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**Team-based Project: Release # 3**

1) The changes in the new release. The document needs to explain where in the code the changes have been done, and what features are turned into services:

* Before the changes, our code consists of three parts that represent the three features that our calculator can perform. The three features are standard mathematical operations (consist of 5 operations, add, subtract, multiplication, division, absolute value function), the higher mathematical operations (consist of ten operations with the result of each operation being displayed in the GUI), and the function to convert and perform arithmetic operations on Binary and Hexadecimal number (consists of ten operations). What we basically did for release #1 is change our code so that it only consists of the function to convert and perform arithmetic operations on Binary and Hexadecimal number, which is the first service. We modify the GUI so that it suits the changes in functionality, and debug to make sure the code runs correctly and efficiently. For release #2, we did the similar thing by changing our code so that it only consists of the standard mathematical operations, which is the second service. We modify the GUI so that it suits the changes in functionality, and debug to make sure the code runs correctly and efficiently. Below are explanations on what features have been made into services in the two releases.
* Release #1: The feature that has been made into a service is the feature to perform arithmetic operations on Binary and Hexadecimal numbers. The first functionality is converting a Binary number to a Decimal number. When user press the “Bin2Dec” button, this function is activated as the first input is taken as a Binary number and converted into a Decimal, and the result is shown in the result text field. The second functionality is converting a Binary number to a Hexadecimal number. Similarly, when user press the “Bin2Hex” button, this function is activated. The first input is then taken as a Binary number and converted into a Hexadecimal, and the result is shown in the result text field. The third functionality is converting a Decimal number to a Binary number. When user press the “Dec2Bin” button, this function is activated. The first input is then taken as a Decimal number and converted into a Binary number, and the result is shown in the result text field. The fourth functionality is converting a Decimal number to a Hexadecimal number. When user press the “Dec2Hex” button, this function is activated. The first input is then taken as a Decimal number and converted into a Hexadecimal number, and the result is shown in the result text field. The fifth functionality is converting a Hexadecimal number to a Binary number. When user press the “Hex2Bin” button, this function is activated. The first input is then taken as a Hexadecimal number, converted into a Decimal number, and then finally converted into a Binary number, and the result is shown in the result text field. The sixth functionality is converting a Binary number to a Hexadecimal number. When user press the “Bin2Hex” button, this function is activated. The first input is then taken as a Binary number, converted into a Decimal number, and then finally converted into a Hexadecimal number, and the result is shown in the result text field. The seventh functionality is performing addition on two Binary numbers. When user press the “Bin Addition” button, this function is activated. The first input and second input are then taken as Binary values, converted into Decimal numbers, added together, and then finally converted into Binary numbers. The result is then shown in the result text field. The eighth functionality is performing subtraction on two Binary numbers. When user press the “Bin Subtraction” button, this function is activated. The first input and second input are then taken as Binary values, converted into Decimal numbers, then the first input is subtracted by the second input, and finally they are converted back into Binary numbers. The result is then shown in the result text field. The ninth functionality is performing addition on two Hexadecimal numbers. When user press the “Hex Addition” button, this function is activated. The first input and second input are then taken as Hexadecimal values, converted into Decimal numbers, added together, and then finally converted back into Hexadecimal numbers. The result is then shown in the result text field. The tenth functionality is performing subtraction on two Hexadecimal numbers. When user press the “Hex Subtraction” button, this function is activated. The first input and second input are then taken as Hexadecimal values, converted into Decimal numbers, then the first input is subtracted by the second input, and finally they are converted back into Hexadecimal numbers. The result is then shown in the result text field.
* Release #2: The feature that has been made into a service is the feature to perform five standard mathematical operations. The first is an addition function where the first input and second input are taken as “X” and “Y” values. They are then added together and then result of the addition is shown in the GUI. The second is a subtraction function where the first input and second input are taken as “X” and “Y” values. "X” is then subtracted by “Y” and then result of the subtraction is shown in the GUI. The third is a multiplication function where the first input and second input are taken as “X” and “Y” values. They are then multiplied together and then result of the multiplication is shown in the GUI. The second is a division function where the first input and second input are taken as “X” and “Y” values. "X” is then divided by “Y” and then result of the division is shown in the GUI. The fifth is an absolute value function where the first input is taken as the “X” value. The unsigned or positive value of "X” is then taken and the result is shown in the GUI.

2) The GitHub link of the project:

* <https://github.com/SoftEng-2-aramin/soft2project>

3) Contribution of each teammate. Who implemented what part?

All 3 of us discussed which functionality to refactor. Alex (username: whitelunick) did the GUI refactorization, Vu (username: vupham272) and Faus (username: fauspa, fpalting) refactored parts of the code.