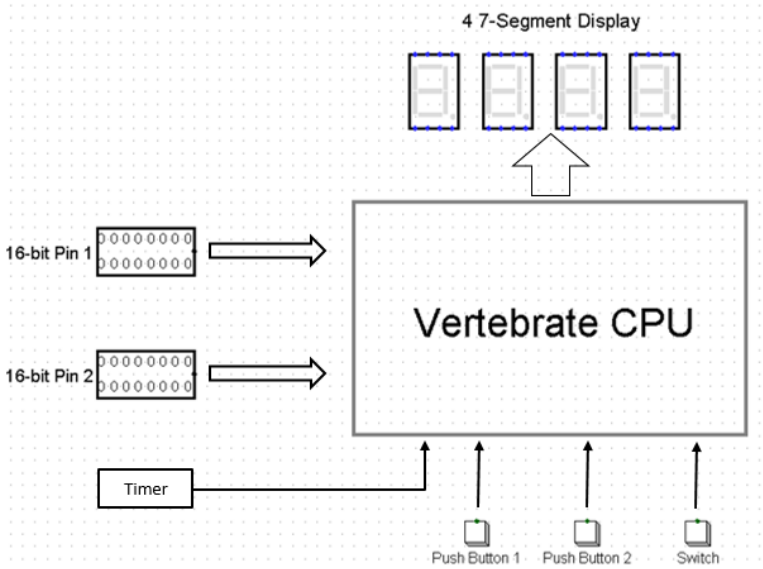
CSE4117 Microprocessors
HW3

You will implement Vertebrate CPU in Logisim and write the specified software that will run on it.



You have;
--Vertebrate CPU
--Two 16-bit switchboards, switchboards 1 and 2
--Two Push Button, PB1 and PB2
--One 4*7-segment display
--One timer
--One switch

Your assembly program will have a variable, called "sum", which is initialized to sum=0 at the beginning. Then your code will continuously poll the 16- bit switchboards (16-bit pins).

-- If PB1 is pressed, you will read the number from switchboard 1, calculate
sum=2*sum+(entered number),
-- If PB2 is pressed, you will read the number from switchboard 2, calculate
sum=sum*(entered number),

The timer will have a 16-bit register (DO NOT use built-in register in Logisim, you have to design your register using S-R FFs). At (approximately) every second, it will increment this register by one and send an interrupt to the CPU. After receiving the interrupt, the CPU will go to an interrupt service routine (ISR), which will read this register and assign its content to a **variable called "time".**

When switch is up, the CPU will display the variable " time". When switch is down, CPU will display the variable "sum".

Your system must work at 4KHz clock of Logisim.

Submission Instructions

- You should submit your homework as a zip file which contains all source files.
- The name of your zip file will be as CSE4117_name_surname_ID1_name_surname_ID2_name_surname_ID3_hw#.zip.
- It is enough, if a single group member uploads.
- Late submissions will loose 10 points for each day after the deadline.