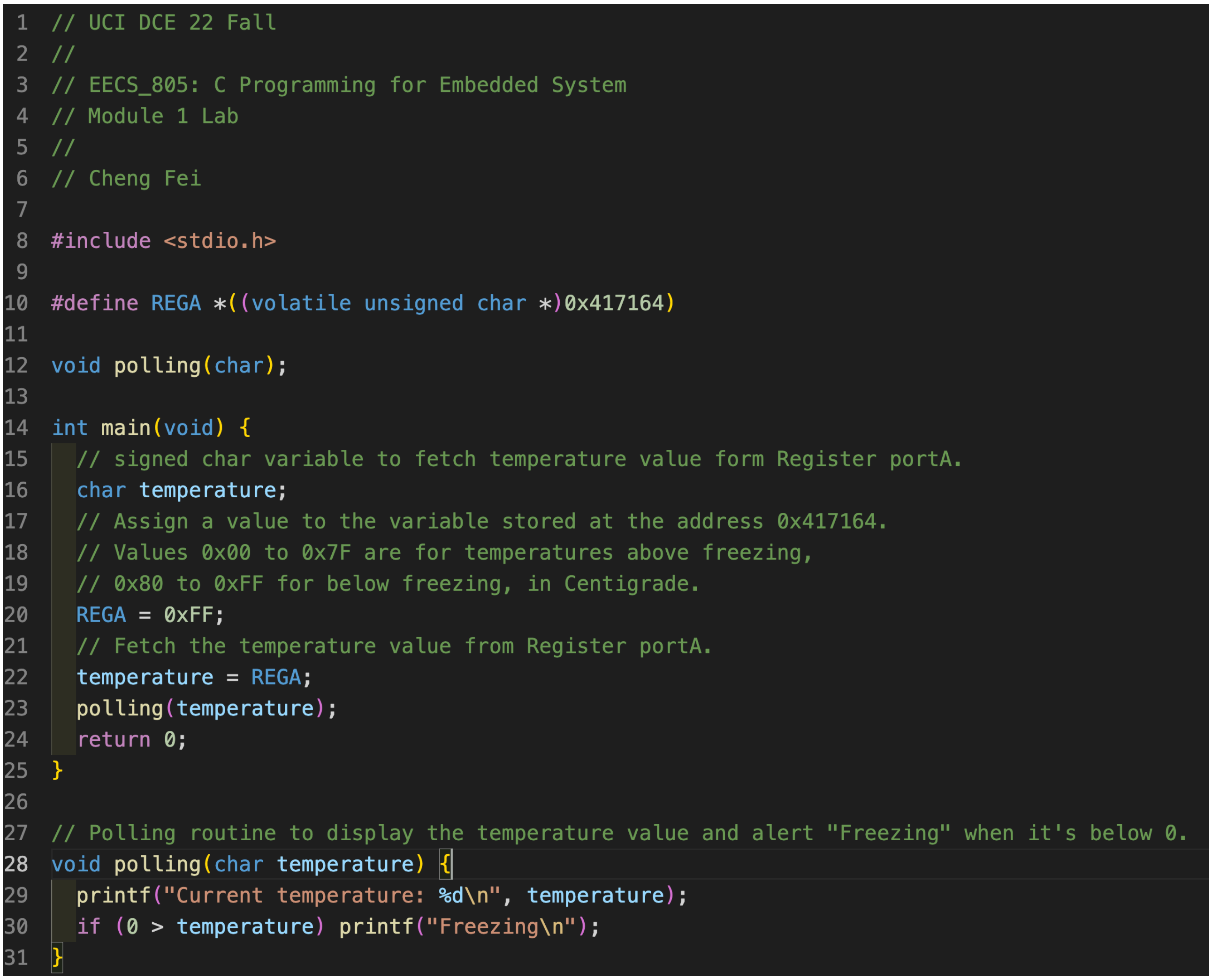
Module 2 Lab:

With REGA definition:

Source Code:



```c
// UCI DCE 22 Fall
//
// EECS_805: C Programming for Embedded System
// Module 1 Lab
//
// Cheng Fei

#include <stdio.h>

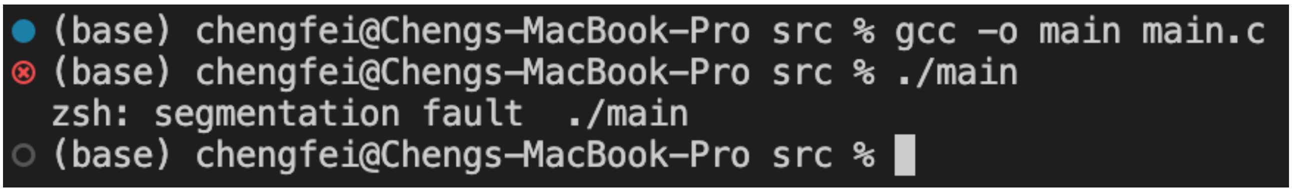
#define REGA *((volatile unsigned char *)0x417164)

void polling(char);

int main(void) {
    // signed char variable to fetch temperature value form Register portA.
    char temperature;
    // Assign a value to the variable stored at the address 0x417164.
    // Values 0x00 to 0x7F are for temperatures above freezing,
    // 0x80 to 0xFF for below freezing, in Centigrade.
    REGA = 0xFF;
    // Fetch the temperature value from Register portA.
    temperature = REGA;
    polling(temperature);
    return 0;
}

// Polling routine to display the temperature value and alert "Freezing" when it's below 0.
void polling(char temperature) {
    printf("Current temperature: %d\n", temperature);
    if (0 > temperature) printf("Freezing\n");
}
```

Console Output:



```
● (base) chengfei@Chengs-MacBook-Pro src % gcc -o main main.c
⊗ (base) chengfei@Chengs-MacBook-Pro src % ./main
  zsh: segmentation fault  ./main
○ (base) chengfei@Chengs-MacBook-Pro src % 
```

Without REGA definition and Assign values directly to temperature:

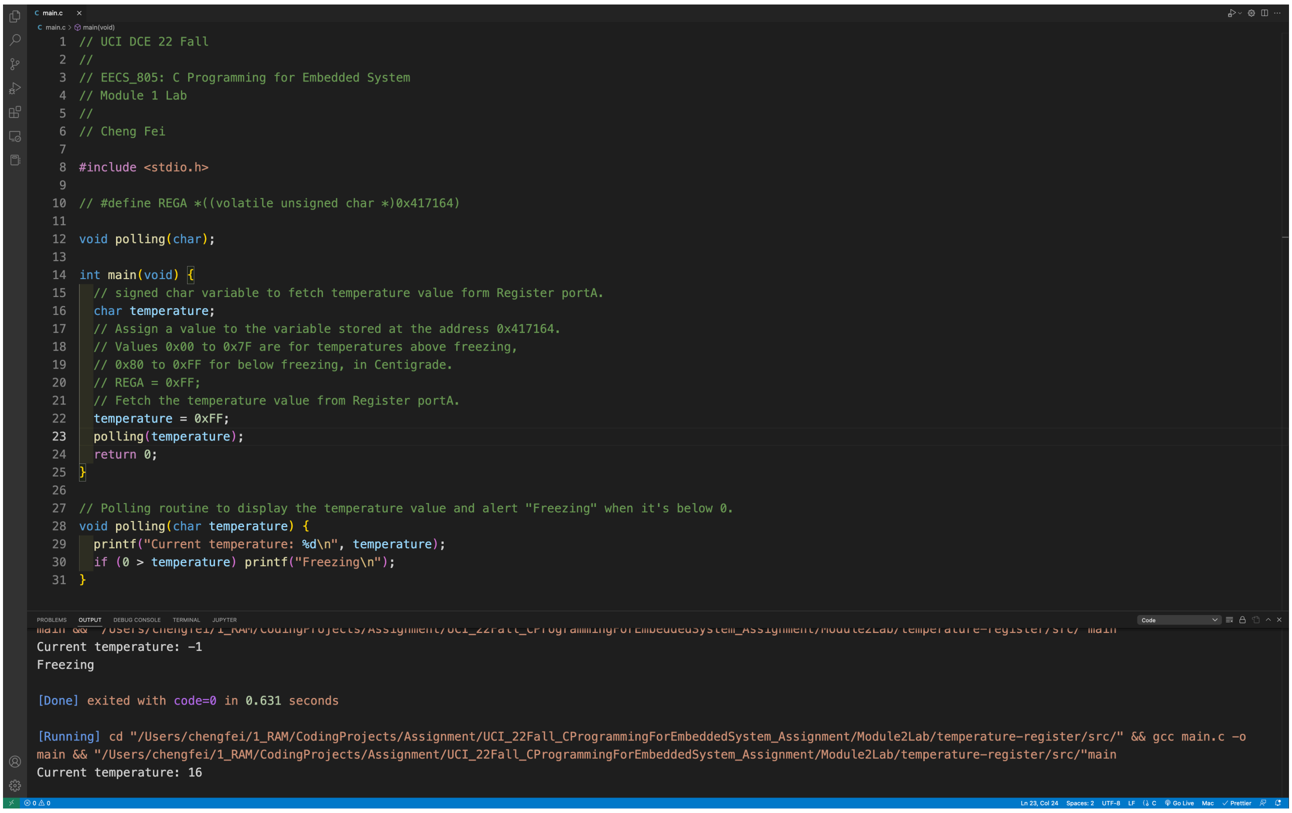
Source code and Output:

PS:

when assigning 0xFF to temperature, the output is “Current temperature: -1 Freezing”;

When assigning 0x10 to temperature, the output is “Current temperature: 16”.

Both conditions compile successfully.



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  // REGA = 0xFF;
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  return 0;
}

// Polling routine to display the temperature value and alert "Freezing" when it's below 0.
void polling(char temperature) {
  printf("Current temperature: %d\n", temperature);
  if (0 > temperature) printf("Freezing\n");
}
```

```
main && "/Users/chengfei/1_RAM/CodingProjects/Assignment/UCI_22Fall_CProgrammingForEmbeddedSystem_Assignment/Module2Lab/temperature-register/src/"main
Current temperature: -1
Freezing

[Done] exited with code=0 in 0.631 seconds

[Running] cd "/Users/chengfei/1_RAM/CodingProjects/Assignment/UCI_22Fall_CProgrammingForEmbeddedSystem_Assignment/Module2Lab/temperature-register/src/" && gcc main.c -o
main && "/Users/chengfei/1_RAM/CodingProjects/Assignment/UCI_22Fall_CProgrammingForEmbeddedSystem_Assignment/Module2Lab/temperature-register/src/"main
Current temperature: 16
```