CSE 2421 – Systems 1

Spring Semester 2024

Programming Assignment #5

- **This assignment is worth 12pts.**
- **You must upload the zipped solution folder to Carmen, as solution.zip.**
- **The deadline for this assignment is April 5th 11:59pm ET.**
- **Deductions for late submissions apply.**
- **The main topic of this assignment is basic control flow and a subset of address modes in x86-64 assembly.**

Preliminary Instructions:

- Download the entire folder a5 from Carmen.
- Recall that assembly programming is system dependent (architecture, processor, OS, etc). To avoid portability and setup problems, all of your work should be done exclusively in stdlinux or coelinux. You should not work in your own laptop or desktop, unless it is a Linux OS with an Intel processor.
- After downloading the folder a5, copy the entire folder to your favorite OSU linux cluster (stdlinux or coelinux).

Instructions:

The downloaded folder contains three simple C programs: loop-write.c, count-primes.c, and add-vectors.c. Read this files, compile them, and run them to see the expected output.

You must implement in x86-64 assembly equivalent programs to the three above. You are free to write the three assembly programs from scratch. Alternatively, you can also choose to combine the following assembly programs (See files in Carmen) achieve the same functionality.

		Files to Merge or Combine (with a few additional modifications). Assembly files can also be found in the folder a5.	
Example C file	Assembly filename to use	File #1	File #2
loop-write.c	loop-write.asm	while-loop.asm	test-print-digit.asm
count-primes.c	count-primes.asm	while-loop.asm	count-divisors.asm
add-vectors.c	add-vectors.asm	while-loop.asm	direct-memory-update.asm

Each assembly program is worth 4 points: 3 pts for the a functional code, and 1 pt for comments.

What and where to upload:

- Upload via Assignments->Assignment 5 in Carmen.
- You must upload a single compressed folder named solutions.zip. The folder should contain for each requested program: the assembly file (*.asm) and a screenshot showing the output you obtain. That is, you should upload three assembly files and three screenshots.
- Each screenshot should show you are logged into a linux cluster, your username, the date and the output of your assembly program (via the build.sh script or by doing echo $?).
- Your programs should run in either stdlinux or coelinux.