

1. The output of the program is: 1 2 4 8 16 32 64 128

```
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as1.c - Untitled (Workspace) - Visual Studio Code

C as1.c
C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4> C as1.c main(void)
1 //Lecture 4 - 1
2
3 #include <stdio.h>
4
5 int main(void)
6 {
7     int i;
8     i = 1;
9     while(i <= 128){
10         printf("%d ", i);
11         i *= 2;
12     }
13 }
14

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
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PS C:\Users\Marj\Documents\CMSC 21\Codes> cd "c:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4" ; if ($?) { gcc as1.c -o as1 } ; if ($?) { .\as1 }
1 2 4 8 16 32 64 128
PS C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4>
```

2. Statement c is not equivalent to statements a and b. If you plug in values less than 10 in i, then the three statements will produce the same value, but if you use values > 10, only statement c will execute. Do-while loops executes at least once.

```
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as2.c - Untitled (Workspace) - Visual Studio Code

C as2.c
C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4> C as2.c main(void)
1 //Lecture 4 - 2
2
3 #include <stdio.h>
4
5 int main(void){
6
7     int i = 1; // if you plug in 1 as i it produces the same value but if you plug in numbers > 10, statements a and b will not execute but c will.
8
9     //a
10    while(i < 10){
11        printf("%d", i++);
12    }
13    printf("\n");
14
15    //b
16    i = 1;
17    for(; i < 10; ){
18        printf("%d", i++);
19    }
20    printf("\n");
21
22    //c
23    i = 1;
24    do{
25        printf("%d", i);
26        i++;
27    }while(i < 10);
28 }

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PS C:\Users\Marj\Documents\CMSC 21\Codes> cd "c:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4" ; if ($?) { gcc as2.c -o as2 } ; if ($?) { .\as2 }
123456789
123456789
123456789
PS C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4>
```

```
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as2.c - Untitled (Workspace) - Visual Studio Code

C as2.c
C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4> C as2.c ...
1 //Lecture 4 - 2
2
3 #include <stdio.h>
4
5 int main(void){
6
7     int i = 11; // if you plug in 1 as i it produces the same value but if you plug in numbers > 10, statements a and b will not execute but c will.
8
9     //a
10    while(i < 10){
11        printf("%d", i++);
12    }
13    printf("\n");
14
15    //b
16    i = 11;
17    for(; i < 10; ){
18        printf("%d", i++);
19    }
20    printf("\n");
21
22    //c
23    i = 11;
24    do{
25        printf("%d", i);
26        i++;
27    }while(i < 10);
28 }

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PS C:\Users\Marj\Documents\CMSC 21\Codes> cd "c:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4" ; if ($?) { gcc as2.c -o as2 } ; if ($?) { .\as2 }
11
PS C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4>
```

3.

```
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as3.c - Untitled (Workspace) - Visual Studio Code

C as3.c x
C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4> C as3.c > main(void)
1 //Lecture 4 - 3
2
3 #include <stdio.h>
4
5 int main(void)
6 {
7     int i;
8
9     //for statement
10    for(i = 1; i <= 128; i *= 2){
11        printf("%d ", i);
12    }
13
14    printf("\n");
15
16    //while statement
17    i = 1;
18    while(i <= 128){
19        printf("%d ", i);
20        i *= 2;
21    }
22
23    return 0;
24 }
```

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PS C:\Users\Marj\Documents\CMSC 21\Codes> cd "c:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4\" ; if (\$?) { gcc as3.c -o as3 } ; if (\$?) { .\as3 }

1 2 4 8 16 32 64 128
1 2 4 8 16 32 64 128
PS C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4>

4.

```
File Edit Selection View Go Run Terminal Help
as4.c - Untitled (Workspace) - Visual Studio Code

C as4.c x
C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4> C as4.c > main(void)
1 //Lecture 4 - 4
2
3 #include <stdio.h>
4
5 int main(void){
6
7     int i = 1, n, result = 1;
8
9     printf("TABLE OF POWERS OF TWO \n");
10    printf("\n");
11    printf(" n      2 to the n \n");
12    printf("---  ----- \n");
13
14    printf(" 0          1\n"); //special case for 0
15
16    for(i = 1; i <= 10; i++){
17        result *= 2;
18        printf(" %d          %d\n", i, result);
19    }
20 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

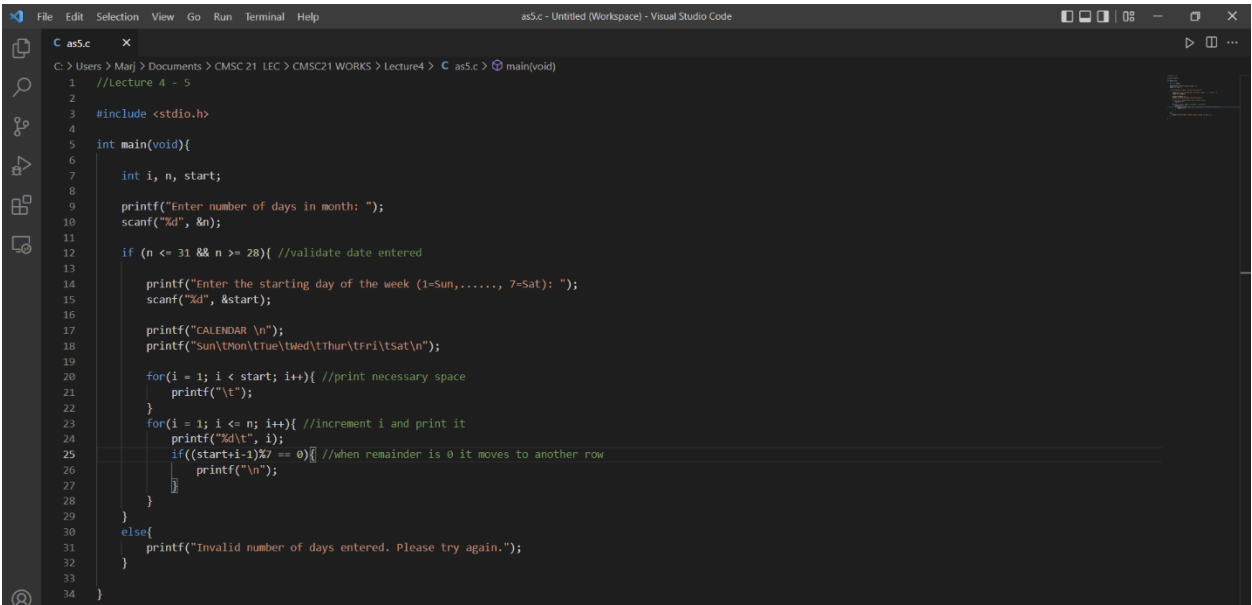
PS C:\Users\Marj\Documents\CMSC 21\Codes> cd "c:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4\" ; if (\$?) { gcc as4.c -o as4 } ; if (\$?) { .\as4 }

TABLE OF POWERS OF TWO

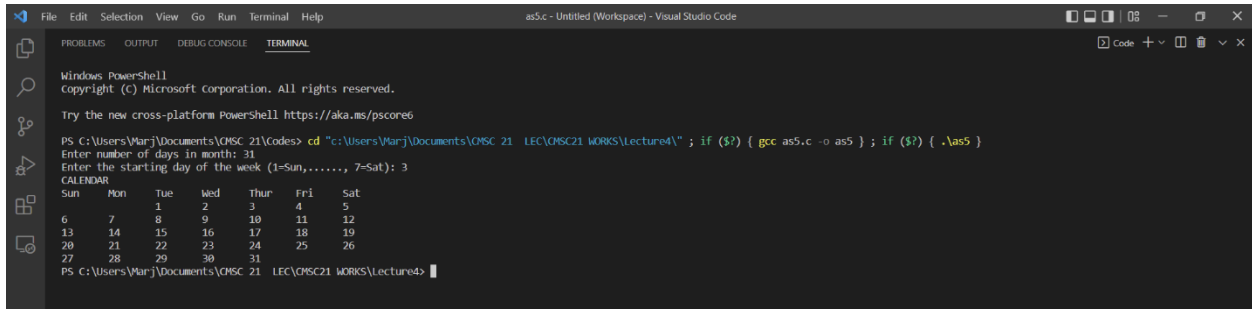
n	2 to the n
0	1
1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256
9	512
10	1024

PS C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4>

5.



```
C: as5.c x
C:\Users\Marj\Documents\CMSC21 LEC\CMSC21 WORKS\Lecture4> C:\as5.c> main(void)
1 //Lecture 4 - 5
2
3 #include <stdio.h>
4
5 int main(void){
6
7     int i, n, start;
8
9     printf("Enter number of days in month: ");
10    scanf("%d", &n);
11
12    if (n <= 31 && n >= 28){ //validate date entered
13
14        printf("Enter the starting day of the week (1=Sun,....., 7=Sat): ");
15        scanf("%d", &start);
16
17        printf("CALENDAR \n");
18        printf("Sun\Mon\tTue\tWed\tThur\tFri\tSat\n");
19
20        for(i = 1; i < start; i++){ //print necessary space
21            printf("\t");
22        }
23        for(i = 1; i <= n; i++){ //increment i and print it
24            printf("%d\t", i);
25            if(((start+i-1)%7 == 0) || //when remainder is 0 it moves to another row
26                i == n)
27                printf("\n");
28        }
29    }
30    else{
31        printf("Invalid number of days entered. Please try again.");
32    }
33 }
34 }
```



```
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PS C:\Users\Marj\Documents\CMSC 21\Codes> cd "C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4\" ; if ($?) { gcc as5.c -o as5 } ; if ($?) { .\as5 }
Enter number of days in month: 31
Enter the starting day of the week (1=Sun,....., 7=Sat): 3
CALENDAR
Sun Mon Tue Wed Thur Fri Sat
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31
PS C:\Users\Marj\Documents\CMSC 21 LEC\CMSC21 WORKS\Lecture4>
```

Link: <https://github.com/marj12/CMSC21/tree/main/Lecture4/Assignments>