VP Vidyalankar Polytechnic	DEPARTMENT OF COMPUTER ENGINEERING

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:	5
Title of Experiment	Write a 'C' Program to Search a particular data from the given Array of Strings using Binary Search Method.

Aim: Write a 'C' Program to Search a particular data from the given Array of Strings using Binary Search Method.

Algorithm:

Step 1: Start
Step 2: Declare a 2D character array a[10][20] and a character array key[20]
Step 3: Declare integer variables i, j, flag = 0, b, mid = 0, beg, end
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 < 10
Step 6.1: Scan a string and store it in a[i]
Step 7: Print "Enter the String you want to search:"
Step 8: Scan the string and store it in key
Step 9: Set beg = 0 and end = 9
Step 10: Run a loop while beg <= end
Step 10.1: Calculate mid = (beg + end) / 2
Step 10.2: Compare a[mid] with key using strcmp() and store result in b
Step 10.3: If b == 0, then
Step 10.3.1: Print "key found at index mid"
Step 10.3.2: Set flag = 1
Step 10.3.3: Break the loop
Step 10.4: Else if b < 0, then set beg = mid + 1
Step 10.5: Else set end = mid - 1
Step 11: If flag == 0, then print "Element not found..."
Step 12: 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[10][20],key[20];
int i,j,flag=0,b,mid=0,beg,end;
clrscr();
printf("Enter the strings in the array: \n");
for(i=0;i<10;i++)
{
scanf("%s",a[i]);
}
printf("\nEnter the String you want to search: ");
scanf("%s",key);
beg=0;
end=10-1;
while(beg<=end)
{
mid=(beg+end)/2;
b=strcmp(a[mid],key);
═══ 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=[↕]
if(b==0)
{
printf("%s found at index %i",key,mid);
flag=1;
break;
}
else if(b<0)
{
beg=mid+1;
}
else
{
end=mid-1;
}
}
if(flag==0)
{
printf("Element not found...");
}
getch();
}
═══ 21:78 ═══
F1 Help  Alt-F8 Next Msg  Alt-F7 Prev Msg  Alt-F9 Compile  F9 Make  F10 Menu
```

Output: -

```
Enter the strings in the array:
a b c d e f g h i j

Enter the String you want to search: f
f found at index 5_
```

Practical Related Questions:

1. **Write a C program that performs binary search on a sorted array of strings. The program should:**
   - **Read a sorted list of strings from the user.**
   - **Ask the user for a target string to search for.**
   - **Use binary search to find the target string in the list.**
   - **Print the index of the target string if found, or a message indicating that the string is not found.**

   Ans:

```
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#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
char a[10][20],key[20];
int i,j,flag=0,b,mid=0,beg,end;
clrscr();
printf("Enter the strings in the array: \n");
for(i=0;i<10;i++)
{
scanf("%s",a[i]);
}
printf("\nEnter the String you want to search: ");
scanf("%s",key);
beg=0;
end=10-1;
while(beg<=end)
{
mid=(beg+end)/2;
b=strcmp(a[mid],key);
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flag=1;
break;
}
else if(b<0)
{
beg=mid+1;
}
else
{
end=mid-1;
}
}
if(flag==0)
{
printf("Element not found...");
}
getch();
}
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F1 Help  Alt-F8 Next Msg  Alt-F7 Prev Msg  Alt-F9 Compile  F9 Make  F10 Menu
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OUTPUT:

```
Enter the strings in the array:
a b c d e f g h i j

Enter the String you want to search: f
f found at index 5_
```

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