Project 4 (Assembly Language)

1 Instructions:

Write your code in the assembler's editor and Translate all to Binary code. Then Load the Binary code to CPU Emulator using the button present there. Run the code and check the output. For **submission** make a pdf file containing the assembly codes and output screenshots from the CPU Emulator tab.

2 Problems:

2.1 Problem 0:

Write a Hack assembly program that **copies** the value from memory location 0 into memory location 2.

2.2 Problem 1:

Write a Hack assembly program that **subtracts** the values stored in memory locations 1 and 2, and stores the result in memory location 0.

2.3 Problem 2:

Write a Hack assembly program that **swaps** the values stored in memory locations 0 and 1.

2.4 Problem 3:

Write a Hack assembly program that **checks** if the value stored in memory location 0 equals that stored in memory location 1. If they are equal, store 1 in memory location 2; otherwise, store 0.

2.5 Problem 4:

Write a Hack assembly program that implements a simple **loop** to increment the value in memory location 0 by 1 a total of 5 times, storing the result in memory location 1.

2.6 Problem 5:

Write a Hack assembly program that **reads from the keyboard** and stores the code of the first key at RAM[0] and code of the second key at RAM[1] and then adds the codes and stores at RAM[2]. after that it **blackens** the first 16 pixels of row 6 of the screen.

2.7 Problem 6:

Write a Hack assembly program that continuously **checks for keyboard input**. Whenever any key is pressed, the program should **black** the first 16 pixels of the top row(top left corner) of the screen. The program should keep running, waiting for additional key presses, and each key press should result in a black line being drawn on the screen.

2.8 Problem 7 and 8:

Complete the tasks mentioned here