Programming Practices
Assignment 1
Getting familiar with assembly language and ARMSim

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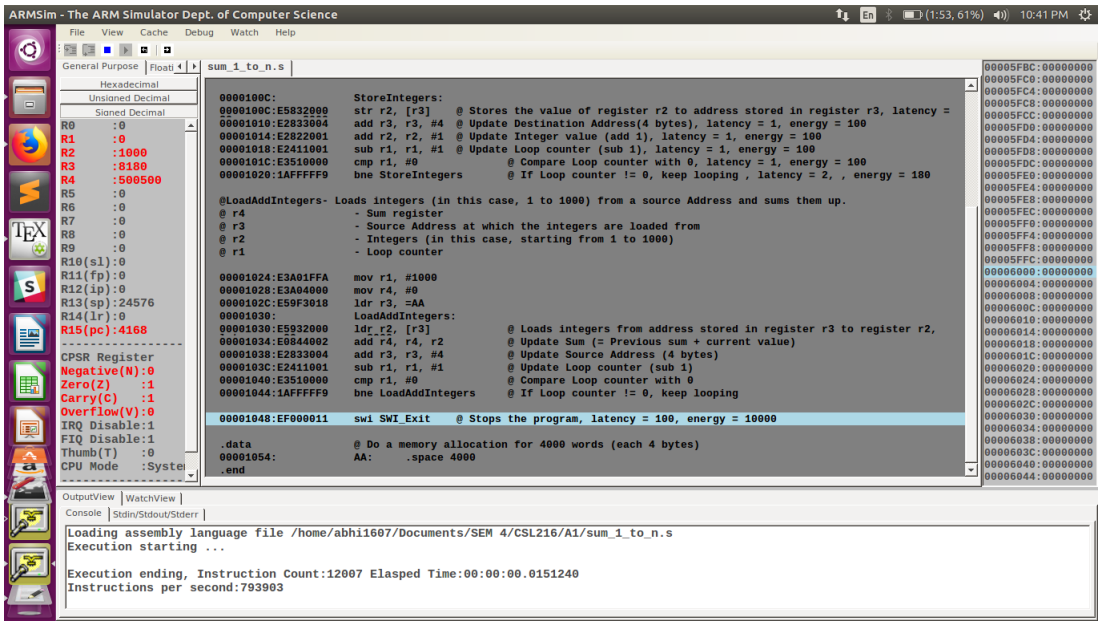
1 Assumed Frequency

Frequnecy= 1 GHz

2 Instruction

There are total 12007 number of instructions.

3 Observed Time Elasped(According to computer)



Time Elasped is equal to 0.0151240 *seconds*.

4 Theoretical time elasped

Theoretically time elasped $= \frac{TotalLatency}{Frequency} = \frac{52106}{10^9}\frac{Cycles}{sec^{-1}} = 5.21 \times 10^{-5}\ s$

5 Total Energy

The total energy is equal to (100+100+110+(2000+100+100+100+100)∗1000+ 1000∗180+100+100+110+(2000+100+100+100+100)∗1000+1000∗180+10000) = 5170620 pJ *i.e.* 5.170620 $\times$ 10$^-$6 J.

6 Total Latency

The Total Latency is equal to $(1+1+1+1000*(20+1+1+1+1)+1000*2+1+1+1+1000*(20+1+1+1+1)+1000*2+100) = 52106\ cycles.$

7 Theoretical Average Power Dissipation

The Average Power Dissipation is equal to $\frac{TotalEnergy}{TheorecticalTimeElasped} = \frac{5.170620}{52}\frac{\mu J}{\mu s} = 0.0994\ J/s$
$i.e.\ 0.0994\ W.$

8 Observed Average Power Dissipation

The observed average power dissipation $\frac{TotalEnergy}{ObservedTimeElasped} = \frac{5.170620}{0.0159}\frac{\mu J}{s} = 325.19\ \mu J/s\ i.e\ 0.325 \times 10^{-3}\ J/s$

9 Cycles per Instruction

Cycles per Instruction=$\frac{TotalLatency}{Totalnumberof Instructions} = \frac{52106s}{12007}\frac{Cycles}{Instruction} = 4.34\ Cycles/Instruction.$