
Running Software

Secondary

Main

CPU

Load
Running Software

Secondary → Load → Main → Run Code → CPU
Software

Algorithm (ˈælɡəˌrɪðəm)noun
A set of instructions to solve a problem
Program (prōˌgram) noun
A set of instructions for a computer to follow.
Programming Languages
Programming Languages

LOW LEVEL
**LOW LEVEL**

* FUNCTION: INCH - Input character
* INPUT: none
* OUTPUT: char in acc A
* DESTROYS: acc A
* CALLS: none
* DESCRIPTION: Gets 1 character from terminal

```
C010 B6 80 04 INCH    LDA A ACIA    GET STATUS
C013 47                ASR A        SHIFT RDRF FLAG INTO CARRY
C014 24 FA             BCC INCH     RECEIVE NOT READY
C016 B6 80 05           LDA A ACIA+1 GET CHAR
C019 84 7F             AND A #$7F    MASK PARITY
C01B 7E C0 79           JMP OUTHCH   ECHO & RTS
```
Low Level Machine Code

**Programming Languages**

**FUNCTION**: INCH - Input character
**INPUT**: none
**OUTPUT**: char in acc A
**DESTROYS**: acc A
**CALLS**: none
**DESCRIPTION**: Gets 1 character from terminal

C010 B6 80 04 INCH
C013 47 ASR A
C014 24 FA BCC INCH
C016 B6 80 05 LDA A ACIA+1
C019 84 7F AND A #$7F
C01B 7E C0 7F JMP OUTF CH ECHO & RTS
High Level
High Level Programming Languages

Java
C/C++
Python
C#
High Level Programming Languages
High Level

Nouns and Verbs
High Level Syntax
Programming Languages
Programming Languages

Compiler
Project

Classes

Methods
Classes

Methods

• Source Code in files with “.JAVA” extension
• The filename must MATCH the name of the class
• Everything is an “Object”
Compilation

Java Source Code (.JAVA)

Running
Compilation

Java Source Code (.JAVA)

Java Compiler

Running

Java™
Compilation

Java Source Code (.JAVA)

Java Compiler

Intermediate Byte Code (.CLASS)

Running
Running

Compilation

Java Source Code (.JAVA)

Java Compiler

Intermediate Byte Code (.CLASS)

Running

Java Virtual Machine (JVM)
Running Compilation

Java Source Code (.JAVA)

Java Compiler

Intermediate Byte Code (.CLASS)

Running

Java Virtual Machine (JVM)