AIR UNIVERSITY

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

EXPERIMENT NO 10

Lab Title: Dynamic Memory Allocation

Student Name: _____ **Reg. No:** _____

Objective: _____

_____

LAB ASSESSMENT:

Attributes	Excellent (5)	Good (4)	Average (3)	Satisfactory (2)	Unsatisfactory (1)
Ability to Conduct Experiment					
Ability to assimilate the results					
Effective use of lab equipment and follows the lab safety rules					

Total Marks: _____ Obtained Marks: _____

LAB REPORT ASSESSMENT:

Attributes	Excellent (5)	Good (4)	Average (3)	Satisfactory (2)	Unsatisfactory (1)
Data presentation					
Experimental results					
Conclusion					

Total Marks: _____ Obtained Marks: _____

Date: _____ Signature: _____

Lab Task#3

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

class Student
{
    int number,*marks;
    float total;
    public:
    void input()
    {
        cout<<"\nEnter data of the student"<<endl;
        cout<<"\nEnter number of subjects: ";
        cin>>number;
        cout<<"\nEnter marks: ";
        marks= new int[number];
        total=0;
        for (int i=0;i<number;i++)
        {
            cin>>marks[i];
            total = marks[i]+total;
        }
    }
    float total_sum()      //Total sum of all subjects
    {
        return total;
    }
    void display()
    {
        cout<<"\nThe average of the student is "<<total/number<<endl;
    }
};
```

```
int main()
{
    int num;
    cout<<"\nEnter the number of students: ";
    cin>>num;
    Student *s[num];
    for (int i=0;i<num;i++)
    {
        s[i] = new Student;
        s[i]->input();
        s[i]->display();   //Will display average mark of an individual student
    }

    int total_class=0;
    for (int i=0;i<num;i++)
    {
        total_class=total_class+s[i]->total_sum();  //Will calculate the total marks of class
    }

    cout<<"\nThe average marks of the class are "<<total_class/num<<endl;

    for(int i=0; i<num; i++)
    {
    delete s[i];
    }


}
```

OUTPUT

```
Enter the number of students: 3

Enter data of the student

Enter number of subjects: 4

Enter marks: 33
35
32
31

The average of the student is 32.75

Enter data of the student

Enter number of subjects: 4

Enter marks: 31
30
34
28

The average of the student is 30.75

Enter data of the student

Enter number of subjects: 4

Enter marks: 28
29
25
21

The average of the student is 25.75

The average marks of the class are 119
```

Lab Task#4

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

class account
{
    string account_id,ammount;
    public:
    void input()
    {
        cin.ignore();
        cout<<"\nEnter account ID: ";
        getline(cin,account_id);
        cout<<"\nEnter ammount: ";
        getline(cin,ammount);
    }

    void display()
    {
        cout<<"\nAccount ID: "<<account_id<<"\tAmmount: "<<ammount<<endl;
    }
};

int main()
{
    int num;
    cout<<"\nEnter number of accounts: ";
    cin>>num;
    account *ptr[num];
    for (int i=0;i<num;i++)
    {
        ptr[i] = new account;
        ptr[i]->input();
    }
    cout<<"\n\nThe account data is: "<<endl;
    for (int i=0;i<num;i++)
    {
        ptr[i]->display();
    }

    for(int i=0; i<num ; i++)
    {
    delete ptr[i];
    }
}
```

OUTPUT

```
Enter number of accounts: 3

Enter account ID: 200768

Enter ammount: 34,000 Dollars


Enter account ID: 200768

Enter ammount: 500,000 Dollars


Enter account ID: 200877

Enter ammount: 9,000 Dollars


The account data is:

Account ID: 200768      Ammount: 34,000 Dollars

Account ID: 200768      Ammount: 500,000 Dollars

Account ID: 200877      Ammount: 9,000 Dollars
```

Conclusion:

In this lab I learned I learned how to create dynamic variables using pointers in classes. I also learned how to create dynamic objects of classes using the ‘new’ operator and then delete the pointers of classes afterwards. Moreover, pointers help us to save space on stack.