CMSC 411 – Software Project – assigned 10/24/17

[100 points]
Teams: Form groups of 2-4 each. Email Dayuan with the team name and members.

Task:

Using the ARM simulator (ARMSim), write code that computes several complex values:
$\sin(x)$, $\cos(x)$, $\tan(x)$, and e^x.
of 32 bit IEEE-754 floating point numbers <u>without</u> using ARM multiplier. There will be extra credit for any additional functions you generate (e.g., $\sinh(x)$, $\cosh(x)$, $\tanh(x)$). Feel free to use any code you can find as long as you reference it and make sure it'

Proposed steps:

1) Read a single number (x) from memory (store any constants in memory)
2) Compute $\sin(x)$ π 360
3) Compute $\cos(x)$
4) Compute $\tan(x)$
5) Compute e^x
6) Store result (and anything else interesting) in memory
7) Determine how may computer cycles it took.

Schedule:

Sunday, 3 Dec, 11.59pm: Assembly code due on Blackboard
                                              No changes allowed after submission
                                              Documentation due on Blackboard as PDF
Monday-Friday 4-7 Dec: 10 min demonstration, in Dayuan's office

Grading:

Source code: 30%
- Commented!!!!

Oral presentation & demonstration: 30%
- 10 minutes
  - Approach, Code discussion, Issues and solutions, Your Results, and Demonstration with Dayuan's numbers

Final report: 30%
- A Total Computer Cycles for each function.
- Estimate CPI for each function.
- Estimate the total processing time assuming a system clock of 32kHz, a 1MHz, and a 1 GHz for each function.
- All implemented algorithms must be described.
- Show sample input and output data

Peer review: 10%