1. Output: 1 2 4 8 16 32 64 128

Welcome | as1.c | as3.c | as4.c

C: > Users > Lenovo > Documents > as1.c > ...

```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. b) for (; i < 10;) {...}

3.

Welcome | as1.c | as3.c

C: > Users > Lenovo > Documents > as3.c > ...

```c
#include <stdio.h>

int main(void){
    int i;

    for (i = 1; i<= 128; i *= 2){
        printf("%d ", i);
    }

    return 0;
}

```

4.

Welcome | as1.c | as3.c | as4.c

C: > Users > Lenovo > Documents > as4.c > ...

```c
#include <stdio.h>

int main(void){

int n, i, sum = 1;

printf("Enter n: ");
scanf("%d", &n);

for (i = 1; i<=n; ++i){
    sum *= 2;
}

printf("2 to the %d: %d", n, sum);

}

```

5.

Welcome | as1.c | as3.c | as4.c | as5.c

C: > Users > Lenovo > Documents > as5.c > ...

```c
#include <stdio.h>

int main(void){

    int i, days, first_day;


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

    printf("Enter the starting day of the week (1=Sun, 7=Sat): ");
    scanf("%d", &first_day);

    printf("\n");

    if (days >= 28 && days <= 31){ //Error Catching: To ensure valid input
        if (first_day > 1 || first_day < 7){ //Error Catching: To ensure valid input
            for(i = 1; i < first_day; i++){
                printf("    ");
            }

            for(i = 1; i <= days; i++){
                printf("%3d", i);
                if((first_day + i - 1) % 7 == 0)
                    printf("\n");
            }

        }
        else{
            printf("Invalid Input");
        }
    }

    else{
        printf("Invalid Input");
    }

    return 0;
}

```

6.

a) bool pathway[8] = {[0] = true, [2] = true};

b) bool pathway[8] = {true, false, true, false};

7.

Welcome | as1.c | as3.c | as4.c | as5.c

C: > Users > Lenovo > Documents > item7_1.c > ...

```c
#include <stdio.h>

int main(void){
    int road_network [9][9] = {
        [0][0]=1, [0][1]=1, [0][5]=1,
        [1][0]=1, [1][1]=1, [1][2]=1,
        [2][1]=1, [2][2]=1, [2][4]=1, [2][5]=1,
        [3][3]=1, [3][4]=1, [3][8]=1,
        [4][3]=1, [4][4]=1,
        [5][0]=1, [5][2]=1, [5][5]=1,
        [6][0]=1, [6][3]=1, [6][6]=1,
        [7][5]=1, [7][7]=1, [7][8]=1,
        [8][7]=1, [8][8]=1
        };
    char road [9] = {'a','b','c','d','e','f','g','h','i'};

    for (int i = 0; i < 9; i++){
        if (i == 2 || i == 3){
            printf("[%c] = ", road [i]);
        }
        else{
            printf("%c   = ", road [i]);
        }

        for (int j = 0; j < 9; j++){
            printf("%3d", road_network [i][j]);
        }
        printf("\n");
    }

    return 0;

}
```

Welcome | as1.c | as3.c | as4.c | as5.c | as7_2.c | as7_1.c

C: > Users > Lenovo > Documents > as7_2.c > ...

```c
#include <stdio.h>

int main(void){

    int point;

    printf("Which point are you located? 0 - A, 1 - B, 2 - C, 3 - D, 4 - E, 5 - F, 6 - G, 7 - H, 8 - I\n");
    scanf("%d", &point);

    printf("At point: %d\n", point);
    if (point == 0 || point == 1 ||  point == 5){
        printf("point: C arrived to charging station");
    }
    else if(point == 2){
        printf("point: C is a charging station");
    }
    else if(point == 3){
        printf("point: D is a charging station");
    }
    else if(point == 4 || point == 6){
        printf("point: D arrived to charging station");
    }
    else{
        printf("point: No direct path to charging station");
    }

}
```