Lab 3: Software Simulation of PIPE

Introduction

In this assignment, you need to implement a software simulation of the PIPE (fig. 4.53). The instruction set is Y86, which is defined in our book (fig. 4.2 and 4.3).

Input: a binary file

The file contains a binary representation of a trunk of code in memory. It is a big-endian machine. The starting address of the code segment is at: 0x0400 and the starting address of the stack is 0x0400, which grows from high to low address. All the registers and memory should be initialized to zero.

You need to read from the input file, parse them and put them into your PIPE implementation. IMPORTANT: The input file is a binary file.

There are two sample input file given: *lab3_1* and *lab3_2*. We will design a third file named *lab3_3* for final test.

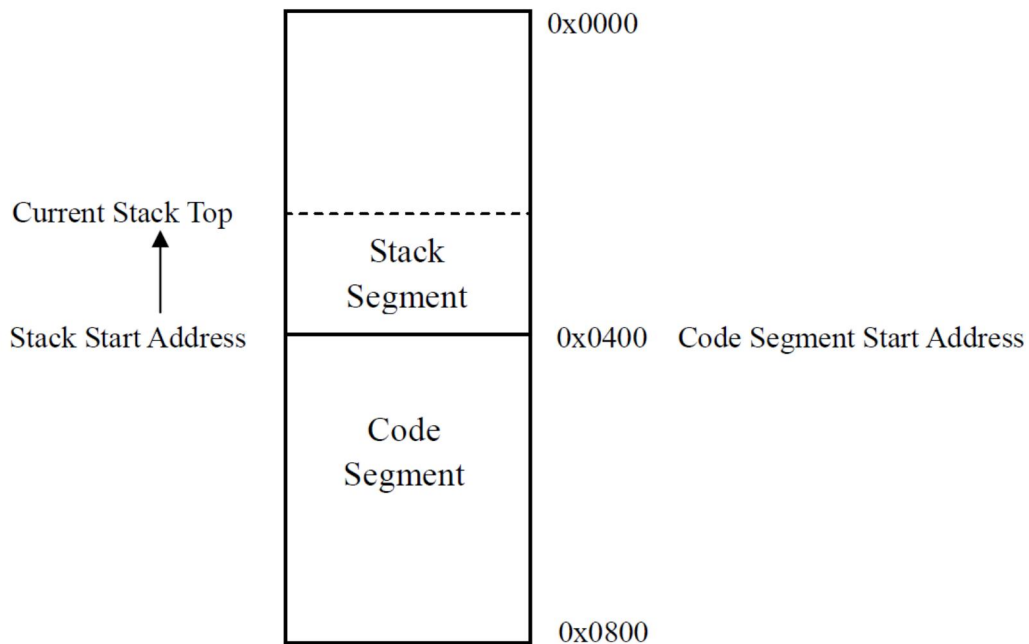
Figure: Memory Usage

Output

You need to output the value of every register in every stage, from the time the PIPE starts to work till the last instruction goes through the W stage. Please refer to *outputFormat.txt* for the output format.

A graphic interface or a console interface are both preferable and will earn extra scores but it is perfectly ok if you do not have one, which means you do not output anything on screen..

Hand In

Please hand in all your source codes and executable file. Also, make a detailed description about

your program's designing way and how to use your program. Easier you can make me to understand your codes, the higher score you may get.