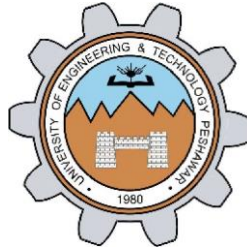# Assignment No 3&4

Fall 2022

CSE-208 OOP

Submitted by: MUHAMMAD SADEEQ

Registration No.: 21PWCSE2028

Section: C

"On my honor, as a student of the University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work"

Submitted to:

Dr. Nasru-Minallah

(19 Jan 2023)

Department of Computer systems engineering
University of Engineering and Technology, Peshawar

ASSIGNMENT NO 3

CODE:

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

class Set
{
private:
    int Array[50];
public:
    Set(){
        for (int i = 0; i < 50; i++)
            Array[i] = 0;}

    void Insert(int value){
        if (value >= 0 && value <= 49)
            Array[value] = 1;}

    void Remove(int value){
        if (value >= 0 && value <= 49)
            Array[value] = 0;}

    Set operator+(const Set& object){
        Set union_set;
        for (int i = 0; i < 50; i++)
            union_set.Array[i] = Array[i] || object.Array[i];
        return union_set;}
```

```cpp
    Set operator*(const Set& object){
        Set intersection_set;
        for (int i = 0; i < 50; i++)
            intersection_set.Array[i] = Array[i] && object.Array[i];
        return intersection_set;}

    Set operator~(){
        Set complement_set;
        for (int i = 0; i < 50; i++)
            complement_set.Array[i] = !Array[i];
        return complement_set;}

    void display(){
        for (int i = 0; i < 50; i++)
            cout << Array[i] << " ";}
};

int main(){
    Set s1,s2,s3;
    for(int i=0;i<50;i++){if(i%2==1)s1.Insert(i);}
    cout<<"Displaying s1 and s2 "<<endl;
    s1.display();
    cout<<endl;
    s2.display();
```

*ASSIGNMENT CHAT 3.cpp - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help

Start here X *ASSIGNMENT CHAT 3.cpp X

```cpp
42    };
43
44    int main(){
45        Set s1,s2,s3;
46        for(int i=0;i<50;i++){if(i%2==1)s1.Insert(i);}
47        cout<<"Displaying s1 and s2 "<<endl;
48        s1.display();
49        cout<<endl;
50        s2.display();
51        s3=s2+s1;
52        cout<<endl;
53        cout<<"Union :"<<endl;
54        s3.display();
55        cout<<endl;
56        s3=s3*s1;
57        cout<<"Intersection :"<<endl;
58        s3.display();
59        cout<<endl;
60        s3=~s3;
61        cout<<"Compliment :"<<endl;
62        s3.display();
63
64    return 0;}
65
```

```
Select "D:\3RD SEMESTER\OOP THEORY\ASSIGNMENTS\ASSIGNMENT CHAT 3.exe"

Displaying s1 and s2
0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Union :
0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1
Intersection :
0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1
Compliment :
1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
Process returned 0 (0x0)   execution time : 0.064 s
Press any key to continue.
```

Answer (1) I made no argument constructor in the class and initialize the elements of array to zero by for loop from 0 to 49 index.

Answer (2) I wrote a insert function having single int argument it will take index of array and set that index element to 1

Answer (3) I copy insert function and change name to remove and set the value to zero.

Answer (4) I wrote an overloaded operator + function and took OR of both arrays

Answer (5) I wrote an overloaded operator * function and took AND of both arrays

Answer (6) I wrote an overloaded operator ~ function and took NOT of the given array

ASSIGNMENT NO 4

CODE:

```cpp
 1    #include<iostream>
 2    #include<string.h>
 3
 4
 5    using namespace std;
 6
 7    class Employee {
 8    private:
 9        char* name;
10        char* department;
11        double salary;
12        double years;
13
14    public:
15        // No-argument constructor
16        Employee() {
17            name = new char[10];
18            strcpy(name, "xyz");
19            department = new char[10];
20            strcpy(department, "xyz");
21            salary = 0.0;
22            years = 0.0;
23        }
24
25        // 4-argument constructor
26        Employee(const char* n, const char* d, double s, double y) {
27            name = new char[strlen(n) + 1];
28            strcpy(name, n);
29            department = new char[strlen(d) + 1];
30            strcpy(department, d);
31            salary = s;
32            years = y;
```

```cpp
33        }
34
35        // Copy constructor
36        Employee(const Employee &e) {
37            name = new char[strlen(e.name) + 1];
38            strcpy(name, e.name);
39            department = new char[strlen(e.department) + 1];
40            strcpy(department, e.department);
41            salary = e.salary;
42            years = e.years;
43        }
44
45        // Getter and Setter functions
46        char* getName() {
47            return name;
48        }
49        void setName(const char* n) {
50            name = new char[strlen(n) + 1];
51            strcpy(name, n);
52        }
53        char* getDepartment() {
54            return department;
55        }
56        void setDepartment(const char* d) {
57            department = new char[strlen(d) + 1];
58            strcpy(department, d);
59        }
60        double getSalary() {
61            return salary;
62        }
63        void setSalary(double s) {
64            salary = s;
```

```cpp
65              }
66          double getyears() {
67              return years;
68          }
69          void setyears(double y) {
70              years = y;
71          }
72
73          // Input function
74          void input() {
75              char n[100], d[100];
76              double s, y;
77              cout << "Enter name: ";
78              cin.getline(n, 100);
79              setName(n);
80              cout << "Enter department: ";
81              cin.getline(d, 100);
82              setDepartment(d);
83              cout << "Enter salary: ";
84              cin >> s;
85              setSalary(s);
86              cout << "Enter period of service: ";
87              cin >> y;
88              setyears(y);
89          }
90
91          // Display function
92          void display() {
93              cout << "Name: " << name << endl;
94              cout << "Department: " << department << endl;
95              cout << "Salary: " << salary << endl;
96              cout << "Period of Service: " << years << endl;
```

```cpp
81              cin.getline(d, 100);
82              setDepartment(d);
83              cout << "Enter salary: ";
84              cin >> s;
85              setSalary(s);
86              cout << "Enter period of service: ";
87              cin >> y;
88              setyears(y);
89          }
90
91          // Display function
92          void display() {
93              cout << "Name: " << name << endl;
94              cout << "Department: " << department << endl;
95              cout << "Salary: " << salary << endl;
96              cout << "Period of Service: " << years << endl;
97          }
98
99          // Destructor
100         ~Employee() {
101             delete[] name;
102             delete[] department;
103         }
104     };
105
106     // Driver program
107     int main() {
108         Employee e1;
109         e1.input();
110         e1.display();
111         }
112
```

```
Enter name: MUHAMMAD SADEEQ
Enter department: COMPUTER SYSTEMS ENGINEERING
Enter salary: 200000
Enter period of service: 12
Name: MUHAMMAD SADEEQ
Department: COMPUTER SYSTEMS ENGINEERING
Salary: 200000
Period of Service: 12

Process returned 0 (0x0)   execution time : 24.627 s
Press any key to continue.
```

Answer (1) I wrote no argument constructor and initialize the data members to fix values

Answer (2) I wrote 4 argument constructor did dynamic allocation for both pointers

Answer (3) I wrote a copy constructor did dynamic allocation for both pointers and did deep copy

Answer (4) I wrote separate getter and setter functions for each data member

Answer (5) i wrote input function that will take all values during run time.i use getline for name and department and cin for salary and years.

Answer (6) I Made display function will display all data of specific student.

Answer (7) I Made a destructor to free memory of name and department

Answer (8) Then made main function to test the class.