In-class lab 2:

Instructions for the experiment on data moving

1.   Experiment Objectives

The main objective of in-class lab 2 is to achieve data moving experiments on the appropriate hardware and software development platform, with the specific objective as follow:

● Be able to use the different addressing mode, including immediate, register, direct, indirect, register indexed etc., to accomplish the required tasks.

2. Main Experiment Apparatus

(1) Software platform:

This experiment could be implemented by using simulation software Keil μvision and burning software PZISP which are stored in the optical accompanied with microcontroller development toolkit.
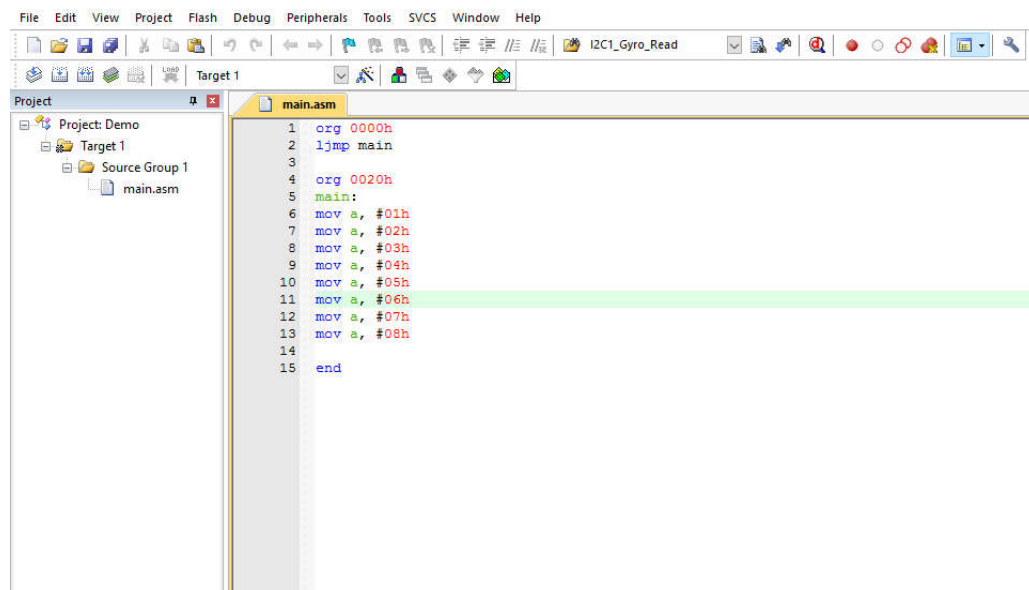
(2) Hardware platform:

● PRECHIN microcontroller development toolkit as shown below, including the main board (HC6800EM3-V3.0) and other accessories:
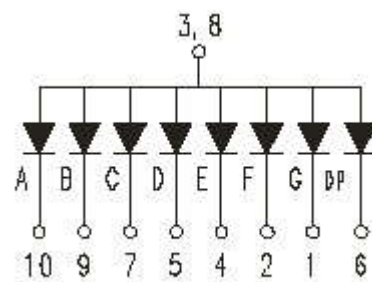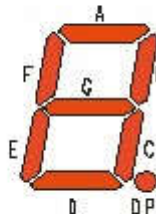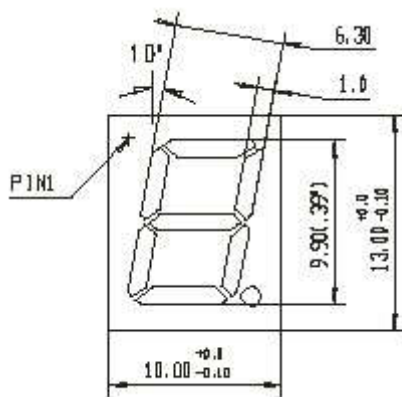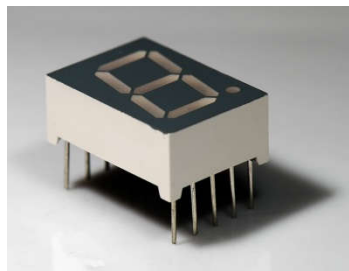
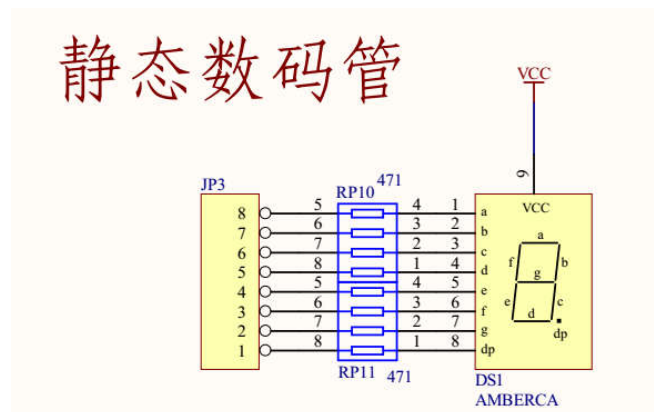1. HC6800EM3-V3.0主板 1块   2. ABS材料多功能外壳 1个   3. ARM核心板 1个

- Seven-segment display (SSD)

The SSD used in the experimental toolkit adopts common anode configuration with the circuit shown below.
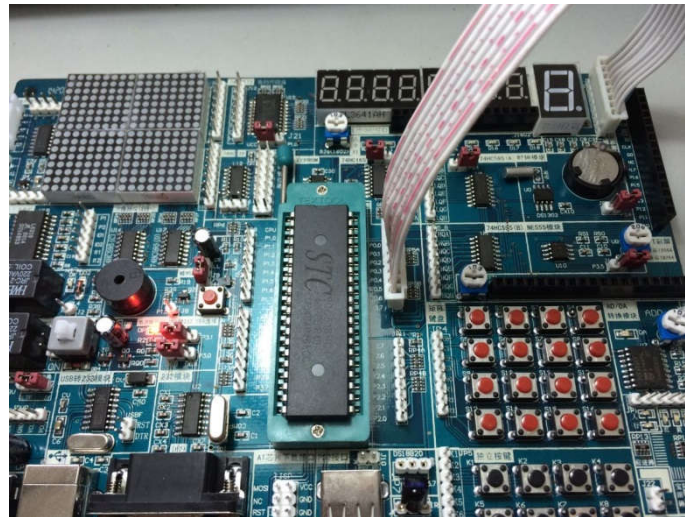

3. Experiment Tasks and Requirements

Each student should complete the following task independently in class:

● Write a program to display your own **student matriculation number** on the seven-segment display (SSD) sequentially.

Reference steps:

● Connect the SSD (JP3) with port 0 (P0) with wires as shown in the following figure

● Create a project in Keil uvision IDE

● Add the assembly code "DataMoving.asm" into the project

● Write the program in the section shown in the following figure

● Store your student matriculation number in RAM address starting from 40H using immediate addressing mode.

● Copy each digit of the matriculation number stored in RAM using register indirect addressing mode to register A.

● Fetch the corresponding hexadecimal encoding stored in ROM using register

indexed addressing mode and store it in register A.

- Copy the fetched hexadecimal encoding to port 0 (P0).

- After copying a number to P0, add an instruction "AJMP DELAY" below to pause for a moment so that we can check the result on SSD clearly.

4. Grading

(1) Performance in-class (70%);

(2) Lab report (30 %);