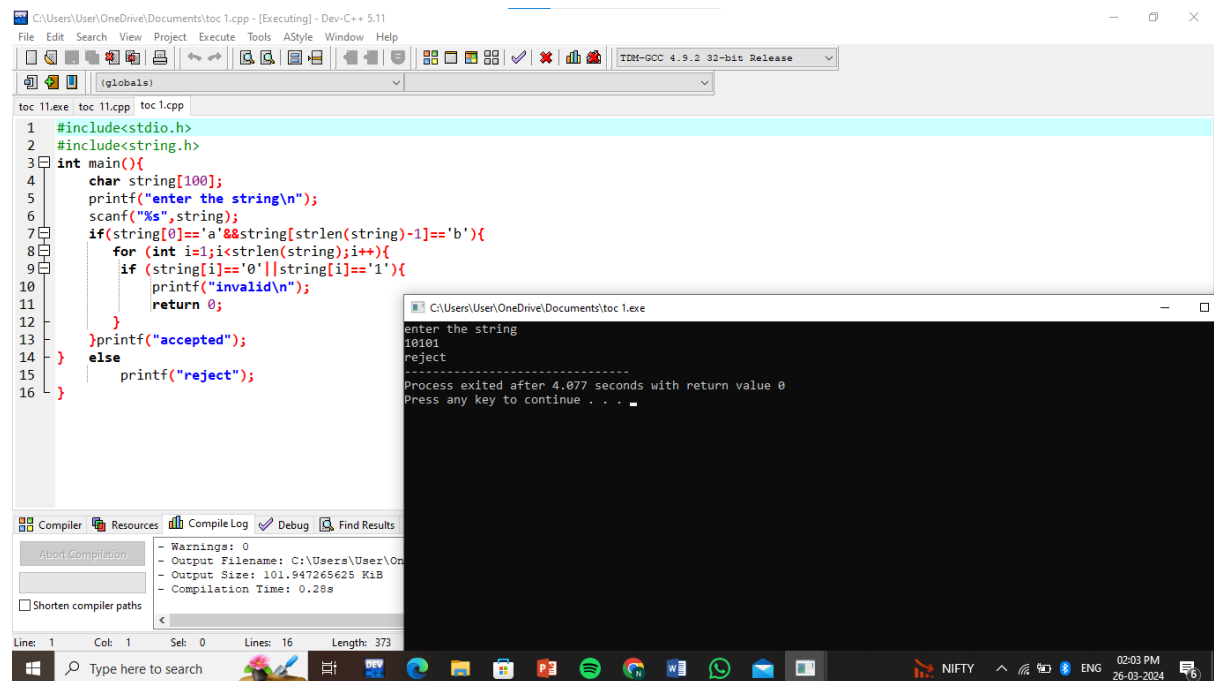


## EXPERIMENT 1



The screenshot shows the Dev-C++ IDE with the file `toc 1.cpp` open. The code is as follows:

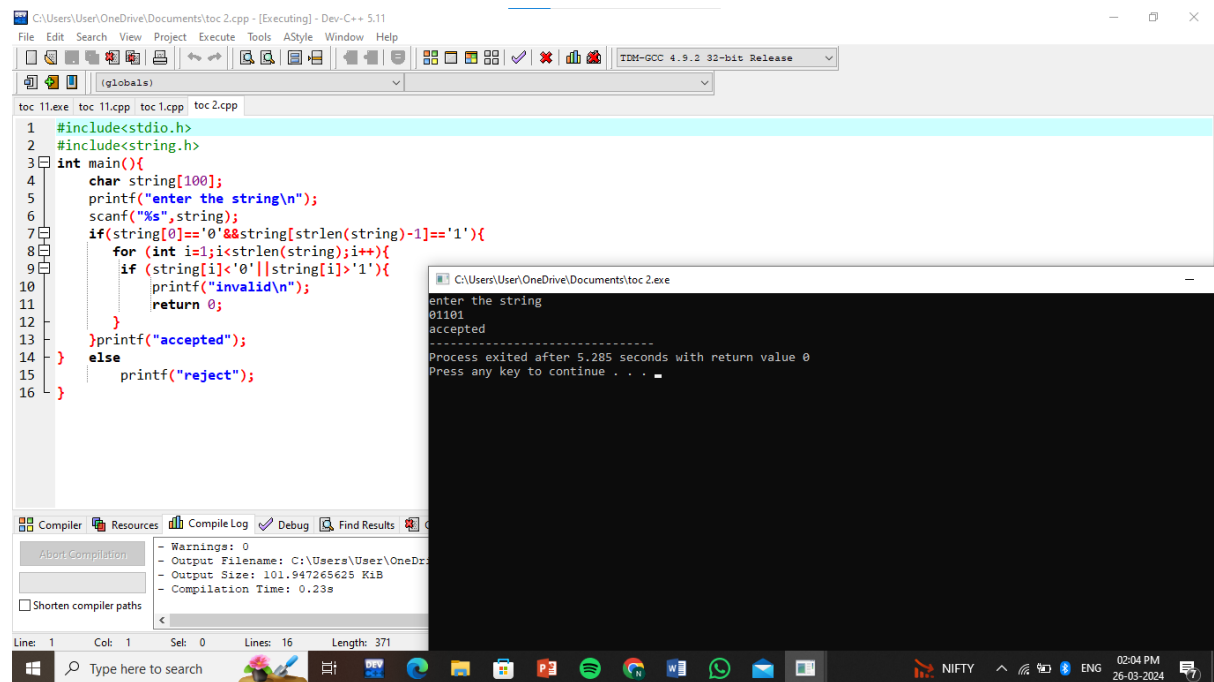
```
1 #include<stdio.h>
2 #include<string.h>
3 int main(){
4     char string[100];
5     printf("enter the string\n");
6     scanf("%s",string);
7     if(string[0]!='a'&&string[strlen(string)-1]!='b'){
8         for (int i=1;i<strlen(string);i++){
9             if (string[i]!='0' || string[i]!='1'){
10                printf("invalid\n");
11                return 0;
12            }
13        }printf("accepted");
14    } else
15        printf("reject");
16 }
```

The output window shows the execution results:

```
enter the string
10101
reject
-----
Process exited after 4.077 seconds with return value 0
Press any key to continue . . .
```

The compiler log shows no warnings and a successful compilation.

## EXPERIMENT 2



The screenshot shows the Dev-C++ IDE with the file `toc 2.cpp` open. The code is as follows:

```
1 #include<stdio.h>
2 #include<string.h>
3 int main(){
4     char string[100];
5     printf("enter the string\n");
6     scanf("%s",string);
7     if(string[0]!='0'&&string[strlen(string)-1]!='1'){
8         for (int i=1;i<strlen(string);i++){
9             if (string[i]<'0' || string[i]>'1'){
10                printf("invalid\n");
11                return 0;
12            }
13        }printf("accepted");
14    } else
15        printf("reject");
16 }
```

The output window shows the execution results:

```
enter the string
01101
accepted
-----
Process exited after 5.285 seconds with return value 0
Press any key to continue . . .
```

The compiler log shows no warnings and a successful compilation.

## EXPERIMENT 3

C:\Users\User\OneDrive\Documents\TOC 3.cpp - [Executing] - Dev-C++ 5.11

```
1 #include <string.h>
2
3 int main () {
4     char String [100];
5     printf ("Enter a string: ");
6     scanf ("%s", String);
7     if (String [0] == '0' && String [strlen (String)-1] == '1')
8     {
9         int i;
10        for (i=1; i<strlen (String); i++) {
11            if (String[i]<'0' || String[i]>'1')
12            {
13                printf ("Invalid! \n");
14                return 0;
15            }
16        }
17        printf ("Valid! The string starts with '0' and ends with '1'.");
18    } else {
19        printf ("Invalid! The string does not start with '0' and ends with '1'.");
20    }
21    return 0;
22 }
```

Compiler: Warnings: 0  
Output Filename: C:\Users\User\OneDrive\Documents\TOC 3.exe  
Output Size: 101.947265625 KiB  
Compilation Time: 0.23s

Enter a string: 01101  
Valid! The string starts with '0' and ends with '1'.  
Process exited after 4.315 seconds with return value 0  
Press any key to continue . . .

## EXPERIMENT 4

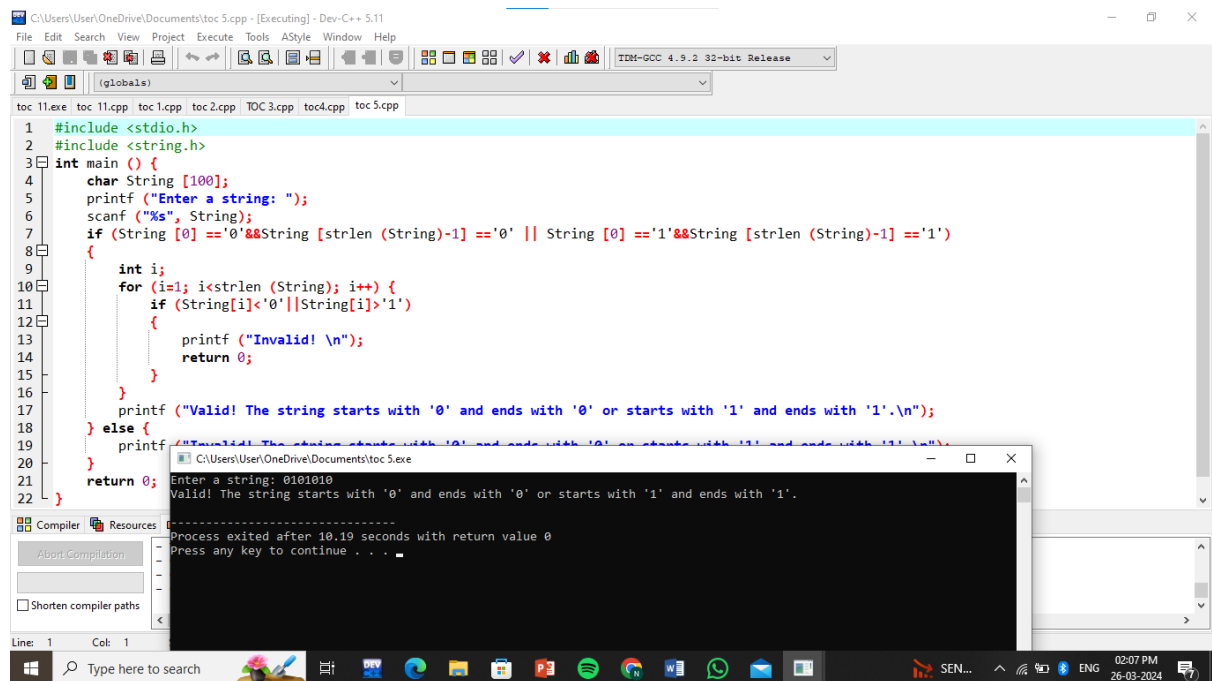
C:\Users\User\OneDrive\Documents\toc4.cpp - [Executing] - Dev-C++ 5.11

```
1 #include <stdio.h>
2 #include <string.h>
3 int main () {
4     char String [100];
5     printf ("Enter a string: ");
6     scanf ("%s", String);
7     if (String [0] == '0' && String [strlen (String)-1] == '1')
8     {
9         int i;
10        for (i=1; i<strlen (String); i++) {
11            if (String[i]<'0' || String[i]>'1')
12            {
13                printf ("Invalid! \n");
14                return 0;
15            }
16        }
17        printf ("Valid! The string starts with '0' and ends with '1'. \n");
18    } else {
19        printf ("Invalid! The string does not start with '0' and ends with '1'. \n");
20    }
21    return 0;
22 }
```

Compiler: Warnings: 0  
Output Filename: C:\Users\User\OneDrive\Documents\toc4.exe  
Output Size: 101.947265625 KiB  
Compilation Time: 0.25s

Enter a string: 010101  
Valid! The string starts with '0' and ends with '1'.  
Process exited after 12.73 seconds with return value 0  
Press any key to continue . . .

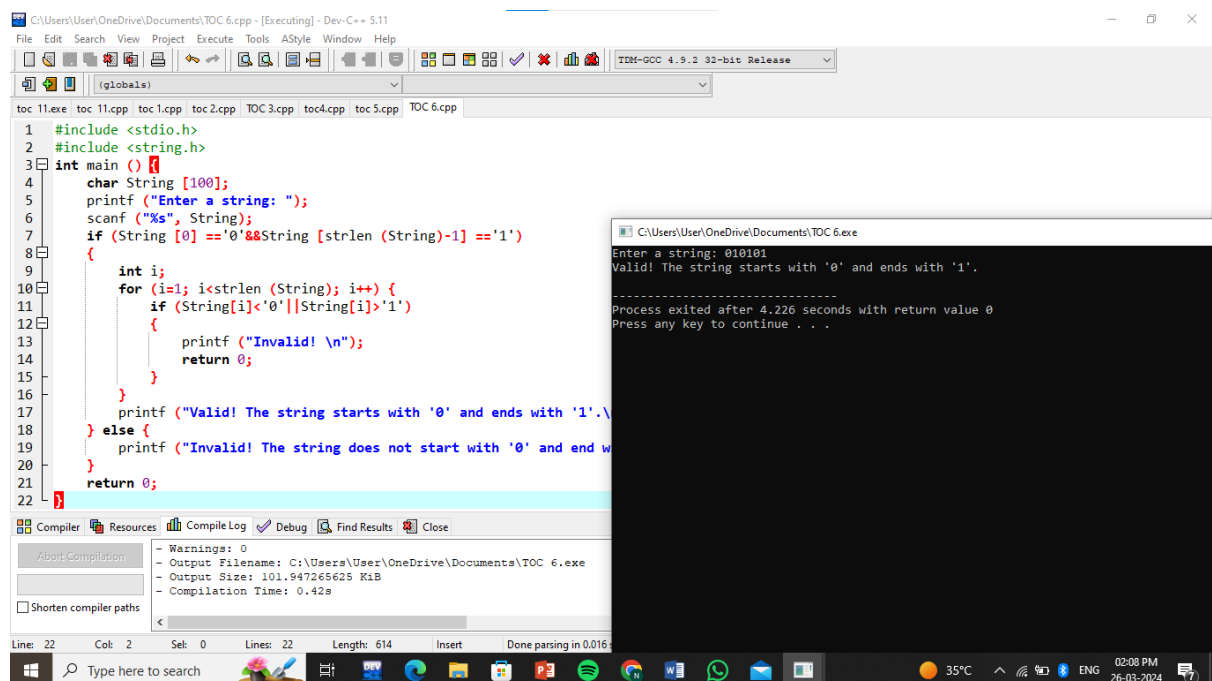
## EXPERIMENT 5



```
1 #include <stdio.h>
2 #include <string.h>
3 int main () {
4     char String [100];
5     printf ("Enter a string: ");
6     scanf ("%s", String);
7     if (String [0] == '0' && String [strlen (String)-1] == '0' || String [0] == '1' && String [strlen (String)-1] == '1')
8     {
9         int i;
10        for (i=1; i<strlen (String); i++) {
11            if (String[i]<'0' || String[i]>'1')
12            {
13                printf ("Invalid! \n");
14                return 0;
15            }
16        }
17        printf ("Valid! The string starts with '0' and ends with '0' or starts with '1' and ends with '1'.\n");
18    } else {
19        printf ("Invalid! The string starts with '0' and ends with '0' or starts with '1' and ends with '1'.");
20    }
21    return 0;
22 }
```

Enter a string: 0101010  
Valid! The string starts with '0' and ends with '0' or starts with '1' and ends with '1'.  
-----  
Process exited after 10.19 seconds with return value 0  
Press any key to continue . . .

## EXPERIMENT 6

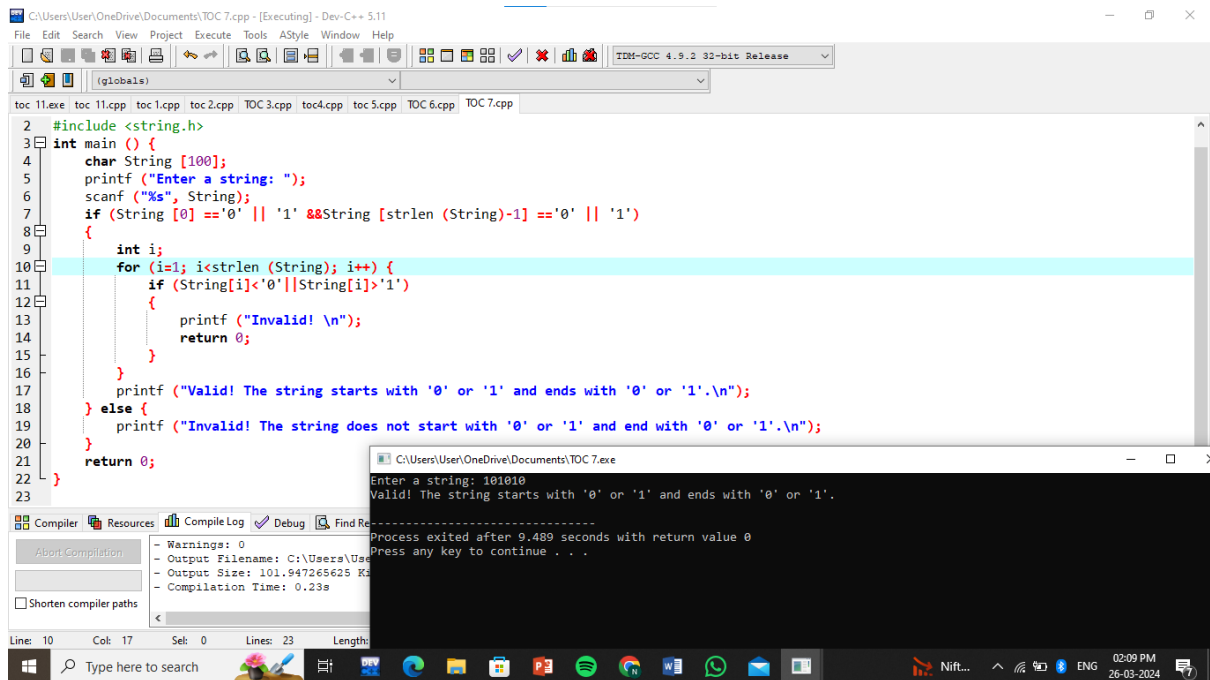


```
1 #include <stdio.h>
2 #include <string.h>
3 int main () {
4     char String [100];
5     printf ("Enter a string: ");
6     scanf ("%s", String);
7     if (String [0] == '0' && String [strlen (String)-1] == '1')
8     {
9         int i;
10        for (i=1; i<strlen (String); i++) {
11            if (String[i]<'0' || String[i]>'1')
12            {
13                printf ("Invalid! \n");
14                return 0;
15            }
16        }
17        printf ("Valid! The string starts with '0' and ends with '1'.");
18    } else {
19        printf ("Invalid! The string does not start with '0' and end w");
20    }
21    return 0;
22 }
```

Enter a string: 010101  
Valid! The string starts with '0' and ends with '1'.  
-----  
Process exited after 4.226 seconds with return value 0  
Press any key to continue . . .

Warnings: 0  
Output Filename: C:\Users\User\OneDrive\Documents\TOC 6.exe  
Output Size: 101.947265625 KiB  
Compilation Time: 0.42s

## EXPERIMENT 7

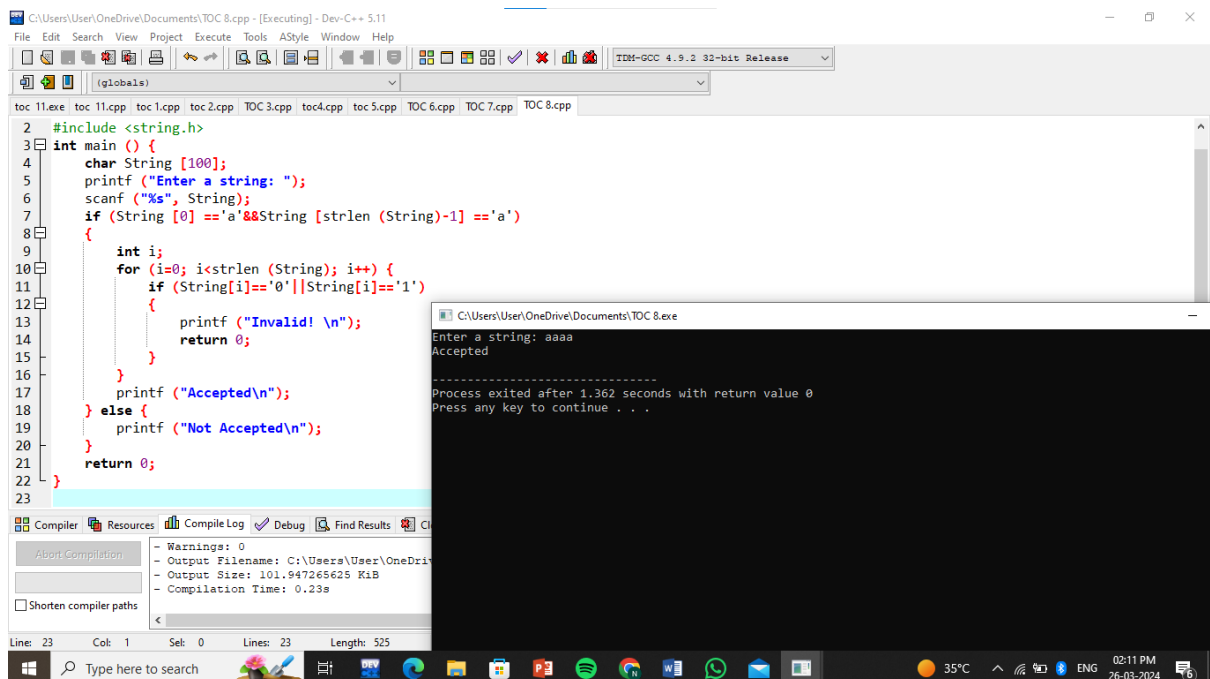


```
2 #include <string.h>
3 int main () {
4     char String [100];
5     printf ("Enter a string: ");
6     scanf ("%s", String);
7     if (String [0] == '0' || '1' &&String [strlen (String)-1] == '0' || '1')
8     {
9         int i;
10        for (i=1; i<strlen (String); i++) {
11            if (String[i]<'0' ||String[i]>'1')
12            {
13                printf ("Invalid! \n");
14                return 0;
15            }
16        }
17        printf ("Valid! The string starts with '0' or '1' and ends with '0' or '1'. \n");
18    } else {
19        printf ("Invalid! The string does not start with '0' or '1' and end with '0' or '1'. \n");
20    }
21    return 0;
22 }
```

Output Window:

```
Enter a string: 101010
Valid! The string starts with '0' or '1' and ends with '0' or '1'.
Process exited after 9.489 seconds with return value 0
Press any key to continue . . .
```

## EXPERIMENT 8

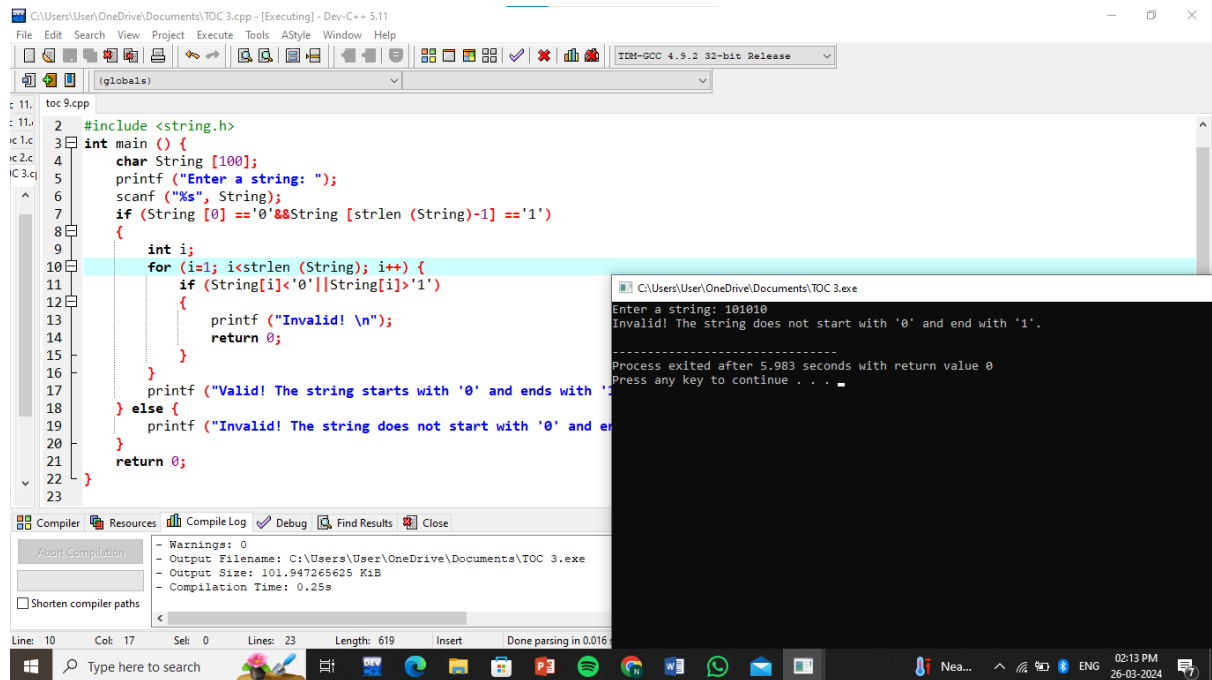


```
2 #include <string.h>
3 int main () {
4     char String [100];
5     printf ("Enter a string: ");
6     scanf ("%s", String);
7     if (String [0] == 'a'&&String [strlen (String)-1] == 'a')
8     {
9         int i;
10        for (i=0; i<strlen (String); i++) {
11            if (String[i]!='0' ||String[i]!='1')
12            {
13                printf ("Invalid! \n");
14                return 0;
15            }
16        }
17        printf ("Accepted \n");
18    } else {
19        printf ("Not Accepted \n");
20    }
21    return 0;
22 }
```

Output Window:

```
Enter a string: aaaa
Accepted
Process exited after 1.362 seconds with return value 0
Press any key to continue . . .
```

## EXPERIMENT 9

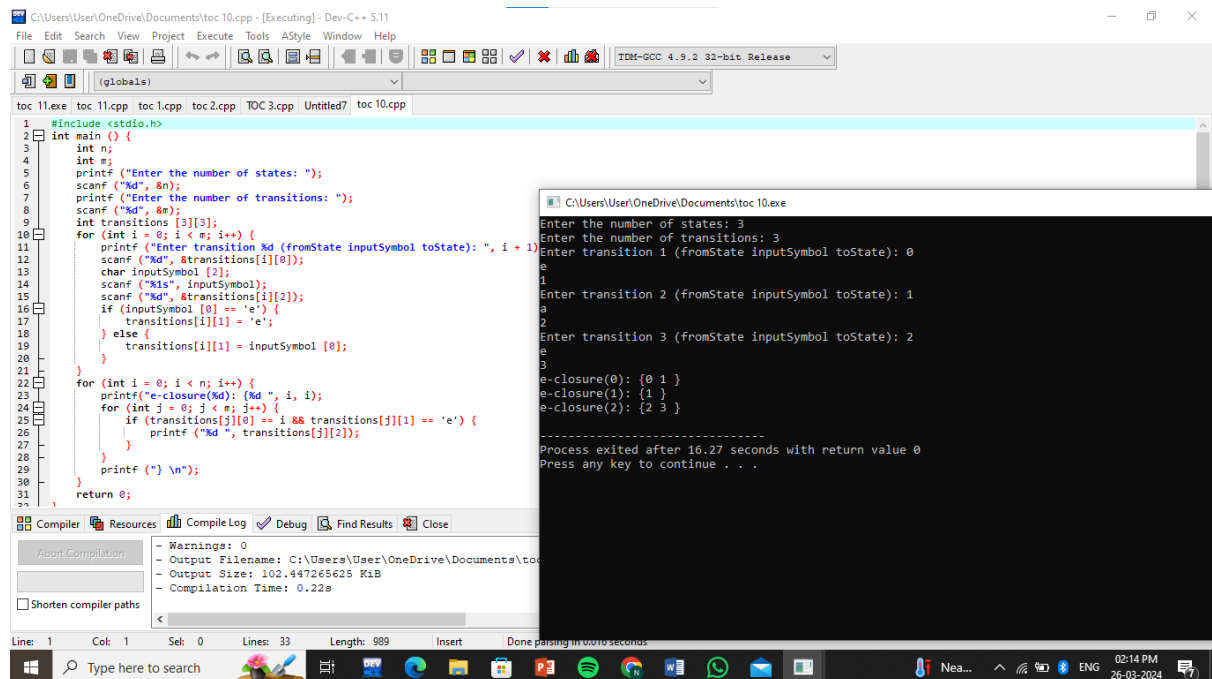


```
#include <string.h>

int main () {
    char String [100];
    printf ("Enter a string: ");
    scanf ("%s", String);
    if (String [0] == '0' && String [strlen (String)-1] == '1')
    {
        int i;
        for (i=1; i<strlen (String); i++) {
            if (String[i]<'0' || String[i]>'1')
            {
                printf ("Invalid! \n");
                return 0;
            }
        }
        printf ("Valid! The string starts with '0' and ends with '1'.");
    }
    else {
        printf ("Invalid! The string does not start with '0' and end with '1'.");
    }
    return 0;
}
```

Enter a string: 101010  
Invalid! The string does not start with '0' and end with '1'.  
.....  
Process exited after 5.983 seconds with return value 0  
Press any key to continue . . .

## EXPERIMENT 10



```
#include <stdio.h>

int main () {
    int n;
    int m;
    printf ("Enter the number of states: ");
    scanf ("%d", &n);
    printf ("Enter the number of transitions: ");
    scanf ("%d", &m);
    int transitions [3][3];
    for (int i = 0; i < m; i++) {
        printf ("Enter transition %d (fromState inputSymbol toState): ", i + 1);
        scanf ("%d", &transitions[i][0]);
        char inputSymbol [2];
        scanf ("%1s", inputSymbol);
        scanf ("%d", &transitions[i][2]);
        if (inputSymbol [0] == 'e') {
            transitions[i][1] = 'e';
        } else {
            transitions[i][1] = inputSymbol [0];
        }
    }
    for (int i = 0; i < n; i++) {
        printf ("e-closure(%d): {", i);
        for (int j = 0; j < m; j++) {
            if (transitions[j][0] == i && transitions[j][1] == 'e') {
                printf ("%d ", transitions[j][2]);
            }
        }
        printf ("}\n");
    }
    return 0;
}
```

Enter the number of states: 3  
Enter the number of transitions: 3  
Enter transition 1 (fromState inputSymbol toState): 0  
e  
Enter transition 2 (fromState inputSymbol toState): 1  
a  
Enter transition 3 (fromState inputSymbol toState): 2  
e  
e-closure(0): {0 1}  
e-closure(1): {1}  
e-closure(2): {2 3}  
.....  
Process exited after 16.27 seconds with return value 0  
Press any key to continue . . .

## EXPERIMENT 11

```
int n;  
int m;  
printf("Enter the number of states: ");  
scanf("%d", &n);  
printf("Enter the number of transitions: ");  
scanf("%d", &m);  
int transitions[3][3];  
for (int i = 0; i < n; i++) {  
    printf("Enter transition %d (fromState inputSymbol toState): ", i + 1);  
    scanf("%d", &transitions[i][0]);  
    char inputSymbol[2];  
    scanf("%1s", inputSymbol);  
    scanf("%d", &transitions[i][2]);  
    if (inputSymbol[0] == 'e')  
        transitions[i][1] = 'e';  
    else  
        transitions[i][1] = inputSymbol[0];  
}  
for (int i = 0; i < n; i++) {  
    printf("e-closure(%d): {", i);  
    for (int j = 0; j < m; j++) {  
        if (transitions[j][0] == i && transitions[j][1] == 'e') {  
            printf(" %d", transitions[j][2]);  
        }  
    }  
    printf("}\n");  
}  
return 0;
```

Compiler Resources Compile Log Debug Find Results Close

About Compilation

- Warnings: 0
- Output Filename: C:\Users\User\OneDrive\Documents\toc 11.exe
- Output Size: 102.447265625 KiB
- Compilation Time: 0.25s

Shorten compiler paths

Line: 16 Col: 38 Sel: 0 Lines: 33 Length: 989 Insert Done

C:\Users\User\OneDrive\Documents\toc 11.exe

Enter the number of states:  
3  
Enter the number of transitions: 3  
Enter transition 1 (fromState inputSymbol toState): 0  
A  
1  
Enter transition 2 (fromState inputSymbol toState): 2  
e  
3  
Enter transition 3 (fromState inputSymbol toState): 3  
e  
1  
e-closure(0): {0 }  
e-closure(1): {1 }  
e-closure(2): {2 3 }  
-----  
Process exited after 22.61 seconds with return value 0  
Press any key to continue . . .