

Mini Project

EKT222 Sem 2 2020/2021

General Description

1. A group project.
 - 1 group should not have more than 5 students.
 - Members of group can be from different Lab group.
 - 1 group will work on one project title – do not change title after your title is logged in the mini project title.
 - Group project title must not be the same with other group's title. (mini project title log form will be provided)
 - Expected 32 groups, in which the viva will consume 6 HRS(One day)- planned on WW14.
2. Open end project - you can propose your own project title but must fulfill the minimum requirements of mini project.

Minimum requirements:

- Use only My1SIM85 simulator program and Assembly Language
- 16KB RAM and 16KB ROM
- 3 PPI 8255
- 1 key pad
- 4 seven segment
- 1 port of switch
- 1 port of LED
- 1 interrupt

3. Assessment – online live presentation

Method:

- Power point presentation - 3 minutes
- My1SIM85 live demo - 5 minute
- Q&A – 2 minutes

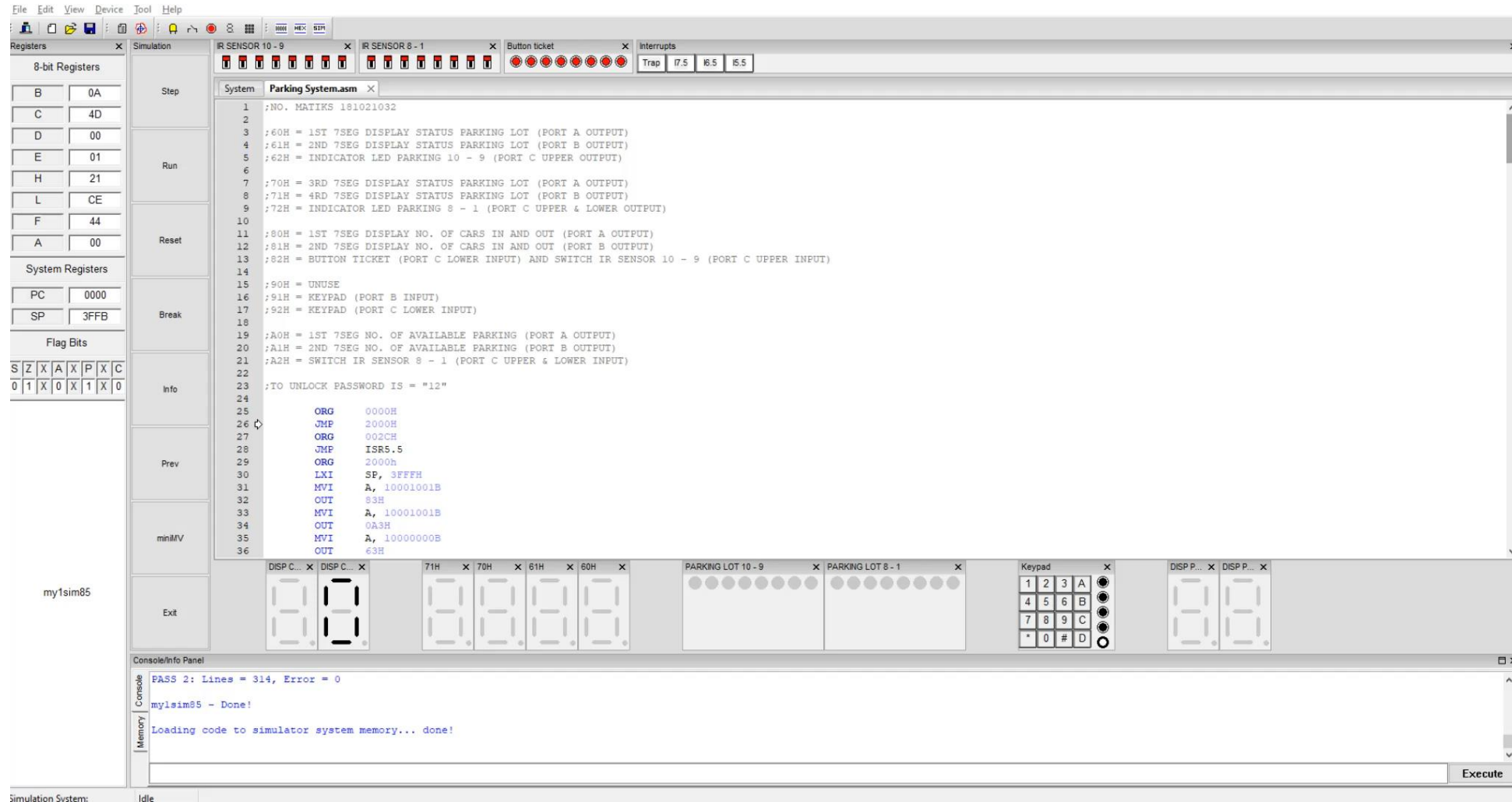
Criteria:

- Theory of basic Microprocessor Architecture.
- Problem analysis, propose solution and use computer programming for application development to solve the problem.
- Microprocessor system design.

Assessment will be guided by a rubric which will be available for you to review soon

4. All members must participate in the presentation and demo. Each member must introduce yourself first before continue with presentation. If there is a member of the group do not participate at all, there will be penalty on the overall mark.

Example project –sample 1.



Example project –sample .

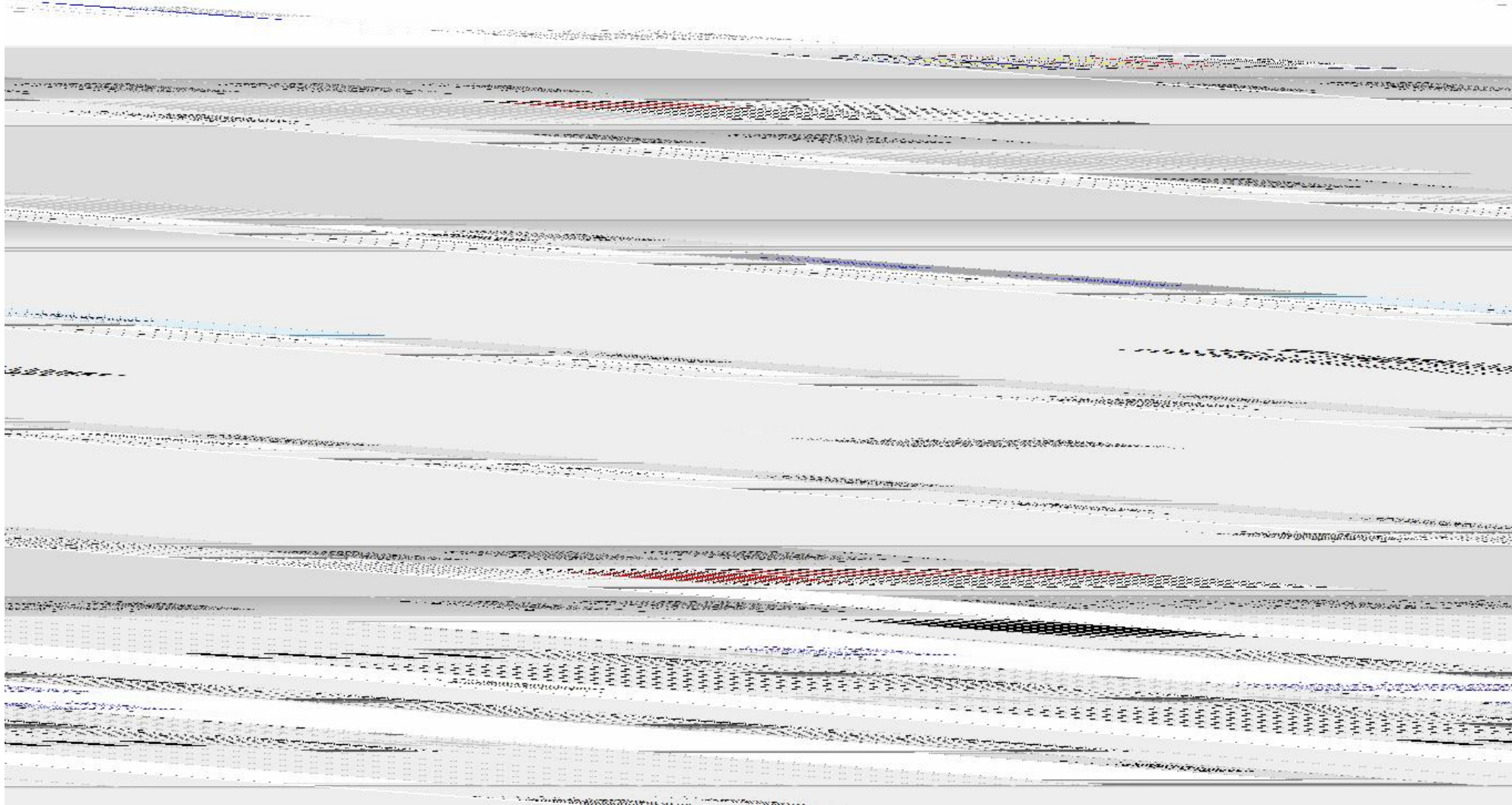
The screenshot displays a 68000 assembly simulator interface. The top menu bar includes File, Edit, View, Device, Tool, and Help. Below the menu is a toolbar with icons for file operations and simulation control. The main window is divided into several panes:

- Registers:** A table showing 8-bit and System Registers. The 8-bit registers (B, C, D, E, H, L, F, A) have values 6F, 12, CF, 1A, D9, 35, 91, and 00 respectively. System registers (PC, SP) have values 001A and 3FFF. Flag bits (S, Z, X, A, X, P, X, C) are shown as 1, 0, X, 1, X, 0, X, 1.
- Code Editor:** Displays assembly code for *Assignment_Indvdu.asm. The code includes port definitions, equates, and a main loop labeled CHECKWATER.
- Console/Info Panel:** Shows the simulation status, including "my1sim85 - Done!" and "Loading code to simulator system memory... done!".

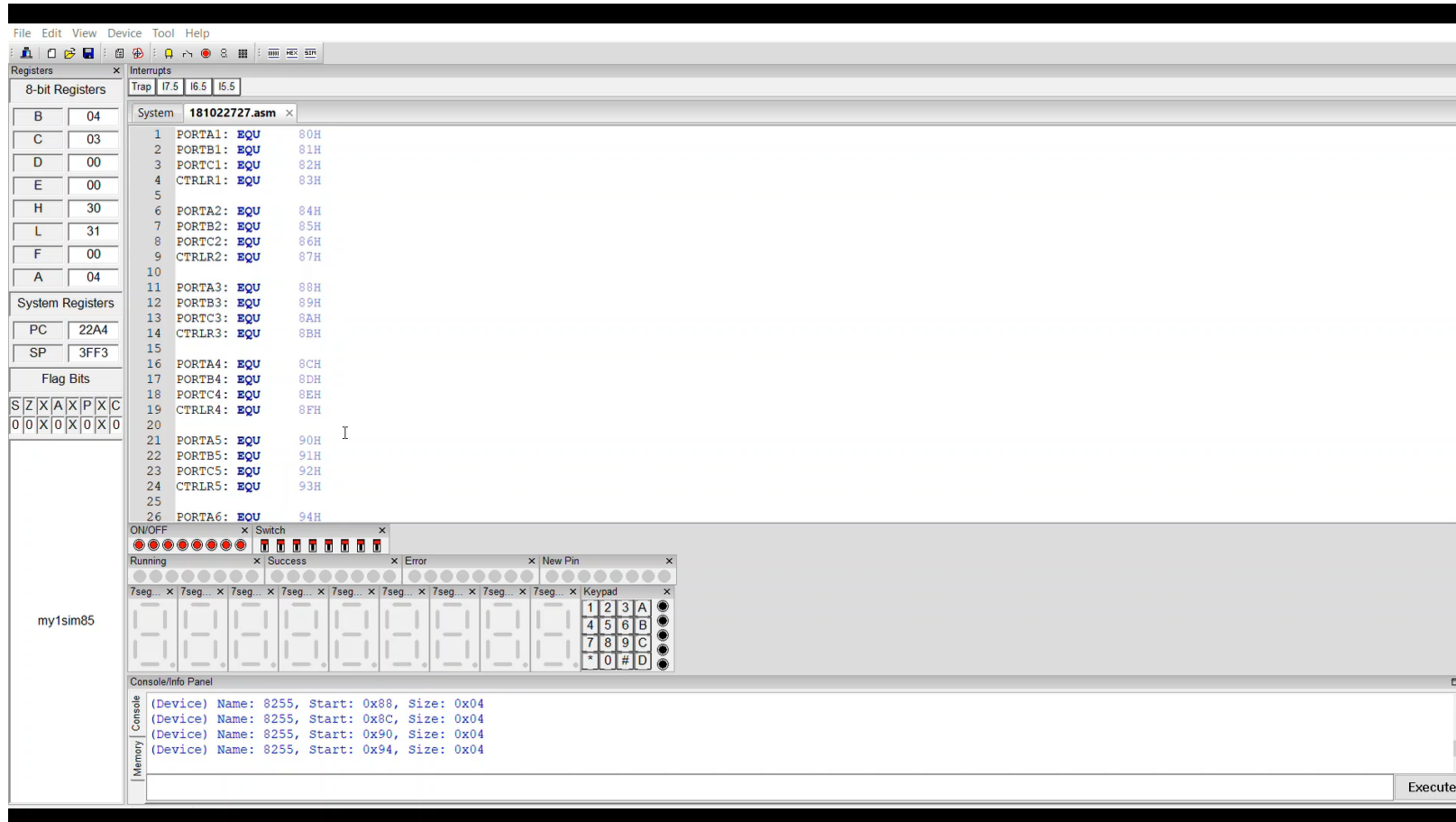
The assembly code in the editor is as follows:

```
1 PORTA1: EQU 80H ;7SEG 'C, 'R, 'H
2 PORTB1: EQU 81H ;7SEG 'O, 'o, 'o
3 PORTC1: EQU 82H ;7SEG 'l, 'o, 't
4 CREG1: EQU 83H
5
6 PORTA2: EQU 84H ;7SEG 'd, m
7 PORTB2: EQU 85H ;SWITCH - SET TIMER
8 PORTC2: EQU 86H ;7SEG TIMER
9 CREG2: EQU 87H
10
11 PORTA3: EQU 88H ;SWITCH2 - WATER CONDITION
12 PORTB3: EQU 89H ;BUTTON - TRIGGER DISPENSER
13 PORTC3: EQU 8AH ;LED - WATER CONDITION
14 CREG3: EQU 8BH
15
16
17 ORG 0000H
18 LXI SP, 3FFFH
19 MVI A, 10000000B ;ALL OUTPUT
20 OUT CREG1
21 MVI A, 10000010B ;PORT B - INPUT , ELSE OUTPUT
22 OUT CREG2
23 MVI A, 10010010B ;PORT A , B - INPUT.
24 OUT CREG3
25
26 CHECKWATER:
27 IN PORTA3
28 BNT 0FH
```

Example project –sample 3



Example project –sample 4



Discussion Topic

- Discuss about Microprocessor and Microcontroller, describe their differences, advantage and disadvantage. Do write your own opinion on which one is your preference and why?