Exam 2 Review

Internal Memory

1. SRAMS/DRAMS distinction
2. ROMS/PROMS/FLASH(NOR & NAND)/EEPROMS
3. REFRESH operation
   1. Problems
4. Interleaved memory – banks
   1. Not random, rather spatial, temporal localities
5. Hamming codes(Error bits, log n), parity(Soft & Hard)
6. SDRAM/DDRAM

External Memory

1. MAG DISKS FN
2. SEEK TIME, ROT DELAY, TRACK, SECTOR, ACCESS TIME, TRANSFER TIME
3. CRC
4. RAID redundancy
   * 1. Parity
     2. Hamming code
     3. Mirroring
   1. Speed
      1. Striping
5. SSDs – disks
6. SSDs
   1. Block level erase, write
   2. Wear levelling
   3. Front interface with a cache(DRAM &HDD)
7. CD/DVD – how is data written, basic CD operation
   1. CD R/W – phase change
8. Tapes

Compare and Contrast

Chapter 7 – I/O

1. Major functions of I/O Module
2. Programmed I/O, interrupt driven I/O, DMA(Direct Memory Access) – Fig 7.4
3. Memory Mapped I/O, Isolated I/O
4. Ways to find who has interrupted
5. DMA breakpoints: Fig 7.13, Fig 7.15
6. USB/ Firewire – IEEE1394
7. Problems

Chapter 14 – PIPES

1. FI, DI, CO, FO, EI, WO – Slide #20
2. Timing
3. Branch penalty
4. Speed-up wrt stages
5. Pipe hazards, resource, data, control
6. Dealing with conditional branches:
   1. Multiple streams
   2. Prefetch branch target
   3. Loop bugger

}Relative Advantages

* 1. Branch prediction
     1. Predict never taken
     2. Predict always taken
     3. Predict by opcode
     4. Taken not take switch
     5. History table (Figs 14.19, 14.20)

1. Speed up equation, derive