Subject: - DSU	**Subject Code:** 313301
Semester: - III	**Course:** Computer Engineering
Laboratory No: L003	**Name of Subject Teacher:** Prof. Imran S.
Name of Student: Mohd Saad Khan	**Roll Id: -** 24203A0007

Experiment No:	9
Title of Experiment	* Write a 'C' Program to Sort an Array of Strings using Selection Sort Method.

Aim: * Write a 'C' Program to Sort an Array of Strings using Selection Sort Method.

Algorithm:

Step 1: Start
Step 2: Declare a 2D character array a[5][11] and a temporary array temp[20]
Step 3: Declare integer variables i, j, min, b
Step 4: Clear screen using clrscr()
Step 5: Print "Enter the strings in the array:"
Step 6: Run a loop from i = 0 to i < 5
Step 6.1: Scan a string and store it in a[i]
Step 7: Run a loop from i = 0 to i < 5
Step 7.1: Set min = i
Step 7.2: Run a nested loop from j = i + 1 to j < 5
Step 7.2.1: Compare a[j] with a[min] using strcmp() and store result in b
Step 7.2.2: If b < 0, then set min = j
Step 7.3: Swap a[i] and a[min] using temp and strcpy()
Step 8: Print "Sorted Array:"
Step 9: Run a loop from i = 0 to i < 5
Step 9.1: Print a[i]
Step 10: Stop

Code:

```
≡  File  Edit  Search  Run  Compile  Debug  Project  Options    Window  Help
┌─[■]══════════════════════ SAAD57.C ══════════════════════1═[↕]┐
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char a[5][11],temp[20];
int i,j,min,b;
clrscr();
printf("Enter the strings in the array: \n");
for(i=0;i<5;i++)
{
scanf("%s",a[i]);
}
for(i=0;i<5;i++)
{
min=i;
for(j=i+1;j<5;j++)
{
b=strcmp(a[j],a[min]);
if(b<0)
{
└───── 21:78 ═══◄□
F1 Help  Alt-F8 Next Msg  Alt-F7 Prev Msg  Alt-F9 Compile  F9 Make  F10 Menu
```

```
≡  File  Edit  Search  Run  Compile  Debug  Project  Options    Window  Help
┌─[■]══════════════════════ SAAD57.C ══════════════════════1═[↕]┐
{
min=j;
}
}
strcpy(temp,a[i]);
strcpy(a[i],a[min]);
strcpy(a[min],temp);
}
printf("\nSorted Array: \n");
for(i=0;i<5;i++)
{
printf("%s \n",a[i]);
}
getch();
}
└───── 36:78 ═══◄□
F1 Help  Alt-F8 Next Msg  Alt-F7 Prev Msg  Alt-F9 Compile  F9 Make  F10 Menu
```

Output: -

```
Enter the strings in the array:
mango
banana
apple
lichi
watermelon

Sorted Array:
apple
banana
lichi
mango
watermelon
```
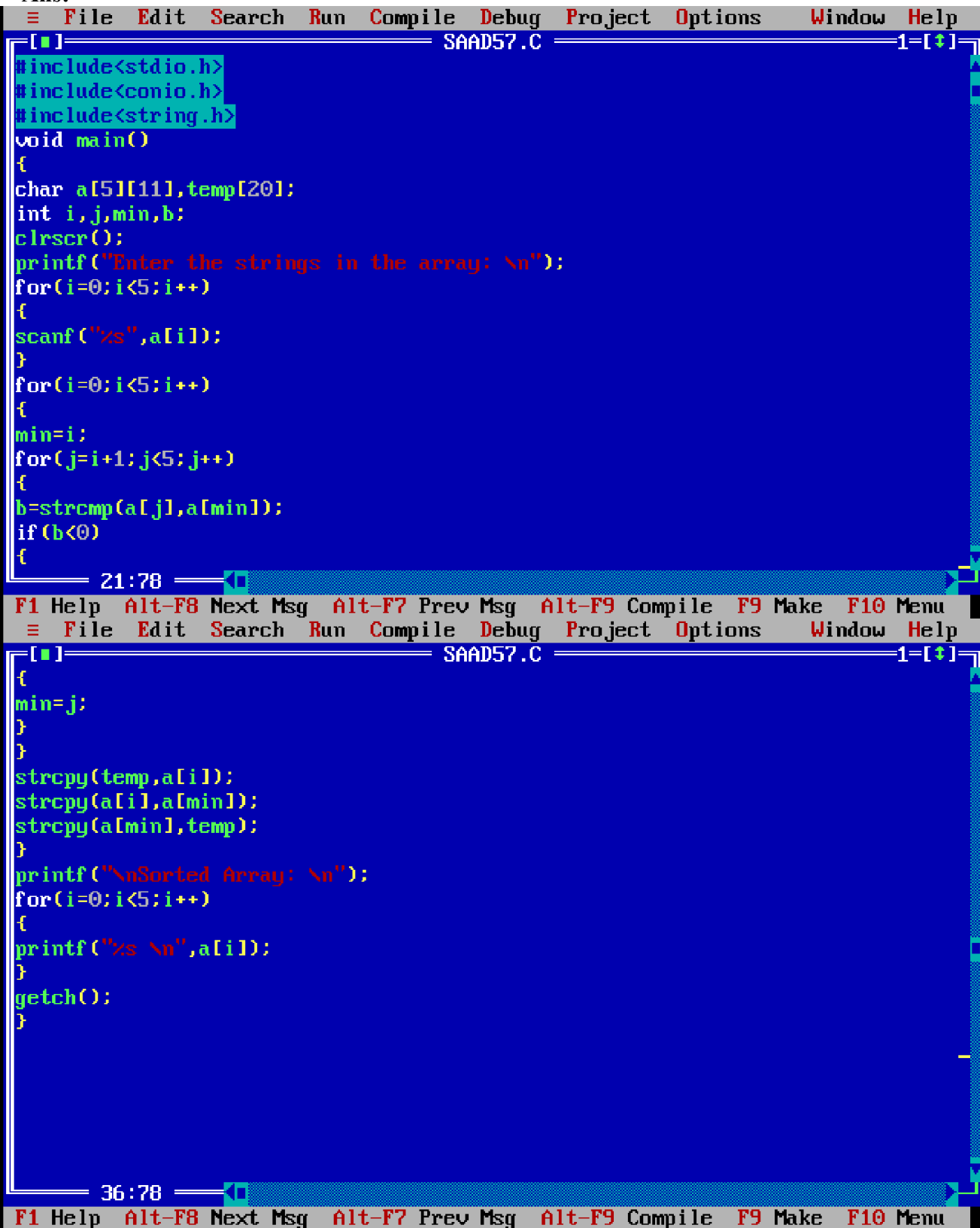
Practical Related Questions:

1. **Write a C program to sort an array of Strings using Selection Sort.**
   Ans:

```
≡  File   Edit   Search   Run   Compile   Debug   Project   Options      Window   Help
┌─[■]══════════════════════════════════ SAAD57.C ══════════════════════════════1═[↕]┐
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char a[5][11],temp[20];
int i,j,min,b;
clrscr();
printf("Enter the strings in the array: \n");
for(i=0;i<5;i++)
{
scanf("%s",a[i]);
}
for(i=0;i<5;i++)
{
min=i;
for(j=i+1;j<5;j++)
{
b=strcmp(a[j],a[min]);
if(b<0)
{
─── 21:78 ═══◄■
F1 Help   Alt-F8 Next Msg   Alt-F7 Prev Msg   Alt-F9 Compile   F9 Make   F10 Menu
```

```
≡  File   Edit   Search   Run   Compile   Debug   Project   Options      Window   Help
┌─[■]══════════════════════════════════ SAAD57.C ══════════════════════════════1═[↕]┐
{
min=j;
}
}
strcpy(temp,a[i]);
strcpy(a[i],a[min]);
strcpy(a[min],temp);
}
printf("\nSorted Array: \n");
for(i=0;i<5;i++)
{
printf("%s \n",a[i]);
}
getch();
}
─── 36:78 ═══◄■
F1 Help   Alt-F8 Next Msg   Alt-F7 Prev Msg   Alt-F9 Compile   F9 Make   F10 Menu
```

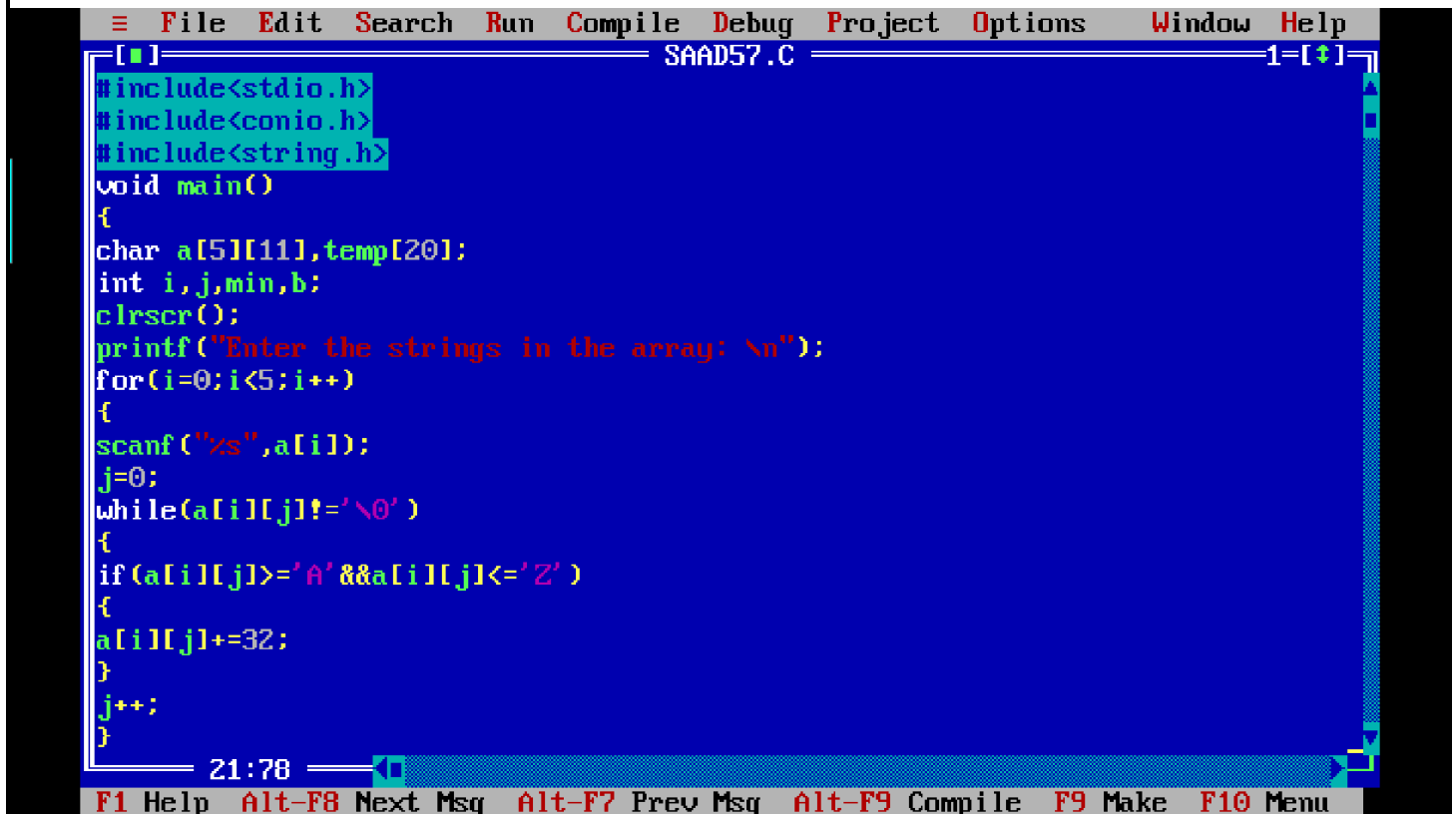**Output: -**

```
Enter the strings in the array:
mango
banana
apple
lichi
watermelon

Sorted Array:
apple
banana
lichi
mango
watermelon
```

2. **Extend your Selection Sort implementation to support case-insensitive sorting of strings. Ensure that uppercase and lowercase versions of the same letter are treated as equal during sorting. Ans:**

```
 ≡  File  Edit  Search  Run  Compile  Debug  Project  Options    Window  Help
╔═[■]══════════════════════════ SAAD57.C ══════════════════════════1═[↕]╗
║#include<stdio.h>                                                        ▲
║#include<conio.h>                                                        ▓
║#include<string.h>                                                       ▓
║void main()
║{
║char a[5][11],temp[20];
║int i,j,min,b;
║clrscr();
║printf("Enter the strings in the array: \n");
║for(i=0;i<5;i++)
║{
║scanf("%s",a[i]);
║j=0;
║while(a[i][j]!='\0')
║{
║if(a[i][j]>='A'&&a[i][j]<='Z')
║{
║a[i][j]+=32;
║}
║j++;
║}
╠═══ 21:78 ═══◄■
 F1 Help  Alt-F8 Next Msg  Alt-F7 Prev Msg  Alt-F9 Compile  F9 Make  F10 Menu
```

```
==[■]========================= SAAD57.C ========================1=[↕]=
}
for(i=0;i<5;i++)
{
min=i;
for(j=i+1;j<5;j++)
{
b=strcmp(a[j],a[min]);
if(b<0)
{
min=j;
}
}
strcpy(temp,a[i]);
strcpy(a[i],a[min]);
strcpy(a[min],temp);
}
printf("\nSorted Array: \n");
for(i=0;i<5;i++)
{
printf("%s \n",a[i]);
}
===== 42:78 =====◄▮
```

```
==[■]========================= SAAD57.C ========================1=[↕]=
getch();
}
```

Output:

```
Enter the strings in the array:
Mango
BAnana
Apple
lichi
WATERmelon

Sorted Array:
apple
banana
lichi
mango
watermelon
```

Marks Obtained			Dated signature of Teacher
Process Related (35)	**Product Related (15)**	**Total (50)**	