CHIANG MAI UNIVERSITY
Bachelor of Science (Software Engineering)
College of Arts, Media and Technology
1st Semester / Academic Year 2019
SE 103 PROGRAMMING LOGICAL THINKING

Lab Assignment 05 : Data Type and If-Statement

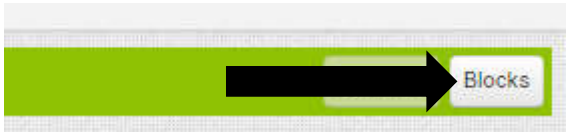
Name ..... Student ID ..... Section.....

Objectives:

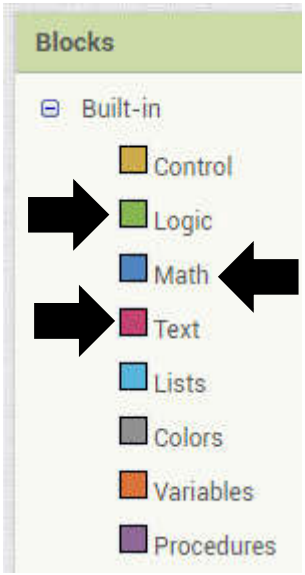
1) The student can use the data type and its operation.
2) The student can if-statement in AppInventor.

Data Type

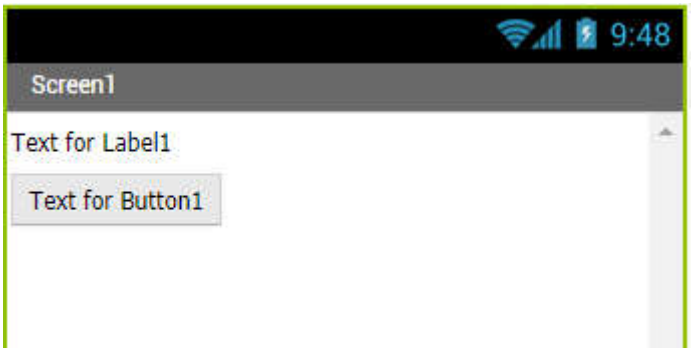
In AppInventer, there are 3 data types which are Math, Text and Logic. The Math combines the decimal number and the integer number together. The Text are string and the Logic are true and false. You can access the value in the Blocks View.



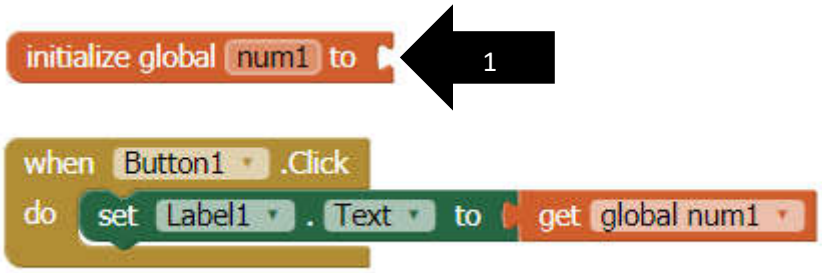
The " **value** " (not the variable) are listed as follows.



1. You have to create the screen as follows including 1 label and 1 button.

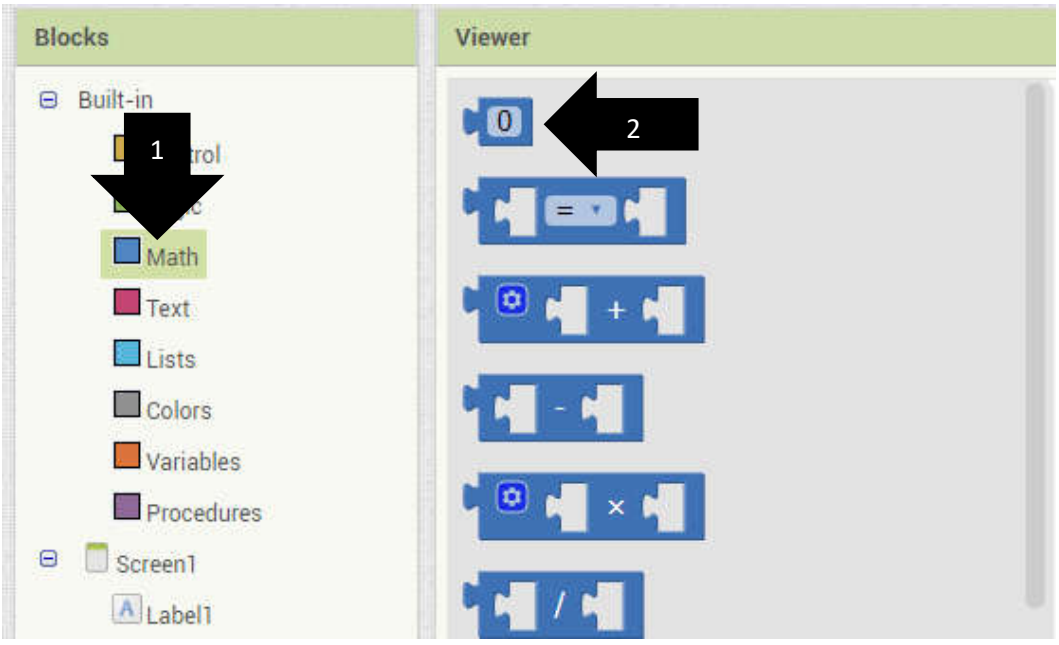


2. Create the blocks as follows.

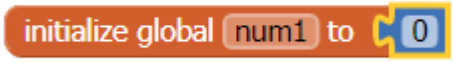


Remark: Look at the black arrow (1). The block is empty.

3. Go to "Built-in" (1) and drag the single math value (2) to the block view.

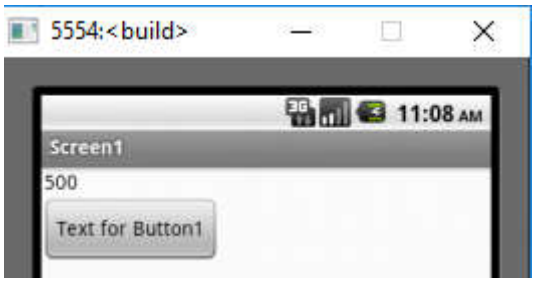


Attach the single value to the initialization of num1.



4. Assign the value 500 to replace the value 0.

5. Execute the program. The result of the program should be like the following.



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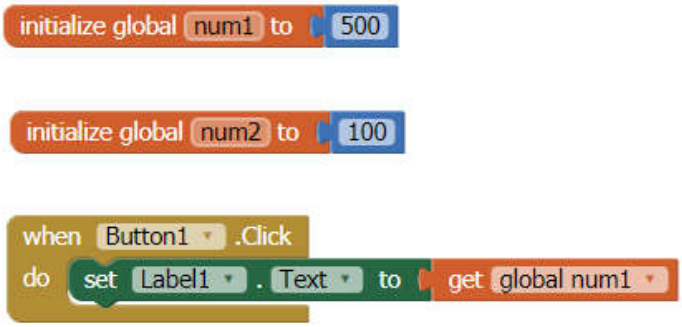
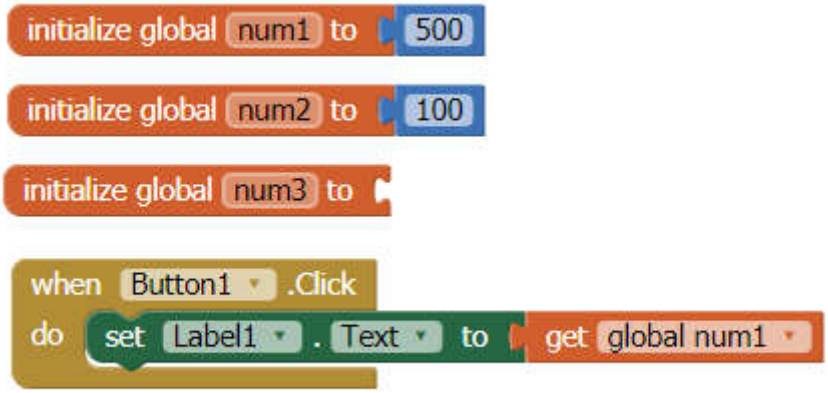
Arithmetic Expression

In this tutorial, you will learn how to use the arithmetic expression to calculate the value.

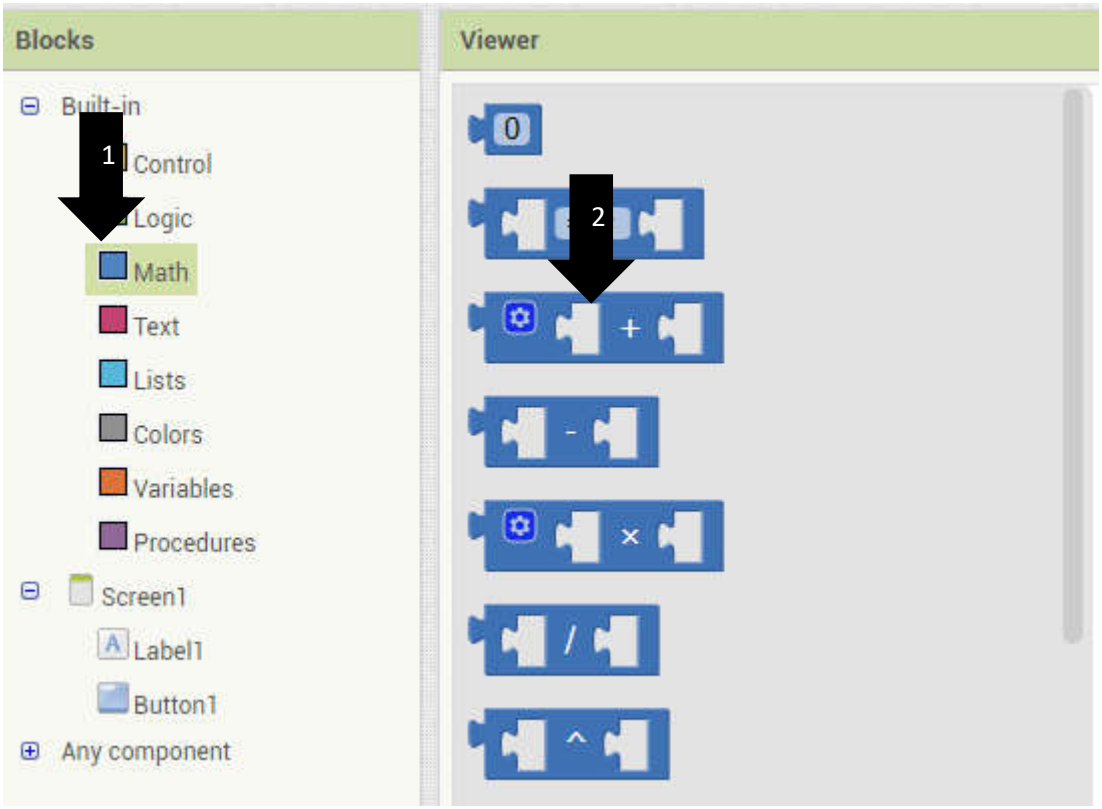
1. Use the interface from the previous tutorial and create the block as follows



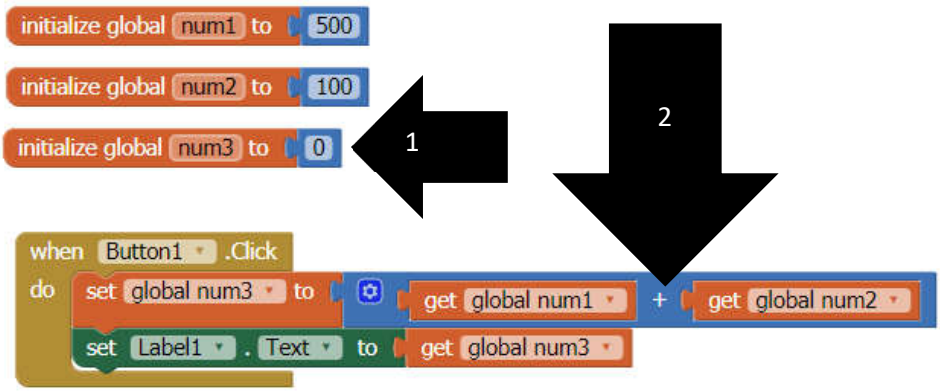
2. Create a new variable named num3.



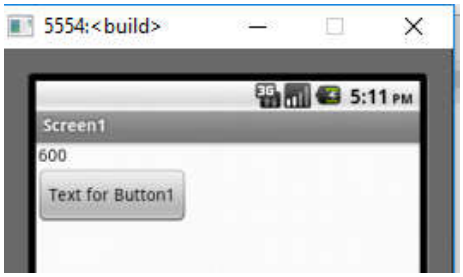
3. Go to "Built-in" menu and click at "Math" (1). Drag the addition operation (2) from the panel. The addition is one the allowable operation. There are many operations that you can use.



4. Assign the initial value of num3 to be 0 (1). Then, perform the addition on num1 and num2 and assign the result to num3 (2).



5. The result is follows.



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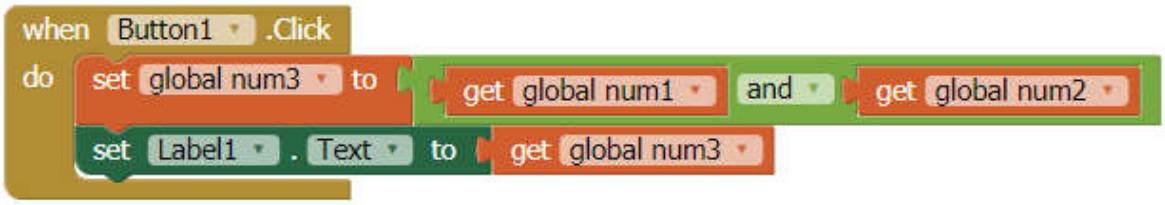
Boolean Expression

Repeat the same step. This time use the Boolean value and its operations.

1. Use the interface from the previous tutorial and create the variable declaration as follows. The Boolean value can be get from "Built-in" menu and click at "Logic". Notice the differences in color.

2. Create the blocks as follows. This set of block will perform the "and" operation on num1 and num2 and assign the result value to num3.



3. Display the result to the TA.

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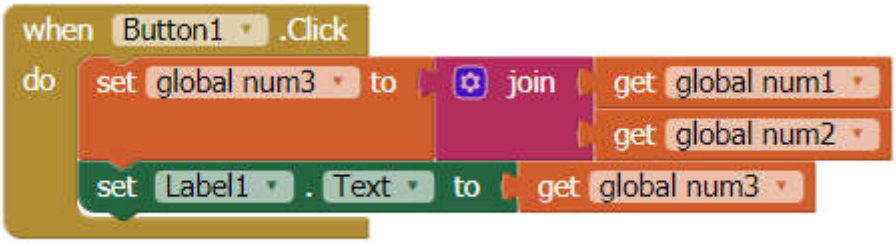
String Expression

Repeat the same step. This time use the String and its operations.

1. Use the interface from the previous tutorial and create the variable declaration as follows. The String value can be get from "Built-in" menu and click at "Text". Notice the different in color.

2. Create the blocks as follows. This set of block will perform the "Join" operation on num1 and num2 and assign the result value to num3. This operation will connect one string with other string.



3. Display the result to the TA.

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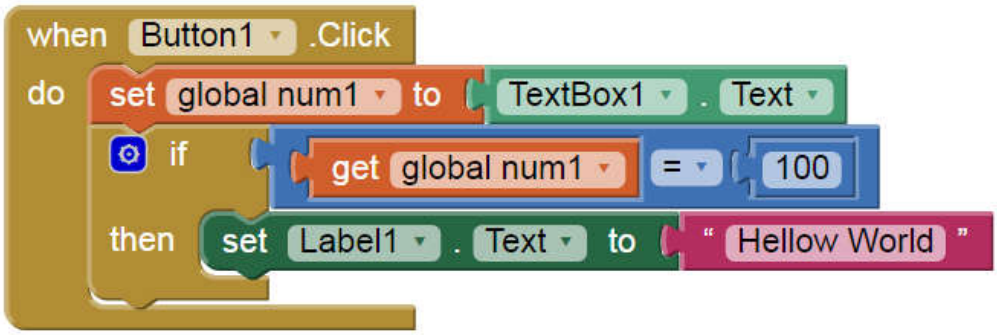
If-then statement

1. In your interface design, you need to drag 1 button, 1 label and 1 text box.

2. Go to your block view. Drag the if-then block from the Built-in > Control into the block design view.

3. Firstly, you need to create the global variable num1 and initialize value to 100. On the button click event, you need to set the value of the num1 to textbox1's. If the value of the textbox1 is 100, the label1 will show "Hellow World"



4. Complete the following table

Input in textbox1	Text in label1
50	
150	
100	

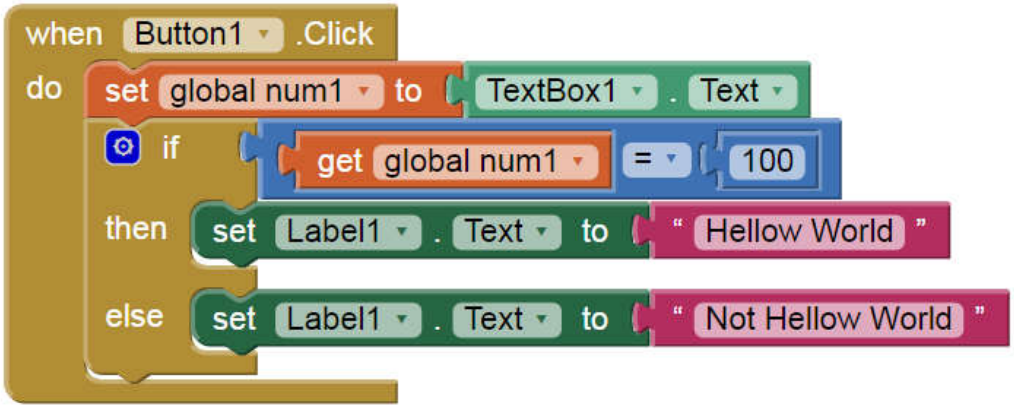
Remark: You need to click the button every time you input a new value.

If-then-else statement

Create the same interface as **If-then statement** tutorial.

1. Go to your block view. Drag the if-then block from the Built-in > Control into the block design view.

2. On the button click event, you need to set the value of the num1 to textbox1's. If the value of the textbox1 is 100, the label1 will show "Hellow World". Otherwise, the label1 will show "Not Hellow World"



3. Complete the following table

Input in textbox1	Text in label1
50	
150	
100	

Remark: You need to click the button every time you input a new value.

Problem Set

1. Create a program to read 2 numbers from user (you must have 2 textboxes). When user clicks the button, the program displays the summation of the 2 inputs in a label.

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2. **From the problem 1**, add a new button. When user clicks the button, the program displays the difference of the 2 inputs on the label.

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3. **From the problem 2**, add a new button. When user clicks the button, the program displays the multiplication of the 2 inputs on the label.

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4. **From the problem 3**, add a new button. When user clicks the button, the program displays the division of the 2 inputs on the label.

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5. Create a new program with a label, a button and 2 textboxes: 1) first name and 2) last name. When user clicks the button, the program displays the "Sawasdee [First name] [Last name]".

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6. Given the following statement

   If the score is greater than 50
   Say "You have passed !!!!!!!"
   Else
   Say "You have failed !!!!!!!!"

   Create the program to read a score from user and display the result on the screen.

   Hints: You need to design how to input and how to display the result. Moreover, you need to define how to store the value and the calculation.

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7. Based on the problem 5, you have to add the following features.
   - ☐ In the TRUE action block, the program displays "Congratulation!!" after the message "You have passed !!!!".
   - ☐ In the FALSE action block, the program display "Sorry, you have to take this course again!!" after the message "You have failed !!!!".
   - ☐ After the IF command block is complete, you have to instruct the program display "Thank you".

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8. Create a program to receive a whole number from user and determine if it is an odd number or even number. **Hint:** Remainder

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9. From the problem 8, adjust the program to receive only the number 0 to 100. If other number is inputted, inform the user "**Incorrect input**" and do nothing. Therefore, **BOTH** range of number **AND** number value have to be **TRUE**. If the correct number is included, make the program do as the problem 3.2.

   Note that the nested structure is **NOT** allowed.

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10. Develop a program to calculate the grade from student's score. The grade criteria are as follows:

Lower bound	Upper bound	Grade
80	100	A
70	79	B
60	69	C
50	59	D
0	49	F

    Note that the nested structure is **NOT** allowed.

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11. Develop a program to calculate the income tax based on the following criteria.
    1) For the first 50,000 baht, the tax is 5%.
    2) For the **next** 50,000 baht, the tax is 6%.
    3) For the **next** 100,000 baht, the tax is 7%.
    4) For the **next** 100,000 baht, the tax is 8%.
    5) Then, the remaining tax is 10%

    Test case:

Income	25000	75000	150000	250000	350000
Tax	1250	4000	9000	16500	25500

    Note that the nested structure is **NOT** allowed.

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