Github link: https://github.com/jarenmatthew/CMSC-21/tree/main/Lecture4/Assignments

1.

```c
#include <stdio.h>
int main(void)
{
    int i;

    i = 1;

    while (i <= 128) {
        printf("%d ", i);
        i *= 2;
    }

    return 0;
}
```

Output :

```
1 2 4 8 16 32 64 128
```

2.

```c
    do{
        printf("%d",i);
        i++;
    }while(i < 10);
}
```

Output:

```
11
```

The do-while loop or letter C is not equivalent to the other two because it always has to execute once before checking its condition to loop. In the output above, 11 was printed because I assigned the value 11 to i. The other two loops or letters, a and b, did not print anything.

3.

```c
#include <stdio.h>
int main(void)
{
    int i = 1;

    for(; i <= 128; i *= 2)
    {
        printf ("%d ", i);
    }

    return 0;
}
```

Output:

```
1 2 4 8 16 32 64 128
```

4.

```c
#include <stdio.h>

int main(void)
{
    int n = 10, i=0, twoToN = 1;

    printf ("TABLE OF POWERS OF TWO\n\n");
    printf ("n     2 to the n\n");
    printf ("--    ----------\n");

    while (i <= n)
    {
        if (i == 0)
            twoToN = 1;
        else
            twoToN *= 2;

        printf ("%d\t%d\n", i, twoToN);

        i++;
    }
}
```

Output:

```
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
```

5.

```c
int main(void)
{
    int n, day, i = 0;

    printf ("Enter number of days in month: ");
    scanf ("%d", &n);

    if (n <= 31 && n >= 28)
    {
        printf ("Enter the starting day of the week (1=Sun, 7=Sat): ");
        scanf ("%d", &day);

        if (day <= 7 && day >= 1)
        {
            printf ("\nSun\tMon\tTue\tWed\tThu\tFri\tSat\n");
            printf ("-------------------------------------------------");

            while (i <= (n + day - 1))
            {
                // prints spaces or indention before starting day of the month
                if (i < day){
                    printf ("\t");
                }
                // prints days in the month with an adjustment based on the starting day of the month
                else{
                    printf ("%d\t", i - day + 1);
                }

                // prints a new line when it reaches the 7th day of the week
                if (i % 7 == 0){
                    printf("\n");
                }

                i++;
            }
        }
        else{
            printf("Invalid. Try again.");
        }
    }

    else{
        printf("Invalid. Try again.");
    }
}
```

Output:

```
Enter number of days in month: 31
Enter the starting day of the week (1=Sun, 7=Sat): 3

Sun     Mon     Tue     Wed     Thu     Fri     Sat
-------------------------------------------------
                1       2       3       4       5
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
```