CSE1710

Week 02, Lecture 03

Fall 2013 ◆ Tuesday, Sept 17, 2013

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Checklist

What we are reinforcing with the exercises this class…

- ❑ concepts & skills from the first lab – using the lab environment, Eclipse
- ❑ being able to understand a memory model
- ❑ being able to construct a memory model (given declaration statements)

Checklist

What you should be doing to prepare for what comes next…

- ❑ prepare for **lecture #05**, final lecture on Ch1. Focus on arithmetic expressions, type promotion/demotion
- ❑ re-read and/or review Ch 1 material, KC's, RQs, and Exercises

From Lecture #02
- ❑ read sections 1.3
- ❑ review Ch 1 KC's 14-17
- ❑ do RQ's 18-21
- ❑ do Ex's 1.17-1.22

Compilation

Why does the compiler need to keep track of the types of declared variables?

What is meant by type checking?

RQ.16. How does the compiler remember the type of a declared variable?

Compilation

Ex 1.8. Suppose a machine with bytecode as its native language were invented.

How would this machine execute a Java program?

Would we still need a compiler?

How would the performance of this machine compare with a VM running on a conventional machine?

next slide for more material

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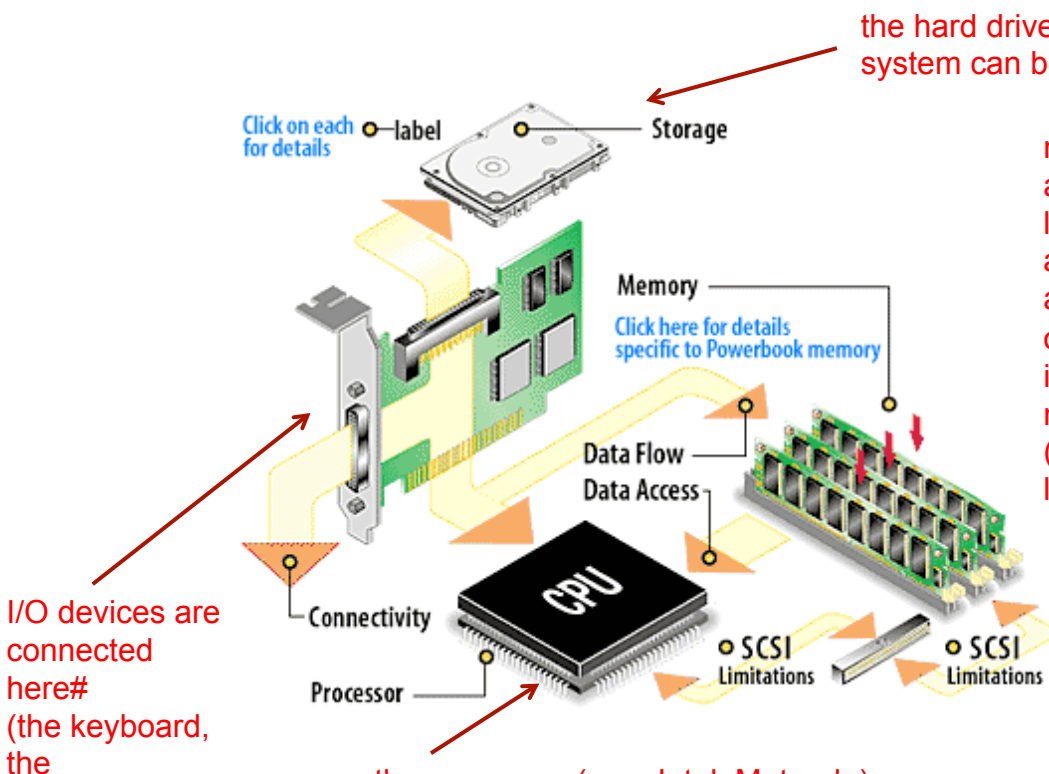
Basic Computer Architecture



the hard drive, where the file system can be found

memory (RAM) # applications are loaded into memory# and get run.# apps are simply a set of instructions written in the processor's native language! (aka machine language)

I/O devices are connected here# (the keyboard, the screen)

the processor (e.g., Intel, Motorola) has its own native instruction set (Not interchangeable!!)

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Compilation

Conventional machines have native languages in the form of instruction sets that the processor can directly understand.

Ex 1.8. Suppose a machine with bytecode as its native language were invented.

a) How would this machine execute a Java program?

b) Would we still need a compiler?

c) How would the performance of this machine compare with a VM running on a conventional machine?

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Understanding Compilation

Sketch out the bytecode instructions for the following app. Supplement with the symbol table.

```
public class Lect03Ex01 {

        public static void main(String[] args) {
                int myVal1 = 89;
                double myVal2 = 778.8;
                char myVal3 = 'A';
                boolean myVal4 = true;
        }

}
```


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Constructing a Memory Diagram

For the following app, draw the memory diagram.

```
public class Lect03Ex01 {

        public static void main(String[] args) {
                int myVal1 = 89;
                double myVal2 = 778.8;
                char myVal3 = 'A';
                boolean myVal4 = true;
        }

}
```


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