

Assignment 's Question Solution

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Question no 01:

Code:

```
g 1 1.cpp 2.cpp 3.cpp 3 program.cpp 6 th program.cpp 2nd program.cpp 7thprohgram.cpp assi
1 #include <iostream>
2 using namespace std;
3 class Account
4 {
5     protected:
6         double balance;
7     public:
8         Account(double initialBalance)
9         {
10             if (initialBalance < 0.0)
11             {
12                 balance = 0.0;
13                 cout << "Initial balance was invalid. Balance set to 0.0." << endl;
14             }
15             else
16             {
17                 balance = initialBalance;
18             }
19         }
20         void credit(double amount)
21         {
22             balance += amount;
23         }
24         bool debit(double amount)
25         {
26             if (amount > balance)
27             {
28                 cout << "Debit amount exceeded account balance." << endl;
29                 return false;
30             }
31         }
32 }
```

Further ...

```
1 1.cpp 2.cpp 3.cpp 3 program.cpp 6 th program.cpp 2nd program.cpp 7thprohgram.c
31 cout << "Debit amount exceeded account balance." << endl;
32 return false;
33 }
34 else
35 {
36     balance -= amount;
37     return true;
38 }
39 }
40
41 double getBalance() const
42 {
43     return balance;
44 }
45 };
46
47 class SavingsAccount : public Account
48 {
49     private:
50         double interestRate;
51     public:
52         SavingsAccount(double initialBalance, double interestRate)
53             : Account(initialBalance), interestRate(interestRate)
54         {
55         }
56         double calculateInterest() const
57         {
58             return balance * interestRate;
59         }
60     };
61
62 }
```

```

61 }
62 };
63
64 class CheckingAccount : public Account
65 {
66 private:
67     double transactionFee;
68
69 public:
70     CheckingAccount(double initialBalance, double transactionFee)
71         : Account(initialBalance), transactionFee(transactionFee)
72     {
73     }
74
75     void credit(double amount)
76     {
77         Account::credit(amount);
78         balance -= transactionFee;
79     }
80
81     bool debit(double amount)
82     {
83         bool success = Account::debit(amount);
84         if (success)
85         {
86             balance -= transactionFee;
87         }
88         return success;
89     }
90 };
91
92 int main()
93 {

```

Further Code...

```

89 }
90 };
91
92 int main()
93 {
94     Account account(100.0);
95     account.credit(50.0);
96     cout << "Account balance: " << account.getBalance() << endl;
97
98     SavingsAccount savingsAccount(500.0, 0.05);
99     double interest = savingsAccount.calculateInterest();
100    savingsAccount.credit(interest);
101    cout << "Savings account balance: " << savingsAccount.getBalance() << endl;
102
103    CheckingAccount checkingAccount(200.0, 2.0);
104    checkingAccount.credit(100.0);
105    cout << "Checking account balance: " << checkingAccount.getBalance() << endl;
106
107    bool success = checkingAccount.debit(150.0);
108    if (success)
109    {
110        cout << "Checking account balance after debit: " << checkingAccount.getBalance() << endl;
111    }
112    cout << "Complied by Zeeshan Ali" << endl;
113
114    return 0;
115 }
116

```

Output:

```
C:\Users\Zeeshan\Desktop\University Relative\2nd Semester\OOP\Assignments\My Assignments\Ass # 2\1.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
C:\Users\Zeeshan\Desktop\U...
Project
Account balance: 150
Savings account balance: 525
Checking account balance: 298
Checking account balance after debit: 146
Complied by Zeeshan Ali

-----
Process exited after 0.0841 seconds with return value 0
Press any key to continue . . .
```

Question no 02:

Code:

```
1.cpp 2.cpp 3.cpp 3 program.cpp 6 th progrm.cpp 2nd progrm.cpp 7thprohgram.cpp assignment 1 1st program.cpp
1  #include <iostream>
2  #include <string>
3  using namespace std;
4
5  class Package
6  {
7  protected:
8      string senderName;
9      string senderAddress;
10     string senderCity;
11     string senderState;
12     string senderZIP;
13
14     string recipientName;
15     string recipientAddress;
16     string recipientCity;
17     string recipientState;
18     string recipientZIP;
19
20     double weight;
21     double costPerOunce;
22
23 public:
24     Package(const string& senderName, const string& senderAddress, const string& senderCity, const string& senderState, const string& senderZIP,
25             const string& recipientName, const string& recipientAddress, const string& recipientCity, const string& recipientState, const string& recipientZIP,
26             double weight, double costPerOunce)
27     : senderName(senderName), senderAddress(senderAddress), senderCity(senderCity), senderState(senderState), senderZIP(senderZIP),
28       recipientName(recipientName), recipientAddress(recipientAddress), recipientCity(recipientCity), recipientState(recipientState), recipientZIP(recipientZIP),
29       weight(weight), costPerOunce(costPerOunce)
30     {
31         if (weight < 0.0)
```

Further More ...

```
1.cpp 2.cpp 3.cpp 3 program.cpp 6 th progrm.cpp 2nd progrm.cpp 7thprohgram.cpp assignment 1 1st program.cpp
29     weight(weight), costPerOunce(costPerOunce)
30     {
31         if (weight < 0.0)
32             this->weight = 0.0;
33         if (costPerOunce < 0.0)
34             this->costPerOunce = 0.0;
35     }
36
37     double calculateCost() const
38     {
39         return weight * costPerOunce;
40     }
41 };
42
43 class TwoDayPackage : public Package
44 {
45 private:
46     double flatFee;
47
48 public:
49     TwoDayPackage(const string& senderName, const string& senderAddress, const string& senderCity, const string& senderState, const string& senderZIP,
50                  const string& recipientName, const string& recipientAddress, const string& recipientCity, const string& recipientState, const string& recipientZIP,
51                  double weight, double costPerOunce, double flatFee)
52     : Package(senderName, senderAddress, senderCity, senderState, senderZIP, recipientName, recipientAddress, recipientCity, recipientState, recipientZIP, weight,
53               costPerOunce),
54       flatFee(flatFee)
55     {
56         if (flatFee < 0.0)
57             this->flatFee = 0.0;
58     }
```

```

55 {
56     if (flatFee < 0.0)
57         this->flatFee = 0.0;
58 }
59
60 double calculateCost() const
61 {
62     return Package::calculateCost() + flatFee;
63 }
64 };
65
66 class OvernightPackage : public Package
67 {
68 private:
69     double additionalFeePerOunce;
70
71 public:
72     OvernightPackage(const string& senderName, const string& senderAddress, const string& senderCity, const string& senderState, const string& senderZIP,
73                     const string& recipientName, const string& recipientAddress, const string& recipientCity, const string& recipientState, const string& recipientZIP,
74                     double weight, double costPerOunce, double additionalFeePerOunce)
75         : Package(senderName, senderAddress, senderCity, senderState, senderZIP, recipientName, recipientAddress, recipientCity, recipientState, recipientZIP, weight,
76                   costPerOunce),
77
Package::Package (const string& senderName, const string& senderAddress, const string& senderCity, const string& senderState, const string& senderZIP, const
79     if (additionalFeePerOunce < 0.0)
80         this->additionalFeePerOunce = 0.0;
81
82
83 double calculateCost() const
84 {
85     return Package::calculateCost() + (additionalFeePerOunce * weight);
86 }

```

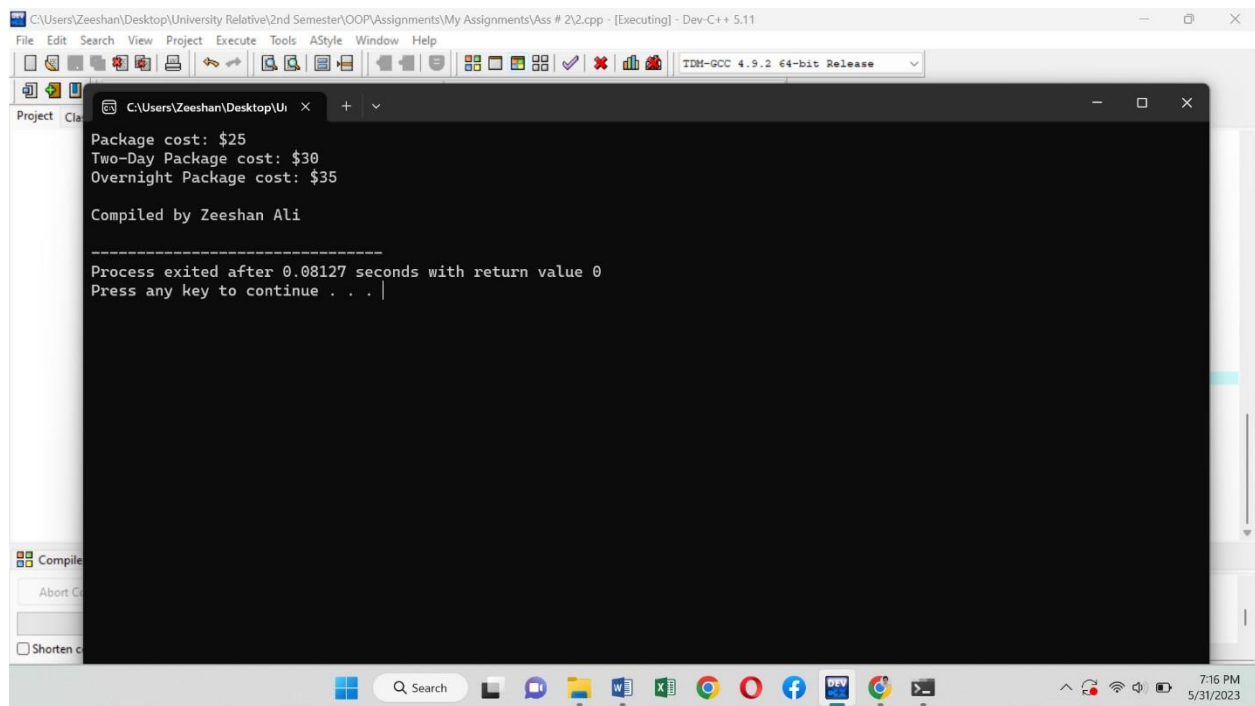
Further ...

```

1.cpp 1-1.cpp 3.cpp 5 program.cpp 6 in program.cpp 7 in program.cpp 7 in program.cpp assignment 1-1st program.cpp
78 {
79     if (additionalFeePerOunce < 0.0)
80         this->additionalFeePerOunce = 0.0;
81 }
82
83 double calculateCost() const
84 {
85     return Package::calculateCost() + (additionalFeePerOunce * weight);
86 }
87 };
88
89 int main()
90 {
91     Package package("Zeeshan", "Superior University", "Lahore", "Punjab", "ZIP",
92                     "Ali", "Gold Campus", "Lahore", "Sindh", "ZIP",
93                     10.0, 2.5);
94
95     TwoDayPackage twoDayPackage("Zeeshan", "Superior University", "Lahore", "Punjab", "ZIP",
96                                 "Ali", "Gold Campus", "Lahore", "Sindh", "ZIP",
97                                 10.0, 2.5, 5.0);
98     OvernightPackage overnightPackage("Zeeshan", "Superior University", "Lahore", "Punjab", "ZIP",
99                                      "Ali", "Gold Campus", "Lahore", "Sindh", "ZIP",
100                                      10.0, 2.5, 1.0);
101
102     cout << "Package cost: $" << package.calculateCost() << endl;
103     cout << "Two-Day Package cost: $" << twoDayPackage.calculateCost() << endl;
104     cout << "Overnight Package cost: $" << overnightPackage.calculateCost() << endl;
105     cout << "\nCompiled by Zeeshan Ali " << endl;
106
107     return 0;
108 }
109

```

Output:



```
C:\Users\Zeeshan\Desktop\University Relative\2nd Semester\OOP\Assignments\My Assignments\Ass # 2\2.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
IDM-GCC 4.9.2 64-bit Release

C:\Users\Zeeshan\Desktop\University Relative\2nd Semester\OOP\Assignments\My Assignments\Ass # 2\2.cpp
Package cost: $25
Two-Day Package cost: $30
Overnight Package cost: $35

Compiled by Zeeshan Ali

-----
Process exited after 0.00127 seconds with return value 0
Press any key to continue . . .
```


Question no 03:

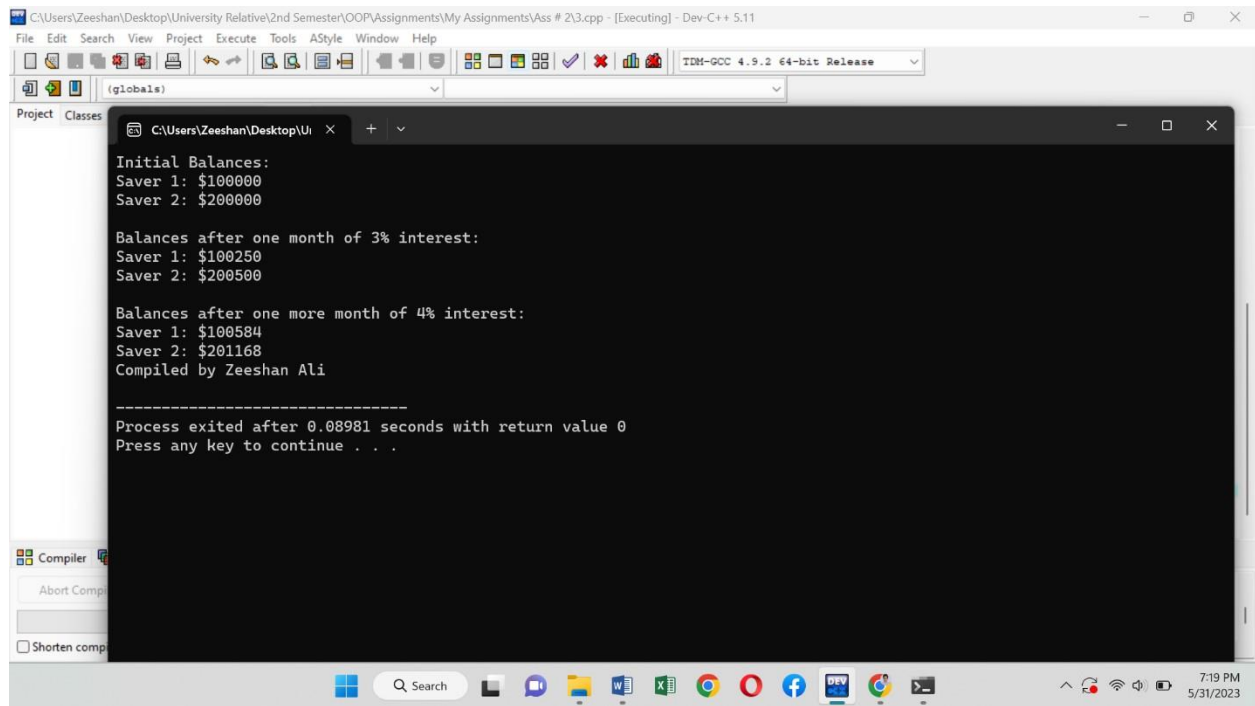
Code:

```
ug 1.cpp 2.cpp 3.cpp 3 program.cpp 6 th progrm.cpp 2nd progrm.cpp 7thprohgram.cpp assignment 1 1st program.cpp
1  #include <iostream>
2  using namespace std;
3
4  class SavingsAccount {
5  private:
6      static double annualInterestRate;
7      double savingsBalance;
8
9  public:
10     SavingsAccount(double balance) : savingsBalance(balance) {}
11
12     void calculateMonthlyInterest() {
13         double monthlyInterest = savingsBalance * (annualInterestRate / 12.0);
14         savingsBalance += monthlyInterest;
15     }
16
17     static void modifyInterestRate(double newRate) {
18         annualInterestRate = newRate;
19     }
20
21     double getBalance() const {
22         return savingsBalance;
23     }
24 };
25
26 double SavingsAccount::annualInterestRate = 0.0;
27
28 int main() {
29     SavingsAccount saver1(100000.0);
30     SavingsAccount saver2(200000.0);
31
32     SavingsAccount::modifyInterestRate(0.03);
```

Further More...

```
9 1.cpp 2.cpp 3.cpp 3 program.cpp 6 th progrm.cpp 2nd progrm.cpp 7thprohgram.cpp assignment 1 1st program.cpp
25
26 double SavingsAccount::annualInterestRate = 0.0;
27
28 int main() {
29     SavingsAccount saver1(100000.0);
30     SavingsAccount saver2(200000.0);
31
32     SavingsAccount::modifyInterestRate(0.03);
33
34     cout << "Initial Balances:" << endl;
35     cout << "Saver 1: $" << saver1.getBalance() << endl;
36     cout << "Saver 2: $" << saver2.getBalance() << endl;
37
38     saver1.calculateMonthlyInterest();
39     saver2.calculateMonthlyInterest();
40
41     cout << "\nBalances after one month of 3% interest:" << endl;
42     cout << "Saver 1: $" << saver1.getBalance() << endl;
43     cout << "Saver 2: $" << saver2.getBalance() << endl;
44
45     SavingsAccount::modifyInterestRate(0.04);
46
47     saver1.calculateMonthlyInterest();
48     saver2.calculateMonthlyInterest();
49
50     cout << "\nBalances after one more month of 4% interest:" << endl;
51     cout << "Saver 1: $" << saver1.getBalance() << endl;
52     cout << "Saver 2: $" << saver2.getBalance() << endl;
53     cout << "Compiled by Zeeshan Ali " << endl;
54
55     return 0;
56 }
```

Output:



```
C:\Users\Zeeshan\Desktop\University Relative\2nd Semester\OOP\Assignments\My Assignments\Ass # 2\3.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
(globals)
Project Classes
C:\Users\Zeeshan\Desktop\Ui
Initial Balances:
Saver 1: $100000
Saver 2: $200000

Balances after one month of 3% interest:
Saver 1: $100250
Saver 2: $200500

Balances after one more month of 4% interest:
Saver 1: $100584
Saver 2: $201168
Compiled by Zeeshan Ali

-----
Process exited after 0.08981 seconds with return value 0
Press any key to continue . . .
```

Compiler
Abort Comp
Shorten comp

7:19 PM
5/31/2023