CEG4136 Group Projects

GIVEN: A 126 line python program reads 5000 tweets containing one keyword ‘engineering’. The program computes the sentiment of these tweets and prints the overall sentiment. The code can be modified by the students as they see fit to achieve the overall objective. This includes changing libraries and even rewriting the program. This task requires little memory and CPU, but is highly serial in implementation.

The code is available using: **https://bitbucket.org/daniel-LSCI/ceg4136-2017**

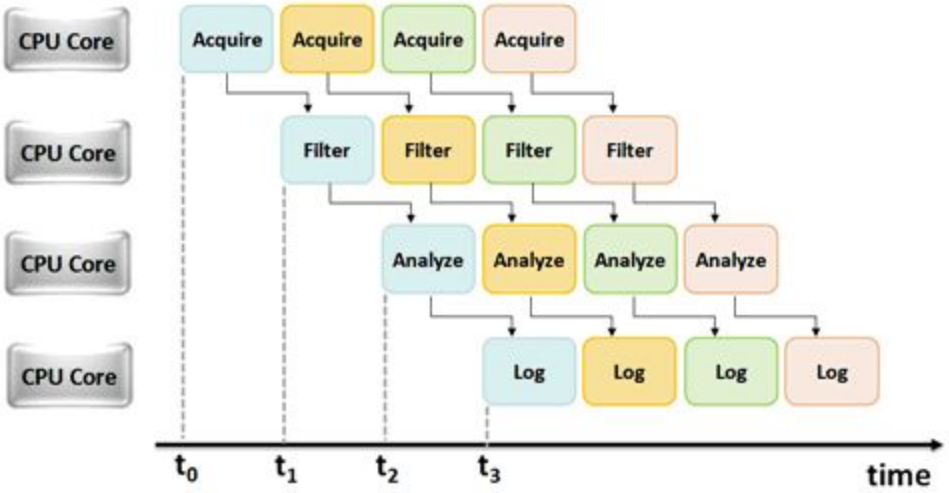
The secret keys are secret. Do not share them. The keys are:

```
# keys and tokens from the Twitter Dev Console
consumer_key = 'hfwpuUy8AbfQEWop6SmtLu0Vo'
consumer_secret = 'EOcwVK6IGxd1NWAqdzVuOygcXdMHWbG7AZREg2uVwkd8a55c8e'
access_token = '578964539-Z8YzO0mx022PoKpD49GPgsqvOjEYSqsxP0GS5yaY'
access_token_secret = 'mMNBzr6GCFzeCjEDyTbquxChi2qg0vvc3xL6Yov0IVsOl'
```

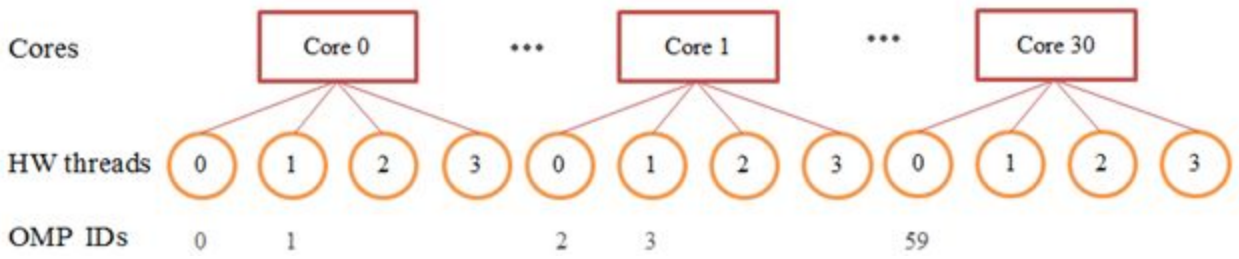
Each team has a $150 budget to spend on cloud computing resources.

TASK: Parallelize the program, and measure price, execution time, and speedup. Use only one of the following approaches:

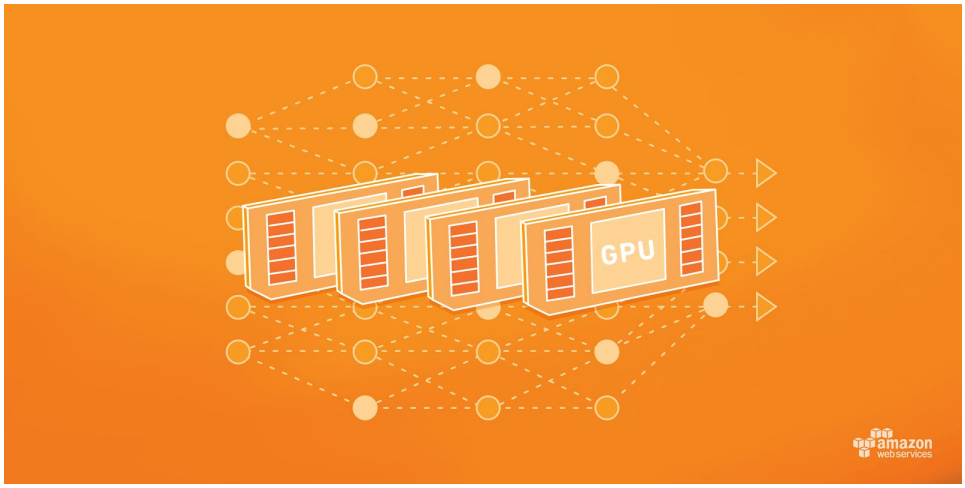
1. **Pipelining** virtual machines (10 CPUs or less - 512 MB RAM each)



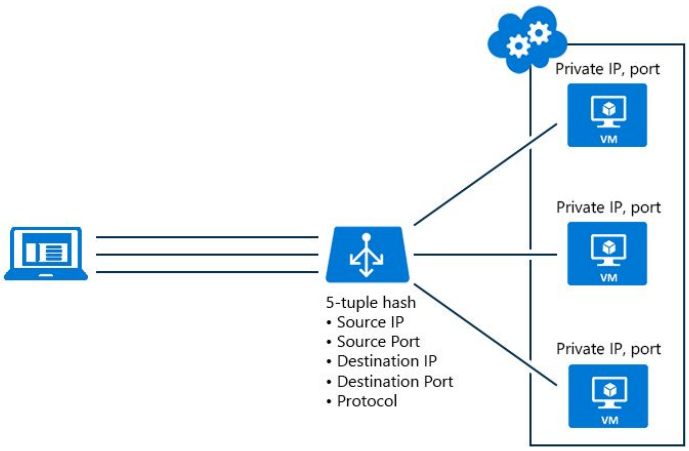
2. **Multiprocessor with OpenMP** (1 high cpu instance)



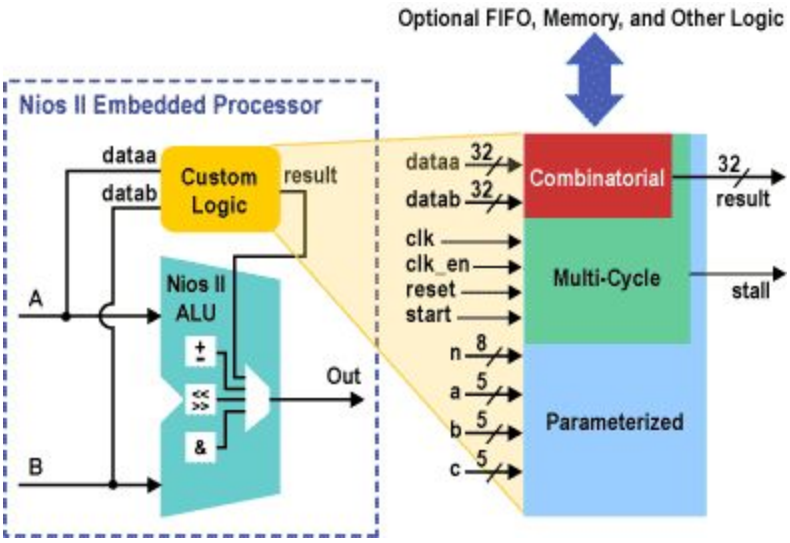
3. **GPU** (1 AWS p2.2x instance)



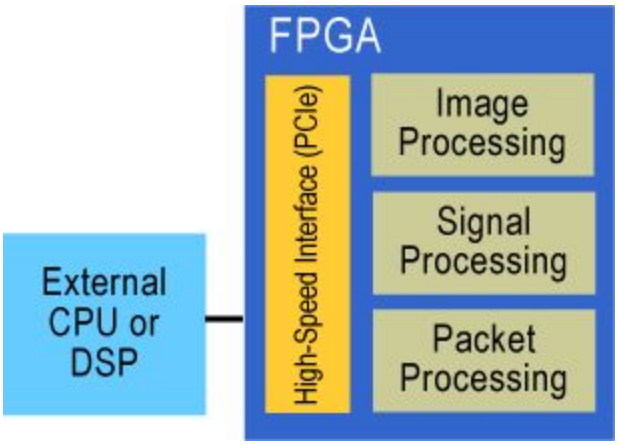
4. **Vector/Parallel Processing** (10 CPUs or less - 512 MB RAM each, and one load balancer)



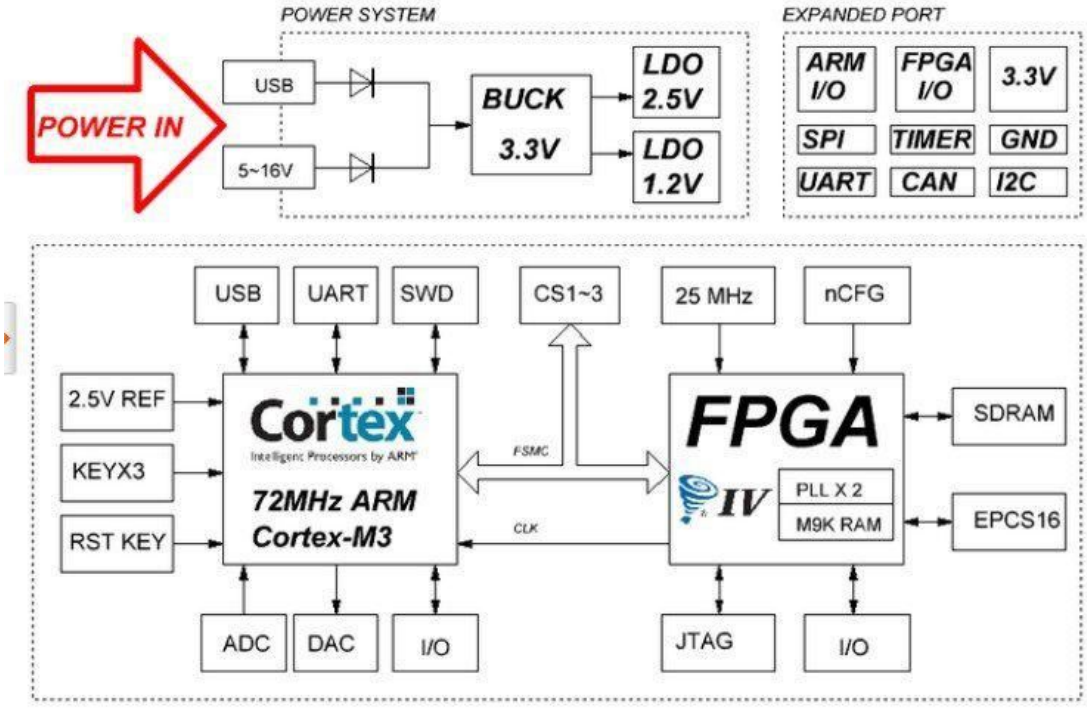
5. **NIOS with custom instruction(s).** Use anything that fits in the FPGA. Use wifi or ethernet to reach the internet.



6. [NIOS](#) **with Coprocessor.** Use anything that fits in the FPGA e.g. ARM with NEON coprocessor. Multiple NIOS, etc.



7. **Custom datapath in VHDL/Verilog** controlled by embedded ARM processor. Use anything that fits in the FPGA e.g. ARM with NEON coprocessor.



Beyond the scope of the course:

8. Lambda architecture
9. Cloud APIs
10. [AWS EC2 F1 xilinx fpga]