Computer Architecture - CS2323. Autumn 2022
Lab-3 (Factorial Computation)

This is a take-home programming assignment. Academic honesty and originality should be followed.

1. Write an assembly program using RISC-V instructions in RIPES simulator (V2.2.4) to calculate the factorial of a given number 'n'. The number 'n' is present at 0x10000000. Use of **MULT** instruction is **not** allowed. Multiplication should be implemented as a procedure which is called each time a multiplication needs to be performed. Use the procedure calling and register saving conventions discussed in the class.

   The computed factorial should be stored at location 0x10000010. Assume that no overflow happens during factorial computation.

   Example: Let's say the location 0x10000000 contains 6
   After completing your program, the memory location from 0x10000010 should contain 720

Instructions:
1. Use Ripes simulator from:
   https://github.com/mortbopet/Ripes/releases/download/v2.2.4/Ripes-v2.2.4-linux-x86_64.AppImage
2. Configure simulator for 64-bit processor (click on the processor symbol below File in the top-left and select 64-bit single cycle processor).
3. While doing this exercise, try to use breakpoints, single stepping, etc. features of the simulator for a better understanding. We will need these features when debugging the programs in subsequent assignments. Also, see the corresponding disassembled (translated) code in the right pane and try to understand the same.

Submission instructions:
Submit the assembly code as a file named YOUR_ROLLNUM.s (e.g., CSYYBTECHXXXXX.s) in the google classroom.

Deadline: 12 Oct 2022 (Wednesday), 10.00 pm
Late submission: 10% for each day of late submission. Max deduction of 40%.