Vidyalankar Polytechnic	DEPARTMENT OF COMPUTER ENGINEERING

Subject: - DATA STRUCTURE	**Subject Code:** 313 301
Semester: - III	**Course:** COMPUTER ENGINEERING
Laboratory No: L003	**Name of Subject Teacher:** Prof. Imraan S.
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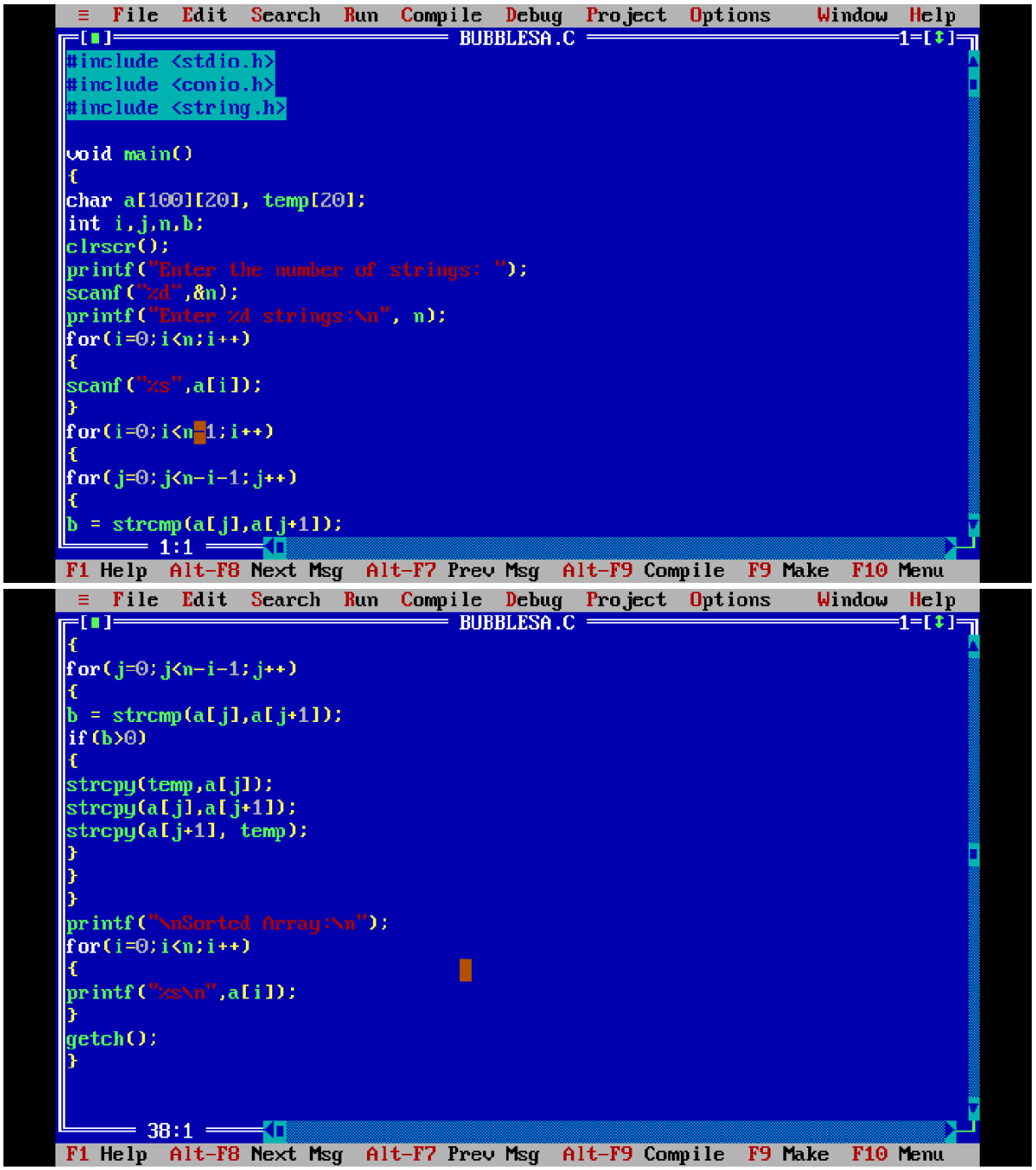
Experiment No:	7
Title of Experiment	* Write a 'C' Program to Sort an Array of Strings using Bubble Sort Method

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

Algorithm:

Step 1: Start
Step 2: Declare a 2D character array a[5][20] and a temporary array temp[20]
Step 3: Declare integer variables i, j, b
Step 4: Clear screen using clrscr()
Step 5: Print "Enter Strings in the Array:"
Step 6: Run a loop from i = 0 to i < 5
Step 6.1: Scan a string from keyboard and store it in a[i]
Step 7: Run a loop from i = 0 to i < 4
Step 7.1: Run a nested loop from j = 0 to j < 4 - i
Step 7.1.1: Compare a[j] and a[j+1] using strcmp() and store result in b
Step 7.1.2: If b > 0, then
Step 7.1.2.1: Copy a[j] to temp
Step 7.1.2.2: Copy a[j+1] to a[j]
Step 7.1.2.3: Copy temp to a[j+1]
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
[■] BUBBLESA.C 1=[↕]
#include <stdio.h>
#include <conio.h>
#include <string.h>

void main()
{
char a[100][20], temp[20];
int i,j,n,b;
clrscr();
printf("Enter the number of strings: ");
scanf("%d",&n);
printf("Enter %d strings:\n", n);
for(i=0;i<n;i++)
{
scanf("%s",a[i]);
}
for(i=0;i<n-1;i++)
{
for(j=0;j<n-i-1;j++)
{
b = strcmp(a[j],a[j+1]);
1:1
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
[■] BUBBLESA.C 1=[↕]
{
for(j=0;j<n-i-1;j++)
{
b = strcmp(a[j],a[j+1]);
if(b>0)
{
strcpy(temp,a[j]);
strcpy(a[j],a[j+1]);
strcpy(a[j+1], temp);
}
}
}
printf("\nSorted Array:\n");
for(i=0;i<n;i++)
{
printf("%s\n",a[i]);
}
getch();
}
38:1
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
```

Output: -


Enter the number of strings: 5
Enter 5 strings:
e
d
c
b
a
Sorted Array:
a
b
c
d
e

Practical Related Questions:

1. **Modify the basic Bubble Sort algorithm to include an optimization that stops the algorithm if no swaps were made during a pass.**

CODE:

```
 ≡  File  Edit  Search  Run  Compile  Debug  Project  Options    Window  Help
[■]═══════════ SAAD7.1 ═══════════1=[↕]
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char a[5][11],temp[20];
int i,j,b,c,flag=0;
clrscr();
printf("Enter the strings in the array: \n");
for(i=0;i<5;i++)
{
scanf("%s",&a[i]);
c=strlen(a[i]);
if(c>=11)
{
printf("strings exceed the lemit of 10 character....");
printf("\nenter the small strings again: ");
scanf("%s",&a[i]);
}
}
for(i=0;i<5-1;i++)
═══ 7:37 ═══
F1 Help  F2 Save  F3 Open  Alt-F9 Compile  F9 Make  F10 Menu
 ≡  File  Edit  Search  Run  Compile  Debug  Project  Options    Window  Help
[■]═══════════ SAAD7.1 ═══════════1=[↕]
for(i=0;i<5-1;i++)
{
flag=0;
for(j=0;j<5-1;j++)
{
b=strcmp(a[j],a[j+1]);
if(b>0)
{
strcpy(temp,a[j]);
strcpy(a[j],a[j+1]);
strcpy(a[j+1],temp);
flag=1;
}
}
if(flag==0)
{
break;
}
}
printf("\nsorted array\n");
for(i=0;i<5;i++)
═══ 41:37 ═══
F1 Help  F2 Save  F3 Open  Alt-F9 Compile  F9 Make  F10 Menu
```

```
b=strcmp(a[j],a[j+1]);
if(b>0)
{
strcpy(temp,a[j]);
strcpy(a[j],a[j+1]);
strcpy(a[j+1],temp);
flag=1;
}
}
if(flag==0)
{
break;
}
}
printf("\nsorted array\n");
for(i=0;i<5;i++)
{
printf("%s\n",a[i]);
}
getch();
}
```

OUTPUT:

```
Enter the strings in the array:
apple
yedchourangpagal
strings exceed the lemit of 10 character....
enter the small strings again: bmw
zebra
dog
mercedes

sorted array
apple
bmw
dog
mercedes
zebra
```

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