



Mansoura University
Faculty of Computers and Information
Department of Computer Science
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Object Oriented Programming Project

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Project Idea:

A bank with a checking, or 25% interest rate
saving account

Run Example

```
> dotnet run
Choose a bank type 1 or 2
1- Checking account
2- Saving account
1
Enter your initial deposit: 1000
-----
What's your next move
1- Deposit
2- Withdraw
3- Check balance
4- Switch account type
5- Exit
Move number: 1
Enter your deposit amount: 1000
The account balance is: 2000
In text: two Thousand
-----
What's your next move
1- Deposit
2- Withdraw
3- Check balance
4- Switch account type
5- Exit
Move number: 4
The account balance is: 2500
In text: two Thousand and more
-----
What's your next move
1- Deposit
2- Withdraw
3- Check balance
4- Switch account type
5- Exit
Move number: 5
bye
```

```
1 // Mohamed Saad Ahmed Ali Omar, SWE, 805554525
2 // Farah Aysam Mohamed Elsaid, SWE, 805481657
3 // Mariam Abdelnaby hessein Elsaid, SWE, 805775545
4 using System;
5
6 namespace OOP_Project_Bank
7 {
8     class Program
9     {
10         public static void Main(string[] args)
11         {
12
13             // Ask the user for the bank account type
14             Console.WriteLine("Choose a bank type 1 or 2");
15             Console.WriteLine("1- Checking account");
16             Console.WriteLine("2- Saving account");
17
18             int type = Convert.ToInt32(Console.ReadLine());
19
20             if (type == 1)
21             {
22                 Console.Write("Enter your initial deposit: ");
23                 int number = Convert.ToInt32(Console.ReadLine());
24                 Account CAccount = new CheckingAccount(number);
25                 login.log(CAccount);
26             }
27
28             else if (type == 2)
29             {
30                 Console.Write("Enter your initial deposit: ");
31                 int number = Convert.ToInt32(Console.ReadLine());
32                 Account SAccount = new SavingsAccount(number);
33                 login.log(SAccount);
34             }
35             else
36             {
37                 Console.WriteLine("Wrong Input");
38             }
39
40         }
41     }
42 }
43
44
45
46
```

```
1  using System;
2  namespace OOP_Project_Bank
3  {
4      interface IAccount
5      {
6          bool Deposit(double amount);
7          bool Withdraw(double amount);
8          void PrintBalance();
9      }
10
11     class Account : IAccount
12     {
13         public string accountType;
14
15         private double _balance;
16
17         protected double Balance
18         {
19             get { return this._balance; }
20             set
21             {
22                 if (value >= 0)
23                     this._balance = value;
24             }
25         }
26
27         // Constructor
28         public Account(double balance)
29         {
30             this.Balance = balance;
31         }
32
33         public Account(Account switchedFrom)
34         {
35             this.Balance = switchedFrom.Balance;
36         }
37
38         //Virtual Methods
39         public virtual bool Deposit(double amount)
40         {
41
42             return false;
43         }
44
45         public virtual bool Withdraw(double amount)
46         {
47
48             return false;
49         }
50
51         public virtual void PrintBalance()
52         {
53             // Console.WriteLine("The balance is: " + Balance);
54             Console.WriteLine("In text: " + Balance.ToString());
55         }
56
57     }
58 }
59
60
```

```
1 using System;
2 namespace OOP_Project_Bank
3 {
4     class SavingsAccount : Account
5     {
6         private double _interestRate;
7
8         // Copy Constructor
9         public SavingsAccount(Account switchedFrom) : base(switchedFrom)
10        {
11            accountType = "Saving";
12            this._interestRate = 0.25;
13            Balance += (Balance * this._interestRate);
14        }
15
16        // Paramterized Constructor
17        public SavingsAccount(double balance)
18            : base(balance)
19        {
20            this._interestRate = 0.25;
21            Balance += (Balance * this._interestRate);
22        }
23
24        public override bool Deposit(double amount)
25        {
26            if (amount > 0)
27            {
28                Balance += amount + (amount * this._interestRate);
29                return true;
30            }
31            return false;
32        }
33
34        public override bool Withdraw(double amount)
35        {
36            if (amount > 0 && amount <= Balance)
37            {
38                // Deducting from balance
39                Balance -= amount;
40                return true;
41            }
42            return false;
43        }
44
45        public override void PrintBalance()
46        {
47            Console.WriteLine("The checking account balance is: " + base.Balance);
48            Console.WriteLine("In text: " + ToString());
49        }
50
51        public override string ToString()
52        {
53            string[] numbers = { "zero", "one", "two", "three", "four", "five", "six", "seven", "eight", "nine" };
54            string[] tens = { "ten", "eleven", "twelve", "thirteen", "fourteen", "fifteen", "sixteen", "seventeen", "eighteen", "nineteen" };
55            string[] ten = { "zero", "Ten", "Twenty", "thirty", "forty", "fifty", "sixty", "seventy", "eighty", "ninety" };
56            string[] levels = { "Hundred", "Thousand", "Million" };
57            string strYear = Balance.ToString();
58
59            if (strYear.Length == 0)
60            {
61                return numbers[0];
62            }
63            else if (strYear.Length == 1)
64            {
65                int num = Convert.ToInt32(strYear[0]) - '0';
66                return numbers[num];
67            }
68            else if (strYear.Length == 2)
69            {
70                if (Balance < 20 && Balance > 9)
71                {
72                    int num = Convert.ToInt32(strYear[1]) - '0';
73                    return tens[num];
74                }
75                else
76                {
77                    int tenat = Convert.ToInt32(strYear[0]) - '0';
78                    int num = Convert.ToInt32(strYear[1]) - '0';
79                    return ten[tenat] + " " + numbers[num];
80                }
81            }
82            else if (strYear.Length == 3)
83            {
84                int num = Convert.ToInt32(strYear[0]) - '0';
85                int tenat = Convert.ToInt32(strYear[1]) - '0';
86                int ones = Convert.ToInt32(strYear[2]) - '0';
87                return numbers[num] + ten[tenat] + " " + numbers[num];
88            }
89            else if (strYear.Length == 4)
90            {
91                int thou = Convert.ToInt32(strYear[0]) - '0';
92                int hun = Convert.ToInt32(strYear[1]) - '0';
93                int tenat = Convert.ToInt32(strYear[2]) - '0';
94                int ones = Convert.ToInt32(strYear[3]) - '0';
95
96                if (hun > 0 || tenat > 0 || ones > 0)
97                    return numbers[thou] + " " + levels[1] + " and more";
98                else
99                    return numbers[thou] + " " + levels[1];
100            }
101            else
102            {
103                return "more than 9999";
104            }
105        }
106    }
107 }
108
109
110
111
112
113
```

```

1 using System;
2 namespace OOP_Project_Bank
3 {
4     class CheckingAccount : Account
5     {
6
7         // Copy Constructor
8         public CheckingAccount(Account switchedFrom) : base(switchedFrom)
9         {
10         }
11
12         // Parameterized Constructor
13         public CheckingAccount(double balance)
14             : base(balance) { accountType = "Checking"; }
15
16
17         public override bool Deposit(double amount)
18         {
19             if (amount > 0)
20             {
21                 Balance += amount;
22                 return true;
23             }
24             return false;
25         }
26
27
28         public override bool Withdraw(double amount)
29         {
30             if (amount > 0 && amount <= Balance)
31             {
32                 Balance -= amount;
33                 return true;
34             }
35             return false;
36         }
37
38
39         public override void PrintBalance()
40         {
41
42             Console.WriteLine("The checking account balance is: " + base.Balance);
43             Console.WriteLine("In text: " + ToString());
44         }
45
46         public override string ToString()
47         {
48             string[] numbers = { "zero", "one", "two", "three", "four", "five", "six", "seven", "eight", "nine" };
49             string[] tens = { "ten", "eleven", "twelve", "thirteen", "fourteen", "fifteen", "sixteen", "seventeen", "eighteen", "nineteen" };
50             string[] ten = { "zero", "Ten", "Twenty", "thirty", "forty", "fifty", "sixty", "seventy", "eighty", "ninety" };
51             string[] levels = { "Hundred", "Thousand", "Million" };
52             string strYear = Convert.ToString(Balance);
53
54             if (strYear.Length == 0)
55             {
56                 return numbers[0];
57             }
58             else if (strYear.Length == 1)
59             {
60                 int num = Convert.ToInt32(strYear[0]) - '0';
61                 return numbers[num];
62             }
63             else if (strYear.Length == 2)
64             {
65                 if (Balance < 20 && Balance > 9)
66                 {
67
68                     int num = Convert.ToInt32(strYear[1]) - '0';
69                     return tens[num];
70                 }
71                 else
72                 {
73                     int tenat = Convert.ToInt32(strYear[0]) - '0';
74                     int num = Convert.ToInt32(strYear[1]) - '0';
75                     return ten[tenat] + " " + numbers[num];
76                 }
77             }
78             else if (strYear.Length == 3)
79             {
80                 int num = Convert.ToInt32(strYear[0]) - '0';
81                 int tenat = Convert.ToInt32(strYear[1]) - '0';
82                 int ones = Convert.ToInt32(strYear[2]) - '0';
83                 return numbers[num] + ten[tenat] + " " + numbers[num];
84             }
85             else if (strYear.Length == 4)
86             {
87                 int thau = Convert.ToInt32(strYear[0]) - '0';
88                 int hun = Convert.ToInt32(strYear[1]) - '0';
89                 int tenat = Convert.ToInt32(strYear[2]) - '0';
90                 int ones = Convert.ToInt32(strYear[3]) - '0';
91
92                 if (hun > 0 || tenat > 0 || ones > 0)
93                     return numbers[thau] + " " + levels[1] + " and more";
94                 else
95                     return numbers[thau] + " " + levels[1];
96             }
97             else
98             {
99                 return "more than 9999";
100             }
101         }
102     }
103 }
104
105 }
106
107

```

```

1  using System;
2  namespace OOP_Project_Bank
3  {
4      class login
5      {
6          public static void log(Account Account)
7          {
8              Console.WriteLine("-----");
9              Console.WriteLine("What's your next move");
10             Console.WriteLine("1- Deposit");
11             Console.WriteLine("2- Withdraw");
12             Console.WriteLine("3- Check balance");
13             Console.WriteLine("4- Switch account type");
14             Console.WriteLine("5- Exit");
15
16             Console.Write("Move number: ");
17
18
19             int opr = Convert.ToInt32(Console.ReadLine());
20             if (opr == 1)
21             {
22                 Console.Write("Enter your deposit amount: ");
23                 int amount = Convert.ToInt32(Console.ReadLine());
24                 Account.Deposit(amount);
25                 Account.PrintBalance();
26                 log(Account);
27             }
28             else if (opr == 2)
29             {
30                 Console.Write("Enter your withdraw amount: ");
31                 int amount = Convert.ToInt32(Console.ReadLine());
32                 Account.Withdraw(amount);
33                 Account.PrintBalance();
34                 log(Account);
35             }
36             else if (opr == 3)
37             {
38                 Account.PrintBalance();
39                 log(Account);
40
41             }
42             else if (opr == 4)
43             {
44                 if (Account.accountType == "Checking")
45                 {
46                     Account SAccount = new SavingsAccount(Account);
47                     SAccount.PrintBalance();
48                     Console.WriteLine("-----");
49                     login.log(SAccount);
50                 }
51                 else
52                 {
53                     Account CAccount = new CheckingAccount(Account);
54                     CAccount.PrintBalance();
55                     Console.WriteLine("-----");
56                     login.log(CAccount);
57
58                 }
59             }
60             else if (opr == 5)
61             {
62                 Console.WriteLine("bye");
63             }
64             else
65             {
66                 Console.WriteLine("try again");
67             }
68         }
69     }
70 }
71
72

```