**Computer Science Department**

**California State University, Fullerton**

CPSC 240-09/10 Computer Organization and Assembly Language

Quiz 01

3:00 pm to 4:15 pm

Thursday, September 28, 2023

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**Note:**

* University regulations on academic honesty will be strictly enforced.
* You have 75 minutes to complete this Quiz.
* Open books, slides and sample programs.
* Turn off or turn vibration your cell phone.
* Use “yasm” assembler to assemble the source code.
* Use “ld” linker to link the object code
* Use “ddd” debugger to simulate the executable code.
* Each student can only submit solution once, and secondary submissions will not be graded. If you have submitting problems, please inform your instructor before you leave the classroom.
* Any content submitted after the due date will be regarded as a make-up quiz.

Quiz 01

1. Download the “CPSC-240-09 Quiz 01.docx” document from Canvas.
2. Convert the following C/C++ variable declarations and arithmetic operations to x86-64 assembly language. Use the “yasm” assembler to assemble the program, the “ld” linker to link the object code, and the “ddd” debugger to simulate the executable code.   
   NOTE: variable sizes and program functions should be equivalent to C/C++ instructions.

unsigned char num1 = 225; //unsigned 8-bit variable

unsigned char num2 = 125; //unsigned 8-bit variable

unsigned char num3 = 133; //unsigned 8-bit variable

unsigned short product = 0 //unsigned 16-bit variable

unsigned char quotient = 0; //unsigned 8-bit variable

unsigned char remainder = 0; //unsigned 8-bit variable

product = num1 \* num2;

quotient = product / num3;

remainder = product % num3;

1. After assembling and linking, run the DDD debugger to display the simulation results of the values of num1, num2, num3, product, quotient, and remainder in GDB panel before terminate program.
2. Insert source code and the simulation results (GDB panel) to the bottom of the document.
3. Save the file in pdf or docx format and submit the pdf or docx file to Canvas before the deadline.
4. Deadline is 4:15 pm on 09/28/2023.

[Copy and paste your assembly source code here:]

A screenshot of a computer

Description automatically generated

[Attach GDB panel with all memory data here:]

A screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generatedA computer screen with a black text

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