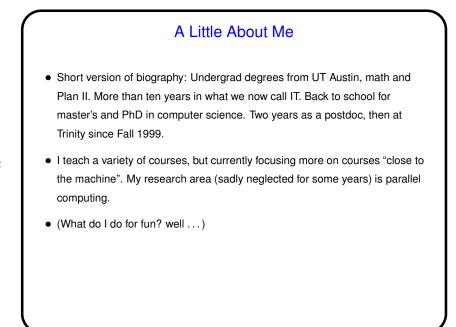


• And finally, something I meant to do last time ...

it soon.



Slide 2

Slide 1

Slide 3

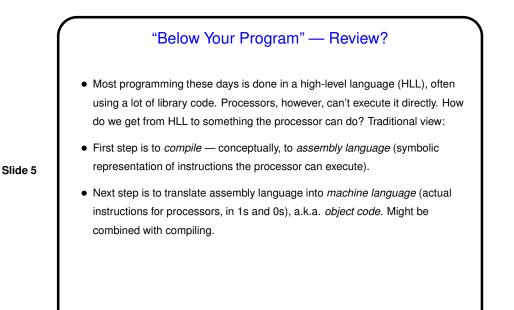
## Introduction

- "Computers are everywhere" you know about servers and desktops and smaller computing devices, all of which are more and more central to our lives, but also consider "embedded processors", largely invisible but even more prevalent.
  - How far they've come, and how fast astonishing to those of who grew up in different times.
- It seems to be a truism that however fast computers can process information, they can't keep up with humans' ability to imagine things for them to do. So performance matters. (Sometimes it makes things not just faster but feasible!).
- We'll start with an overview of hardware and software and how they interact (cf. textbook subtitle) and also talk a little about measuring performance.

## **Overview of Hardware**

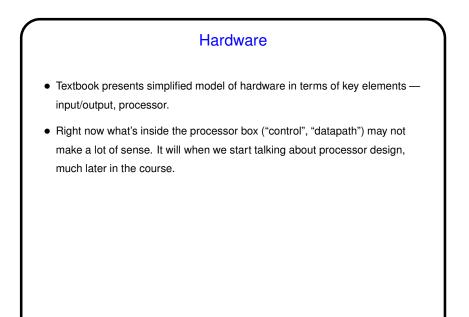
- Lots of material in this chapter that's interesting (to some) but not vital to the course. No need to understand details! Reading indicates that some sections are "skim/skip". I'll try to at least mention in class things you shouldn't miss.
- Some things won't make a lot of sense at this point e.g., "great ideas" but will as the semester goes along.

Slide 4



"Below Your Program", Continued

- Final step is to combine object code for your program with library object code. Can be done as part of compiling process to create an *executable file* or at runtime, or some combination of the two.
- Actual execution of program typically involves operating system (something that manages physical resources / provides abstraction for applications).
  Contents/format of executable files depends on operating system as well as hardware.
- Worth noting that some languages/implementations don't exactly follow this scheme: Some languages (e.g., shell scripts) are translated/interpreted at runtime, and others (e.g., Scala and Java) are compiled to machine language for a virtual processor (the JVM), which may then be translated into "native code" at runtime.
- Slide 6



Slide 7

