

CSSE 132 – Introduction to Computer Systems  
 Rose-Hulman Institute of Technology  
 Computer Science and Software Engineering Department

### Homework 3

Write your answers on a separate sheet of paper. Show your work, and when writing code, make sure you document it well.

1. (5 points) Consider the 32-bit unsigned integer 0x103F29CD. What is the value of the byte in the *lowest address*:
  - (a) on a little-endian system?
  - (b) on a big-endian system?
2. (20 points) Consider a system with a cache for its hard disk. It takes 10ms to access the disk and 100ns to access the disk's cache. Compute the average access time for each miss rate. Be sure to show all your work.
  - (a) Cache miss rate is 0.1%.
  - (b) Cache miss rate is 0.0001%.
3. (15 points) Estimate the average time (in ms) to access a sector on the following disk:

Parameter	Value
Rotational rate	15,000 RPM
$T_{\text{aveseek}}$	4 ms
Average # sectors/track	800

4. (10 points) Create a 2 input, 2 bit mux using Verilog. You can verify your design in Xilinx if you wish. An outline module is provided below.

```

module(
    input [1:0] A,
    input [1:0] B,
    input S,
    output wire [1:0] R)

    //your code goes here

endmodule
  
```