Object Oriented Programming

Assignment # 01

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Task 01

```
#include<iostream>

using namespace std;

class user_account {
    private:
        int acc_number ;
        string acc_holder_name ;
        float acc_balance ;
        string bankname ;
    public:
        void setnumber ( int number ) {
            acc_number = number ;
        }
        void setname ( string name ) {
            acc_holder_name = name ;
        }
        void setbalance ( float balance ) {
            acc_balance = balance ;
        }
        void setbankname ( string b_name ) {
            bankname = b_name ;
        }

        int getnumber () {
            return acc_number ;
        }
        string getname () {
            return acc_holder_name ;
        }
        float getbalance () {
            return acc_balance ;
        }
        string getbankname () {
            return bankname ;
        }
```

```
        void detail_user () {
            cout << "\n  Account Number: " << acc_number << endl;
            cout << "  Account Holder Name: " << acc_holder_name << endl;
            cout << "  Account Balance: " << acc_balance << endl;
            cout << "  Bank Name: " << bankname << endl;
            cout << endl;
        }
} ;

int main() {
    user_account acc[5] ;

    acc[0].setnumber(123456);
    acc[0].setname("Muhammad Ali");
    acc[0].setbalance(1000.0);
    acc[0].setbankname("Bank of Punjab");

    acc[1].setnumber(654321);
    acc[1].setname("Muhammad Ahmed");
    acc[1].setbalance(500.0);
    acc[1].setbankname("Habib Metro");

    acc[2].setnumber(987654);
    acc[2].setname("Abdul Hadi");
    acc[2].setbalance(750.0);
    acc[2].setbankname("Habib Bank Limited");

    acc[3].setnumber(123123);
    acc[3].setname("Arman Bin Tahir");
    acc[3].setbalance(2500.0);
    acc[3].setbankname("Allied Bank");

    acc[4].setnumber(456456);
    acc[4].setname("Eman Murtaza");
    acc[4].setbalance(10000.0);
    acc[4].setbankname("Alfalah Bank");
```

```
int choice, ac_num ;
float new_balance;
bool found = false;

cout << "Existing Account Numbers\n  123456, 654321, 987654, 123123, 456456\n" ;

cout << "Enter Account Number: " ;
cin >> ac_num ;
for (int i = 0; i < 5; i++) {
    if (acc[i].getnumber() == ac_num) {
        found = true;
        cout << "  Enter 1 if you want to check Account Details\n" ;
        cout << "  Enter 2 if you want to Modify Account Balance\n" ;
        cout << "  Enter 0 if you want to exit\n" ;
        cout << "  Enter Choice : " ;
        cin >> choice ;

        if (choice==1) {
            acc[i].detail_user();
        }

        else if (choice==2) {
            cout << "  Enter new balance: ";
            cin >> new_balance;
            acc[i].setbalance(new_balance);
            cout << "Account balance updated successfully." << endl;
        }

        else if (choice==0) {
            return 0;
        }

        else {
            cout << "Invalid choice. Please try again." << endl;
        }
    }
```

```
    }
    if (!found) {
        cout << "Account not found.\n" ;
    }



    return 0;
}
```

```
PS D:\M. Shakaib F2022266626\OOP Theory\Assignment 01>
cpp -o Problem_01 } ; if ($?) { .\Problem_01 }
Existing Account Numbers
  123456, 654321, 987654, 123123, 456456
Enter Account Number: 123123
  Enter 1 if you want to check Account Details
  Enter 2 if you want to Modify Account Balance
  Enter 0 if you want to exit
  Enter Choice : 1

  Account Number: 123123
  Account Holder Name: Arman Bin Tahir
  Account Balance: 2500
  Bank Name: Allied Bank
```

```
PS D:\M. Shakaib F2022266626\OOP Theory\Assignment 01>
cpp -o Problem_01 } ; if ($?) { .\Problem_01 }
Existing Account Numbers
  123456, 654321, 987654, 123123, 456456
Enter Account Number: 654321
  Enter 1 if you want to check Account Details
  Enter 2 if you want to Modify Account Balance
  Enter 0 if you want to exit
  Enter Choice : 2
  Enter new balance: 45000
Account balance updated successfully.
```

Task 02

```
#include<iostream>


using namespace std;


class Stock {
    private:
        string symbol ;
        string name ;
        float current_price ;
        float historical_price[5] ;
    public:
        void setsymbol (string sym) {
            symbol = sym ;
        }
        void setname (string nam) {
            name = nam ;
        }
        void setcp (float cp) {
            current_price = cp ;
        }
```

```
void sethp (float hp[]) {
    for(int i = 0 ; i < 5 ; i++) {
        historical_price[i] = hp[i] ;
    }
}

string getsymbol () {
    return symbol ;
}
string getname () {
    return name ;
}
float getcp () {
    return current_price ;
}
float gethp (int i) {
    return historical_price[i] ;
}

float cal_avg_pr (int timePeriod) {
    float sum = 0 ;
    for(int i = 0 ; i < timePeriod ; i++) {
        sum = sum + historical_price[i] ;
    }
    return sum / timePeriod ;
}

string stockValue() {
    float average_price = cal_avg_pr (5) ;
    float value = ((current_price - average_price) / average_price) * 100 ;
    if(value > 10) {
        if(value > 0) {
            return "Overvalued" ;
        } else {
            return "Undervalued" ;
        }
    } else {
```

```
                return "Fairly valued" ;
            }
        }
} ;

int main() {
    Stock comp ;

    string sym, nam ;
    float cp, hp[5] ;

    cout << "Ticket Symbol : " ;
    getline(cin,sym) ;
    cout << "Company Name : " ;
    getline(cin,nam) ;
    cout << "Current Price : " ;
    cin >> cp ;
    for(int i = 0 ; i < 5 ; i++) {
        cout << i+1 << " Historical Price : " ;
        cin >> hp[i] ;
    }

    comp.setsymbol(sym) ;
    comp.setname(nam) ;
    comp.setcp (cp) ;
    comp.sethp (hp) ;

    int tp ;
    cout << "Input Time Period = " ;
    cin >> tp ;
    float average_price = comp.cal_avg_pr (tp) ;
    cout << "Average price over " << tp << " periods: " << average_price << endl ;

    string value = comp.stockValue() ;
    cout << "Status of Current stock value is " << value << endl ;

    return 0 ;
```

```
}
```

```
PS D:\Semester II\OOP Theory\Assignment 01> cd "d:
_02.cpp -o Problem_02 } ; if ($?) { .\Problem_02 }
Ticket Symbol : STR
Company Name : MOFINS GI
Current Price : 17000
1 Historical Price : 12000
2 Historical Price : 15000
3 Historical Price : 13000
4 Historical Price : 14000
5 Historical Price : 16000
Input Time Period = 4
Average price over 4 periods: 13500
Status of Current stock value is Overvalued
PS D:\Semester II\OOP Theory\Assignment 01>
```

Task 03

```
#include <iostream>


using namespace std;


class DATE {

private:

    int date;

    int month;

    int year;

    int checkmonth();

    bool leapyear();


public:

    void setdate(int d);

    void setmonth(int m1);

    void setyear(int y1);


    int getdate();

    int getmonth();

    int getyear();


    int dayBetween(DATE d1, DATE d2);

};
```

```
int DATE::checkmonth() {
    if (month == 2) {
        if (leapyear()) {
            return 29;
        } else {
            return 28;
        }
    } else if (month == 4 || month == 6 || month == 9 || month == 11) {
        return 30;
    } else {
        return 31;
    }
}

void DATE::setdate(int d) {
    date = d;
}

void DATE::setmonth(int m1) {
    month = m1;
}

void DATE::setyear(int y1) {
    year = y1;
}

int DATE::getdate() {
    return date;
}

int DATE::getmonth() {
    return month;
}

int DATE::getyear() {
    return year;
}
```

```
bool DATE::leapyear() {
    if (year % 4 != 0) {
        return false;
    } else if (year % 100 != 0) {
        return true;
    } else if (year % 400 != 0) {
        return false;
    } else {
        return true;
    }
}

int DATE::dayBetween(DATE d1, DATE d2) {
    int y_difference ;
    y_difference = d2.year - d1.year;

    int m_difference ;
    m_difference = d2.month - d1.month;

    int d_difference ;
    d_difference = d2.date - d1.date;

    int totaldays ;
    totaldays = (y_difference * 365) + (m_difference * 30) + d_difference;

    return totaldays;
}

int main() {
    DATE d1, d2;

    int n1, m1, y1;
    int n2, m2, y2;

    cout << "From\n";
    cout << "  Date: ";
```

```
    cin >> n1;
    cout << "  Month: ";
    cin >> m1;
    cout << "  Year: ";
    cin >> y1;
    d1.setdate(n1);
    d1.setmonth(m1);
    d1.setyear(y1);

    cout << "To\n";
    cout << "  Date: ";
    cin >> n2;
    cout << "  Month: ";
    cin >> m2;
    cout << "  Year: ";
    cin >> y2;
    d2.setdate(n2);
    d2.setmonth(m2);
    d2.setyear(y2);

    int days = d2.dayBetween(d1, d2);

    cout << "Days between " << d1.getdate() << "-" << d1.getmonth() << "-" << d1.getyear() << "
and " << d2.getdate() << "-" << d2.getmonth() << "-" << d2.getyear() << " is: " << days <<
endl;

    return 0;
}
```

```
PS D:\M. Shakaib F2022266626\OOP Theory\Assignment 01>
cpp -o Problem_03 } ; if ($?) { .\Problem_03 }
From
  Date: 2
  Month: 2
  Year: 2022
To
  Date: 2
  Month: 2
  Year: 2023
Days between 2-2-2022 and 2-2-2023 is: 365
```

```
PS D:\M. Shakaib F2022266626\OOP Theory\Assignment 01>
cpp -o Problem_03 } ; if ($?) { .\Problem_03 }
From
  Date: 31
  Month: 3
  Year: 2002
To
  Date: 1
  Month: 6
  Year: 2002
Days between 31-3-2002 and 1-6-2002 is: 60
```

Task 04

```
#include<iostream>

using namespace std;

class Employee {
    private:
        string name;
        int id;
        float salary;
        string department;

    public:
        void setname(string n) {
            name = n;
        }
        void setid(int i) {
            id = i;
        }
        void setsalary(float s) {
            salary = s;
        }
        void setdepartment(string d) {
            department = d;
        }

        string getname() {
            return name;
        }
        int getid() {
            return id;
        }
        float getsalary() {
            return salary;
        }
        string getdepartment() {
            return department;
```

```
        }

        void display() {
            cout << "Name: " << name << endl;
            cout << "ID: " << id << endl;
            cout << "Salary: " << salary << endl;
            cout << "Department: " << department << endl;
        }

        void raise_salary(float raise_amount) {
            salary = salary + raise_amount;
        }
};

int main() {
    Employee emp[3];
    int i;
    float s;
    string n, d;
    for(int a=0; a<3; a++) {
        cout << "Employee Name: ";
        getline(cin, n);
        cout << n << " ID: ";
        cin >> i;
        cout << n << " Salary: ";
        cin >> s;
        cout << n << " Department: ";
        cin.ignore();
        getline(cin, d);
        cout << endl ;

        emp[a].setname(n);
        emp[a].setid(i);
        emp[a].setsalary(s);
        emp[a].setdepartment(d);
    }
```

```
    int eID;
    float raise;
    cout << "Enter the employee's ID for a salary raise: ";
    cin >> eID;
    bool found = false;
    for(int i=0; i<3; i++) {
        if(emp[i].getid() == eID) {
            cout << "Enter the amount of the salary raise for " << emp[i].getname() << ": ";
            cin >> raise;
            emp[i].raise_salary(raise);
            found = true;
            break;
        }
    }
    if(!found) {
        cout << "Employee with ID " << eID << " not found." << endl;
    }

    cout << "====== Updated List of Employees ======" << endl;
    for(int a=0; a<3; a++) {
        emp[a].display();
        cout << endl;
    }

    return 0;
}
```

```
PS D:\Semester II\OOP Theory\Assignment 01> cd "d:\Seme
ster II\OOP Theory\Assignment 01\" ; if ($?) { g++ Prob
lem_04.cpp -o Problem_04 } ; if ($?) { .\Problem_04 }
Employee Name: M. Ali
M. Ali ID: 123456
M. Ali Salary: 55000
M. Ali Department: IT

Employee Name: Abdul Hadi
Abdul Hadi ID: 123123
Abdul Hadi Salary: 45000
Abdul Hadi Department: Accounts

Employee Name: Eman Murtaza
Eman Murtaza ID: 654321
Eman Murtaza Salary: 75000
Eman Murtaza Department: IT

Enter the employee's ID for a salary raise: 123456
Enter the amount of the salary raise for M. Ali: 13000
====== Updated List of Employees ======
Name: M. Ali
ID: 123456
Salary: 68000
Department: IT

Name: Abdul Hadi
ID: 123123
Salary: 45000
Department: Accounts

Name: Eman Murtaza
ID: 654321
Salary: 75000
Department: IT

PS D:\Semester II\OOP Theory\Assignment 01>
```