Programming Fundamentals Lab
Lab Assignment 11

Course Code: CL1002

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Question 1:

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

q1.c

```c
#include<stdio.h>

main()
{
    int x,y,z, *ptr,*ptr1,*ptr2;
    printf("Enter three numbers:\n");
    scanf("%d %d %d",&x,&y,&z);
    ptr=&x;
    ptr1=&y;
    ptr2=&z;
if(*ptr>*ptr1 && *ptr>*ptr2)
    printf("Largest: %d\n",*ptr);
else if(*ptr1>*ptr && *ptr1>*ptr2)
    printf("Largest: %d\n",*ptr1);
else
    printf("Largest: %d\n",*ptr2);

if(*ptr<*ptr1 && *ptr<*ptr2)
    printf("Smallest: %d\n",*ptr);
else if(*ptr1<*ptr && *ptr1<*ptr2)
    printf("Smallest: %d\n",*ptr1);
else
    printf("Smallest: %d\n",*ptr2);

}
```

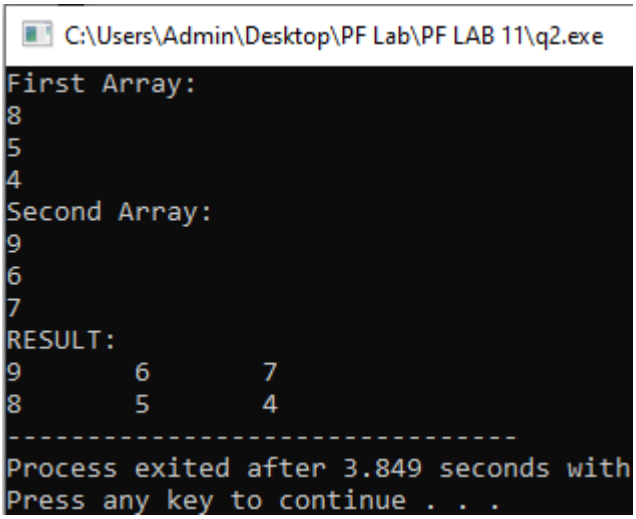
```
C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q1.exe
Enter three numbers:
8
5
9
Largest: 9
Smallest: 5

--------------------------------
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

```c
#include<stdio.h>
main()
{
    int a1[3],a2[3],temp,i,j;
    int *x=&a1,*y=&a2;

        printf("First Array:\n");
    for(i=0;i<3;i++)
        scanf("%d",&a1[i]);

        printf("Second Array:\n");
    for(i=0;i<3;i++)
        scanf("%d",&a2[i]);

for(i=0;i<3;i++)
{
temp = *(x+i);
*(x+i)=*(y+i);
*(y+i)=temp;
}
printf("RESULT:\n");
    for(i=0;i<3;i++)
    {
    printf("%d\t",a1[i]);
    }
    printf("\n");
    for(i=0;i<3;i++)
    {
    printf("%d\t",a2[i]);
    }
}
```



Question: 3

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

A3 Q3.c | q3.c

```c
#include<stdio.h>
#include<string.h>

void wordcount(char *Text,int *size);

main()
{
char str[30];

char *t=&str;

puts("Enter any sentence: ");
gets(str);

int s= strlen(str);
int *size=&s;
wordcount(t,size);

}

void wordcount(char *Text,int *size){
int i,word=0;

for(i=0;i<*size;i++)
{
    if(Text[i]==' ' || Text[i]=='\t' )
    word++;

}
word++;
    printf("words: %d",word);
}
```

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

```c
#include<stdio.h>
int calmat(int *ptr1[2][2],int *ptr2[2][2]);
int main(){
    int a[2][2],b[2][2],i,j;
    int *ptr1[2][2];
    int *ptr2[2][2];

    printf("Matrix 1:\n");
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            printf("Element[%d,%d]: ",i+1,j+1);
            scanf("%d",&a[i][j]);
            ptr1[i][j]=&a[i][j];

        }
    }
    printf("Matrix 2:\n");
        for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            printf("Element[%d,%d]: ",i+1,j+1);
            scanf("%d",&b[i][j]);
            ptr2[i][j]=&b[i][j];

        }
    }

    calmat(ptr1,ptr2);
}
int calmat(int *ptr1[2][2],int *ptr2[2][2]){
    int i,j;
    int resMat[2][2];
    int *ptr3[2][2];
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            resMat[i][j]=*ptr1[i][j]+*ptr2[i][j];
            ptr3[i][j]=&resMat[i][j];
    }
        printf("\n");
    }
    printf("After addition matrix is:\n");
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            printf("%d\t",*ptr3[i][j]);
        }
        printf("\n");
    }
}
```

```
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

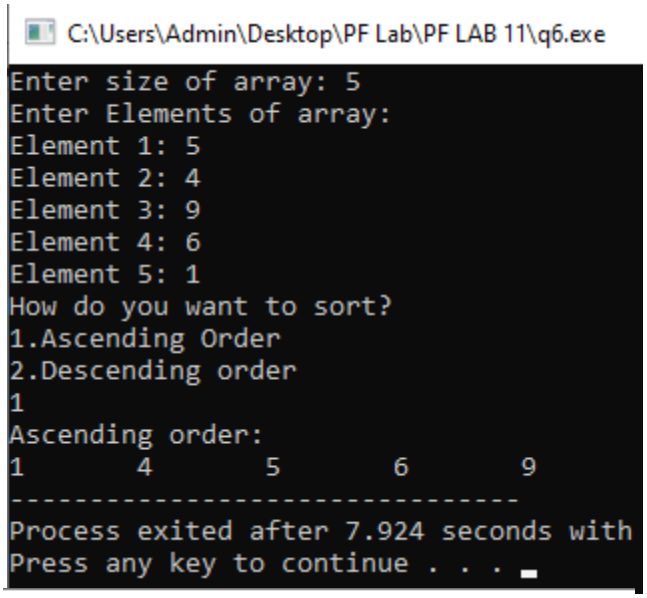
```c
#include <stdio.h>
#include <stdlib.h>

void countEven(int *array, int *size)
{
    int i, count = 0;

    for(i=0;i<=*size-1;i++)
    {
        if(*(array+i)%2==0)
            count++;
    }

    printf("Total even numbers are: %d",count);
}

main(){
    int i,n;
    int *size,*array;

    printf("Size of Array: ");
    scanf("%d",&n);
    size=&n;

    int arr[n];

    for(i=0;i<*size;i++)
    {
        printf("Enter element %d: ",i+1);
        scanf("%d",&arr[i]);
        array=arr;
    }
    countEven(array,size);
}
```

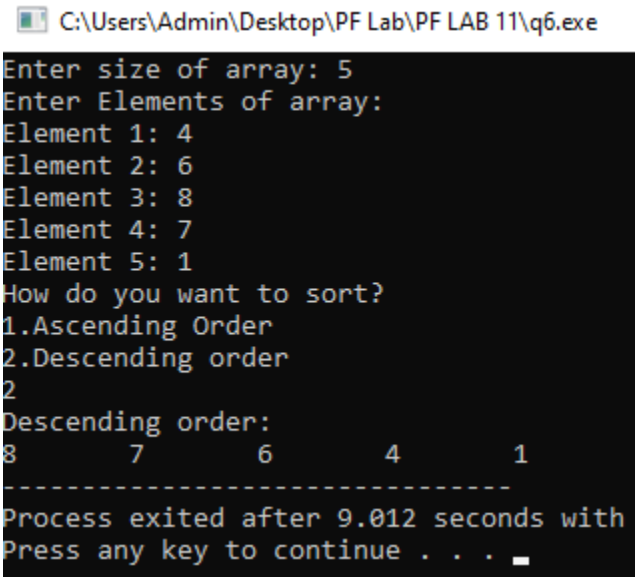
```
C:\Users\Admin\Desktop\PF Lab\PF LAB 11\q5.exe
Size of Array: 5
Enter element 1: 1
Enter element 2: 6
Enter element 3: 8
Enter element 4: 9
Enter element 5: 7
Total even numbers are: 2
--------------------------------
Process exited after 13.89 seconds with
Press any key to continue . . .
```

Question: 6

[*] A3 Q3.c q6.c

```c
#include<stdio.h>

void SortFunction(int *arr, int *size, int );

main()
{
    int n,i,*size,*ptr;

    printf("Enter size of array: ");
    scanf("%d",&n);

    int arr[n];
    size=&n;
    ptr=&arr;

printf("Enter Elements of array:\n");
    for(i=0;i<*size;i++)
    {
        printf("Element %d: ",i+1);
        scanf("%d",&arr[i]);
    }

    int ch;

    printf("How do you want to sort?\n");
    printf("1.Ascending Order\n2.Descending order\n");
    scanf("%d",&ch);

    SortFunction(arr,size,ch);

    for(i=0;i<*size;i++)
    printf("%d\t",arr[i]);
}
void SortFunction(int *arr, int *size, int ch){

    int i,j,temp=0;

    switch(ch)
    {
        case 1:
        printf("Ascending order:\n");
            for(i=0;i<*size;i++)
            {
                for(j=0;j<*size;j++)
                {
                    if(*(arr+j)>*(arr+i))
                    {
                    temp=*(arr+i);
                    *(arr+i)=*(arr+j);
                    *(arr+j)=temp;
                    }
                }
            }
        break;
        case 2:
        {
        printf("Descending order:\n");
            for(i=0;i<*size;i++)
            {
                for(j=0;j<*size;j++)
                {
                    if(*(arr+j)<*(arr+i))
                    {
                    temp=*(arr+i);
                    *(arr+i)=*(arr+j);
                    *(arr+j)=temp;
                    }
                }
            }
        }
        break;
        default: printf("Invalid input...");
    }
}
```


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 . . .