

Programming Fundamentals Lab
Lab Assignment 11

Course Code: CL1002

Syed Muhammad Shuja Ur Rahman

Roll No. 22K-4456

Ms. Ayesha Ali

Question 1:

Write a program to find out the greatest and the smallest among three numbers using pointers.

```
q1.c
1  #include<stdio.h>
2  |
3  main()
4  {
5      int x,y,z, *ptr,*ptr1,*ptr2;
6      printf("Enter three numbers:\n");
7      scanf("%d %d %d",&x,&y,&z);
8      ptr=&x;
9      ptr1=&y;
10     ptr2=&z;
11     if(*ptr>*ptr1 && *ptr>*ptr2)
12         printf("Largest: %d\n",*ptr);
13     else if(*ptr1>*ptr && *ptr1>*ptr2)
14         printf("Largest: %d\n",*ptr1);
15     else
16         printf("Largest: %d\n",*ptr2);
17
18     if(*ptr<*ptr1 && *ptr<*ptr2)
19         printf("Smallest: %d\n",*ptr);
20     else if(*ptr1<*ptr && *ptr1<*ptr2)
21         printf("Smallest: %d\n",*ptr1);
22     else
23         printf("Smallest: %d\n",*ptr2);
24
25 }
```

```
C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q1.exe
Enter three numbers:
8
5
9
Largest: 9
Smallest: 5
-----
Process exited after 2.93 seconds with
Press any key to continue . . .
```

Question: 2

Write a C program to swap corresponding elements of two arrays using pointers.

q2.c

```
1  #include<stdio.h>
2  main()
3  {
4      int a1[3],a2[3],temp,i,j;
5      int *x=&a1,*y=&a2;
6
7      printf("First Array:\n");
8      for(i=0;i<3;i++)
9          scanf("%d",&a1[i]);
10
11     printf("Second Array:\n");
12     for(i=0;i<3;i++)
13         scanf("%d",&a2[i]);
14
15     for(i=0;i<3;i++)
16     {
17         temp = *(x+i);
18         *(x+i)=*(y+i);
19         *(y+i)=temp;
20     }
21     printf("RESULT:\n");
22     for(i=0;i<3;i++)
23     {
24         printf("%d\t",a1[i]);
25     }
26     printf("\n");
27     for(i=0;i<3;i++)
28     {
29         printf("%d\t",a2[i]);
30     }
31 }
```

C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q2.exe

First Array:
8
5
4
Second Array:
9
6
7
RESULT:
9 6 7
8 5 4

Process exited after 3.849 seconds with
Press any key to continue . . .

Question: 3

Write a program that implements the function(WordCount). int WordCount(char *Text, int *size);

```
A3 Q3.c  q3.c
1  #include<stdio.h>
2  #include<string.h>
3
4
5  void wordcount(char *Text,int *size);
6
7  main()
8  {
9      char str[30];
10
11     char *t=&str;
12
13     puts("Enter any sentence: ");
14     gets(str);
15
16     int s= strlen(str);
17     int *size=&s;
18     wordcount(t,size);
19 }
20
21
22 void wordcount(char *Text,int *size){
23     int i,word=0;
24
25     for(i=0;i<*size;i++)
26     {
27         if(Text[i]==' ' || Text[i]=='\t' )
28             word++;
29     }
30     word++;
31     printf("words: %d",word);
32 }
33
```

```
C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q3.exe
Enter any sentence:
my name is shuja
words: 4
-----
Process exited after 5.055 seconds with
Press any key to continue . . .
```

Question: 4

Write a C program to add two matrices using pointers. Create a function called calMat() that take pointers of 2 matrices as arguments and return the resulted sum and display it in main.

```
A3 Q3.c q4.c
1  #include<stdio.h>
2  int calmat(int *ptr1[2][2],int *ptr2[2][2]);
3  int main(){
4      int a[2][2],b[2][2],i,j;
5      int *ptr1[2][2];
6      int *ptr2[2][2];
7
8      printf("Matrix 1:\n");
9      for(i=0;i<2;i++)
10     {
11         for(j=0;j<2;j++)
12         {
13             printf("Element[%d,%d]: ",i+1,j+1);
14             scanf("%d",&a[i][j]);
15             ptr1[i][j]=&a[i][j];
16         }
17     }
18     printf("Matrix 2:\n");
19     for(i=0;i<2;i++)
20     {
21         for(j=0;j<2;j++)
22         {
23             printf("Element[%d,%d]: ",i+1,j+1);
24             scanf("%d",&b[i][j]);
25             ptr2[i][j]=&b[i][j];
26         }
27     }
28
29
30
31     calmat(ptr1,ptr2);
32 }
33 int calmat(int *ptr1[2][2],int *ptr2[2][2]){
34     int i,j;
35     int resMat[2][2];
36     int *ptr3[2][2];
37     for(i=0;i<2;i++)
38     {
39         for(j=0;j<2;j++)
40         {
41             resMat[i][j]=*ptr1[i][j]+*ptr2[i][j];
42             ptr3[i][j]=&resMat[i][j];
43         }
44         printf("\n");
45     }
46     printf("After addition matrix is:\n");
47     for(i=0;i<2;i++)
48     {
49         for(j=0;j<2;j++)
50         {
51             printf("%d\t",*ptr3[i][j]);
52         }
53         printf("\n");
54     }
55 }
```

```
C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q4.exe
Matrix 1:
Element[1,1]: 1
Element[1,2]: 2
Element[2,1]: 3
Element[2,2]: 4
Matrix 2:
Element[1,1]: 5
Element[1,2]: 8
Element[2,1]: 9
Element[2,2]: 10

After addition matrix is:
6      10
12     14

-----
Process exited after 7.191 seconds with
Press any key to continue . . .
```

Question: 5

Write a function `countEven(int*, int)` which receives an integer array and its size, and returns the number of even numbers in the array.

```
A3 Q3.c  q5.c
1  #include <stdio.h>
2  #include <stdlib.h>
3
4  void countEven(int *array, int *size)
5  {
6      int i, count = 0;
7
8      for(i=0;i<=*size-1;i++)
9      {
10         if(*(array+i)%2==0)
11             count++;
12     }
13
14     printf("Total even numbers are: %d",count);
15 }
16
17 main(){
18     int i,n;
19     int *size,*array;
20
21     printf("Size of Array: ");
22     scanf("%d",&n);
23     size=&n;
24
25     int arr[n];
26
27     for(i=0;i<*size;i++)
28     {
29         printf("Enter element %d: ",i+1);
30         scanf("%d",&arr[i]);
31         array=arr;
32     }
33     countEven(array,size);
34 }
```

```
C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q5.exe
Size of Array: 5
Enter element 1: 1
Enter element 2: 6
Enter element 3: 8
Enter element 4: 9
Enter element 5: 7
Total even numbers are: 2
-----
Process exited after 13.89 seconds with
Press any key to continue . . .
```

Question: 6

```
[*] A3 Q3.c q6.c
1  #include<stdio.h>
2
3  void SortFunction(int *arr, int *size, int );
4
5  main()
6  {
7      int n,i,*size,*ptr;
8
9      printf("Enter size of array: ");
10     scanf("%d",&n);
11
12     int arr[n];
13     size=&n;
14     ptr=&arr;
15
16     printf("Enter Elements of array:\n");
17     for(i=0;i<*size;i++)
18     {
19         printf("Element %d: ",i+1);
20         scanf("%d",&arr[i]);
21     }
22
23     int ch;
24
25     printf("How do you want to sort?\n");
26     printf("1.Ascending Order\n2.Descending order\n");
27     scanf("%d",&ch);
28
29     SortFunction(arr,size,ch);
30
31     for(i=0;i<*size;i++)
32     printf("%d\t",arr[i]);
33 }
34
35 void SortFunction(int *arr, int *size, int ch){
36
37     int i,j,temp=0;
38
39     switch(ch)
40     {
41         case 1:
42             printf("Ascending order:\n");
43             for(i=0;i<*size;i++)
44             {
45                 for(j=0;j<*size;j++)
46                 {
47                     if(*(arr+j)>*(arr+i))
48                     {
49                         temp=*(arr+i);
50                         *(arr+i)=*(arr+j);
51                         *(arr+j)=temp;
52                     }
53                 }
54             }
55             break;
56         case 2:
57             {
58                 printf("Descending order:\n");
59                 for(i=0;i<*size;i++)
60                 {
61                     for(j=0;j<*size;j++)
62                     {
63                         if(*(arr+j)<*(arr+i))
64                         {
65                             temp=*(arr+i);
66                             *(arr+i)=*(arr+j);
67                             *(arr+j)=temp;
68                         }
69                     }
70                 }
71             }
72             break;
73         default: printf("Invalid input...");
74     }
75 }
```

C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q6.exe

```
Enter size of array: 5
Enter Elements of array:
Element 1: 5
Element 2: 4
Element 3: 9
Element 4: 6
Element 5: 1
How do you want to sort?
1.Ascending Order
2.Descending order
1
Ascending order:
1      4      5      6      9
-----
Process exited after 7.924 seconds with
Press any key to continue . . .
```

C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q6.exe

```
Enter size of array: 5
Enter Elements of array:
Element 1: 4
Element 2: 6
Element 3: 8
Element 4: 7
Element 5: 1
How do you want to sort?
1.Ascending Order
2.Descending order
2
Descending order:
8      7      6      4      1
-----
Process exited after 9.012 seconds with
Press any key to continue . . .
```