

Cairo University

Faculty of Computer Science and Artificial Intelligence



CS213: Programming 2

Assignment 2

2022

Supervised by dr. Mohamed Elramly

Project team:

Yousef Magdy Eldaly 20220527

Omnia Magdy Abdelnaby 20211018

Yousef Karam Muhammed 20210480

Task1:

- Yousef Karam First Set
- Omnia Magdy Second Set
- Yousef Eldaly Third Set

Github link:

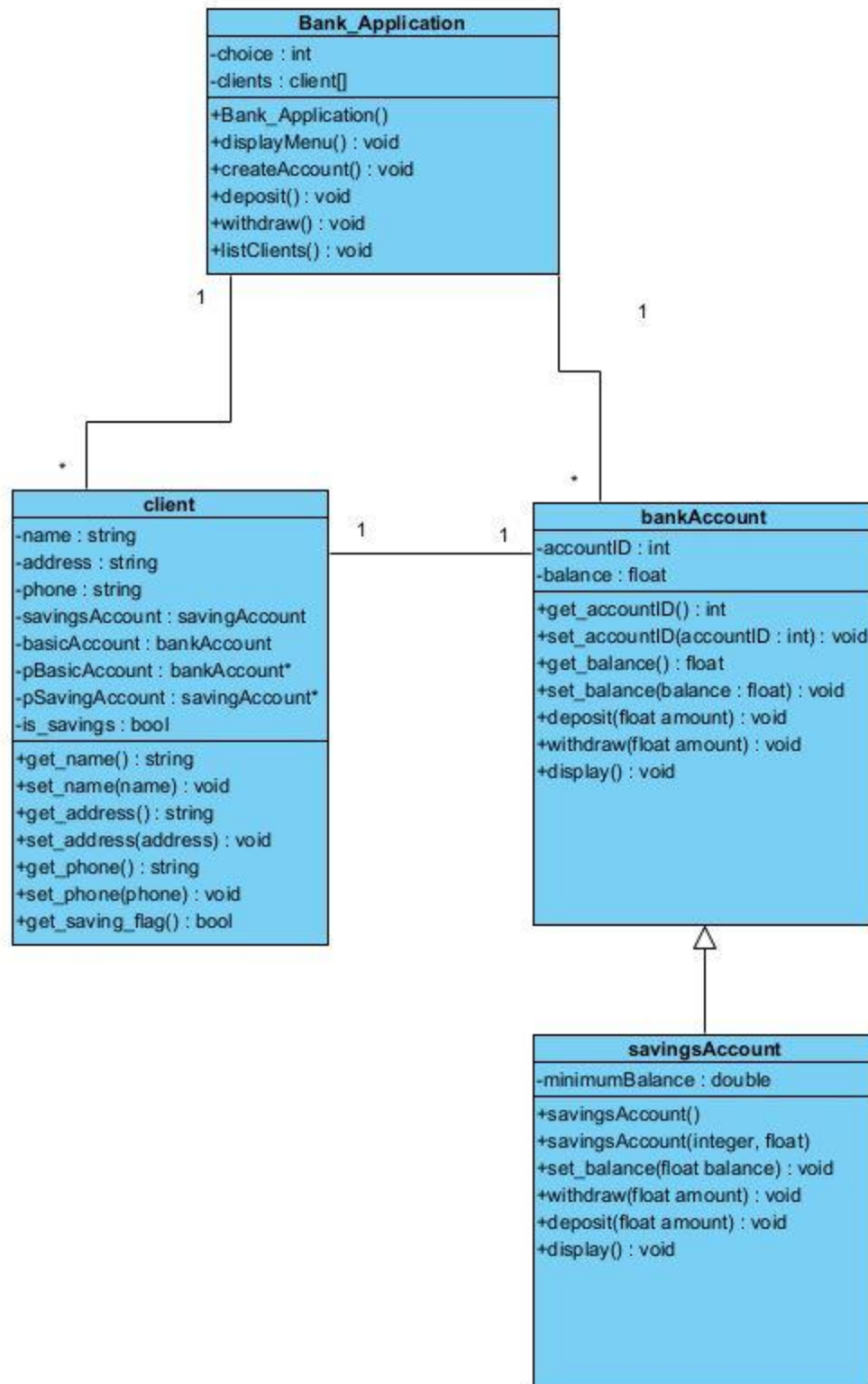
<https://github.com/YousefEldaly/OOPAssignment2/tree/main/BigReal>

Task2:

- Yousef Eldaly
 - Built the UML diagram, Bank system, and Client classes.
- Yousef Karam
 - Built the BankAccount and SavingsAccount classes.
- Omnia Magdy
 - Checked and reviewed the code.

Github link:

<https://github.com/YousefEldaly/OOPAssignment2/tree/main/banksystem>



Task 3:

- Yousef Magdy Eldaly 1, 4
- Yousef Karam 2, 5
- Omnia Magdy 0, 3

Github link:

<https://github.com/YousefEldaly/OOPAssignment2/tree/main/Individual%20Tasks>

Task4:

```
⚠ Declaration shadows a field of 'bankAccount' :30
⚠ Declaration shadows a field of 'bankAccount' :35
⚠ Declaration shadows a field of 'client' :119
⚠ Declaration shadows a field of 'client' :124
⚠ Declaration shadows a field of 'client' :129
⚠ Expression can be simplified :308
⚠ Expression can be simplified :331
⚠ Expression can be simplified :355
⚠ The file is too complex to perform the data-flow analysis :9
```

```
❗ Addition of default argument on redeclaration makes this constructor a default constructor :7
❗ Call to constructor of 'BigReal' is ambiguous :129
❗ Call to constructor of 'BigReal' is ambiguous :153
⚠ Clang-Tidy: Use range-based for loop instead :25
⚠ Empty declaration :43
⚠ Constructor 'BigReal' is never used :44
⚠ Clang-Tidy: Use range-based for loop instead :59
⚠ Empty declaration :77
⚠ Constructor 'BigReal' is never used :79
⚠ Clang-Tidy: The parameter 'bigInteger' is copied for each invocation but only used as a const reference; consider making it a const reference :79
⚠ Empty declaration :83
⚠ Constructor 'BigReal' is never used :86
⚠ Empty declaration :90
⚠ Clang-Tidy: Move constructors should be marked noexcept :93
⚠ Constructor 'BigReal' is never used :93
⚠ Empty declaration :101
⚠ Clang-Tidy: Constructing string from nullptr is undefined behaviour :105
⚠ Clang-Tidy: Use nullptr :105
⚠ Clang-Tidy: Constructing string from nullptr is undefined behaviour :106
⚠ Clang-Tidy: Use nullptr :106
⚠ Empty declaration :111
⚠ Clang-Tidy: Move assignment operators should be marked noexcept :114
⚠ Clang-Tidy: Constructing string from nullptr is undefined behaviour :116
⚠ Clang-Tidy: Use nullptr :116
⚠ Clang-Tidy: Constructing string from nullptr is undefined behaviour :117
```


Cppcheck 2.9 - Project: test123.cppcheck

File Edit View Analyze Help

Quick Filter:

File	Severity	Line	Summary	Since date	Tag
Desko...	performance		TT Function param...	dd/MM/yyyy	
Desko...	performance		TT Function param...	dd/MM/yyyy	
Desko...	performance		TT Function param...	dd/MM/yyyy	
Desko...	warning		TT Either the condi...	dd/MM/yyyy	
Desko...	warning		TT Either the condi...	dd/MM/yyyy	
Desko...	style		TT The function 'Si...	dd/MM/yyyy	
Desko...	error		TT Found a exit pat...	dd/MM/yyyy	
Desko...	performance		TT Variable 'numb...	dd/MM/yyyy	
Desko...	performance		TT Variable 'whole'...	dd/MM/yyyy	
Desko...	performance		TT Variable 'fraction'...	dd/MM/yyyy	
Desko...	style		TT Condition 'z.wh...	dd/MM/yyyy	

CWE: 758
Found a exit path from function with non-void return type that has missing return statement

```

107 fraction = other.fraction;
108 big_sign = other.big_sign;
109 return *this;
110 };
111
112 // Move Assignment
113 BigReal& BigReal::operator= (BigReal& other) {
114     if (this != &other) {
115         whole = other.whole;
116         fraction = other.fraction;
117         big_sign = other.big_sign;
118         other.whole = BigDecimalInt("0");
119         other.fraction = BigDecimalInt("0");
120         other.big_sign = '+';
121         return *this;
122     }
123 };
124
125
126 BigReal BigReal::operator+ (BigReal& z) {
127     BigReal answer;
128     if (z.big_sign == big_sign) {
129         answer.big_sign = big_sign;
130         answer.whole = whole + z.whole;
131         answer.fraction = fraction + z.fraction;
132     }
133     else {
134         if (whole > z.whole) {
135             answer.big_sign = big_sign;
136         }
137     }

```

Cppcheck 2.9 - Project: test123.cppcheck

File Edit View Analyze Help

Quick Filter:

File	Severity	Line	Summary	Since date	Tag
Desko...	warning		TT Member variabl...	dd/MM/yyyy	
Desko...	warning		TT Member variabl...	dd/MM/yyyy	
Desko...	performance		TT Variable 'name'...	dd/MM/yyyy	
Desko...	performance		TT Variable 'address'...	dd/MM/yyyy	
Desko...	performance		TT Variable 'phone'...	dd/MM/yyyy	
Desko...	style		TT Parameter 'new...	dd/MM/yyyy	
Desko...	style		TT Parameter 'new...	dd/MM/yyyy	
Desko...	style		TT Parameter 'new...	dd/MM/yyyy	

CWE: 398
When an object of a class is created, the constructors of all member variables are called consecutively in the order the variables are declared, even if you don't explicitly write them to the initialization list. You could avoid assigning 'name' a value by passing the value to the constructor in the initialization list.

```

1 #include "clientClass.h"
2
3
4 client::client()
5 {
6     name = "";
7     address = "";
8     phone = "";
9     is_saving = false;
10 }
11
12 client::client(string& newName, string& newAddress, string& newPhone)
13 : name(newName), address(newAddress), phone(newPhone) {}
14
15 void client::set_name(string& newName)
16 {
17     name = newName;
18 }
19
20 void client::set_address(string& newAddress)
21 {
22     address = newAddress;
23 }
24
25 void client::set_phone(string& newPhone)
26 {
27     phone = newPhone;
28 }
29
30 void client::set_balance(float amount) {
31     if (get_saving_flag() == true) {
32         pSavingAccount->set_balance(amount);
33     }
34 }

```

Analyze Log Warning Details

Cppcheck 2.9 - Project: test12.cppcheck

File Edit View Analyze Help

Quick Filter:

File	Severity	Line	Summary	Since date	Tag
Desko...	warning		Y1 Member variabl...	dd/MM/yyyy	
Desko...	warning		Y2 Member variabl...	dd/MM/yyyy	
Desko...	performance		Y Variable 'name' ...	dd/MM/yyyy	
Desko...	performance		V Variable 'address...	dd/MM/yyyy	
Desko...	performance		A Variable 'phone...	dd/MM/yyyy	
Desko...	style		Y Parameter 'new...	dd/MM/yyyy	
Desko...	style		Y Parameter 'new...	dd/MM/yyyy	
Desko...	style		Y Parameter 'new...	dd/MM/yyyy	

CWE: 398
Member variable 'client::is_saving' is not initialized in the constructor.

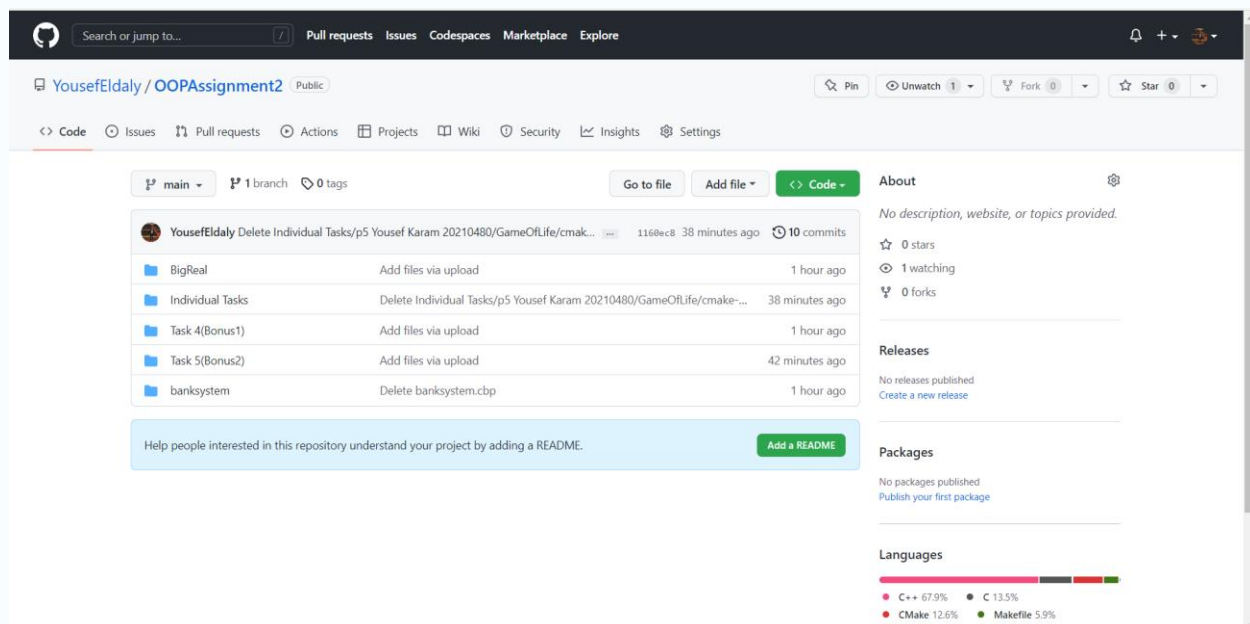
```
1 #include "clientClass.h"
2
3
4 client::client()
5 {
6     name = "";
7     address = "";
8     phone = "";
9     is_saving = false;
10 }
11
12 client::client(string& newName, string& newAddress, string& newPhone)
13 : name(newName), address(newAddress), phone(newPhone){}
14
15 void client::set_name(string& newName)
16 {
17     name = newName;
18 }
19
20 void client::set_address(string& newAddress)
21 {
22     address = newAddress;
23 }
24
25 void client::set_phone(string& newPhone)
26 {
27     phone = newPhone;
28 }
29
30 void client::set_balance(float amount){
31     if(get_saving_flag() == true){
32         pSavingAccount->set_balance(amount);
33     }
34 }
```

Analysis Log Warning Details

Task5:

We used Visual Paradigm to turn all of the classes used in the banking system into UML Diagrams and then generate the code into c++ classes and headers The program has a complicated interface when you open it for the first time but making the classes and using the tools in the program made it easy to navigate and use As a UML Design tool it was pretty easy to use and make classes with after we got the hang of it and the generated code quality was great clean readable and under stable from the UML diagram the program also made a source file with empty functions a working Bank application was made but due to the fact that it only makes header files and no actual implementation the source code from the original function had to be use

Yousef Eldaly's git profile:



Omnia's git profile:

This screenshot shows the GitHub interface for the repository 'YousefEldaly / OOPAssignment2'. The repository is public and has 1 branch (main) and 0 tags. The commit history shows 10 commits, with the latest commit being 'Delete Individual Tasks/p5 Yousef Karam 20210480/GameOfLife/cmak...' 10 minutes ago. The file list includes 'BigReal', 'Individual Tasks', 'Task 4(Bonus1)', 'Task 5(Bonus2)', and 'banksystem'. The right sidebar shows the 'About' section with no description, 0 stars, 1 watching, and 0 forks. The 'Releases' section shows no releases published. The 'Packages' section shows no packages published. A banner at the bottom encourages adding a README.

File	Action	Time
BigReal	Add files via upload	21 minutes ago
Individual Tasks	Delete Individual Tasks/p5 Yousef Karam 20210480/GameOfLife/cmak...	10 minutes ago
Task 4(Bonus1)	Add files via upload	18 minutes ago
Task 5(Bonus2)	Add files via upload	14 minutes ago
banksystem	Delete banksystem.cbp	23 minutes ago

Yousef Karams's git profile:

This screenshot shows the GitHub interface for the repository 'YousefEldaly / OOPAssignment2' from the perspective of Yousef Karams. The repository is public and has 1 branch (main) and 0 tags. The commit history shows 10 commits, with the latest commit being 'Delete Individual Tasks/p5 Yousef Karam 20210480/GameOfLife/cmak...' 38 minutes ago. The file list includes 'BigReal', 'Individual Tasks', 'Task 4(Bonus1)', 'Task 5(Bonus2)', and 'banksystem'. The right sidebar shows the 'About' section with no description, 0 stars, 1 watching, and 0 forks. The 'Releases' section shows no releases published. The 'Packages' section shows no packages published. The 'Languages' section shows a bar chart with the following data: C++ 67.9%, C 13.5%, CMake 12.6%, and Makefile 5.9%.

File	Action	Time
BigReal	Add files via upload	1 hour ago
Individual Tasks	Delete Individual Tasks/p5 Yousef Karam 20210480/GameOfLife/cmak...	38 minutes ago
Task 4(Bonus1)	Add files via upload	1 hour ago
Task 5(Bonus2)	Add files via upload	42 minutes ago
banksystem	Delete banksystem.cbp	1 hour ago

Language	Percentage
C++	67.9%
C	13.5%
CMake	12.6%
Makefile	5.9%

Github Collaborators:

The screenshot shows the GitHub repository settings for 'YousefEldaly / OOPAssignment2'. The 'Collaborators' tab is selected in the left sidebar. The main content area is divided into two sections: 'Who has access' and 'Manage access'.

Who has access:

- PUBLIC REPOSITORY:** This repository is public and visible to anyone. [Manage](#)
- DIRECT ACCESS:** 2 have access to this repository, 1 collaborator, 1 invitation.

Manage access:

[Add people](#)

<input type="checkbox"/> Select all	Type
<input type="text" value="Find a collaborator..."/>	
<input type="checkbox"/> Youssef Karam Muhammad Farag Awaiting callmejee's response	Pending Invite Remove
<input type="checkbox"/> OMNIA omniamadgyy • Collaborator	Remove

< Previous Next >

Created& submitted repository

<https://github.com/YousefEldaly/OOPAssignment2>