



CS213

Programming II

Assignment 2

Course Professor:

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Prepared by:

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Ammar Mohamed	Formatting & Operators +, -
Joseph Sameh	Comparisons <, >, ==, <<, >>
Miguel Reda	Constructors

BigReal Algorithms:

isValid:

we used regex library that checks if the the user entered a sign(+/-) and a digit (/d) and after that we checked if he entered a floating point (.) with an optional number after it (\d*)

formattedReal:

deletes the padded zeros (from left in the decimal side and from right in the fraction side) and if the number doesn't have a floating point it adds one to it so every BigReal is handled as a whole number with a floating point

Operators (+/-):

we need to make sure that both of them has same string size if not we just do zero padding and we proceed to addition

We use the usual way of addition and storing variable in one of the variables (memory optimization) and use the variables "sum" to add each digit and "carry" if the sum exceeds 9

The addition is divided into 2 conditions one with adding two same sign values

And the other handles adding different sign values so the subtraction is just a special case of addition

Comparison (</>):

Operator < Algorithm:

1. Check if the signs of the two BigReal numbers are different.
 - If true, return whether the sign of the current BigReal is less than the sign of Big_Real_2.
2. Both numbers have the same sign, so further comparison is needed.
 - If both signs are negative:
 - Compare the number of decimal digits in both numbers.
 - If the current number has more decimal digits, return true.
 - If the current number has fewer decimal digits, return false.
 - If the number of decimal digits is the same, compare the digits one by one.
 - If the current digit is greater in the current number, return true.
 - If the current digit is greater in Big_Real_2, return false.
 - If all decimal digits are equal, compare the remaining digits.
 - If the current number has more total digits, return true.
 - If the current number has fewer total digits, return false.
 - If both numbers have the same total digits, return false.
 - If both signs are positive:
 - Compare the number of decimal digits in both numbers.
 - If the current number has more decimal digits, return false.
 - If the current number has fewer decimal digits, return true.
 - If the number of decimal digits is the same, compare the digits one by one.
 - If the current digit is greater in the current number, return false.
 - If the current digit is greater in Big_Real_2, return true.
 - If all decimal digits are equal, compare the remaining digits.
 - If the current number has more total digits, return false.
 - If the current number has fewer total digits, return true.
 - If both numbers have the same total digits, return false.
3. Default case (should not be reached). Return false.

Operator > Algorithm:

1. Check if the signs of the two BigReal numbers are different.
 - If true, return whether the sign of the current BigReal is greater than the sign of Big_Real_2.
2. Both numbers have the same sign, so further comparison is needed.
 - If both signs are negative:
 - Compare the number of decimal digits in both numbers.
 - If the current number has more decimal digits, return false.
 - If the current number has fewer decimal digits, return true.
 - If the number of decimal digits is the same, compare the digits one by one.
 - If the current digit is greater in the current number, return false.
 - If the current digit is greater in Big_Real_2, return true.
 - If all decimal digits are equal, compare the remaining digits.
 - If the current number has more total digits, return false.
 - If the current number has fewer total digits, return true.
 - If both numbers have the same total digits, return false.
 - If both signs are positive:
 - Compare the number of decimal digits in both numbers.
 - If the current number has more decimal digits, return true.
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 - If the number of decimal digits is the same, compare the digits one by one.
 - If the current digit is greater in the current number, return true.
 - If the current digit is greater in Big_Real_2, return false.
 - If all decimal digits are equal, compare the remaining digits.
 - If the current number has more total digits, return true.
 - If the current number has fewer total digits, return false.
 - If both numbers have the same total digits, return false.
3. Default case (should not be reached). Return false.

GitHub Screenshots:

Miguel-Reda / OOP-Assignment2-

<> Code

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Releases

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📁 Task1 floating point to float yesterday

📁 Task3 edit Register::getData(int index) 1 hour ago

📄 A2_Task2_S9_20220099_20220216_20... add comments to my code last week

📄 A2_Task2_S9_20220099_20220216_20... add pdf last week

📄 BigReallib.cpp add comments to my code last week

📄 BigReallib.h ... last week

Help people interested in this repository understand your project by adding a README.

Add a README

add test and start_address and start_counter

👤 Joseph-Sameh-0 committed 1 hour ago

📄 f3eb01c <>

delete operation 6

👤 Joseph-Sameh-0 committed 4 hours ago

📄 167c979 <>

A little edit.

👤 Miguel-Reda committed yesterday

📄 8a4979a <>

done

👤 Miguel-Reda committed yesterday

📄 262a1c9 <>

floating point to float

👤 Miguel-Reda committed yesterday

📄 d98fc27 <>

edit

👤 Miguel-Reda committed yesterday

📄 73faf63 <>

done

👤 Miguel-Reda committed yesterday

📄 c68600e <>

int_to_bin

👤 Miguel-Reda committed yesterday

📄 e2be5b1 <>

Commits on Nov 11, 2023

Merge branch 'main' of https://github.com/Miguel-Reda/OOP-Assignment2-
👤 Miguel-Reda committed yesterday
📄 70ac199 <>

Update MLS.cpp
👤 ammarmorad24 committed yesterday
📄 50c446e <> Verified

File Edit View Repository Branch Help

Current repository
OOP-Assignment2-

Current branch
main

Fetch origin
Last fetched 4 minutes ago

Changes 3

History

No branches to compare

👤 Joseph-Sameh-0 a86869a 1 changed file +12 -6

Task3\MLS.cpp

57 57 cout << setw(2) << setfill('0') << hex << uppercase << (int)memory[i];

58 - i += 128, Address += 128;

58 + i += 64, Address += 64;

59 59 cout << "\t " << setw(2) << setfill('0') << hex << Address << "\t ";

60 + cout << setw(2) << setfill('0') << hex << uppercase << (int)memory[i];

61 + i += 64, Address += 64;

62 + cout << "\t " << setw(2) << setfill('0') << hex << Address << "\t ";

63 + cout << setw(2) << setfill('0') << hex << uppercase << (int)memory[i];

64 + i += 64, Address += 64;

65 + cout << "\t " << setw(2) << setfill('0') << hex << Address << "\t ";

60 66 cout << setw(2) << setfill('0') << hex << uppercase << (int)memory[i] << "\n";

61 - i -= 128, Address -= 127;

67 + i -= 192, Address -= 191;

62 68 }

63 69 }

64 70 }

@@ -132,8 +138,8 @@ void Machine::reset()

132 138 void Machine::show()

133 139 {

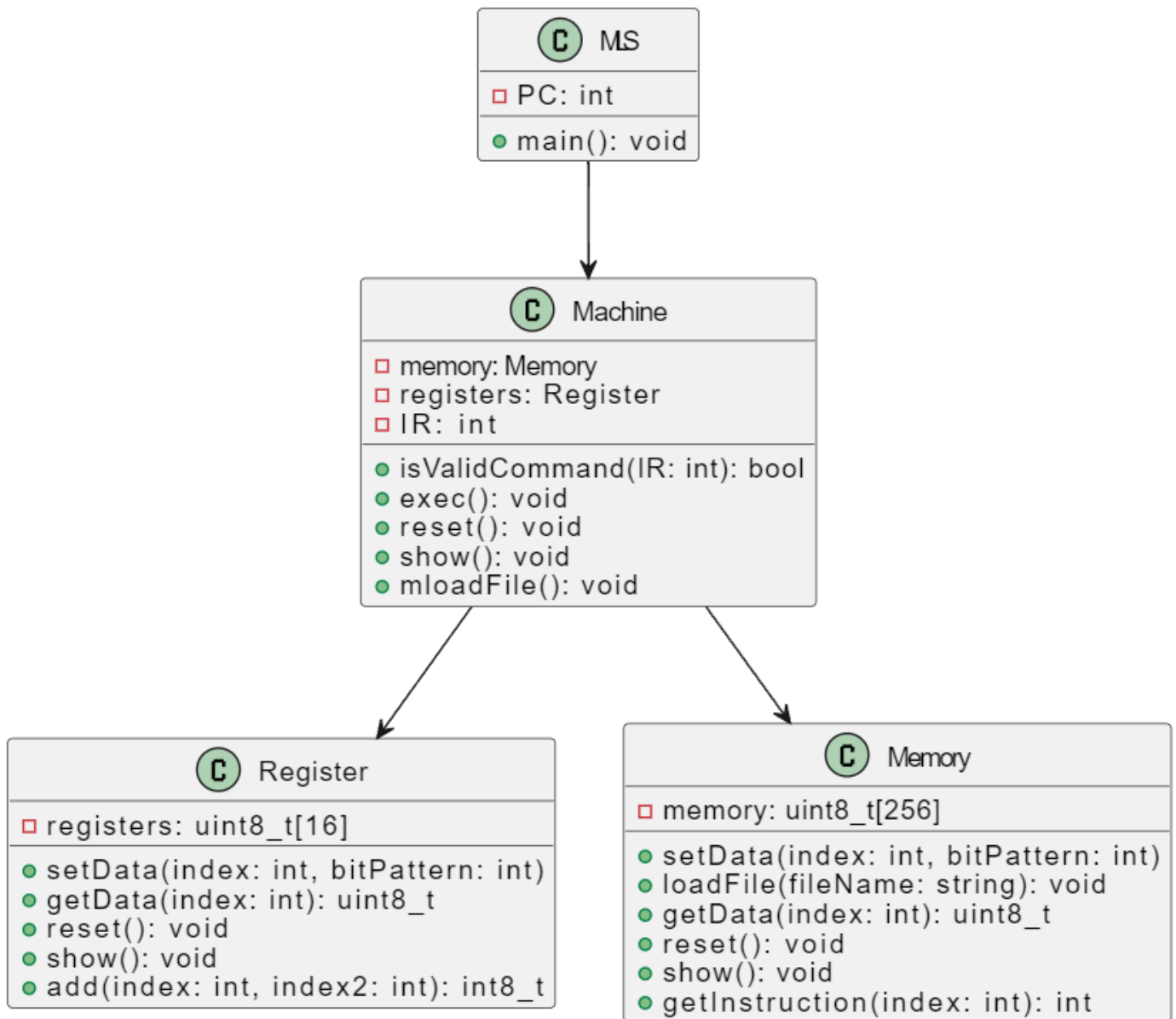
134 140 {

135 - cout << "PC: " << PC << " \n";

136 - cout << "IR: " << IR << " \n";

141 + cout << "PC: " << hex << PC << " \n";

Machine Language Simulator Diagram:



Ammar	Machine logic Operations
Joseph	Show function and testing
Miguel	Classes Design

Static Code Analysis and Code Quality Report:

In our recent coding endeavors, we integrated PVS Studio, a robust code analysis tool, into our development workflow to elevate code quality. However, the tool's analysis process yielded a surprising outcome: it detected a multitude of errors, yet none were directly associated with our codebase.

Despite our meticulous code review and adherence to coding standards, PVS Studio remained silent about our specific code. Instead, it flagged errors external to our project, creating a unique challenge in deciphering the origin and implications of these unrelated errors.

Undeterred by the absence of feedback on our code, I delved into the PVS Studio documentation to understand this unexpected behavior. Unfortunately, our exploration yielded no definitive answers, adding a layer of complexity to the troubleshooting process.

This experience has been both challenging and enlightening, underscoring the need for a nuanced understanding of code analysis tools and the importance of interpreting results in a broader context.

