

POINTERS AND STRUCTURES
OBJECT ORIENTED PROGRAMMING LAB



ASSIGNMENT # 02

Submitted By
QASIM ALI (20P-0070)

Submitted to :
MR. MUHAMMAD ABDULLAH ORAKZAI
(INSTRUCTOR CS)

DEPARTMENT OF COMPUTER SCIENCE
FAST NATIONAL UNIVERSITY OF COMPUTER
AND EMERGING SCIENCES, PESHAWAR

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Pointers

Q No.1: Write a program to input data into an array (Take value from user at runtime for inserting into array using loop) and find out the maximum value and minimum value from array through pointer?

```
#include <iostream>
using namespace std;
int main()
{
    int size,small,large;
    cout<<"Enter the size of array: ";
    cin >> size;
    int *Parr= new int [size];
    //intilizing the array
    for(int i=0;i<size;i++)
    {
        cout<<"Enter the val at Parr["<<i<<"]= ";
        cin >> Parr[i];
    }
    // //Displaying the Element and the max and min num;
    for(int j=0;j<size;j++)
    {
        cout << Parr[j]<<" ";
    }
    cout<<endl;
    small=Parr[0];
    large=Parr[0];
    //smal and large values
    for(int i=0;i<size;i++)
    {
        if(Parr[i]>large)
            large=Parr[i];
        if(Parr[i]<small)
            small = Parr[i];
    }
    cout<<"Maximum value = "<<large<<endl;
    cout<<"Minimum value = "<<small<<endl;
    return 0;
}
```

Output:-

```
Enter the size of array: 4
Enter the val at Parr[0]= 1
Enter the val at Parr[1]= 2
Enter the val at Parr[2]= 3
Enter the val at Parr[3]= 4
1 2 3 4
Maximum value = 4
Minimum value = 1
```

Q No.2: Write a program to convert Fahrenheit to Celsius degrees by passing pointers as arguments to the function?

```
#include <iostream>
using namespace std;

float Conversion(float *Fpointer)
{
    float Cval;    //converted value
    Cval = (*Fpointer - 32) * 0.5556;    // -Formula--(32°F - 32) * 0.5556 = 0°C---
    return Cval;
}

int main()
{
    float Fval;
    cout<<"Enter the input to convert Fahrenheit to Celsius: ";
    cin >> Fval;
    cout<<"Conversion "<<Fval<<" Fahrenheit to Celsius = "<<Conversion(&Fval)<<"Celsius"<<endl;
    return 0;
}
```

```
Enter the input to convert Fahrenheit to Celsius: 32
Conversion 32 Fahrenheit to Celsius = 0Celsius
```

Q No.3: Write a program to convert kilogram into grams by passing pointers as arguments to the function?

```

#include <iostream>
using namespace std;

float Conversion(float *Kpointer)
{
    float Cval;    //converted value
    Cval = (*Kpointer * 1000);    // -Formula--multiply the mass value by 1000--
    return Cval;
}

int main()
{
    float Kval;
    cout<<"Enter the input to convert kilogram into grams: ";
    cin >> Kval;
    cout<<"Conversion "<<Kval<<" kilogram into grams = "<<Conversion(&Kval)<<"grams"<<endl;
    return 0;
}

```

output:-

```

Enter the input to convert kilogram into grams: 1
Conversion 1 kilogram into grams = 1000grams

```

No.4: Write a program to find out the length of string by using pointers?

```

1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      //array
6      char text[100];
7      char *strArray =text;
8
9      //count a world whloe
10     int count= 0;
11
12     //using enter the number
13     cout<<"Enter the string please : ";
14     cin>>text;
15
16     //using a while loop to count a text
17     while (*(strArray++)!='\0')
18     {
19         count++;
20     }
21 }

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```

cd "/home/qasim/Desktop/3 Semter /oop LAB/Assessment/Assess
./"Q4"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~$ cd "/home
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3
Enter the string please : Qasimali
Length of string is : 8
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3

```

Q No.5: Write a program to copy one string to another string by using pointers?

```
Get Started  Q5.cpp x Q4.cpp ~/.../AssessmentN0#02 Q4.c
home > qasim > Desktop > 3 Semter > oop LAB > Assessment > AssessmentN0#02 > G
1  #include<iostream>
2  using namespace std;
3  int main(){
4      char text1[100], text2[100];
5      char *str1= text1;
6      char *str2= text2;
7      //inputting string form user
8      cout<<"Enter any string : ";
9      cin>>str1;
10     //iterating though last element of string
11     while (*(str1) !='\0')
12     {
13         *str2++ = *str1++;
14         *str2='\0';
15     }
16     cout<<"Copy of "<<text1 <<" is : " <<text2<<endl;
17     return 0;
18 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter
Assessment/AssessmentN0#02"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter
Enter any string : Qasim
Copy of Qasim is : Qasim
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter
```

Q No.6: Write a program to combine two strings by using pointers?

```
Get Started  Q6.cpp x Q5.cpp Q4.cpp ~/.../AssessmentN0#02
home > qasim > Desktop > 3 Semter > oop LAB > Assessment > AssessmentN0#02 > G
1  #include<iostream>
2  using namespace std;
3
4  int main(){
5      //sting varbile
6      string firststr,secondstr,*firstp,*secondp;
7      //combine a two string
8      firstp =&firststr;
9      secondp =&secondstr;
10     //using enter
11     cout<<"Enter the first str : ";
12     cin>>firststr;
13
14     cout<<"Enter the second str : ";
15     cin>>secondstr;
16     //first + second add
17     cout<<"Comcationantion of string = "<<*firstp+*secondp<<endl;
18     return 0;
19 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
cd "/home/qasim/Desktop/3 Semter /oop LAB/Assessment/AssessmentN0#02"
./"Q6"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~$ cd "/home/qasim/Des
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oo
Enter the first str : Qasim
Enter the second str : ali
Comcationantion of string = Qasimali
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oo
```

Q No#07 :-

a. Create a structure called employee that contains two members?

```
#include <iostream>
using namespace std;
struct employee
{
    int employeeNum;
    float Ecompensation;
};
int main()
{
    employee E1,E2,E3;
    cout<<"Employee number: ";
    cin>>E1.employeeNum;
    cout<<"Employee compensation: ";
    cin>>E1.Ecompensation;
    cout<<"Employee number: ";
    cin>>E2.employeeNum;
    cout<<"Employee compensation: ";
    cin>>E2.Ecompensation;
    cout<<"Employee number: ";
    cin>>E3.employeeNum;
    cout<<"Employee compensation: ";
    cin>>E3.Ecompensation;
    cout<<"\n\nDisplaying the Employee's number and compensation\n";
    cout<<"Employee number = "<<E1.employeeNum<<endl;
    cout<<"Employee compensation = "<<E1.Ecompensation<<"Dollars"<<endl;
    cout<<"Employee number = "<<E2.employeeNum<<endl;
    cout<<"Employee compensation = "<<E2.Ecompensation<<"Dollars"<<endl;
    cout<<"Employee number = "<<E3.employeeNum<<endl;
    cout<<"Employee compensation = "<<E3.Ecompensation<<"Dollars"<<endl;
    return 0;
}
```

output:-

```
Employee number: 1
Employee compensation: 30
Employee number: 2
Employee compensation: 40
Employee number: 3
Employee compensation: 40

Displaying the Employee's number and compensation
Employee number = 1
Employee compensation = 30Dollars
Employee number = 2
Employee compensation = 40Dollars
Employee number = 3
Employee compensation = 40Dollars
```

b. Create a structure called time. Its three members, all type int, should be called hours, minutes, and seconds.

```
#include <iostream>
using namespace std;
struct time
{
    int hours;
    int minutes;
    int seconds;
};

int main()
{
    time value;
    cout<<"You have to enter time in hours,minutes and seconds\n";
    cout<<"Enter hours: ";
    cin>>value.hours;
    cout<<"Enter minutes: ";
    cin>>value.minutes;
    cout<<"Enter seconds: ";
    cin>>value.seconds;
    cout<<"Displaying the Total time in Seconds:-\n";
    cout<<"Seconds = "<<(value.hours*3600)+(value.minutes*60)+(value.seconds)<<"sec"<<endl;
    return 0;
}
```

Output:-

```
Enter hours: 4
Enter minutes: 4
Enter seconds: 4
Displaying the Total time in Seconds:-
Seconds = 14644sec
```

c. Use the time structure from above question and write a program that obtains two time values from the user?

```

#include <iostream>
using namespace std;
struct time
{
    int hours;
    int minutes;
    int seconds;
};
int main()
{
    int myval, val1, val2;
    time value, value1, value2;
    cout<<"You have to enter 1st time value in hours,minutes and seconds\n";
    cout<<"Enter hours: ";
    cin>>value1.hours;
    cout<<"Enter minutes: ";
    cin>>value1.minutes;
    cout<<"Enter seconds: ";
    cin>>value1.seconds;
    cout<<"Displaying the Total time in Seconds:-\n";
    cout<<"Seconds = "<<(value1.hours*3600)+(value1.minutes*60)+(value1.seconds)<<"sec"<<endl;
    cout<<"You have to enter 2nd time value in hours,minutes and seconds\n";
    cout<<"Enter hours: ";
    cin>>value2.hours;
    cout<<"Enter minutes: ";
    cin>>value2.minutes;
    cout<<"Enter seconds: ";
    cin>>value2.seconds;
    cout<<"Displaying the Total time in Seconds:-\n";
    cout<<"Seconds = "<<(value2.hours*3600)+(value2.minutes*60)+(value2.seconds)<<"sec"<<endl;
    value.hours=(value1.hours)+(value2.hours); //hours
    value.minutes=(value1.minutes)+(value2.minutes); //minutes
    value.seconds=(value1.seconds)+(value2.seconds);
    cout<<"Total Time = "<<value.hours<<":"<<value.minutes<<":"<<value.seconds<<endl;
    return 0;
}
//-----

```

Output:-

```

Enter hours: 6
Enter minutes: 29
Enter seconds: 29
Displaying the Total time in Seconds:-\n
Seconds = 23369sec
You have to enter 2nd time value in hours,minutes and seconds\n
Enter hours: 6
Enter minutes: 30
Enter seconds: 30
Displaying the Total time in Seconds:-\n
Seconds = 23430sec
Total Time = 12:59:59

```

d. Create a structure called Volume that uses three variables of type Distance to model the volume of a room.


```

#include <iostream>
using namespace std;
struct phone
{
    int area_code;
    int exchange;
    int the_number;
};

int main()
{
    phone caller1, caller2;
    caller1.area_code=212;
    caller1.exchange=767;
    caller1.the_number=8900;
    cout<<"Enter your area code, exchange, and number: ";
    cin>>caller2.area_code>>caller2.exchange>>caller2.the_number;
    cout<<"My number is ("<<caller1.area_code<<")"<<" "<<caller1.exchange<<"-"<<caller1.the_number<<endl;
    cout<<"Your number is ("<<caller2.area_code<<")"<<" "<<caller2.exchange<<"-"<<caller2.the_number<<endl;
    return 0;
}
//-----

```

Output:-

```

Enter your area code, exchange, and number: 415
555
1212
My number is (212) 767-8900
Your number is (415) 555-1212

```

6. Implement the given nested structure in the following figures. Note: Only write the definitions of structs nothing else. It is not a complete program.

```

1 #include<iostream>
2 using namespace std;
3
4 struct Date_of_brith
5 {
6     string Day;
7     int Month;
8     int year;
9 };
10
11 struct Employee
12 {
13     string Name;
14     int Emp_id;
15     string Gender;
16     struct Date_of_brith;
17     int Age;
18 };
19 struct vegetable
20 {
21     string vg1;
22     string vg2;
23 };
24
25 struct fruits
26 {
27     string fr1;
28     string fr2;
29 };
30 struct food
31 {
32     vegetable vegis;
33     fruits fruits;
34 };
35
36 int main(){
37     //Date of brith E1;
38     Employee E1;
39     food f1;
40     cout<<" Enter the data --> Employ name(string) ,Id(integer),Gender(String),Age(Day(string),Month(integer),year(integer)): \n";
41     cin>>E1.Name>>E1.Emp_id>>E1.Gender>>E1.Age.Day>>E1.Age.Month>>E1.Age.year;
42     cout<<" \n      \n \n \n --->Employee Birthday   <<E1.Age.Day<<" \n,      \n \n \n,      --->Employee Birthday Month   <<E1.Age.Month;
43     cout<<" \n      \n \n \n --->Employee Birthday year   <<E1.Age.year<<endl;
44     return 0;
45 }
46

```

Output:-

```
Enter the data-->Employ Name(string),Id(integer),Gender(string),Age{Day(string),Month(integer),Year(integer)}:
Qasim
200070
MALE
MONDAY
01
2002
Employee
.
.
.-->Name      Qasim
.
.
.-->Emp_id    200070
.
.
.-->Gender    MALE
.
.
.-->Age
.
.
.
.-->Employee Birthday    MONDAY
.
.
.
.-->Employee Birthday month    1
.
.
.
.-->Employee Birthday year    2002
```