Lecture 32: Files in Grace

CS 51G
Spring 2018
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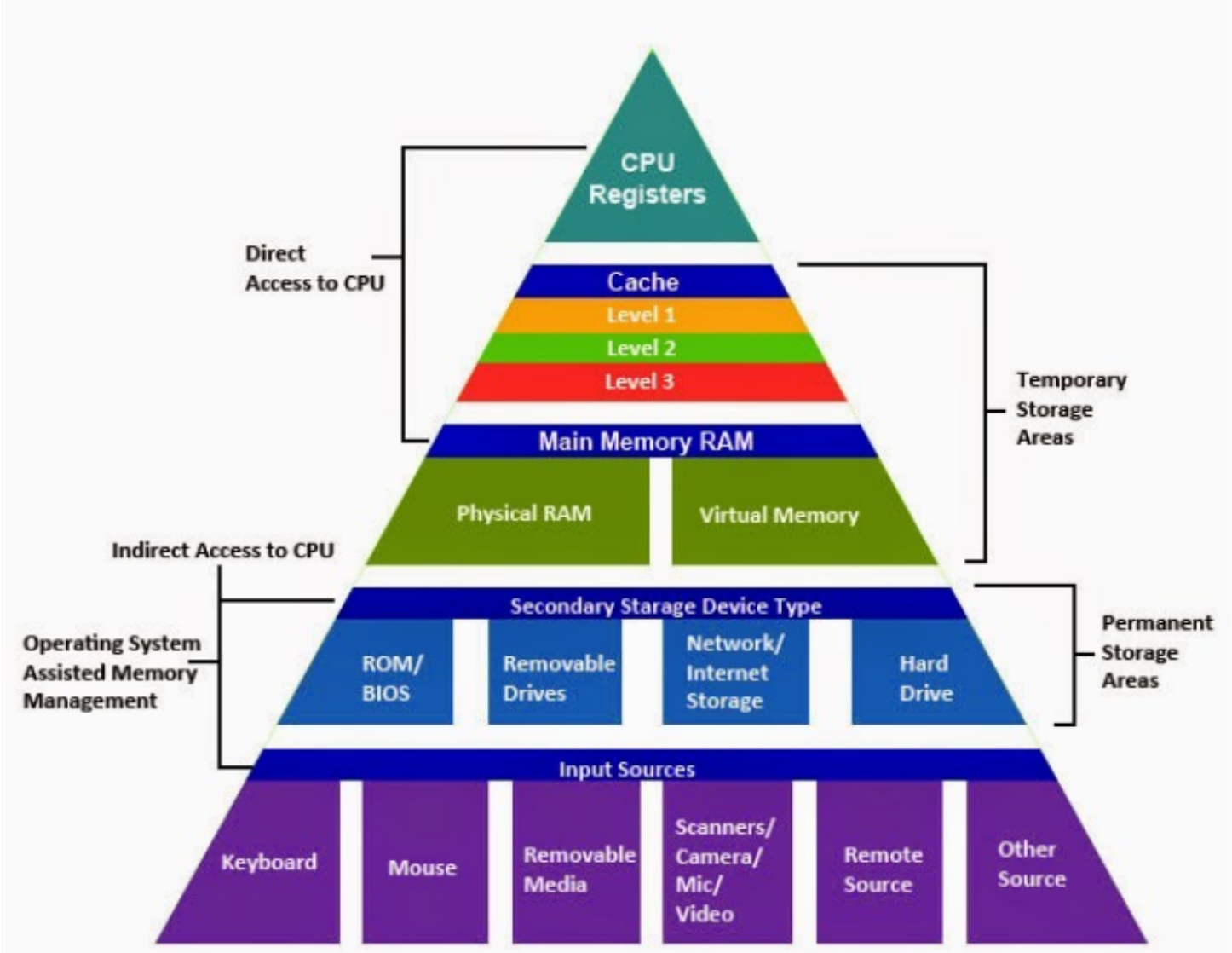
Announcements

- Nibbles lab Friday

Computer Storage

- Different levels of memory, distinguished by speed and cost
  - Hard drive: slow & cheap, but persistent
    - For my laptop, 1 Terabyte = 1000 GB = 1,000,000,000,000 B
  - Core memory: much faster, more expensive, volatile
    - For me, 16GB

Memory Hierarchies



Access Time

Registers: Typical access time: One clock cycle.

Cache: Tens to hundreds of clock cycles.

Main Memory: Hundreds of clock cycles.

Secondary Memory: Millions of clock cycles.

Removable memory: Tens of millions of clock cycles

3 Ghz processor performs 3 billion clock cycles per second

Getting Data

- Can get data from your hard drive
- or from local servers
  - What you do in lab — servers in basement
- Can get data over internet
  - Web pages
  - Massive amounts
    - Google has around 1,000,000 servers
    - About 10-15 exabytes where 1EB = 1,000,000TB

Getting Access

- Grace has limited access to files because it runs in a browser
  - Why should browsers limit access to user's data?
  - In 51J must shift from applets to applications ...
- Can read and write files on your hard drive if you load them into the Grace IDE first and then manually store them
  - Like you have been with programs.
  - We will restrict ourselves to "text files". No images, sounds, etc.

Writing Files

- Must import io library from standard Grace
  - import “io” as inout // use whatever name you like!
- Must open file for writing:
  - inout.open (path,”w") // object of type inout.FileStream
  - def myFile: inout.FileStream =
    inout.open (“Lec32/bookmarks.txt","w")
- Writing:
  - myFile.write(stuff) // where stuff is string
- When done: Must close or won’t write
  - myFile.close

Example

- Writing and reading bookmarks:
  - http://www.cs.pomona.edu/classes/cs051G/demos/Bookmarks/Bookmark.grace

Reading files

- Open for reading:
  - inout.open ("Lec32/bookmarks.txt", “r")
  - returns value of type inout.FileStream
- Can get path location (in files in left panel)
  - myReadFile.pathname
- read gives whole file, getline gives one line
- eof determines if at end of file
- Don’t forget to close!!

Example

- Find words of given length in dictionary:
  - http://www.cs.pomona.edu/classes/cs051G/demos/FindShortWords/FindShortWords.grace

Questions?