

# Lab5:Sequence Detector

## Instructions

In this lab,you need to develop a sequence detector in LC-3 to solve a problem.

1. **Initial Prompt:**On starting,display **SD is ready!Please input your number:** and wait for input.
2. **Sequence Input:**The sequence detector expect a sequence of **0** and **1**.The sequence should be typed in by keyboard.After entering the sequence,type **y** to submit.
3. **Count Specific Sequence:**The finite state machine should find and count how many **1010** in the sequence.For example,in sequence **1100101011010**,there are **two 1010**.Attention that 101010 means there are **two 1010**.
4. **Showing Result:**After finding out the result,display **There are(is) X 1010 in the sequence!** Where **X** is the number of **1010** in the input sequence.Then the program should **HALT** immediately.

## Programming Guidelines

1. Start with **.ORIG x3000** and end with **.END**
2. Last instruction should be **TRAP x25(HALT)**
3. Use **capitalized** keywords and labels(e.g. "ADD" rather than "add")
4. Maintain **spaces** after **commas** for clarity
5. **Decimal** constants start with **#**,**hexadecimal** with lowercase **x**
6. Write **comments** for clarity

## Reports

Your report should be structured into the following sections:

## **Purpose**

**Program Design:** Describe the principles of your program. It will be better if you draw your state diagram.

**Testing Evidence:** Provide screenshots or a video link demonstrating the program's functionality.