1.) The output of this program is:

1 2 4 8 16 32 64 128

```
#include <stdio.h>
int main(void)
{
 int i; // declaring i as int
 i = 1; // initializing i as 1

// while i is less than or equal to 128, do these
 while (i <= 128) {

 printf("%d ", i); // print the value of i

 i *= 2; // multiply i by 2
 }
 return 0;
}
```

Command Prompt

```
Microsoft Windows [Version 10.0.22000.1696]
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C:\Users\Ideapad Lenovo>cd Desktop

C:\Users\Ideapad Lenovo\Desktop>gcc -o as1 as1.c

C:\Users\Ideapad Lenovo\Desktop>.\as1
1 2 4 8 16 32 64 128
C:\Users\Ideapad Lenovo\Desktop>
```

2.) The do while conditional statement is not equivalent to the while and for conditional statements.

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

// A program that checks who among the three conditional statements differs from the other two
    int i; // declaration
    i = 10; // initialization of i to 10

// While Loop:

    while (i < 10){
// while i is less than 10, do these:
        printf("%d ", i);
        i += 1;
    }
    printf("\n");

// For Loop:
    for (; i < 10; i++){
// if i is less than 10, do these:
        printf("%d ",i);
    }
    printf("\n");

// Do While Loop:

    do{
// do these statements first:
        printf("%d ", i);
        i += 1;
    }
// then check if i < 10, if it is return back to do
    while(i < 10);


    return 0;

}
```

Command Prompt

```
Microsoft Windows [Version 10.0.22000.1696]
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C:\Users\Ideapad Lenovo>cd Desktop

C:\Users\Ideapad Lenovo\Desktop>gcc -o as2 as2.c

C:\Users\Ideapad Lenovo\Desktop>.\as2


10
C:\Users\Ideapad Lenovo\Desktop>
```

3.)

Command Prompt

```
Microsoft Windows [Version 10.0.22000.1696]
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C:\Users\Ideapad Lenovo>cd Desktop

C:\Users\Ideapad Lenovo\Desktop>gcc -o as3 as3.c

C:\Users\Ideapad Lenovo\Desktop>.\as3
1 2 4 8 16 32 64 128
C:\Users\Ideapad Lenovo\Desktop>
```
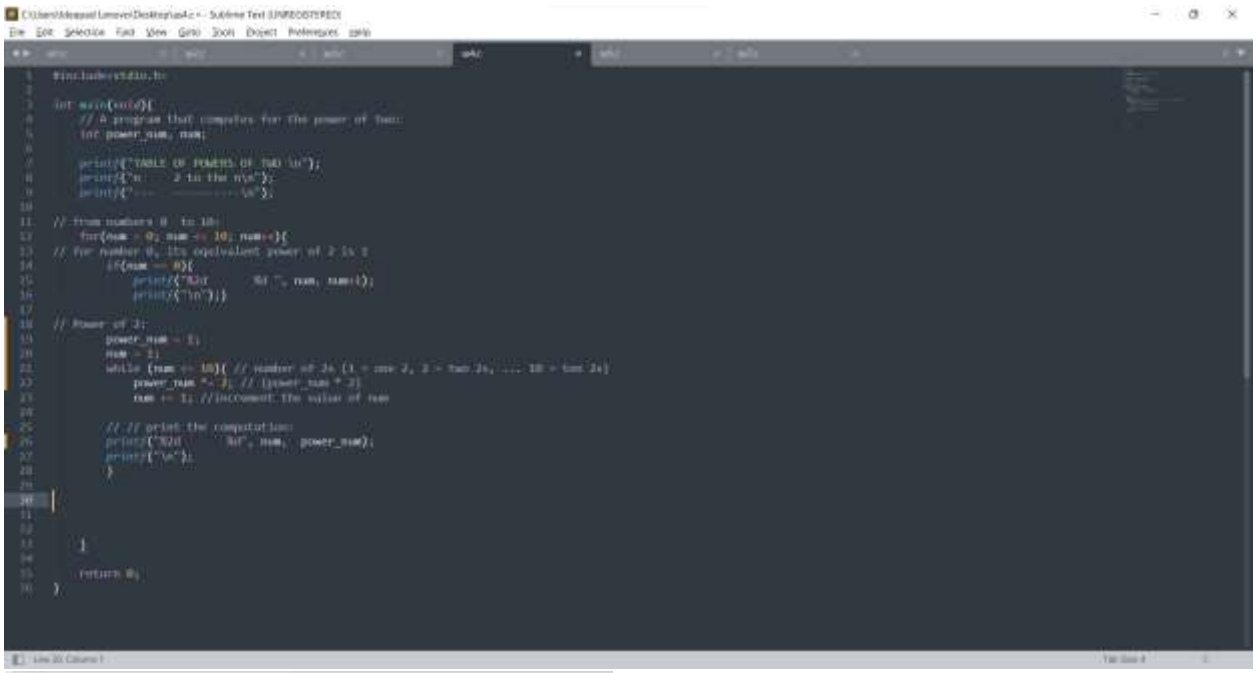
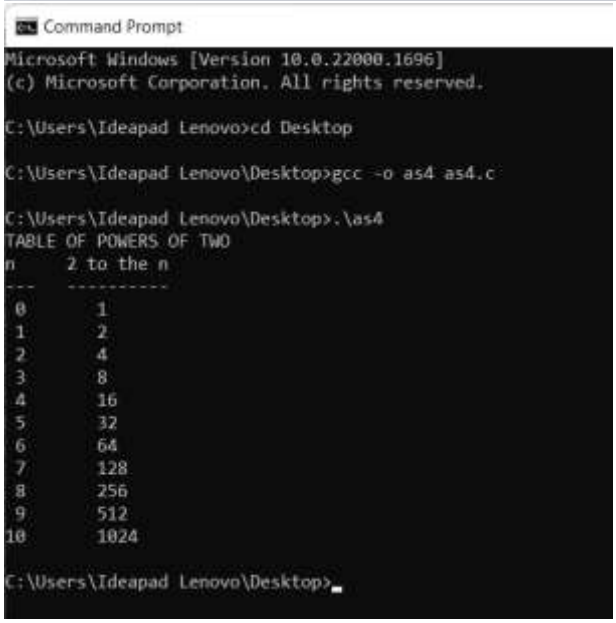

4.)



```
#include<stdio.h>

int main(void){
    // A program that computes for the power of two:
    int power_num, num;

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

// From numbers 0  to 10:
    for(num = 0; num <= 10; num++){
// For number 0, its equivalent power of 2 is 1
        if(num == 0){
            printf("%2d       %d ", num, num+1);
            printf("\n");}

// Power of 2:
        power_num = 1;
        num = 1;
        while (num <= 10){ // number of 2s (1 = one 2, 2 = two 2s, ... 10 = ten 2s)
            power_num *= 2; // (power_num * 2)
            num += 1; //increment the value of num

        // // print the computation:
        printf("%2d       %d", num,  power_num);
        printf("\n");
        }


    }

    return 0;
}
```



```
Command Prompt
Microsoft Windows [Version 10.0.22000.1696]
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C:\Users\Ideapad Lenovo>cd Desktop

C:\Users\Ideapad Lenovo\Desktop>gcc -o as4 as4.c

C:\Users\Ideapad Lenovo\Desktop>.\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

C:\Users\Ideapad Lenovo\Desktop>_
```
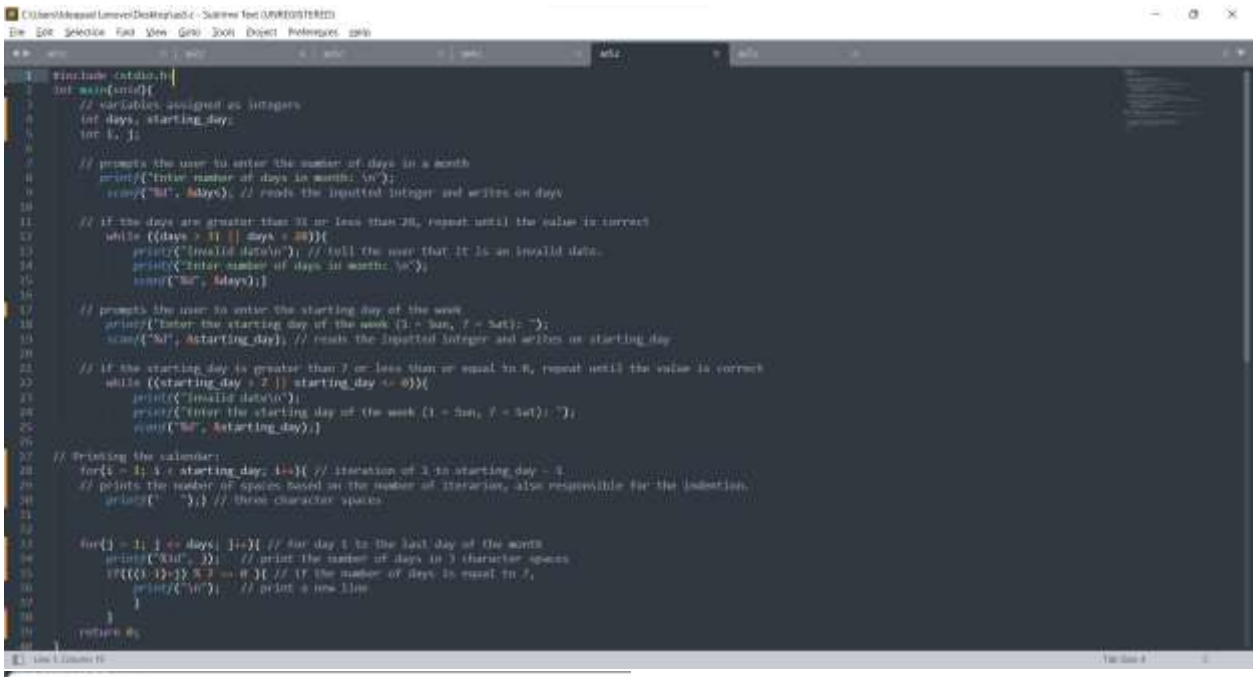
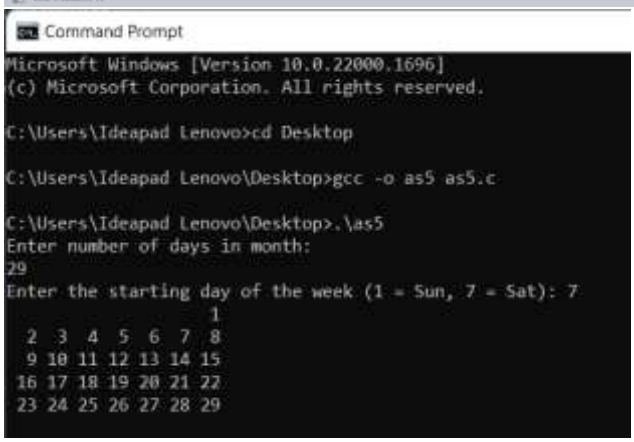

5.)



```
#include <stdio.h>
int main(void){
    // variables assigned as integers
    int days, starting_day;
    int i, j;

    // prompts the user to enter the number of days in a month
        printf("Enter number of days in month: \n");
        scanf("%d", &days); // reads the inputted integer and writes on days

    // if the days are greater than 31 or less than 28, repeat until the value is correct
        while ((days > 31 || days < 28)){
            printf("Invalid data\n"); // tell the user that it is an invalid data.
            printf("Enter number of days in month: \n");
            scanf("%d", &days);}

    // prompts the user to enter the starting day of the week
        printf("Enter the starting day of the week (1 = Sun, 7 = Sat): ");
        scanf("%d", &starting_day); // reads the inputted integer and writes on starting_day

    // if the starting_day is greater than 7 or less than or equal to 0, repeat until the value is correct
        while ((starting_day > 7 || starting_day <= 0)){
            printf("Invalid data\n");
            printf("Enter the starting day of the week (1 = Sun, 7 = Sat): ");
            scanf("%d", &starting_day);}

// Printing the calendar:
    for(i = 1; i < starting_day; i++){ // iteration of 1 to starting_day - 1
    // prints the number of spaces based on the number of iteration, also responsible for the indention.
        printf("   ");} // three character spaces


    for(j = 1; j <= days; j++){ // for day 1 to the last day of the month
        printf("%2d", j);   // print the number of days in 3 character spaces
        if(((j-1)+j) % 7 == 0 ){ // if the number of days is equal to 7,
            printf("\n");   // print a new line
            }
        }
    return 0;
}
```



```
Command Prompt
Microsoft Windows [Version 10.0.22000.1696]
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C:\Users\Ideapad Lenovo>cd Desktop

C:\Users\Ideapad Lenovo\Desktop>gcc -o as5 as5.c

C:\Users\Ideapad Lenovo\Desktop>.\as5
Enter number of days in month:
29
Enter the starting day of the week (1 = Sun, 7 = Sat): 7
                   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
```
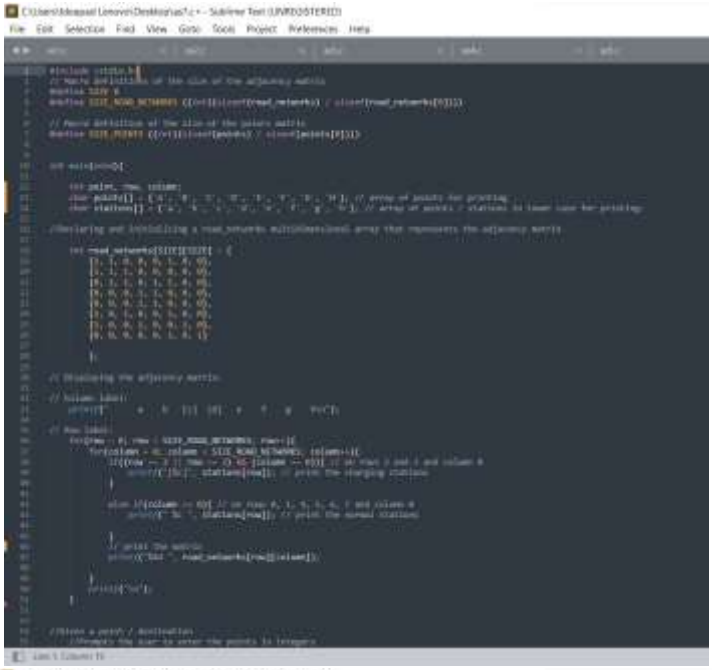
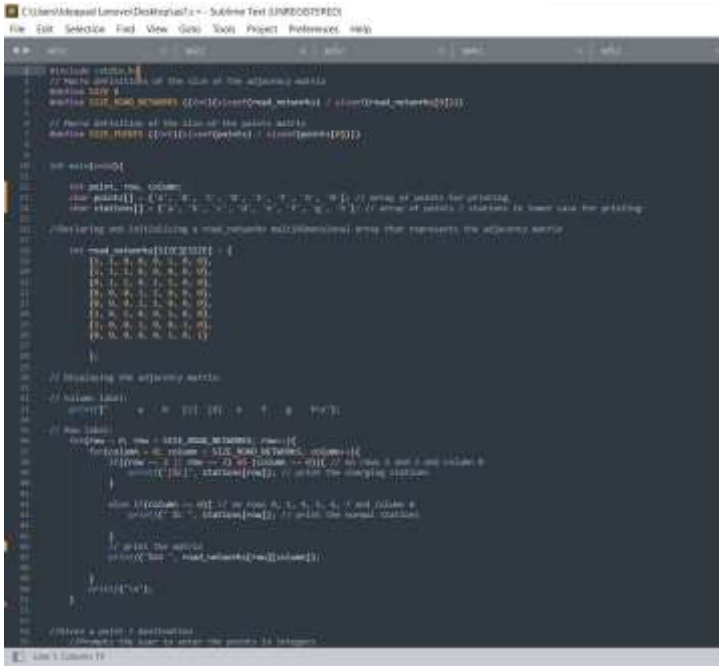
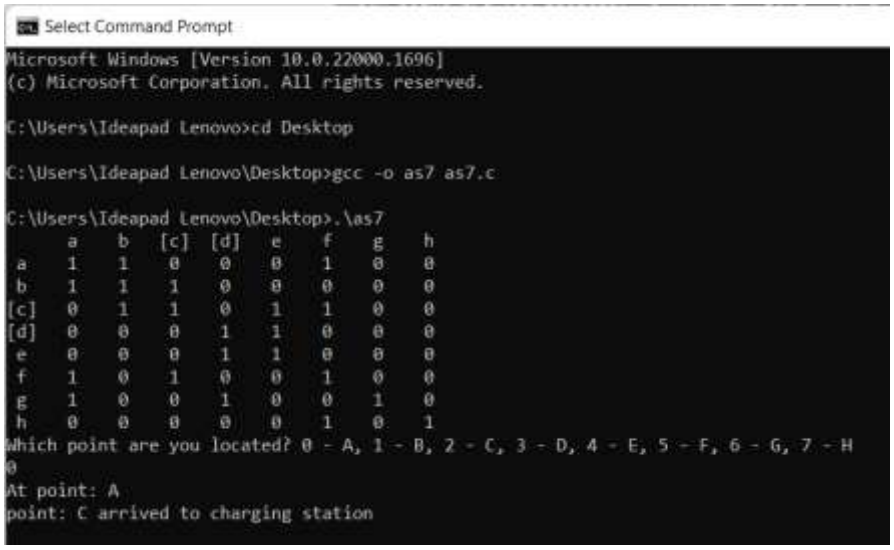

6.)
bool pathway [8] ={ [0] = true, [2] = true }
bool pathway[8] = {true, false, true};

7.)







```
Select Command Prompt
Microsoft Windows [Version 10.0.22000.1696]
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C:\Users\Ideapad Lenovo>cd Desktop

C:\Users\Ideapad Lenovo\Desktop>gcc -o as7 as7.c

C:\Users\Ideapad Lenovo\Desktop>.\as7
      a    b   [c]  [d]   e    f    g    h
 a    1    1    0    0    0    1    0    0
 b    1    1    1    0    0    0    0    0
[c]   0    1    1    0    1    1    0    0
[d]   0    0    0    1    1    0    0    0
 e    0    0    0    1    1    0    0    0
 f    1    0    1    0    0    1    0    0
 g    1    0    0    1    0    0    1    0
 h    0    0    0    0    0    1    0    1
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
point: C arrived to charging station
```
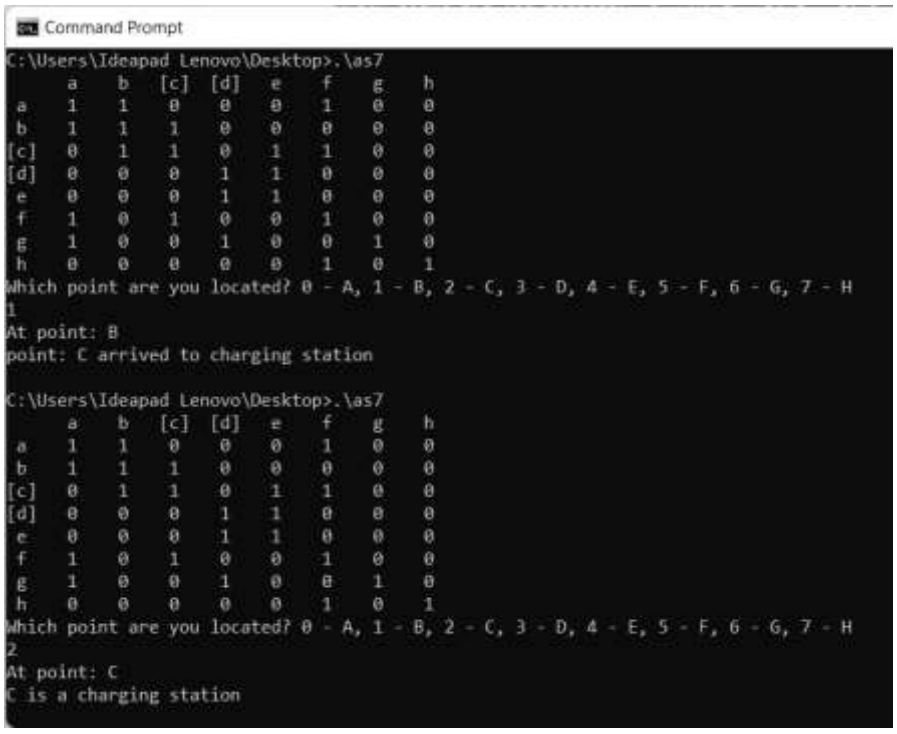
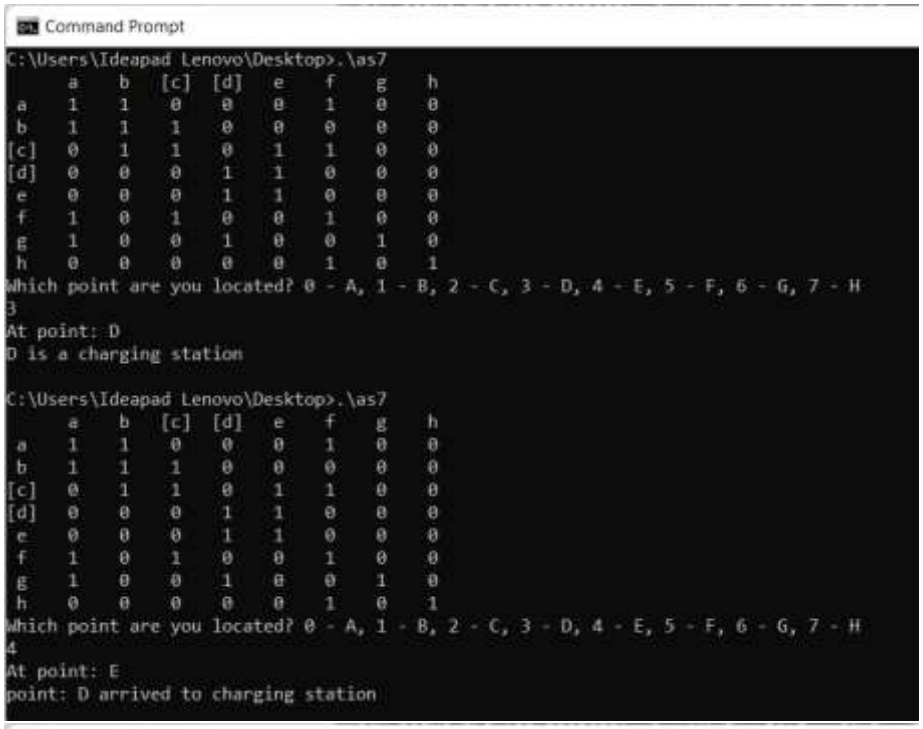
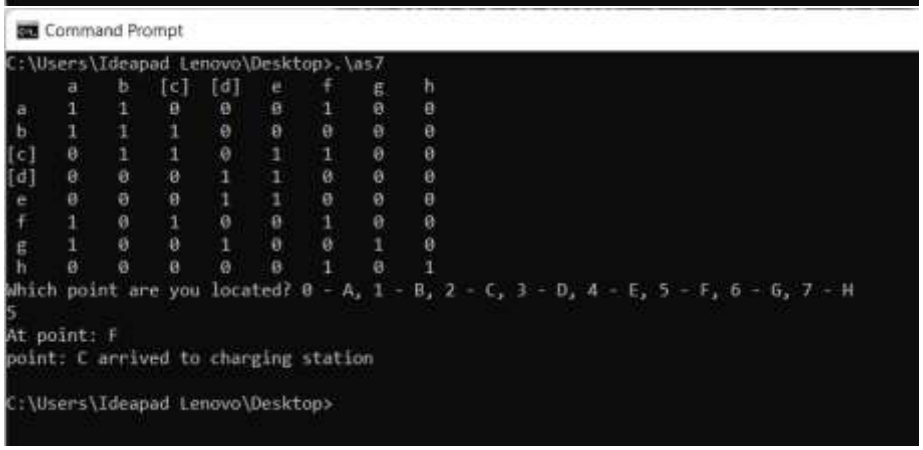



```
Command Prompt
C:\Users\Ideapad Lenovo\Desktop>.\as7
      a    b   [c]  [d]   e    f    g    h
 a    1    1    0    0    0    1    0    0
 b    1    1    1    0    0    0    0    0
[c]   0    1    1    0    1    1    0    0
[d]   0    0    0    1    1    0    0    0
 e    0    0    0    1    1    0    0    0
 f    1    0    1    0    0    1    0    0
 g    1    0    0    1    0    0    1    0
 h    0    0    0    0    0    1    0    1
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
point: C arrived to charging station

C:\Users\Ideapad Lenovo\Desktop>.\as7
      a    b   [c]  [d]   e    f    g    h
 a    1    1    0    0    0    1    0    0
 b    1    1    1    0    0    0    0    0
[c]   0    1    1    0    1    1    0    0
[d]   0    0    0    1    1    0    0    0
 e    0    0    0    1    1    0    0    0
 f    1    0    1    0    0    1    0    0
 g    1    0    0    1    0    0    1    0
 h    0    0    0    0    0    1    0    1
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
```



```
Command Prompt
C:\Users\Ideapad Lenovo\Desktop>.\as7
      a    b   [c]  [d]   e    f    g    h
 a    1    1    0    0    0    1    0    0
 b    1    1    1    0    0    0    0    0
[c]   0    1    1    0    1    1    0    0
[d]   0    0    0    1    1    0    0    0
 e    0    0    0    1    1    0    0    0
 f    1    0    1    0    0    1    0    0
 g    1    0    0    1    0    0    1    0
 h    0    0    0    0    0    1    0    1
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\Ideapad Lenovo\Desktop>.\as7
      a    b   [c]  [d]   e    f    g    h
 a    1    1    0    0    0    1    0    0
 b    1    1    1    0    0    0    0    0
[c]   0    1    1    0    1    1    0    0
[d]   0    0    0    1    1    0    0    0
 e    0    0    0    1    1    0    0    0
 f    1    0    1    0    0    1    0    0
 g    1    0    0    1    0    0    1    0
 h    0    0    0    0    0    1    0    1
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
point: D arrived to charging station
```



```
Command Prompt
C:\Users\Ideapad Lenovo\Desktop>.\as7
      a    b   [c]  [d]   e    f    g    h
 a    1    1    0    0    0    1    0    0
 b    1    1    1    0    0    0    0    0
[c]   0    1    1    0    1    1    0    0
[d]   0    0    0    1    1    0    0    0
 e    0    0    0    1    1    0    0    0
 f    1    0    1    0    0    1    0    0
 g    1    0    0    1    0    0    1    0
 h    0    0    0    0    0    1    0    1
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
point: C arrived to charging station

C:\Users\Ideapad Lenovo\Desktop>
```