Computer Architecture

Chemical Engineering, B01504044 YI-LIN SUNG

1. **Some Files in the CA1051_b01504044**

   SW.txt, report.pdf

2. **Run the Program**

   We can use QtSpim to open SW.txt, and then run the program.

   (1) Run QtSpim.

   (2) Click File -> Reinitialize and Load File, and then open "CA1051_b01504044/SW.txt".

   (3) Click Run/ Continue (Icon in the bar) to run the program, and then follow the instructions appear in the console.

   (4) If you want to re-run the program, click Clear Registers (Icon in the bar), and redo step 3.

3. **Program Design**

   (1) I first did the Smith-Waterman algorithm on C++, and output the alignment result to check if my implementation was right.

   (2) Translated the C++ code to MIPS code. The comments of the codes are in SW.txt.

   (3) Constructed Print function in SW.txt, so I could use this function to check the alignment score matrix was same as C++ implementation, so the correctness of my MIPS code was confirmed.

4. **Extra Work**

   My program is not limited with 4 length's input, but 100 length's input. And there is Print function in SW.txt for debugging and strlen function to calculate the length of the string.

5. Reference

(1) https://cs.stanford.edu/people/eroberts/courses/soco/projects/computers-and-the-hgp/smith_waterman.html

(2) https://www.csie.ntu.edu.tw/~kmchao/dp.ppt