



CIS 27.1 Review Points for Exam 1 – Chaps. 1 & 2 – Spring 2008

- Difference between computer organization & computer architecture
- How many clock cycles per second for, e.g., 1 Hertz? 1 Megahertz? 1 Gigahertz
- One /millisecond/nanosecond, etc., = _____ of a second
- Difference between serial & parallel ports
- What does 'open architecture' mean?
- Define the four generations of computers, e.g., first generation used vacuum tubes.
- What is the main feature of the Von Neumann model?
- Name the three main parts of a computer.
- Name and define the three cycles the computer goes thru when executing instructions.

- A nibble is?
- Do number conversions of whole numbers bases 2-10-16.
- Convert fractional decimal numbers to binary; e.g., 0.8125 to binary.
- Convert fractional binary to decimal, e.g. 0.101111×2^{-3} .
- Negative numbers – show in: signed magnitude, one's complement, two's complement.
- What is the problem with signed magnitude & one's complement?
- Carry/overflow – I give two binary values; you add them and determine if you have carry and/or overflow condition/s and determine if sum represents correct answer.
- Floating point:
 - what are the three parts?
 - express, e.g., 32_{10} in the simplified 14 bit floating model discussed in the book and used in class, where the first digit of the significand must be a binary 1. Use a 16 bias.
 - express 0.0625_{10} in the 14 bit model.
 - express -26.625 in the 14 bit model.
 - what is the shortcoming of floating point representation?
 - range, precision, accuracy – e.g., 3.1433 is accurate to 3 digits, and has 5 digits of precision. Range of a numeric integer format is the difference between the largest and smallest values that it can express. Do more digits of precision make a number more accurate?
- Character codes – ASCII, EBCDIC, Unicode – what are major differences between them? Advantage of Unicode? Intel computers use which (other than if coding java)?
- I give a string; show in hex using ASCII character codeset.
- Error detection & correction:
 - CRC (cyclic redundancy checking) – what is general outline of the method? Review the example we did in class (modulo 2 division).
 - Hamming codes – review example we did in class. Know the general concept of the check bits.
 - When to use CRC's; when to use Hamming codes; when to use Reed-Solomon codes?