Laboratory 1

1. Questions

    1. Write a program to find biggest among three numbers using pointer.
    2. Write a program to find the sum of all the elements of an array using pointers
    3. Write a program to sort a list of string words using an array of pointers.

2. Introduction

1.In First program have three integers a, b & c. We have assigned the addresses of these three numbers to three pointers p1, p2 & p3 respectively. Later we performed the comparison on the values stored at the addresses pointed by pointers using if else statement.

2.In second program Here we are setting up the pointer to the base address of array and then we are incrementing pointer and using * operator to get & sum-up the values of all the array elements.

3. In third program the array can be fetched with the help of pointers with the pointer variable pointing to the base address of the array. Hence in order to sort the array using pointers, we need to access the elements of the array using (pointer + index) format. Using this approach we solve problem.

4. Algorithm

Algorithm for program to find biggest among three numbers using pointer.

Step1 = start

Step 2= declare int a,b,c;

Step 3= assign int*p1=&a,*p2=&b,*p3=&c;

Step 4=display ("enter three values")

Step 5 = read values of p1,p2,p3

Step 6=display* p1,*p2,*p3

Step 7=if((*p1>*p2 && *p1>*p3))

Dispay "Largest number=%d",*p1

Step 8=else if((*p2>*p1 && *p2>*p3))

display"Largest number =%d",*p2)

step 9=else

dispay Largest number=%d",*p3

step 10 =stop

2.Algorithm for program find the sum of all the elements of an array using pointers

Step 1=start

Step 2= declare int a[n]; int I,n,sum=0;int *p;

Step 3=read nuber of elements n

Step 4= display Enter array elements

Step 5=for(i=0;i<n;i++)

Read a[i]

Step 6=p = a;

for(i=0;i<n;i++)

step 7=assign   sum = sum + *p;

step 8= increment   p++;
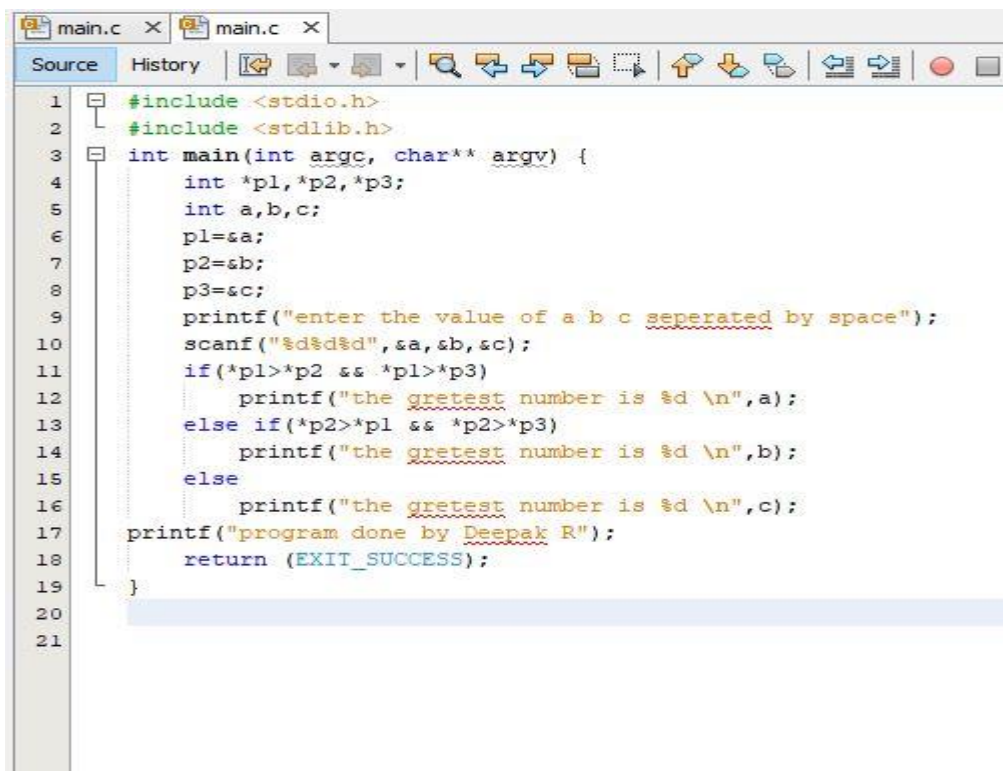
step 9= display sum

step 10 =stop

3.Algorithm for program to sort a list of string words using an array of pointers.

```
Step 1=start

Step 2= declare     char *T; int I,J,K;

step 3= assign char *ARRAY[5]={"DEEPAK","BHARATH","CHARITH","VISNUPRASAD","VISHNUNANDAN"};
step 4=    for(I=0;I<5;I++)
 step 5=write  ("%s \t",ARRAY[I]);
 step 6=for(I=0;I<4;I++)
    for(J=0;J<4-I;J++)
 step 7=assign K=strcmp(ARRAY[J],ARRAY[J+1]);
  step 8=          if(K>0)
  step 9=assign T=ARRAY[J];ARRAY[J]=ARRAY[J+1];
             ARRAY[J+1]=T;
  step 10=      for(I=0;I<5;I++)
  step 11=    write ARRAY[I]
step 12=stop
```
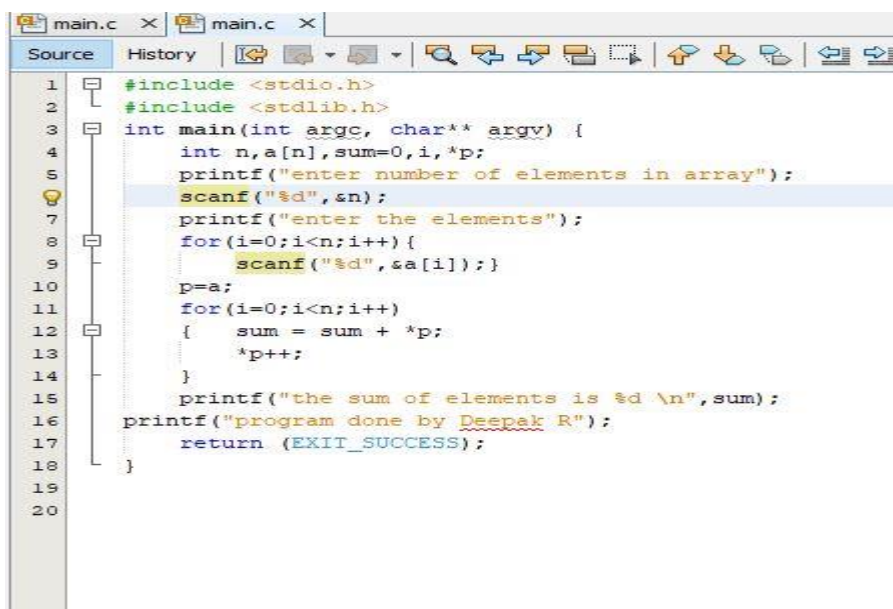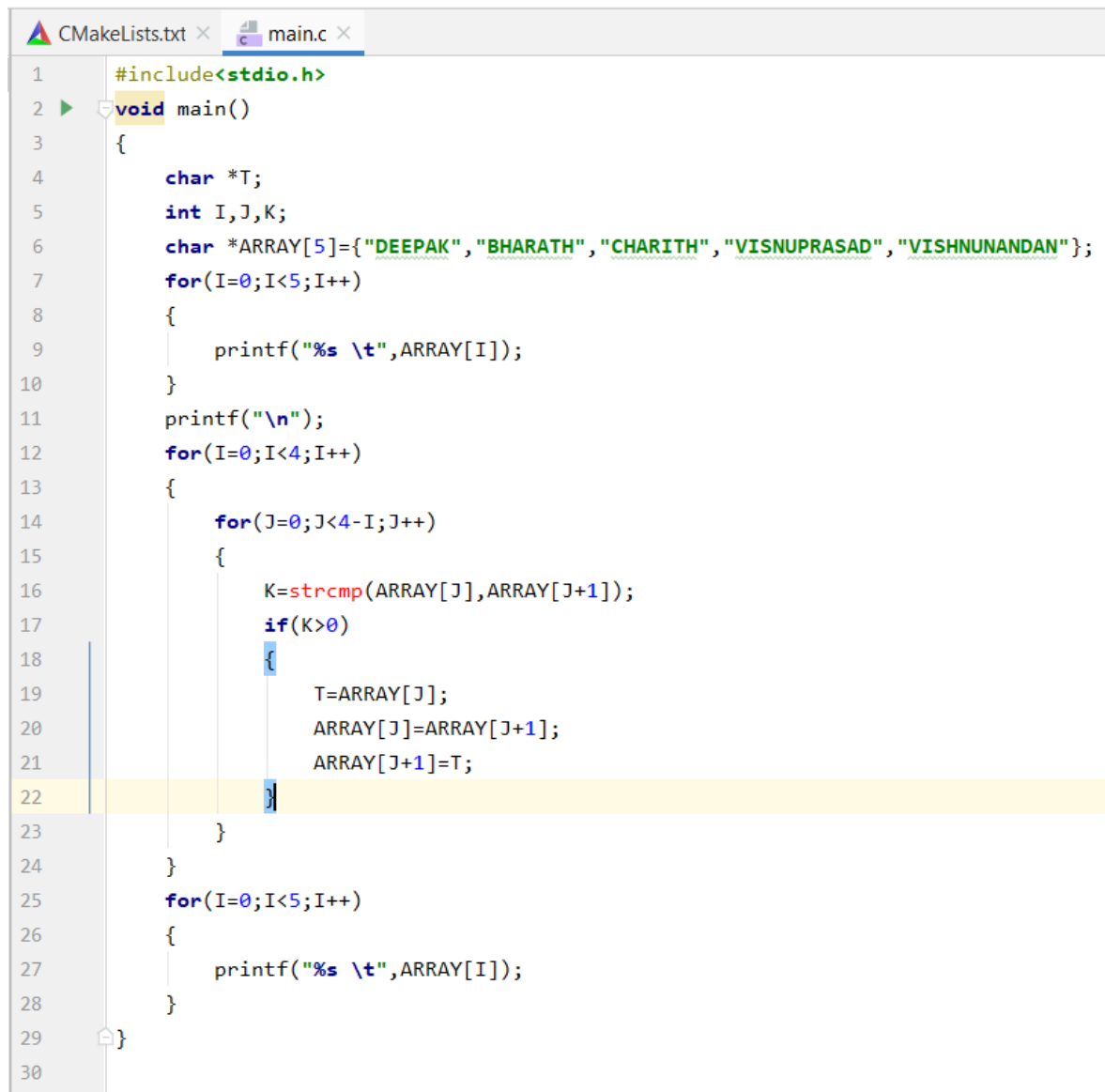
5. Program

```c
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char** argv) {
    int *p1,*p2,*p3;
    int a,b,c;
    p1=&a;
    p2=&b;
    p3=&c;
    printf("enter the value of a b c seperated by space");
    scanf("%d%d%d",&a,&b,&c);
    if(*p1>*p2 && *p1>*p3)
        printf("the gretest number is %d \n",a);
    else if(*p2>*p1 && *p2>*p3)
        printf("the gretest number is %d \n",b);
    else
        printf("the gretest number is %d \n",c);
printf("program done by Deepak R");
    return (EXIT_SUCCESS);
}
```

Fig 1 Program to find biggest among three numbers using pointer.

```c
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char** argv) {
    int n,a[n],sum=0,i,*p;
    printf("enter number of elements in array");
    scanf("%d",&n);
    printf("enter the elements");
    for(i=0;i<n;i++){
        scanf("%d",&a[i]);}
    p=a;
    for(i=0;i<n;i++)
    {   sum = sum + *p;
        *p++;
    }
    printf("the sum of elements is %d \n",sum);
printf("program done by Deepak R");
    return (EXIT_SUCCESS);
}
```

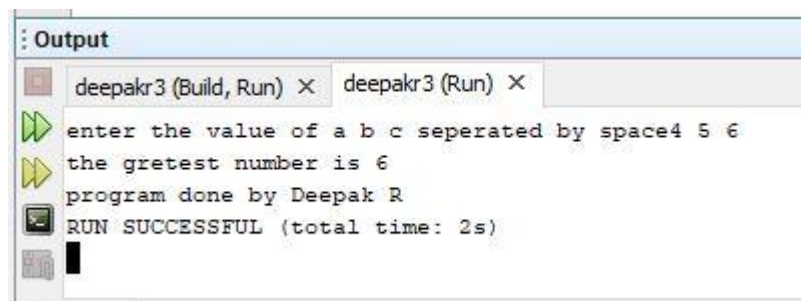Fig 2 program to find the sum of all the elements of an array using pointers

```
    CMakeLists.txt ×    main.c ×
1        #include<stdio.h>
2   ▶    void main()
3        {
4            char *T;
5            int I,J,K;
6            char *ARRAY[5]={"DEEPAK","BHARATH","CHARITH","VISNUPRASAD","VISHNUNANDAN"};
7            for(I=0;I<5;I++)
8            {
9                printf("%s \t",ARRAY[I]);
10           }
11           printf("\n");
12           for(I=0;I<4;I++)
13           {
14               for(J=0;J<4-I;J++)
15               {
16                   K=strcmp(ARRAY[J],ARRAY[J+1]);
17                   if(K>0)
18                   {
19                       T=ARRAY[J];
20                       ARRAY[J]=ARRAY[J+1];
21                       ARRAY[J+1]=T;
22                   }
23               }
24           }
25           for(I=0;I<5;I++)
26           {
27               printf("%s \t",ARRAY[I]);
28           }
29       }
30
```
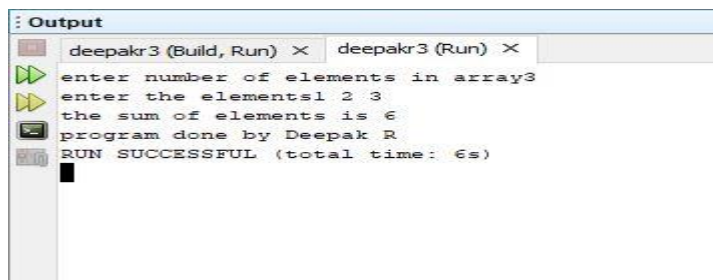
Fig 3 program to sort a list of string words using an array of pointers
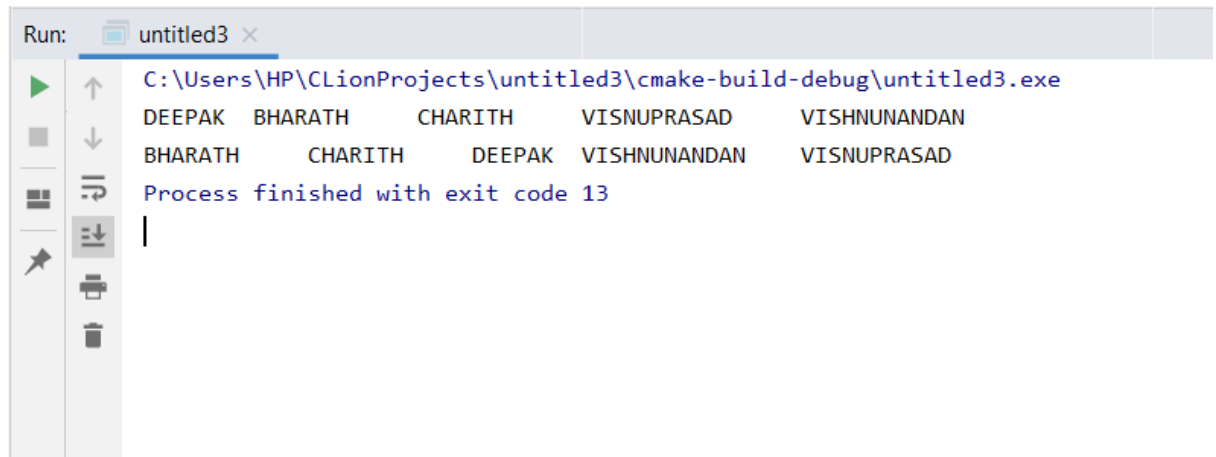
6. Presentation of Results

```
Output
  deepakr3 (Build, Run) ×   deepakr3 (Run) ×
▷ enter the value of a b c seperated by space4 5 6
▷ the gretest number is 6
  program done by Deepak R
  RUN SUCCESSFUL (total time: 2s)
```

Fig 4 result of Program to find biggest among three numbers using pointer.

Fig 5 result of program to find the sum of all the elements of an array using pointers

Fig 6 result program to sort a list of string words using an array of pointers

7. Conclusions

In this lab we learnt how to Write a program to find biggest among three numbers using pointer to Write a program to find the sum of all the elements of an array using pointers and how to Write a program to sort a list of string words using an array of pointers.