Experiment 3

AIM: Write a program which defines a class Bank with member functions deposit, withdraw, compound interest, and getBalance. It should have a constructor to initialize balance and rate of interest. Implement a menu driven program to use these features.

Theory:

A constructor is a member function of a class which initializes objects of a class. Destructor is a member function which destructs or deletes an object. There are 3 types of access modifiers available in C++:

1. **Public:** All the class members declared under public will be available to everyone.
2. **Private**: The class members declared as **private** can be accessed only by the functions inside the class.
3. **Protected**

Code:
```cpp
#include < iostream >
#include < cmath >
using namespace std;
class Bank {
    float balance, rate;
    float getBalance() {
        return balance;
    }
    float getRate() {
        return rate;
    }
    float deposit(float m) {
        balance += m;
        return balance;
    }
    float withdraw(float m) {
        if (balance >= m) balance -= m;
        return balance;
    }
    float compound(int t) {
        return balance * pow(1 + rate / 100, t);
    }
    public: Bank() {
        cout << "Enter balance and rate:";
        cin >> balance >> rate;
    }~Bank() {
        cout << "I am destroyed." << endl;
    }
    int menu() {
        int op;
        cout << "1 - Deposit" << endl;
        cout << "2 - Withdraw" << endl;
        cout << "3 - Compound interest" << endl;
        cout << "4 - Get balance" << endl;
        cout << "5 - Exit" << endl;
        cin >> op;
        switch (op) {
```

```cpp
            float money, time;
            case 1:
                cout << "Enter amount to deposit: ";
                cin >> money;
                cout << "Current balance: " << deposit(money) << endl;

                break;
            case 2:
                cout << "Enter amount to withdraw: ";
                cin >> money;
                cout << "Current balance: " << withdraw(money) << endl;

                break;
            case 3:
                cout << "Enter time: ";
                cin >> time;
                cout << "Compound interest: " << compound(time) << endl;
                break;
            case 4:
                cout << "Current balance: " << getBalance() << endl;
                break;
        }
        return op;
    }
};
int main() {
    Bank dj;
    while (dj.menu() != 5) {}
    return 0;
}
```

Output:

```
[djsinghnegi:desktop djsinghnegi$ ./a.out
Enter balance and rate:5000 9
1 - Deposit
2 - Withdraw
3 - Compound interest
4 - Get balance
5 - Exit
1
Enter amount to deposit: 3000
Current balance: 8000
1 - Deposit
2 - Withdraw
3 - Compound interest
4 - Get balance
5 - Exit
2
Enter amount to withdraw: 1000
Current balance: 7000
1 - Deposit
2 - Withdraw
3 - Compound interest
4 - Get balance
5 - Exit
3
Enter time: 5
Compound interest: 10770.4
```

```
Compound interest: 10770.4
1 - Deposit
2 - Withdraw
3 - Compound interest
4 - Get balance
5 - Exit
4
Current balance: 7000
1 - Deposit
2 - Withdraw
3 - Compound interest
4 - Get balance
5 - Exit
5
I am destroyed.
djsinghnegi:desktop djsinghnegi$
```

Discussion:

The class bank has 5 private methods: getBalance: to get the balance, getRate: to get the rate of interest, deposit: to deposit money and it returns the resultant balance, withdraw: to withdraw money and it returns the resultant balance, and compound to calculate compound interest. The constructor initializes the balance and the rate of interest. The menu method starts a menu driven program on the instance aneesh.