

Lecture 4 Assignments

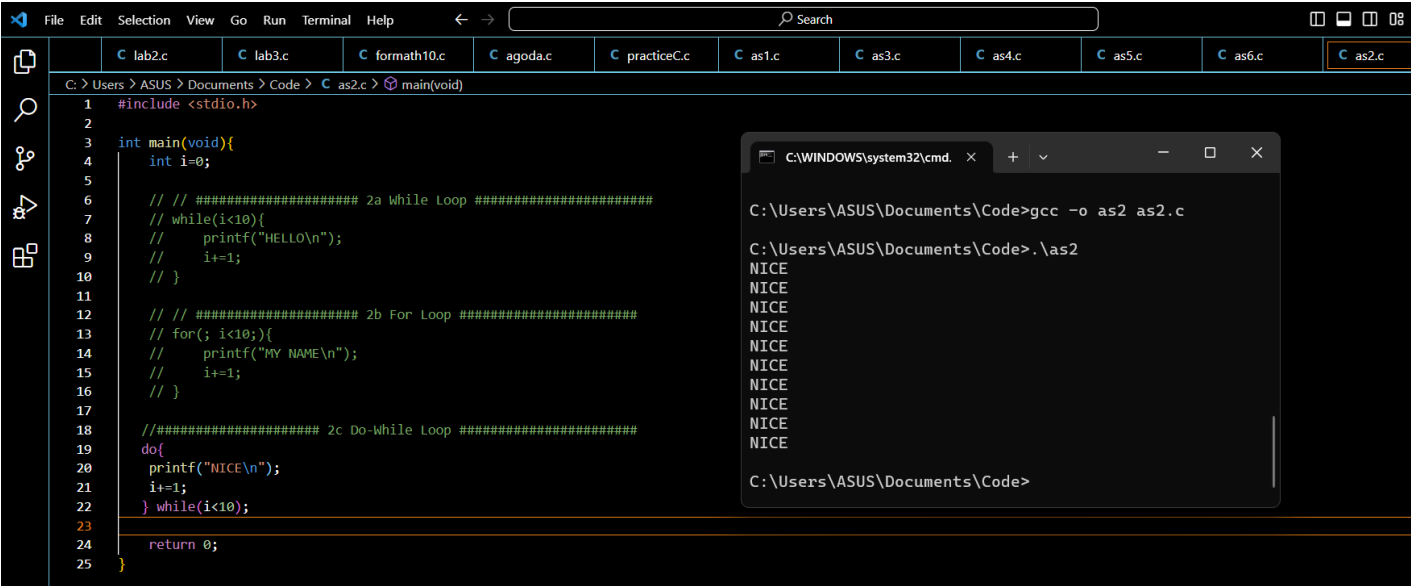
Student Number: 202206224

>>> The output of the program is 1248163264128

a) while (i < 10) {...} **result**

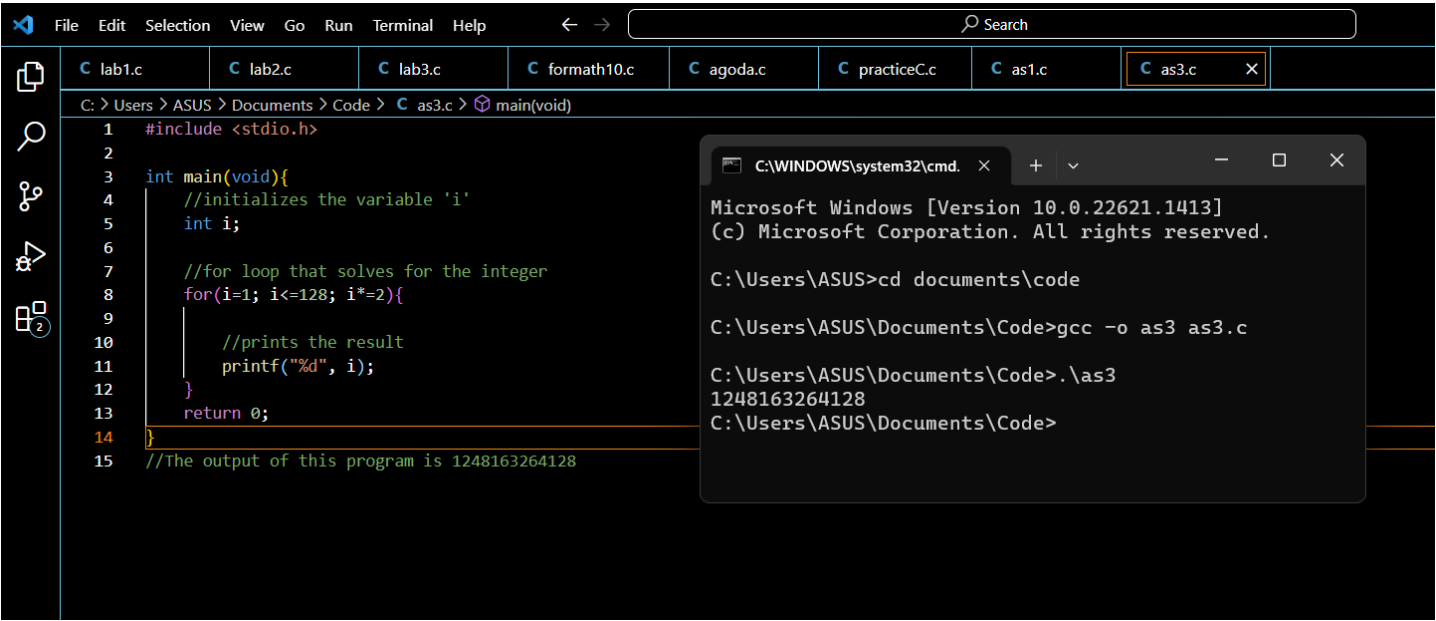
The screenshot shows a Windows IDE with a menu bar (File, Edit, Selection, View, Go, Run, Terminal, Help) and a toolbar. The file explorer on the left shows a project structure with files like lab2.c, lab3.c, formath10.c, agoda.c, practiceC.c, as1.c, as3.c, as4.c, as5.c, as6.c, and as2.c. The main editor displays the content of as2.c, which is a C program with three loops: a while loop (2a), a for loop (2b), and a do-while loop (2c). The program prints "HELLO\n", "MY NAME\n", and "NICE\n" respectively. A terminal window on the right shows the command prompt with the command `C:\Users\ASUS\Documents\Code>gcc -o as2 as2.c` and the output `C:\Users\ASUS\Documents\Code>.\as2`, which prints "MY NAME" multiple times.

c) do {...} while (i < 10); **result**

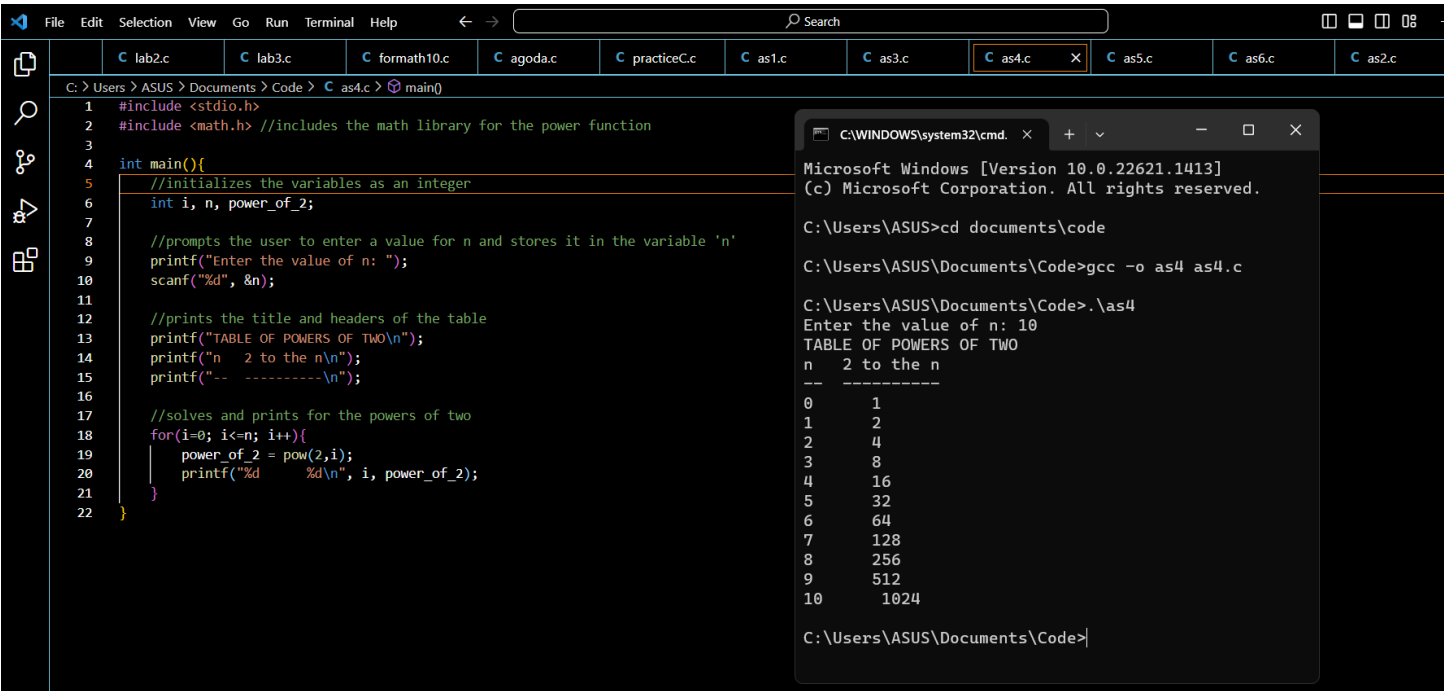


>>> The results after inserting the same loop body for all three loops are the same. Therefore, they are all equivalent with each other.

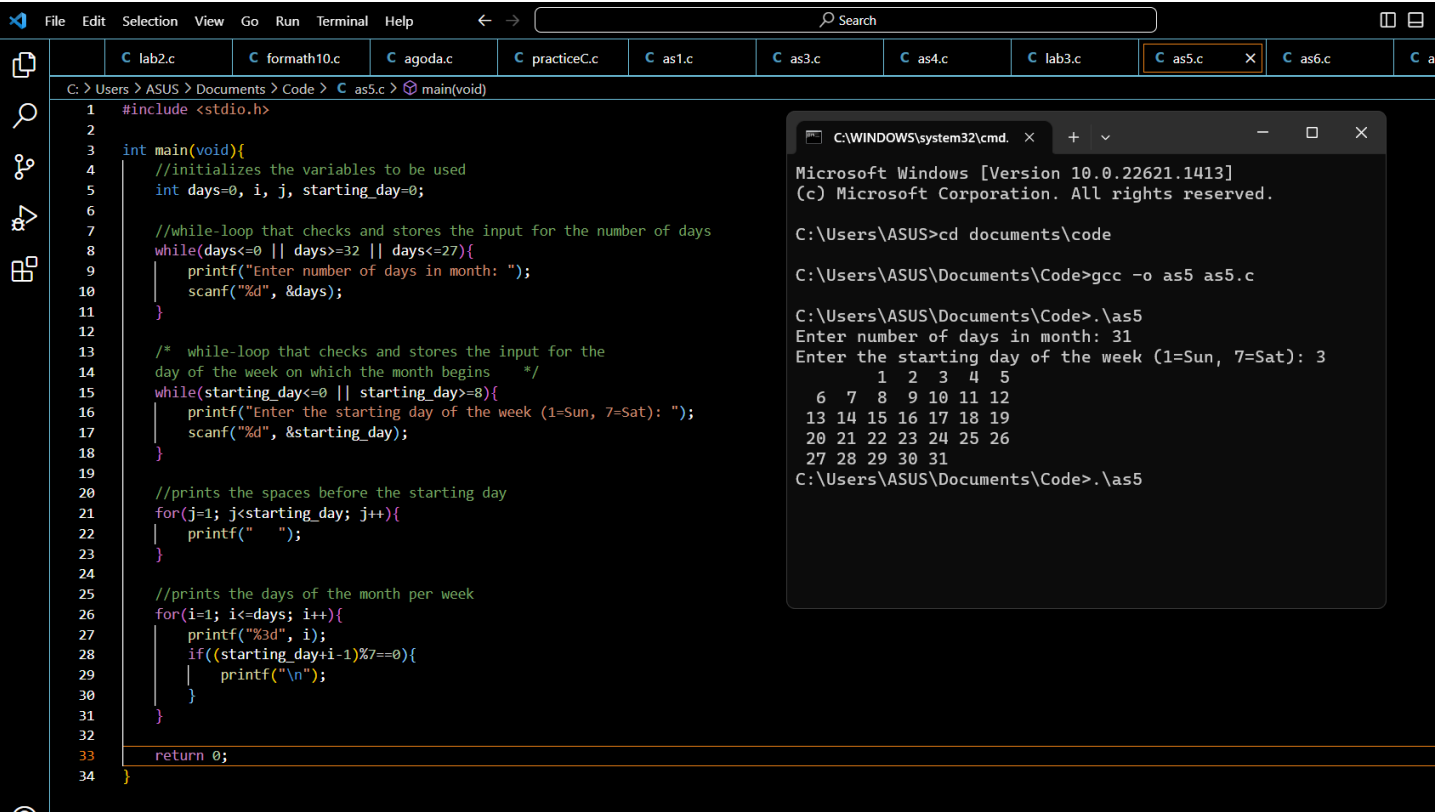
3. Convert item 1 into an equivalent for statement. You can validate your answer by checking if the produced outputs by both the while and for statements are similar.



4. Write a code that computes for the power of two.



5. Write a program that displays a one-month calendar.



- 6.
- a. Revise line 16 such that you use a designated initializer to set pathways 0 and 2 to be true, and the rest will be false. Make the initializer as short as possible.

>>> bool pathway [8] = {[0] = 1, [2] = 1};

- b. Revise line 16 such that the initializer will be short as possible (without using a designated initializer)

>>> bool pathway [8] = {1, 0, 1};

Note: The code for this is saved as ‘as6.c’

#7 Proceed to next page →

7. Code saved as ‘as7.c’

```
File Edit Selection View Go Run Terminal Help
C:\Users\ASUS\Documents\Code> C as7.c > main(void)
1 #include <stdio.h>
2
3 //macro to define the size of 2d array
4 #define N 8
5 #define M 8
6
7 int main(void){
8     //initializes the adjacency matrix and point
9     int road_networks[N][M]={
10         {1,1,1,0,0,1},{1,1,1,1},
11         {0,1,1,0,1,1},{0,0,0,1,1},
12         {0,0,0,1,1},{1,0,1,0,0,1},
13         {1,0,0,1,0,0,1},{0,0,0,0,0,1,0,1}
14     };
15     int point;
16
17     //asks the user about the location and stores it as the value of 'point'
18     printf("Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H\n");
19     scanf("%d", &point);
20
21     //switch statement to print the designated point
22     switch(point){
23         case 0: printf("At point: A\n"); break;
24         case 1: printf("At point: B\n"); break;
25         case 2: printf("At point: C\n"); break;
26         case 3: printf("At point: D\n"); break;
27         case 4: printf("At point: E\n"); break;
28         case 5: printf("At point: F\n"); break;
29         case 6: printf("At point: G\n"); break;
30         case 7: printf("At point: H\n"); break;
31         default: break;
32     }
33
34     //determines the nearest charging station to the location provided by the user
35     if(point==2){
36         printf("C is a charging station");
37     }
38     else if(point==3){
39         printf("D is a charging station");
40     }
41 }
```

```
File Edit Selection View Go Run Terminal Help
C:\Users\ASUS\Documents\Code> C as7.c > ...
33
34     //determines the nearest charging station to the location provided by the user
35     if(point==2){
36         printf("C is a charging station");
37     }
38     else if(point==3){
39         printf("D is a charging station");
40     }
41     else{
42         if(road_networks[point][2]==0 && road_networks[point][3]==0){
43             printf("There is no charging station nearby");
44         }
45         else if(road_networks[point][2]==1){
46             printf("C arrived to charging station");
47         }
48         else if(road_networks[point][3]==1){
49             printf("D arrived to charging station");
50         }
51         else{
52             printf("The point does not exist");
53         }
54     }
55 }
56
57
```

Output of the Code:

```
C:\WINDOWS\system32\cmd. x + v
Microsoft Windows [Version 10.0.22621.1413]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ASUS>cd documents\code

C:\Users\ASUS\Documents\Code>gcc -o as7 as7.c

C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
0
At point: A
C arrived to charging station
C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
1
At point: B
C arrived to charging station
C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
2
At point: C
C is a charging station
C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
3
At point: D
D is a charging station
```

```
C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
4
At point: E
D arrived to charging station
C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
5
At point: F
C arrived to charging station
C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
6
At point: G
D arrived to charging station
C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
7
At point: H
There is no charging station nearby
C:\Users\ASUS\Documents\Code>.\as7
Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H
8
The point does not exist
C:\Users\ASUS\Documents\Code>|
```