CSE2312 Computer Organization and Assembly Language Programming
Test 2 Example Study Topics

Due to similarity to test questions, no solutions will be provided for these questions.

1. While questions are not reused from Test 1, know material in the Test 1 example study topics. Much of the material is still relevant to the questions on Test 2.

2. Be able to write assembly code similar to any of those in homework 3, problem 2. You will not need to write the C code on the exam to test the function.

3. Be able to write assembly code similar to any of those in homework 4, problem 7. You will not need to write the C code on the exam to test the function.

4. Be prepared to write assembly to access a C structure given on the exam. Understand how C default alignment and packing affect memory addressing within the structure. Be prepared to handle packed and unpacked structures.

5. Understand the operation of the stack and how the SP value changes as values are pushed and popped. Understand the order of push and pop operations with a register list.

6. Be able to calculate the number of instruction cycles and execution time for various simple functions using the pipeline assumptions and operation shown in class.

7. Be able to encode or decode a single-precision floating point number to/from a 32-bit hexadecimal value.

8. Understand the limited resolution of the mantissa and how can cause loss of precision when adding numbers with relatively large differences in magnitude.

9. Be able to explain the concept of memory virtualization and how this adds security and prevents fragmentation.

10. Explain the operation and differences between stack and heap allocated variables.

11. Explain the role of cache in a modern microprocessor.

12. Explain the operation of interrupts, including the saving and restoring of the context, interrupt vector tables, and interrupt service routines.

Please make sure you have all relevant pages of the ARM technical reference (especially pages 1-11 through 1-20), C calling and register convention document, class notes, your homework submissions, and class code printed out before the exam. No computers/tablets/phones/communications devices are allowed during the exams as stated in the syllabus. Be sure to bring a calculator.