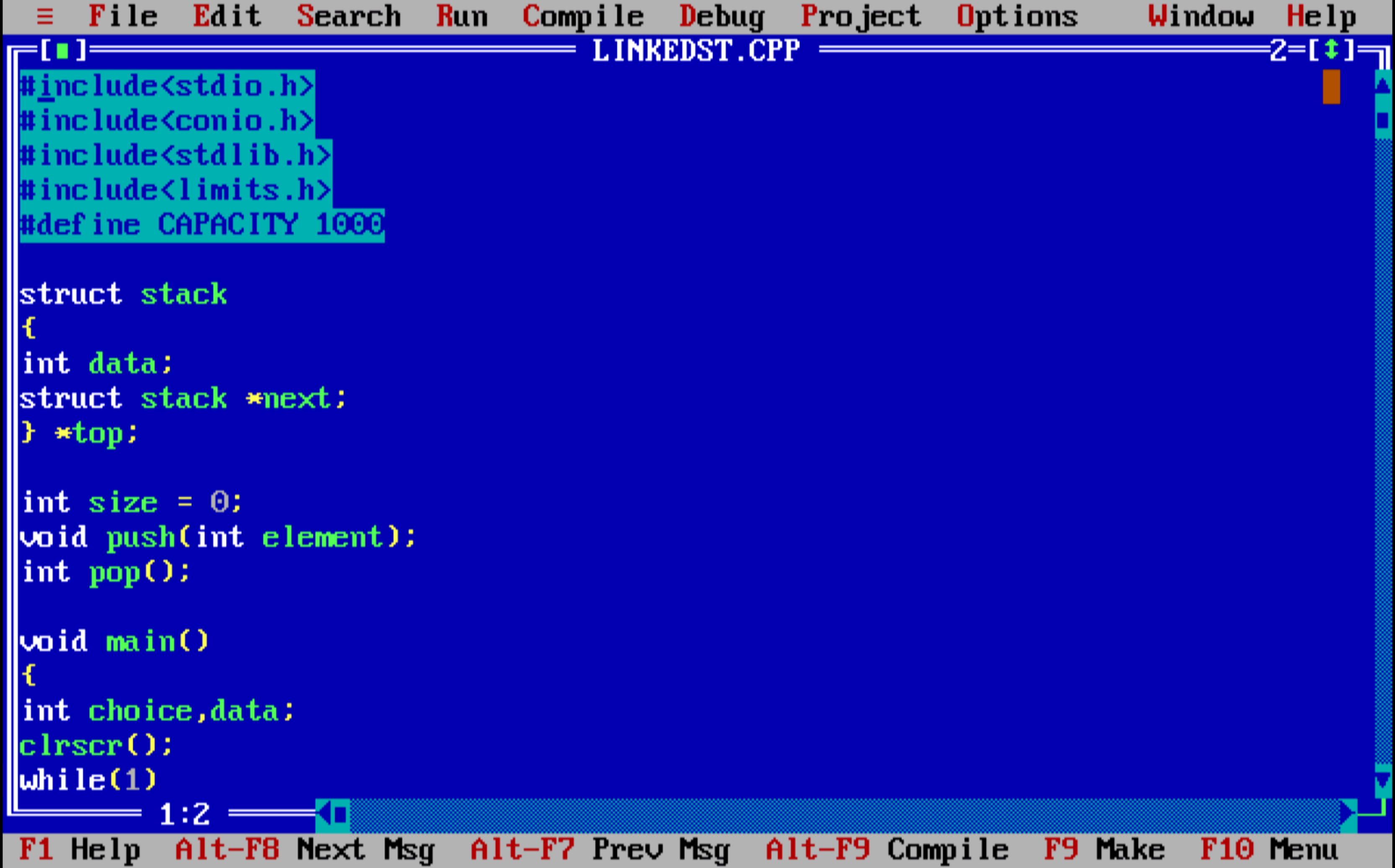
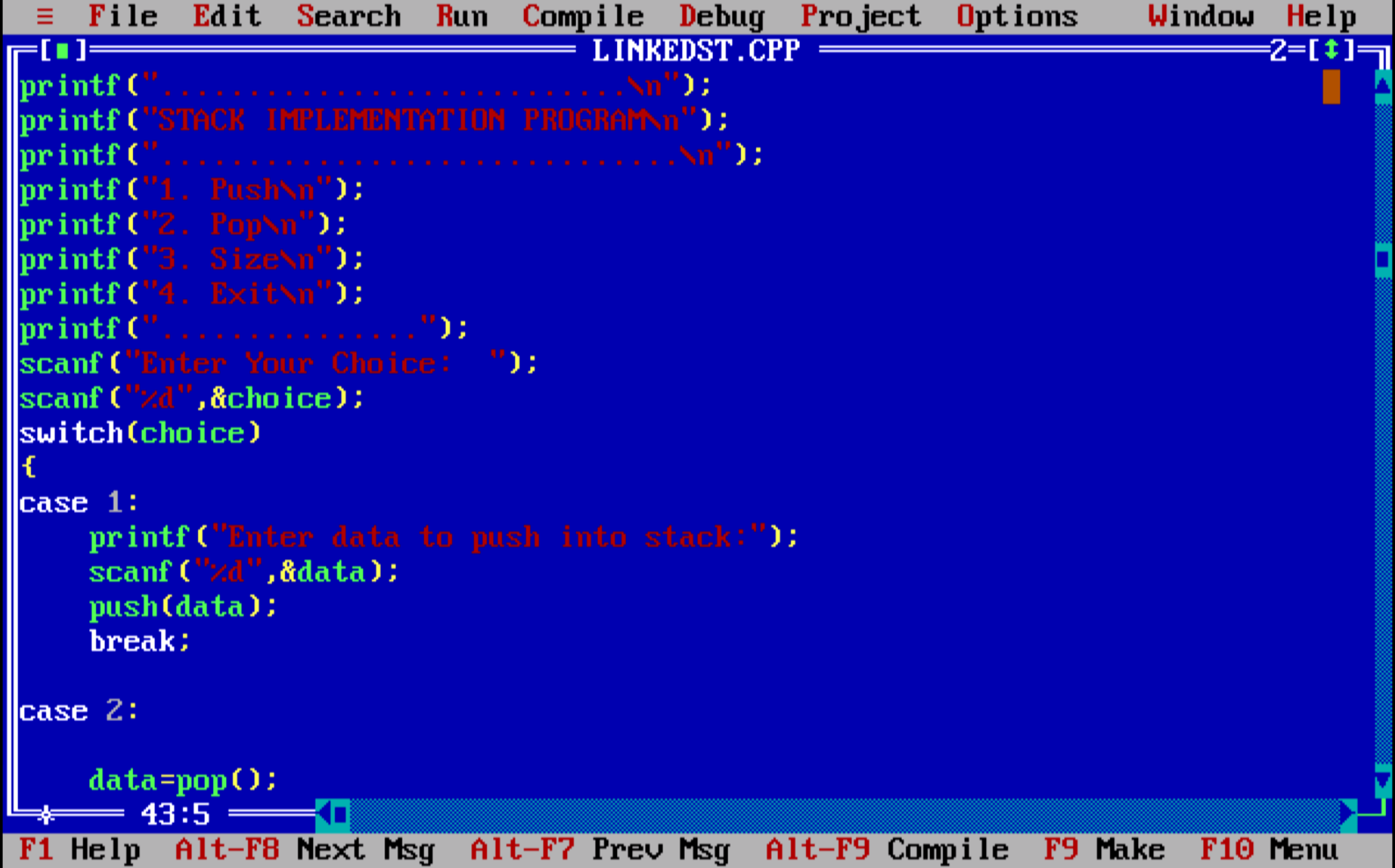
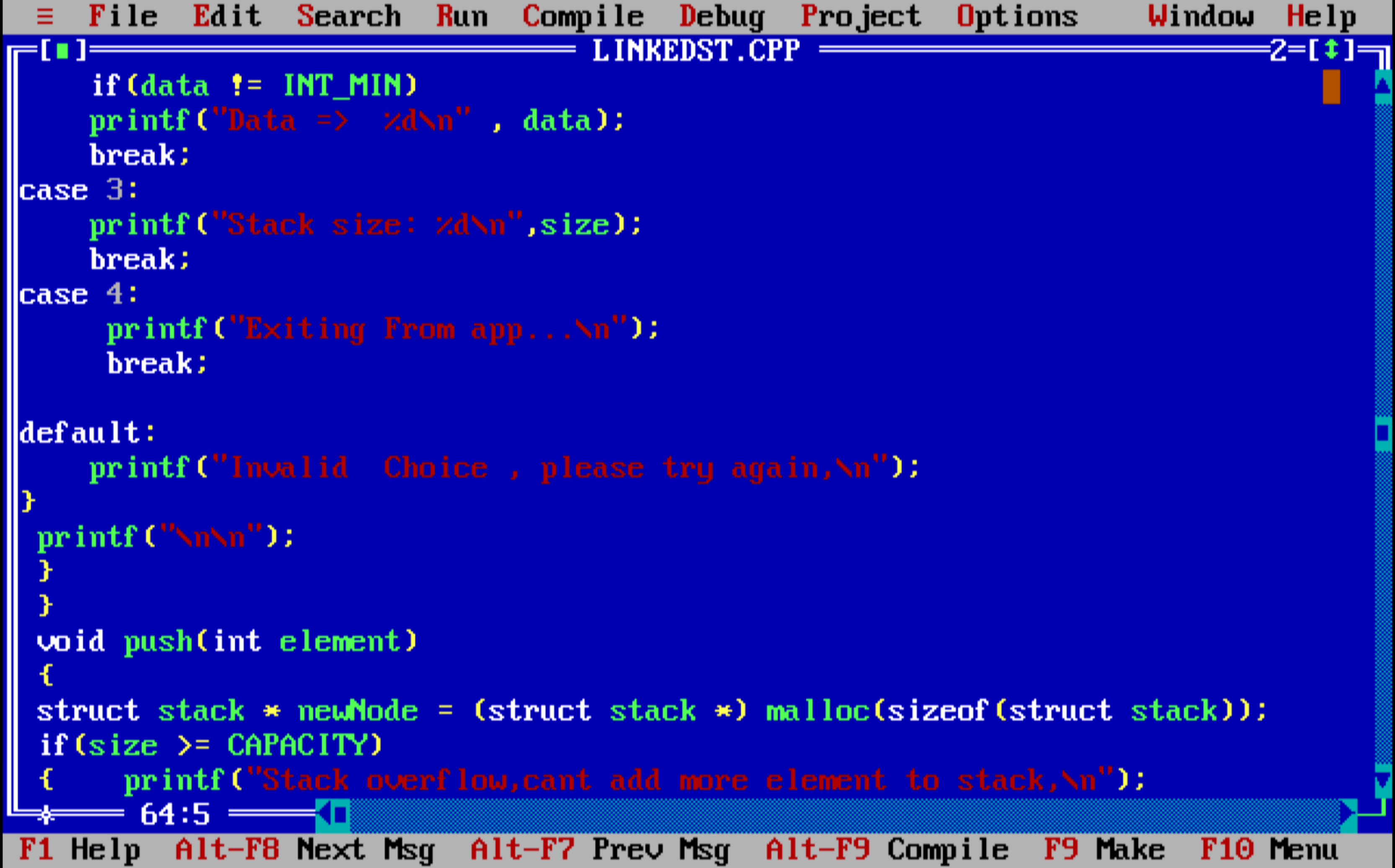


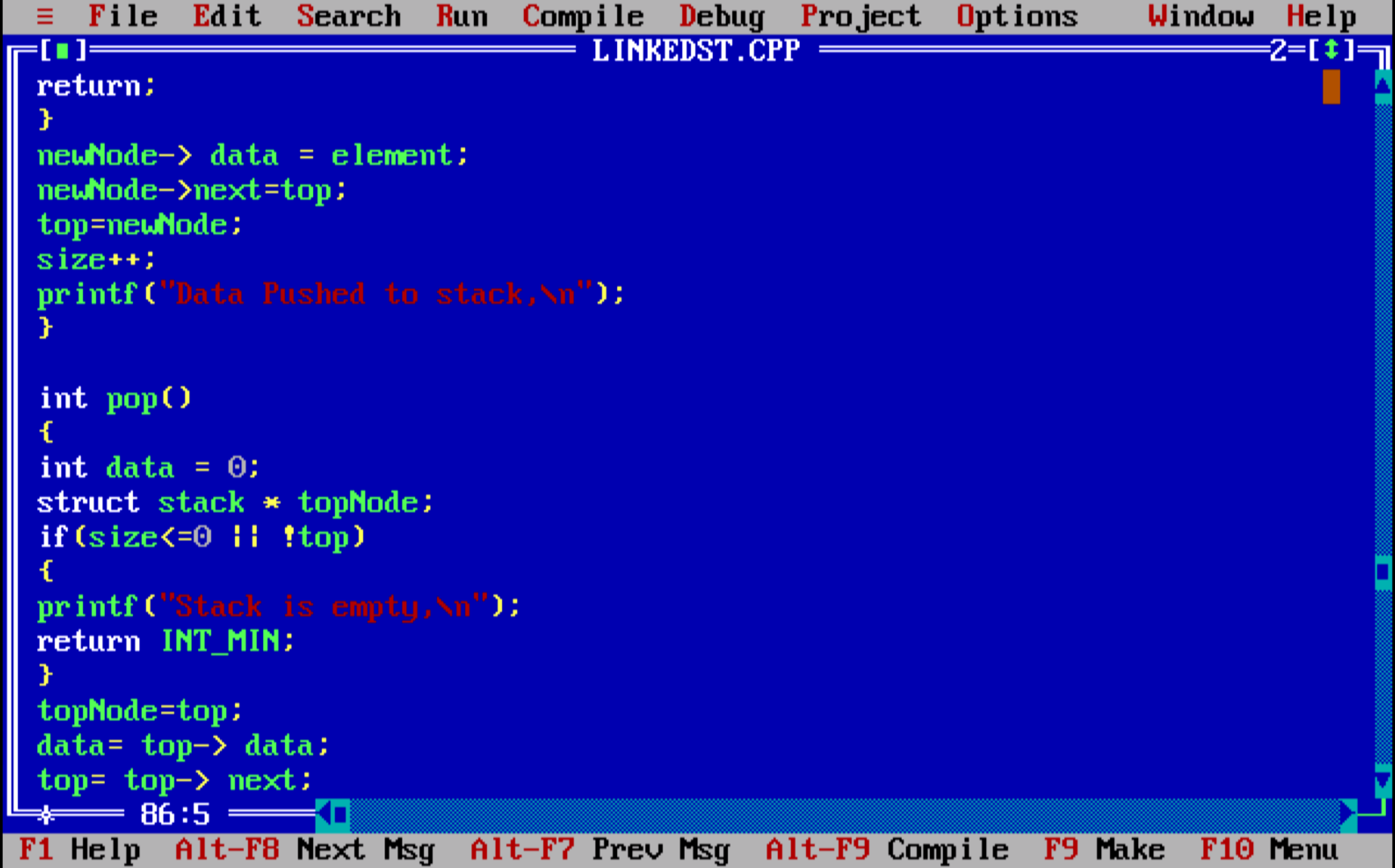
```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#include<limits.h>
#define CAPACITY 1000

struct stack
{
int data;
struct stack *next;
} *top;

int size = 0;
void push(int element);
int pop();

void main()
{
int choice,data;
clrscr();
while(1)
```


≡ File Edit Search Run Compile Debug Project Options Window Help
[■] LINKEDST.CPP 2=[↕]
43:5
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu

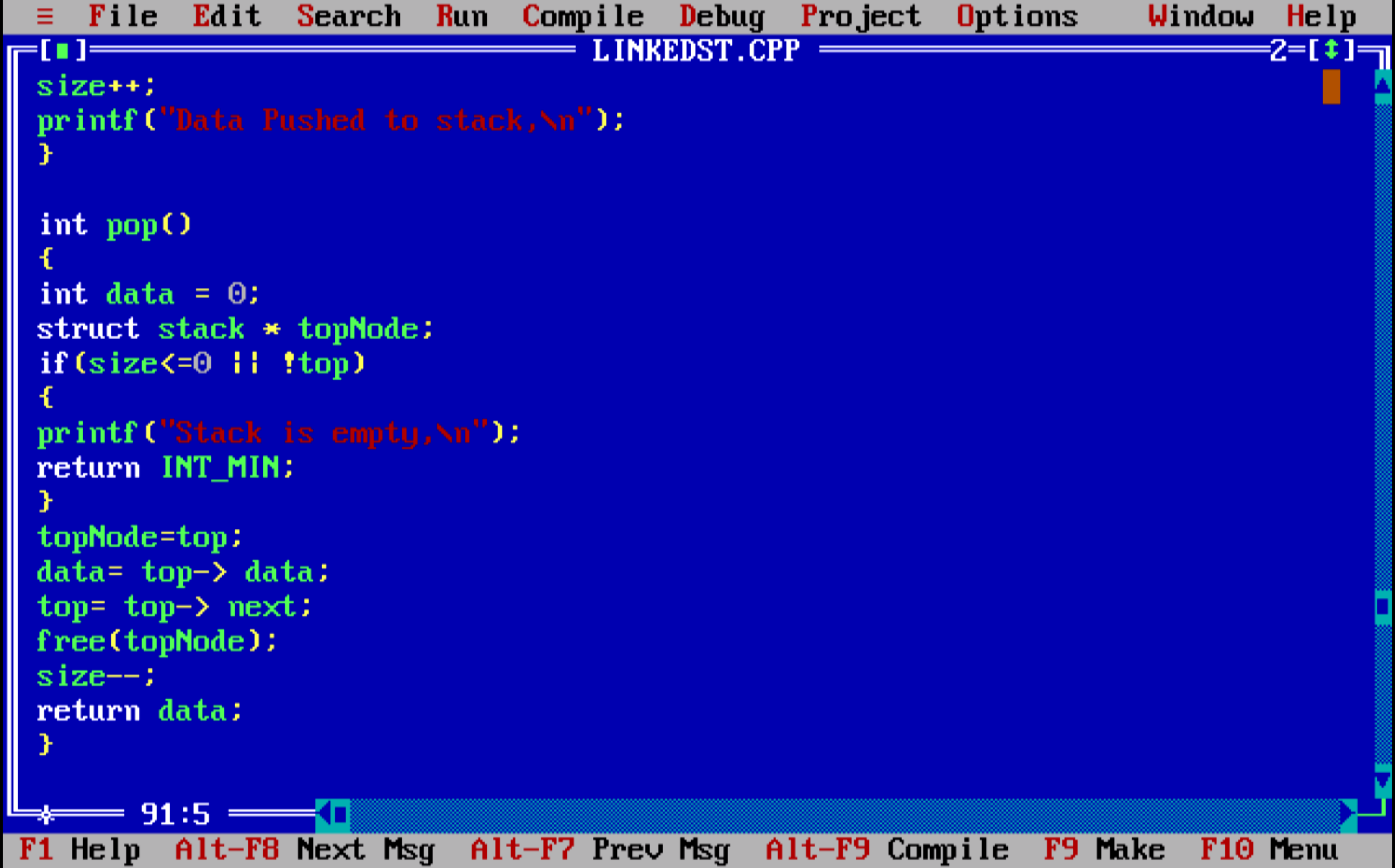
```
printf("..........................\n");
printf("STACK IMPLEMENTATION PROGRAM\n");
printf("...........................\n");
printf("1. Push\n");
printf("2. Pop\n");
printf("3. Size\n");
printf("4. Exit\n");
printf("................");
scanf("Enter Your Choice:  ");
scanf("%d",&choice);
switch(choice)
{
case 1:
    printf("Enter data to push into stack:");
    scanf("%d",&data);
    push(data);
    break;

case 2:

    data=pop();
```


≡ File Edit Search Run Compile Debug Project Options Window Help
[■] LINKEDST.CPP 2=[↕]
64:5
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu

```
    if(data != INT_MIN)
    printf("Data =>  %d\n" , data);
    break;
case 3:
    printf("Stack size: %d\n",size);
    break;
case 4:
     printf("Exiting From app...\n");
     break;

default:
    printf("Invalid  Choice , please try again,\n");
}
 printf("\n\n");
 }
 }
 void push(int element)
 {
 struct stack * newNode = (struct stack *) malloc(sizeof(struct stack));
 if(size >= CAPACITY)
 {    printf("Stack overflow,cant add more element to stack,\n");
```

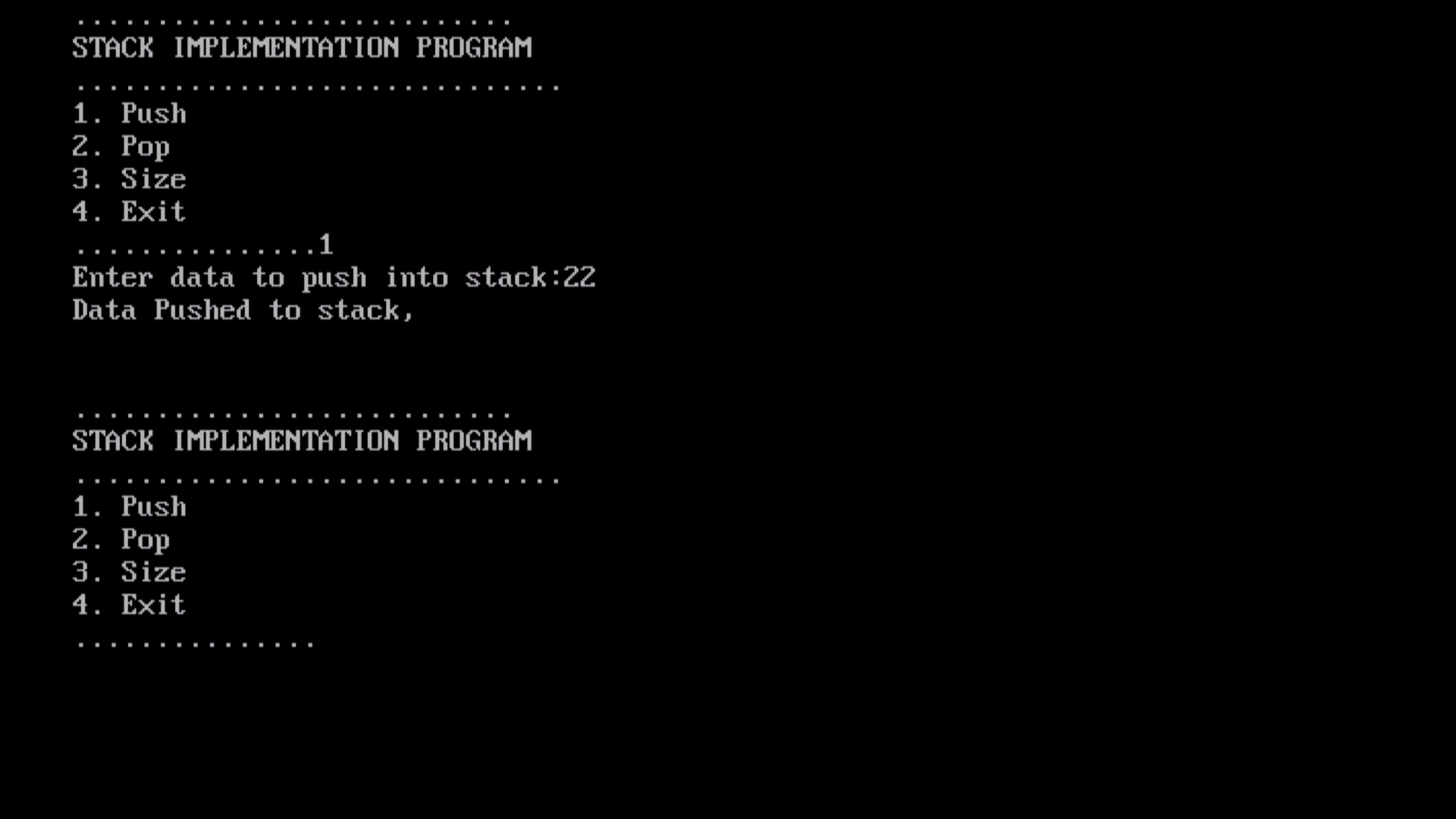

≡ File Edit Search Run Compile Debug Project Options Window Help
[■]
LINKEDST.CPP
2=[↕]
86:5
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu

```
return;
}
newNode-> data = element;
newNode->next=top;
top=newNode;
size++;
printf("Data Pushed to stack,\n");
}

int pop()
{
int data = 0;
struct stack * topNode;
if(size<=0 || !top)
{
printf("Stack is empty,\n");
return INT_MIN;
}
topNode=top;
data= top-> data;
top= top-> next;
```

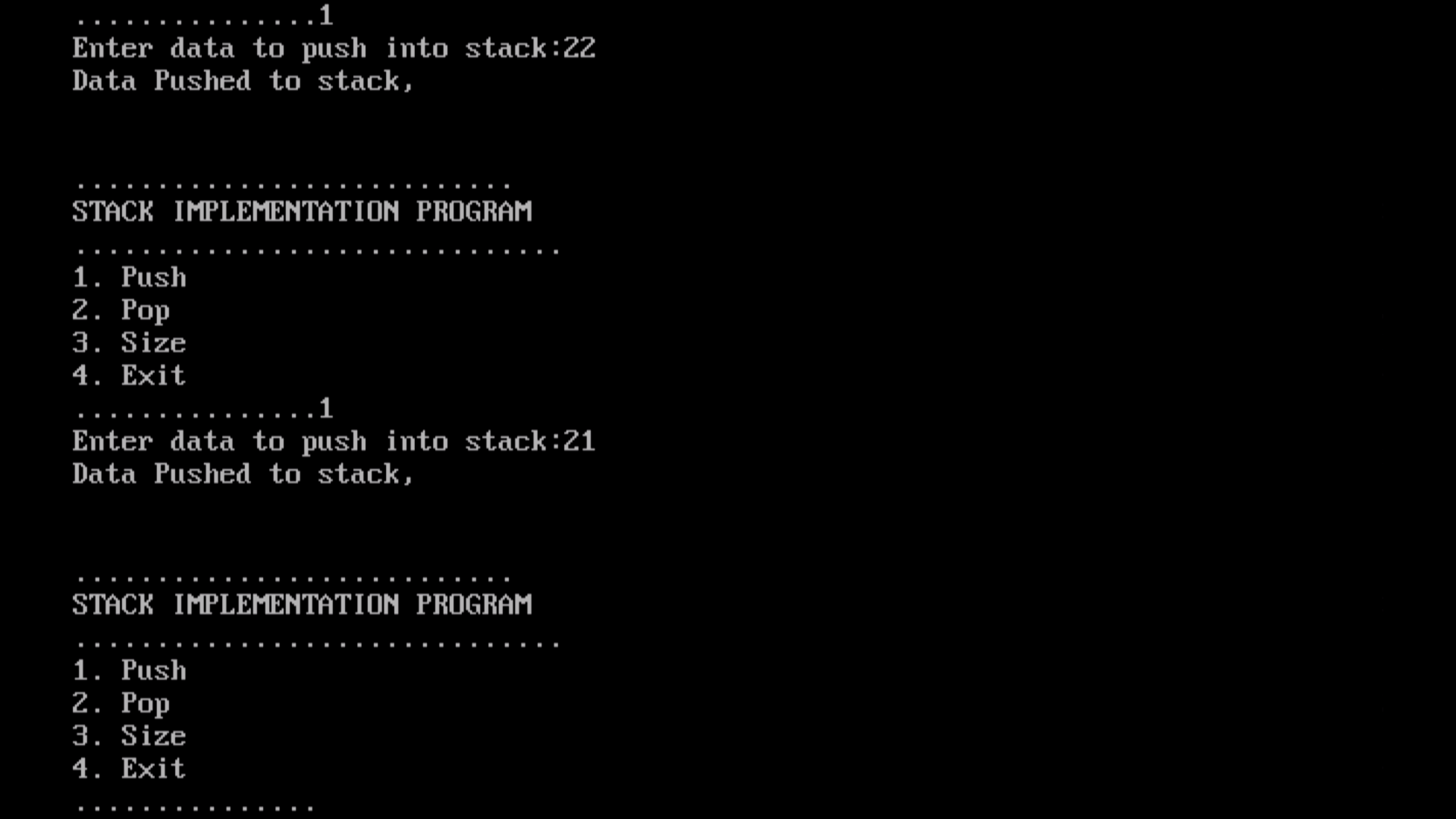


≡ File Edit Search Run Compile Debug Project Options Window Help
[■]
LINKEDST.CPP
2=[↕]
91:5
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu

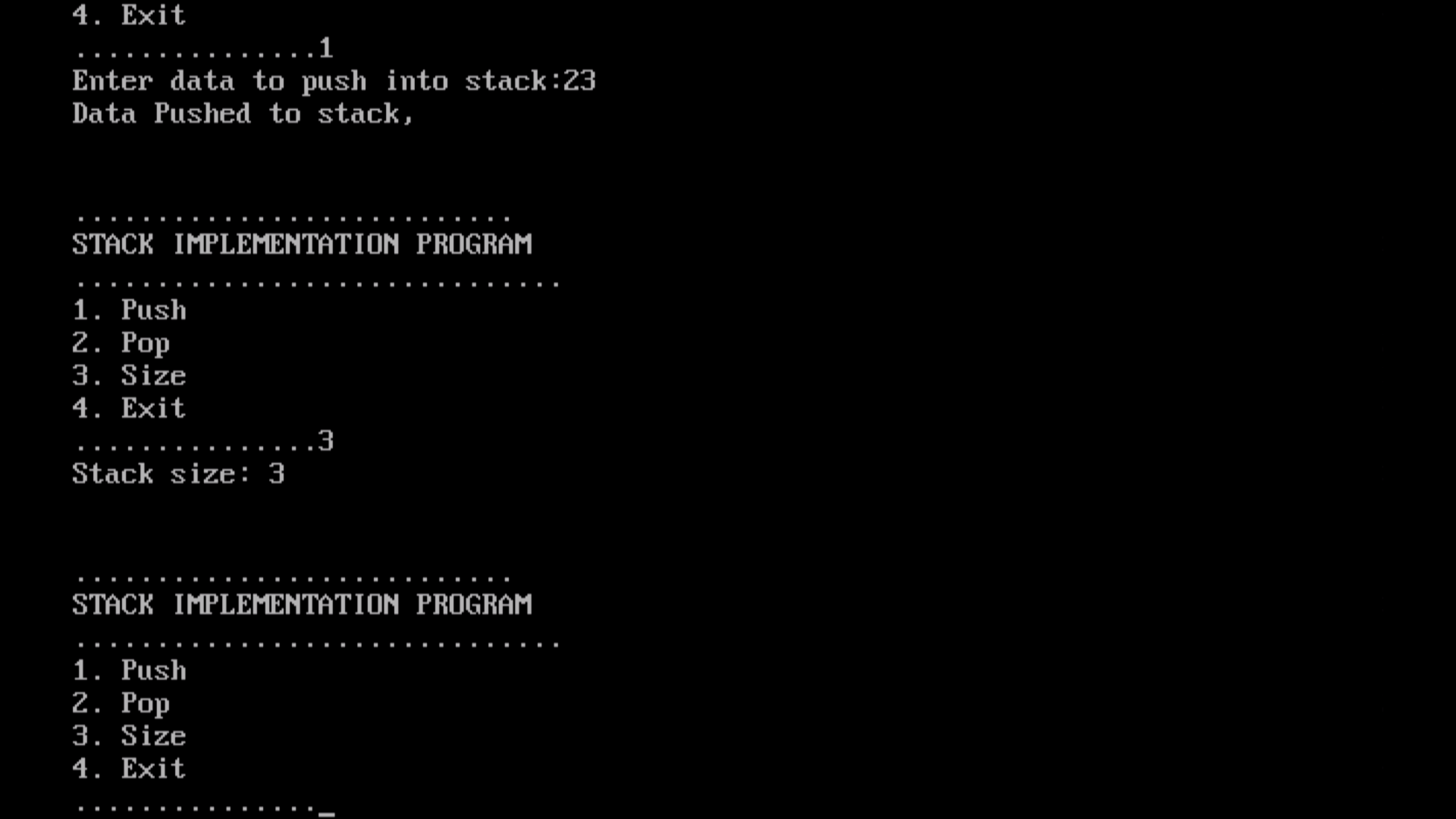
```
size++;
printf("Data Pushed to stack,\n");
}


int pop()
{
int data = 0;
struct stack * topNode;
if(size<=0 || !top)
{
printf("Stack is empty,\n");
return INT_MIN;
}
topNode=top;
data= top-> data;
top= top-> next;
free(topNode);
size--;
return data;
}
```



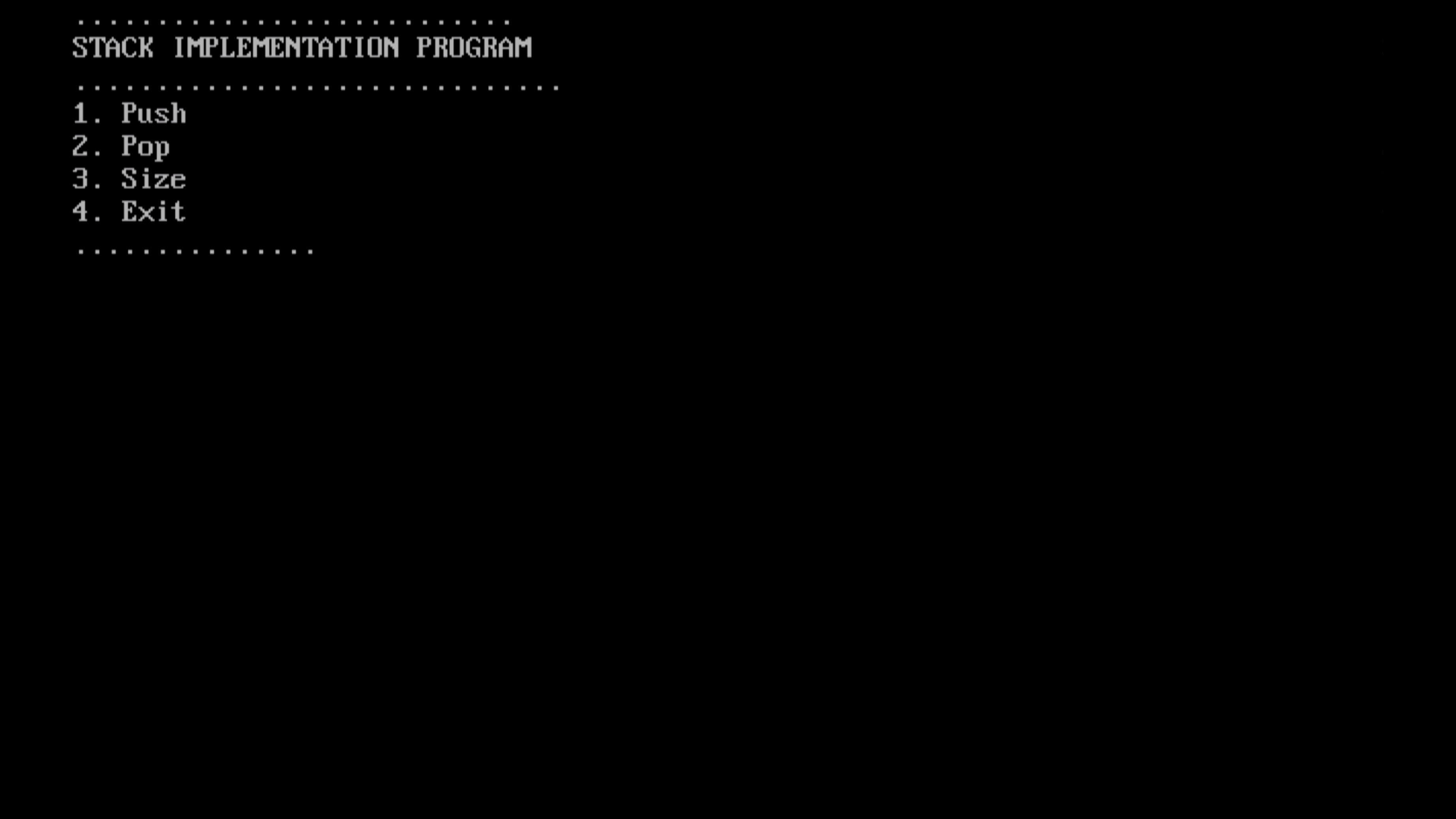
```
...........................
STACK IMPLEMENTATION PROGRAM
..............................
1. Push
2. Pop
3. Size
4. Exit
...............1
Enter data to push into stack:22
Data Pushed to stack,


...........................
STACK IMPLEMENTATION PROGRAM
..............................
1. Push
2. Pop
3. Size
4. Exit
...............
```



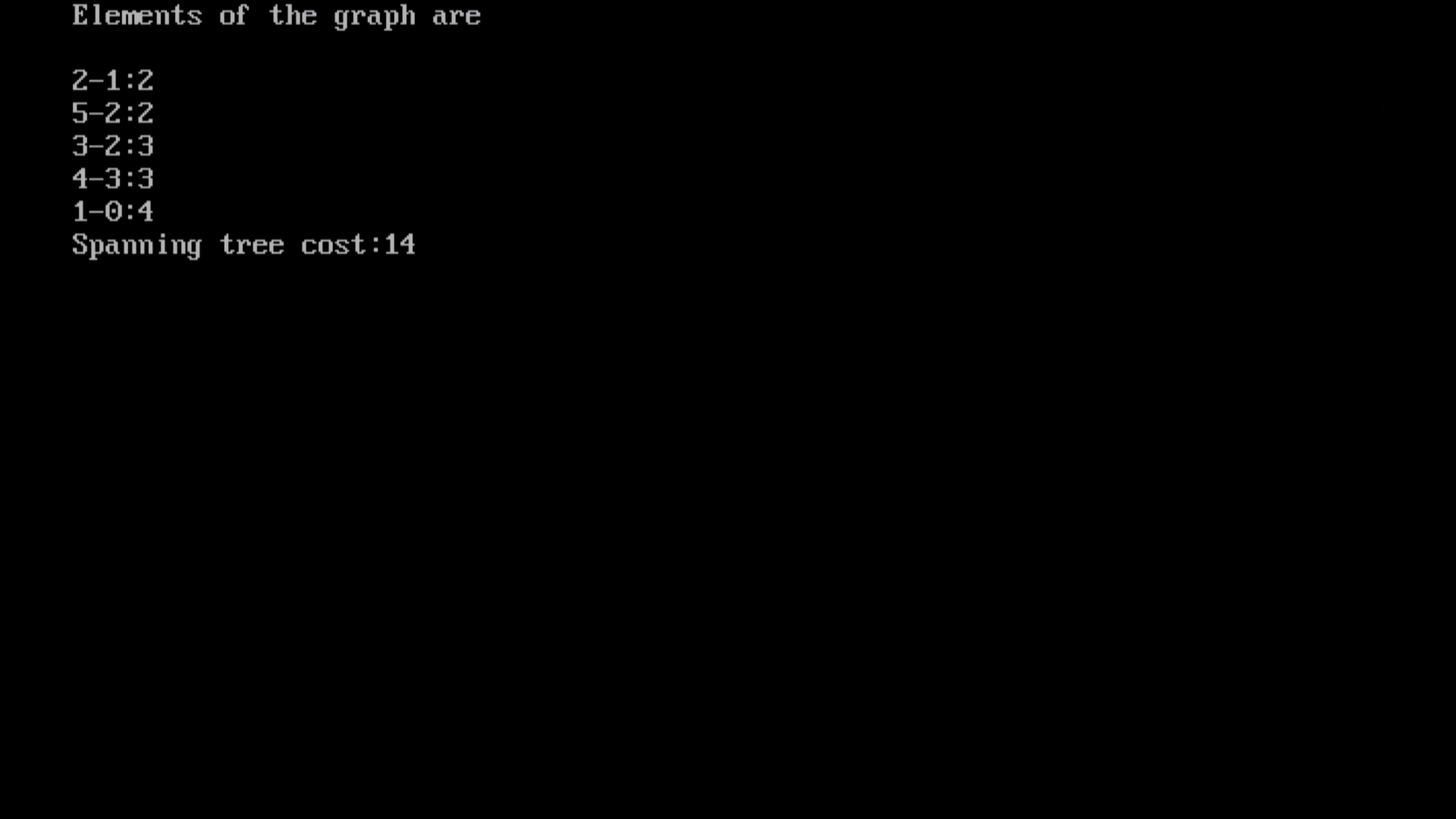
```
...............1
Enter data to push into stack:22
Data Pushed to stack,


...........................
STACK IMPLEMENTATION PROGRAM
..............................
1. Push
2. Pop
3. Size
4. Exit
...............1
Enter data to push into stack:21
Data Pushed to stack,


...........................
STACK IMPLEMENTATION PROGRAM
..............................
1. Push
2. Pop
3. Size
4. Exit
...............
```



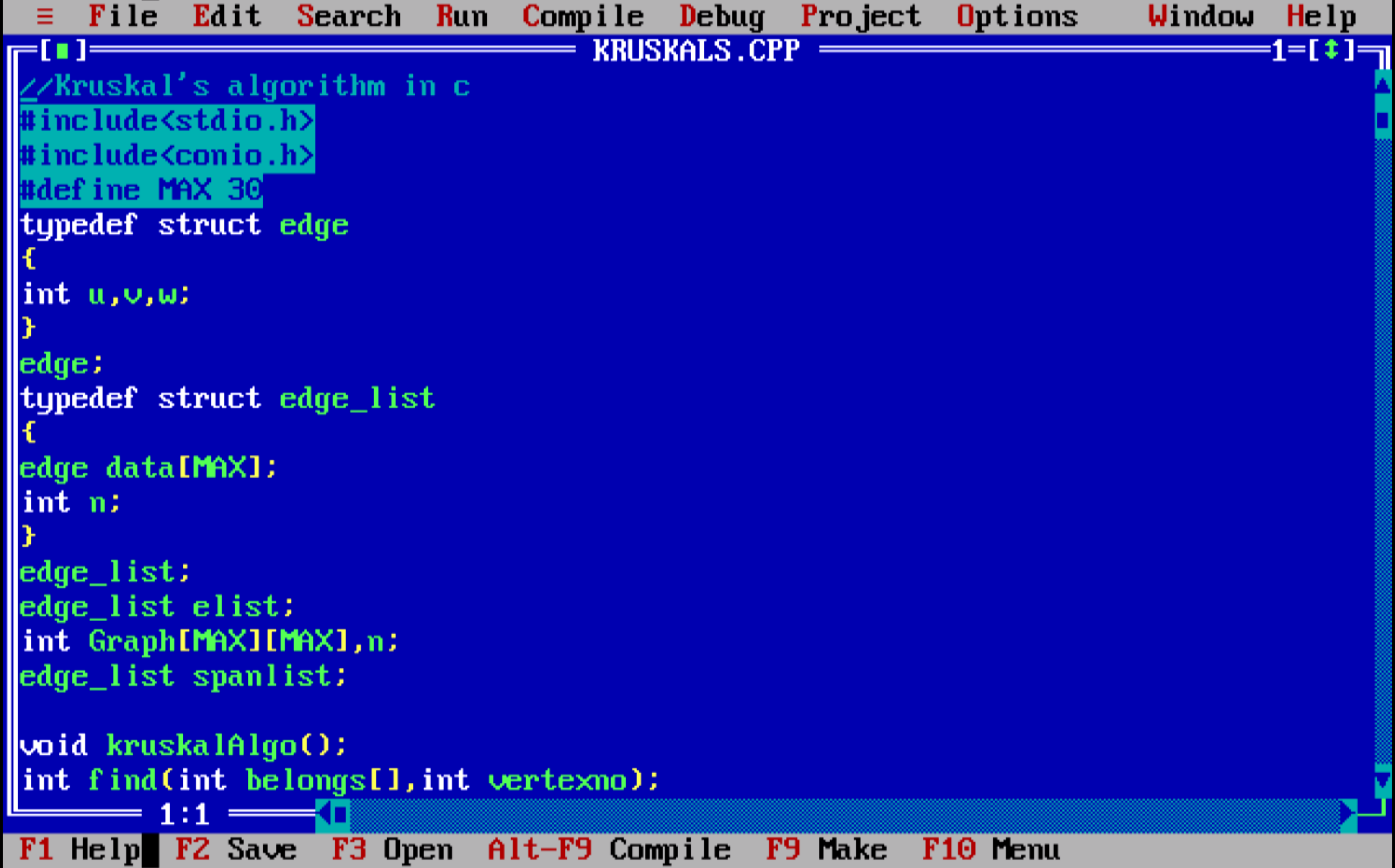
```
4. Exit
...............1
Enter data to push into stack:23
Data Pushed to stack,



...........................
STACK IMPLEMENTATION PROGRAM
..............................
1. Push
2. Pop
3. Size
4. Exit
...............3
Stack size: 3



...........................
STACK IMPLEMENTATION PROGRAM
..............................
1. Push
2. Pop
3. Size
4. Exit
..............._
```



```
...........................
STACK IMPLEMENTATION PROGRAM
..............................
1. Push
2. Pop
3. Size
4. Exit
...............
```

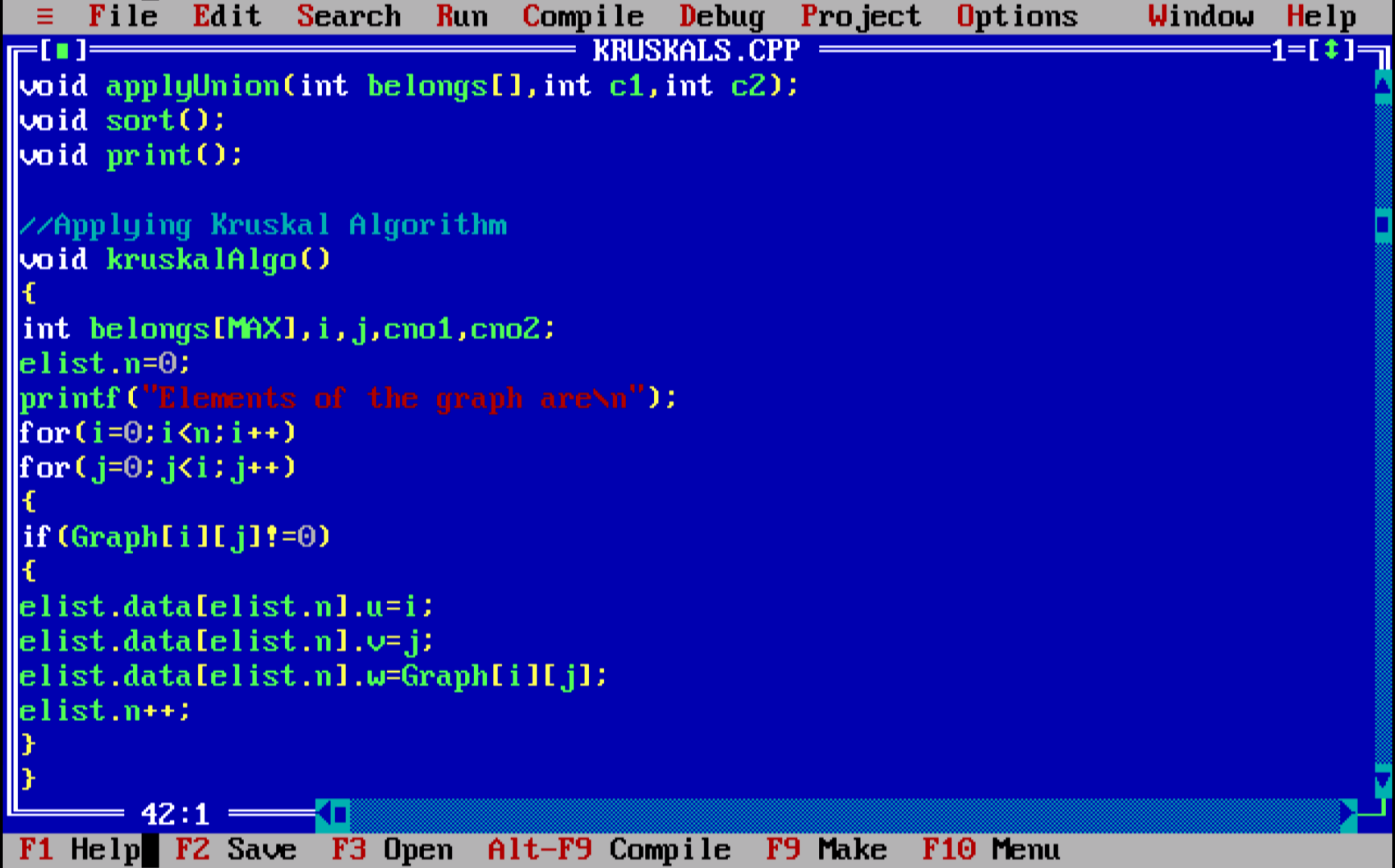


```
Elements of the graph are

2-1:2
5-2:2
3-2:3
4-3:3
1-0:4
Spanning tree cost:14
```

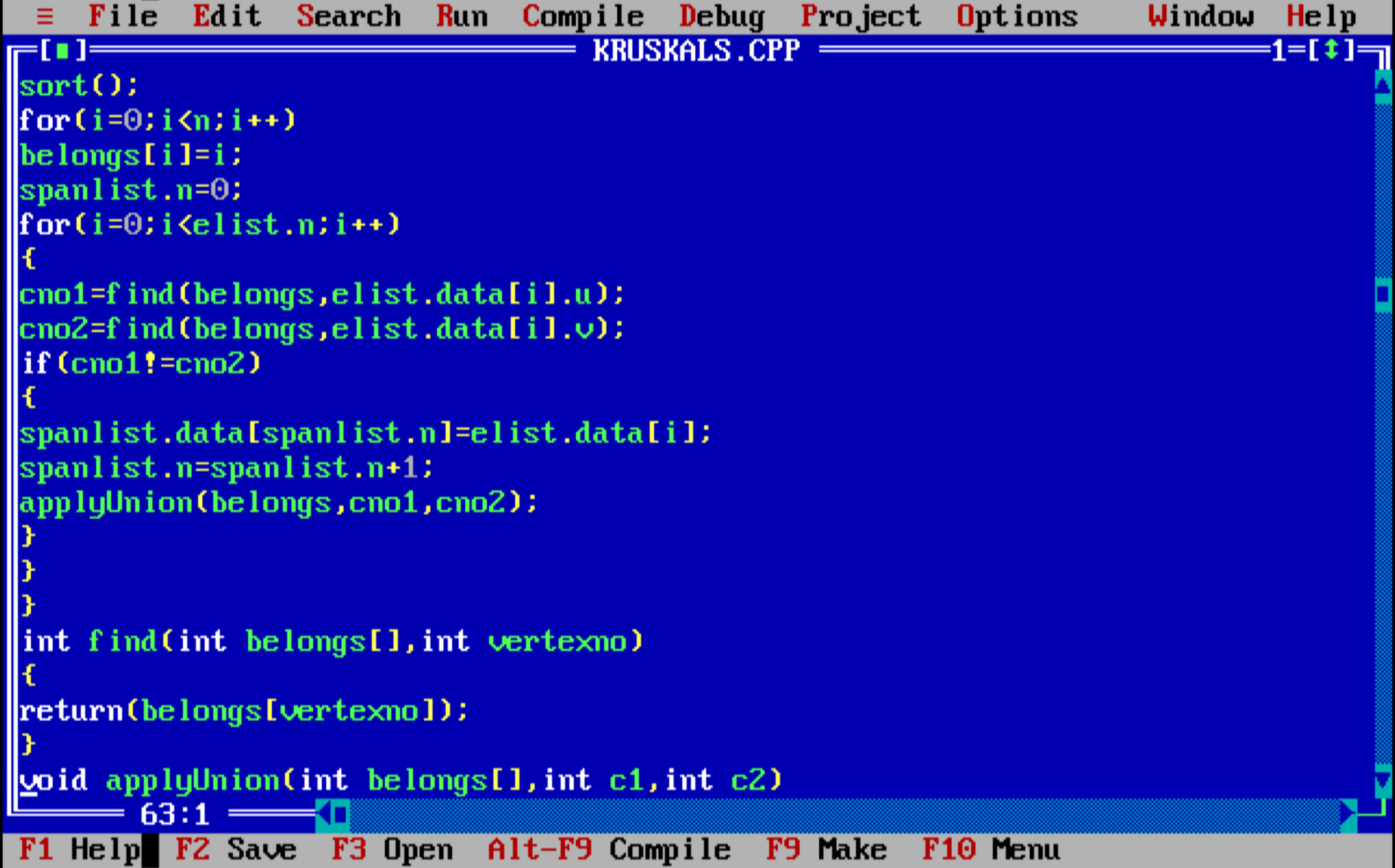


≡ File Edit Search Run Compile Debug Project Options Window Help
[■] KRUSKALS.CPP 1=[↕]
1:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

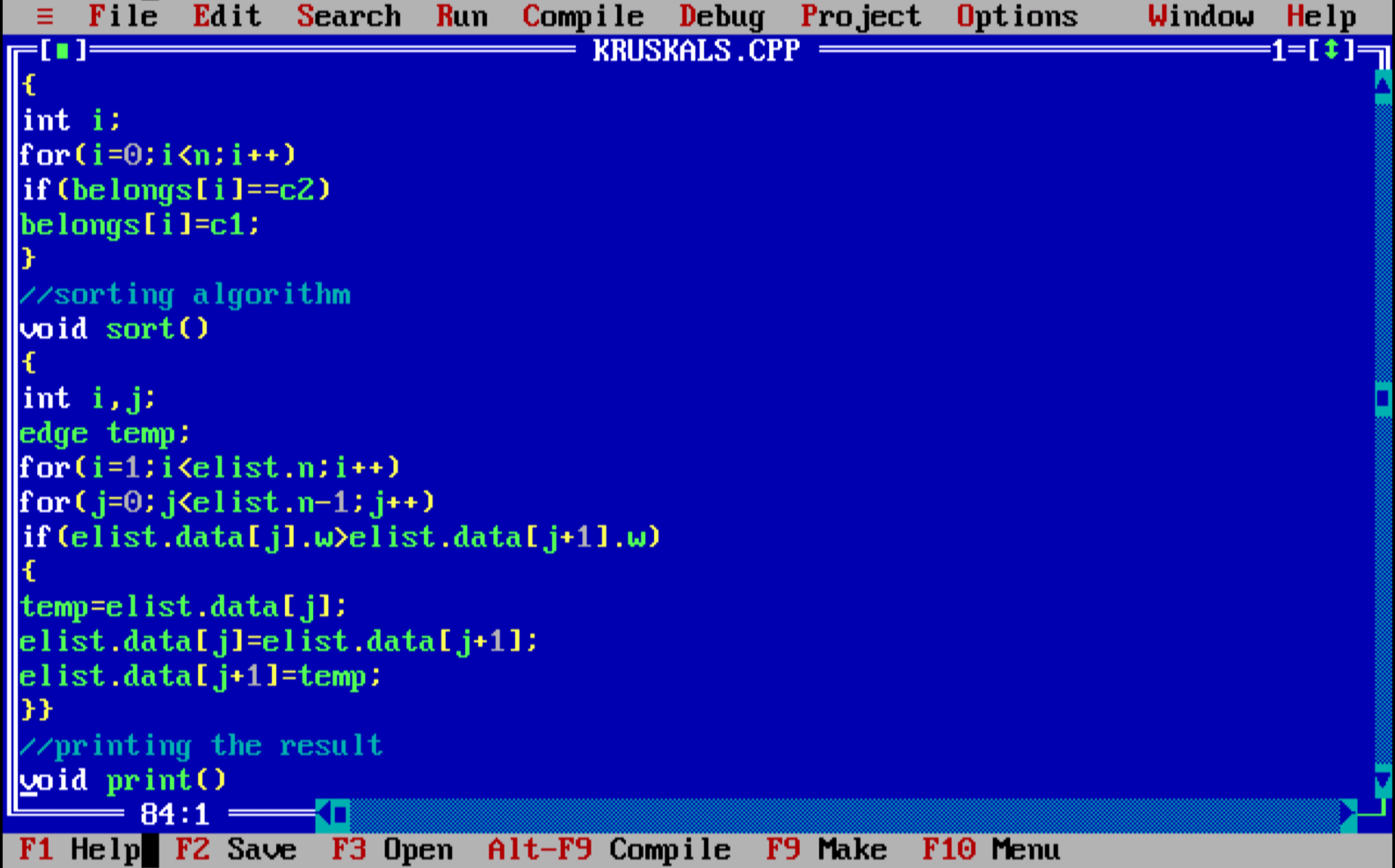
```
//Kruskal's algorithm in c
#include<stdio.h>
#include<conio.h>
#define MAX 30
typedef struct edge
{
int u,v,w;
}
edge;
typedef struct edge_list
{
edge data[MAX];
int n;
}
edge_list;
edge_list elist;
int Graph[MAX][MAX],n;
edge_list spanlist;

void kruskalAlgo();
int find(int belongs[],int vertexno);
```


≡ File Edit Search Run Compile Debug Project Options Window Help
[■] KRUSKALS.CPP 1=[↕]
42:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

```
void applyUnion(int belongs[],int c1,int c2);
void sort();
void print();

//Applying Kruskal Algorithm
void kruskalAlgo()
{
int belongs[MAX],i,j,cno1,cno2;
elist.n=0;
printf("Elements of the graph are\n");
for(i=0;i<n;i++)
for(j=0;j<i;j++)
{
if(Graph[i][j]!=0)
{
elist.data[elist.n].u=i;
elist.data[elist.n].v=j;
elist.data[elist.n].w=Graph[i][j];
elist.n++;
}
}
```

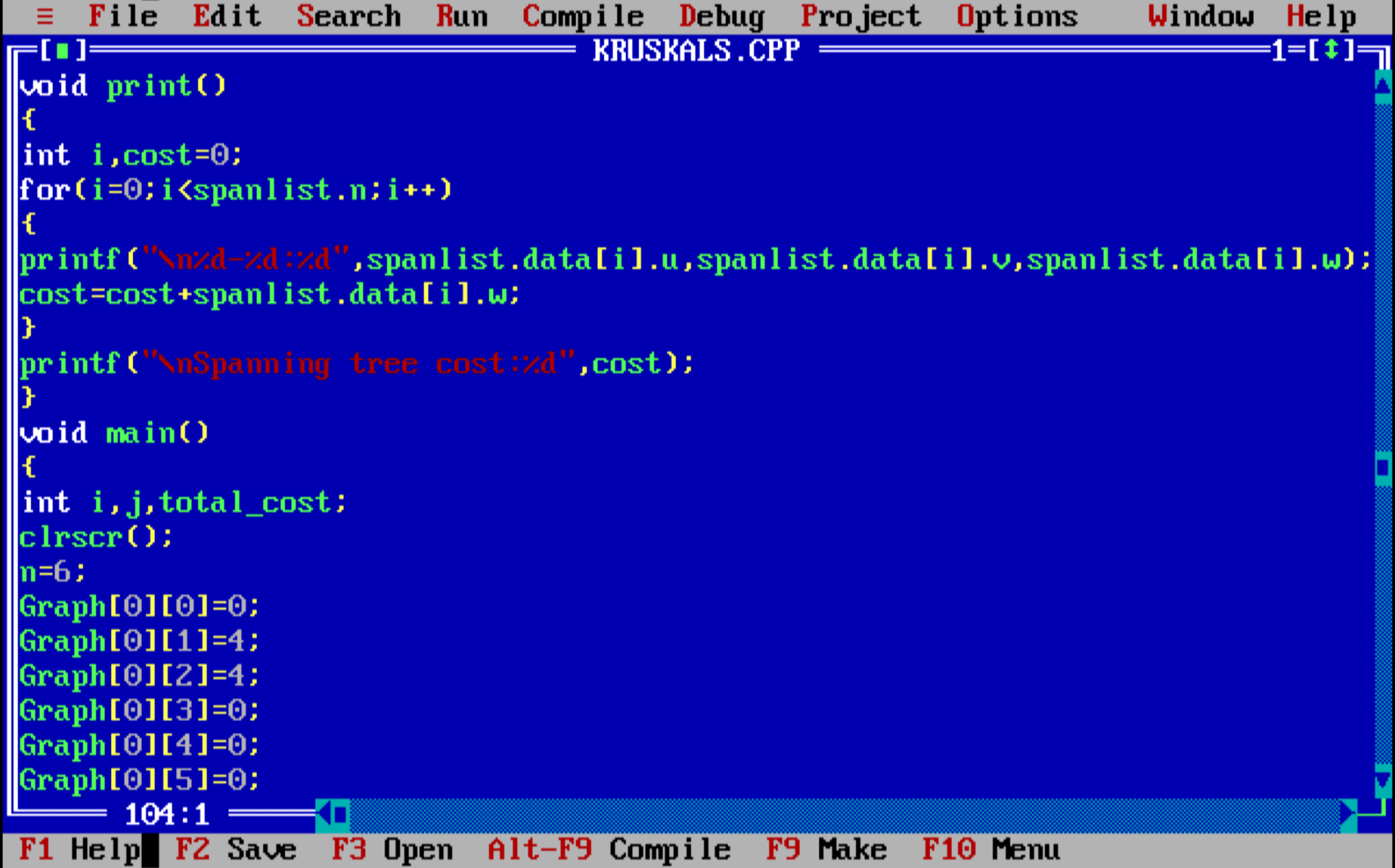

≡ File Edit Search Run Compile Debug Project Options Window Help
[■]
KRUSKALS.CPP
1=[↕]
63:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

```
sort();
for(i=0;i<n;i++)
belongs[i]=i;
spanlist.n=0;
for(i=0;i<elist.n;i++)
{
cno1=find(belongs,elist.data[i].u);
cno2=find(belongs,elist.data[i].v);
if(cno1!=cno2)
{
spanlist.data[spanlist.n]=elist.data[i];
spanlist.n=spanlist.n+1;
applyUnion(belongs,cno1,cno2);
}
}
}
int find(int belongs[],int vertexno)
{
return(belongs[vertexno]);
}
void applyUnion(int belongs[],int c1,int c2)
```

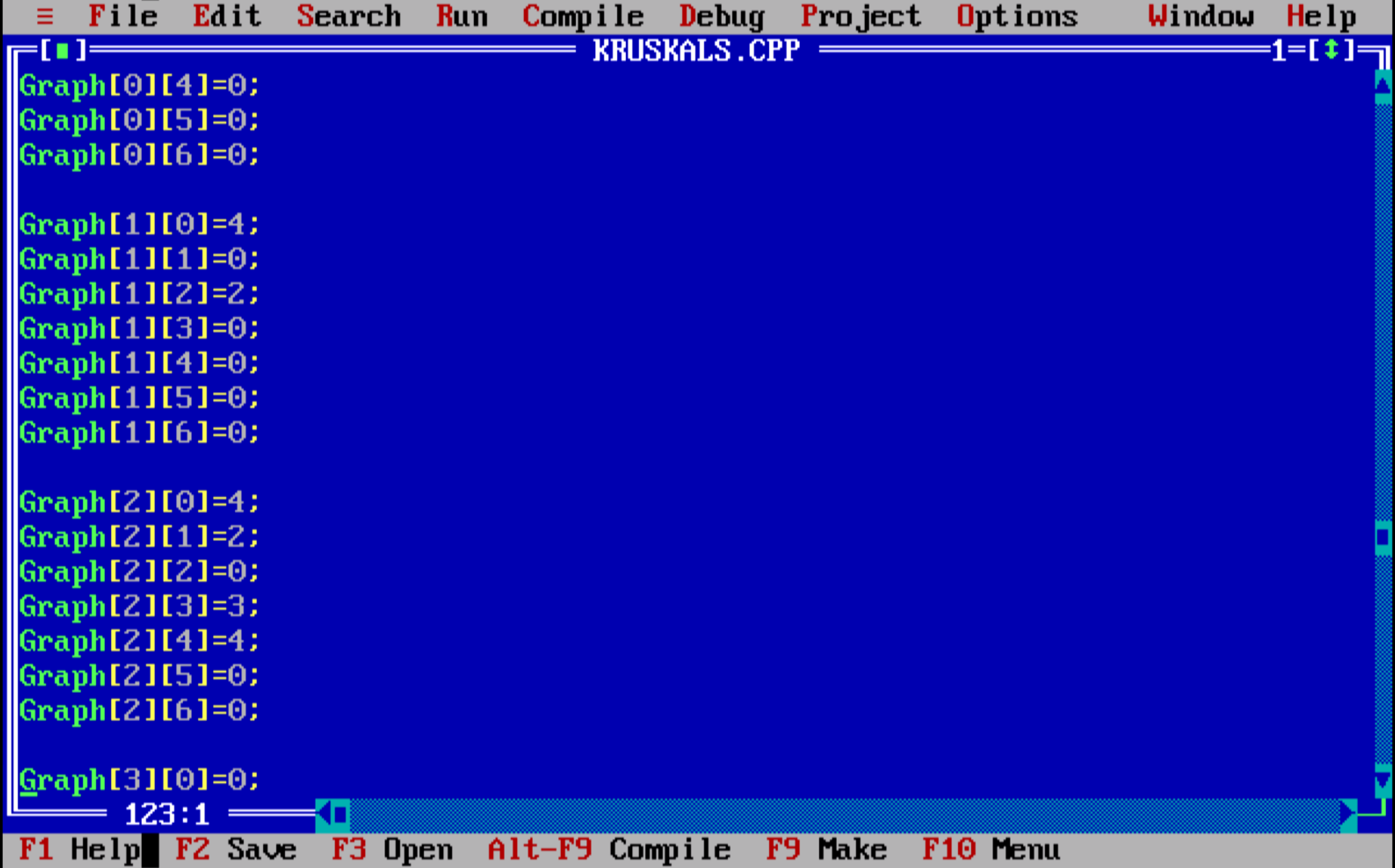


≡ File Edit Search Run Compile Debug Project Options Window Help
[■] KRUSKALS.CPP 1=[↕]
84:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

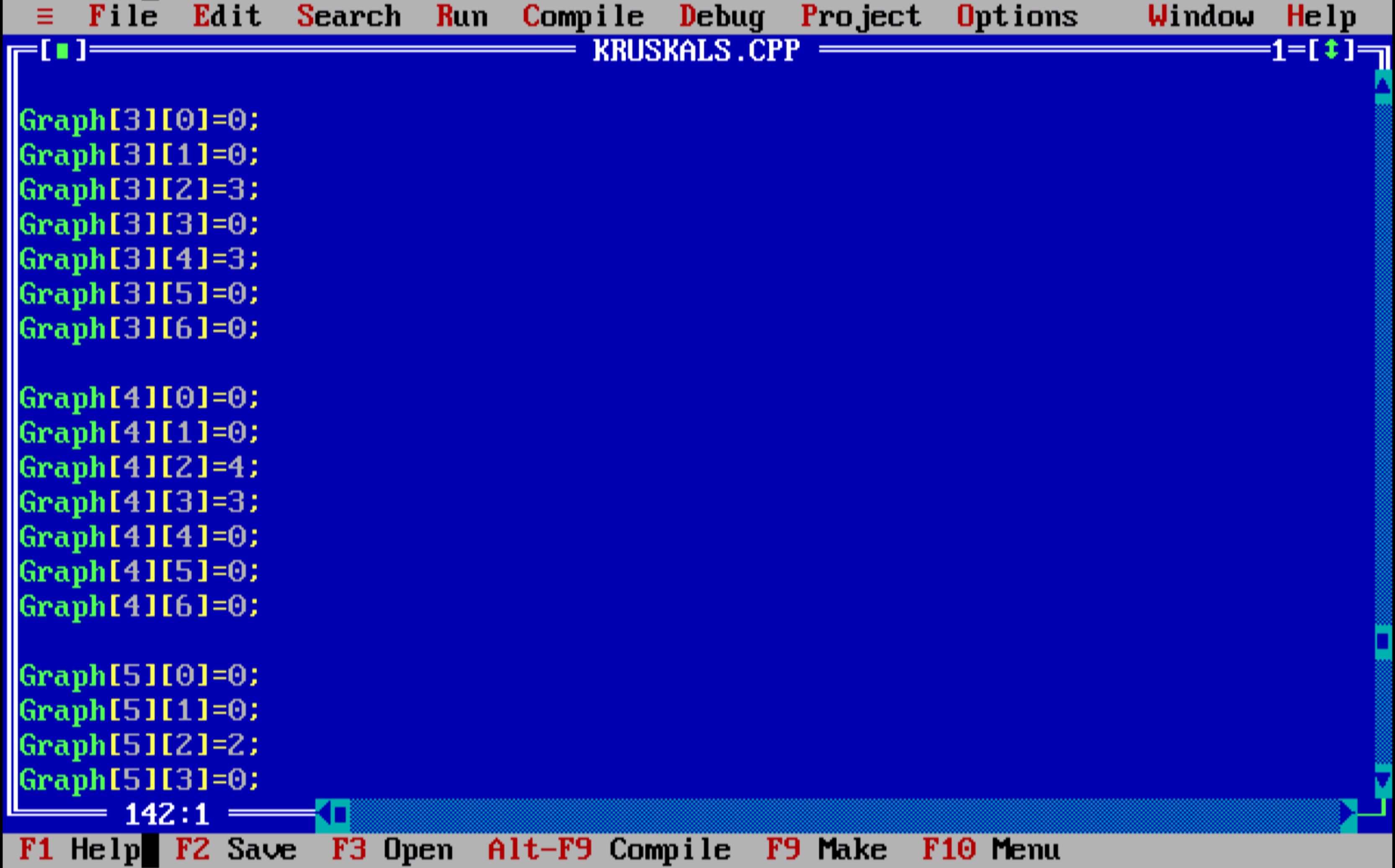
```
{
int i;
for(i=0;i<n;i++)
if(belongs[i]==c2)
belongs[i]=c1;
}
//sorting algorithm
void sort()
{
int i,j;
edge temp;
for(i=1;i<elist.n;i++)
for(j=0;j<elist.n-1;j++)
if(elist.data[j].w>elist.data[j+1].w)
{
temp=elist.data[j];
elist.data[j]=elist.data[j+1];
elist.data[j+1]=temp;
}}
//printing the result
void print()
```


≡ File Edit Search Run Compile Debug Project Options Window Help
[■]
KRUSKALS.CPP
1=[↕]
104:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

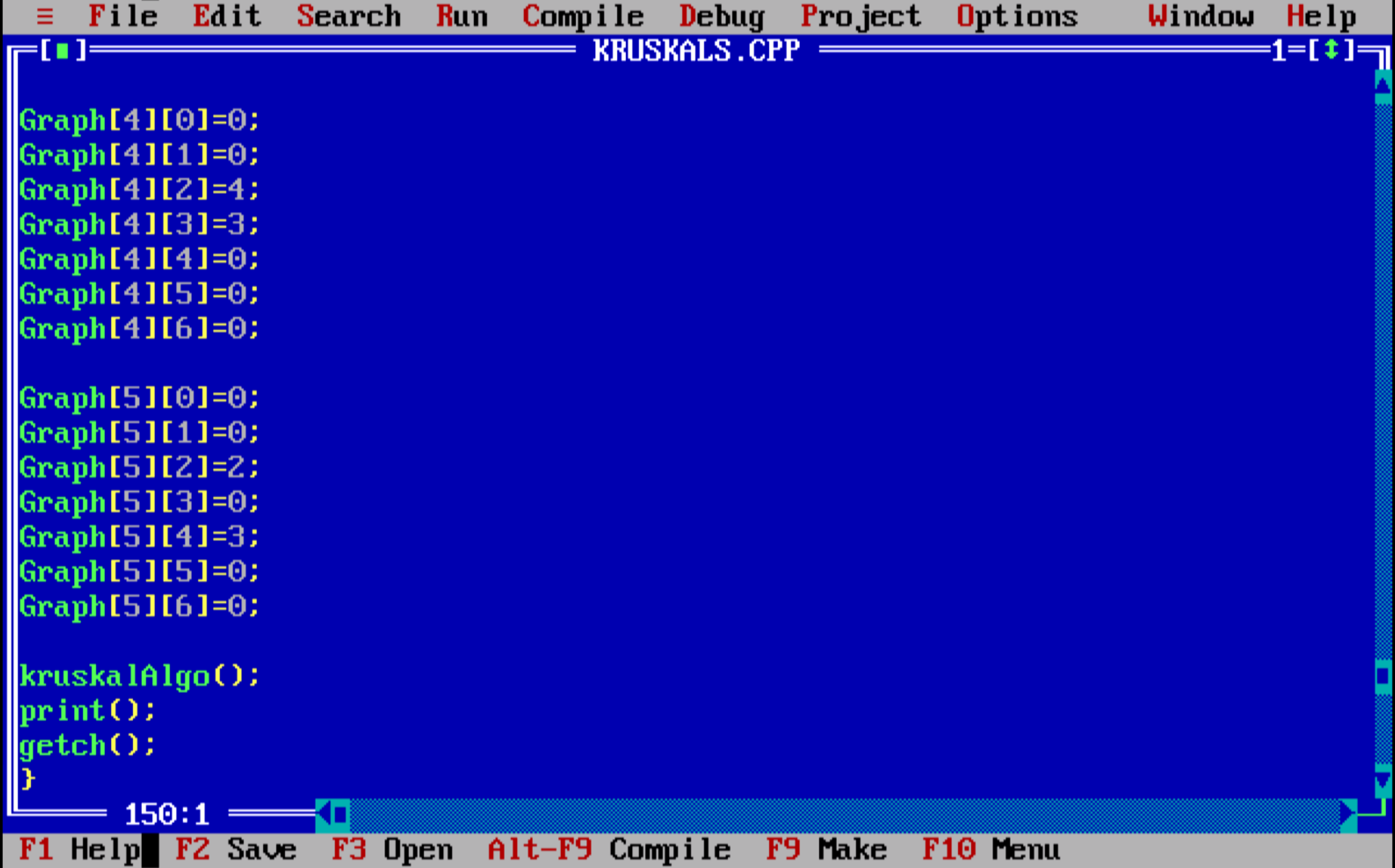
```
void print()
{
int i,cost=0;
for(i=0;i<spanlist.n;i++)
{
printf("\n%d-%d:%d",spanlist.data[i].u,spanlist.data[i].v,spanlist.data[i].w);
cost=cost+spanlist.data[i].w;
}
printf("\nSpanning tree cost:%d",cost);
}
void main()
{
int i,j,total_cost;
clrscr();
n=6;
Graph[0][0]=0;
Graph[0][1]=4;
Graph[0][2]=4;
Graph[0][3]=0;
Graph[0][4]=0;
Graph[0][5]=0;
```


≡ File Edit Search Run Compile Debug Project Options Window Help
[■] KRUSKALS.CPP 1=[↕]
123:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

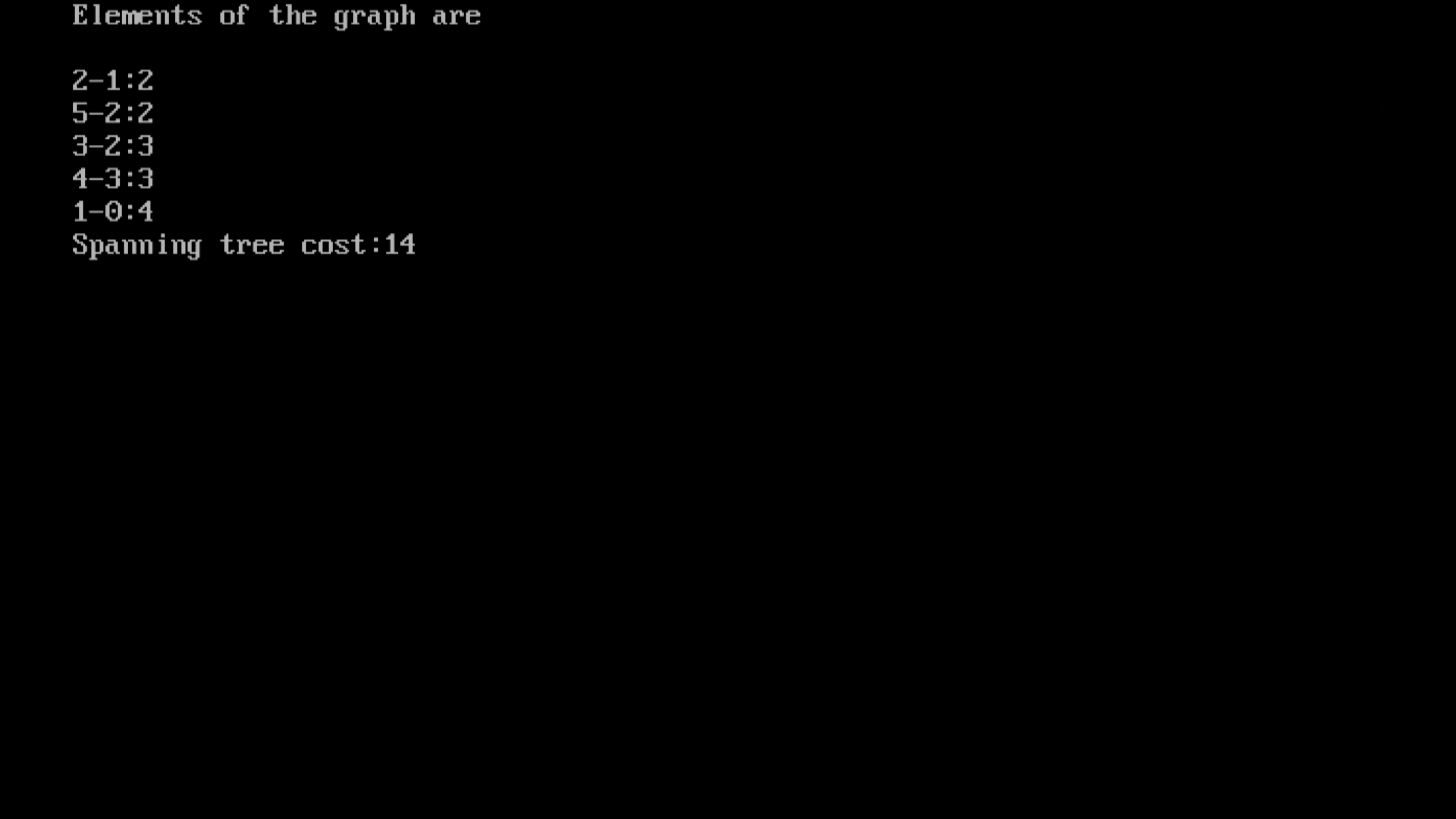
```
Graph[0][4]=0;
Graph[0][5]=0;
Graph[0][6]=0;

Graph[1][0]=4;
Graph[1][1]=0;
Graph[1][2]=2;
Graph[1][3]=0;
Graph[1][4]=0;
Graph[1][5]=0;
Graph[1][6]=0;

Graph[2][0]=4;
Graph[2][1]=2;
Graph[2][2]=0;
Graph[2][3]=3;
Graph[2][4]=4;
Graph[2][5]=0;
Graph[2][6]=0;

Graph[3][0]=0;
```


≡ File Edit Search Run Compile Debug Project Options Window Help
[■]
KRUSKALS.CPP
1=[↕]
142:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

```

Graph[3][0]=0;
Graph[3][1]=0;
Graph[3][2]=3;
Graph[3][3]=0;
Graph[3][4]=3;
Graph[3][5]=0;
Graph[3][6]=0;

Graph[4][0]=0;
Graph[4][1]=0;
Graph[4][2]=4;
Graph[4][3]=3;
Graph[4][4]=0;
Graph[4][5]=0;
Graph[4][6]=0;

Graph[5][0]=0;
Graph[5][1]=0;
Graph[5][2]=2;
Graph[5][3]=0;
```


≡ File Edit Search Run Compile Debug Project Options Window Help
KRUSKALS.CPP
1
150:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu

```

Graph[4][0]=0;
Graph[4][1]=0;
Graph[4][2]=4;
Graph[4][3]=3;
Graph[4][4]=0;
Graph[4][5]=0;
Graph[4][6]=0;

Graph[5][0]=0;
Graph[5][1]=0;
Graph[5][2]=2;
Graph[5][3]=0;
Graph[5][4]=3;
Graph[5][5]=0;
Graph[5][6]=0;

kruskalAlgo();
print();
getch();
}
```



```
Elements of the graph are

2-1:2
5-2:2
3-2:3
4-3:3
1-0:4
Spanning tree cost:14
```