Course Name: Computer Engineering workshop (CEN 1006)		
LAB # 12: Introduction to Basic Circuit Designing		
Department	**Registration Number/Name**	**Semester/Section**
BS CEN	F24604018/Muhammad Hamzah Iqbal	1
Date	**Instructor's Name**	**Instructor's Signature**
24/12/2024	Maj Sheryar /Iqra Ashraf	

Objective:

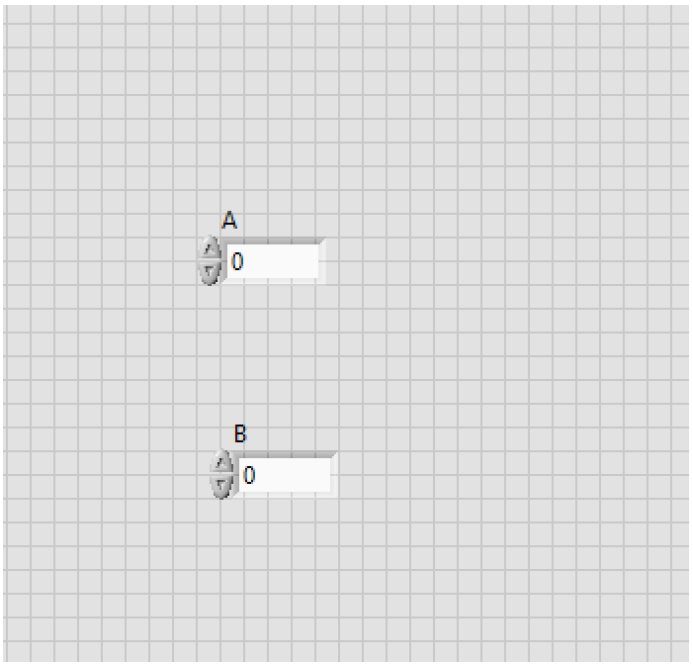
- To get familiar with data types in LabVIEW.

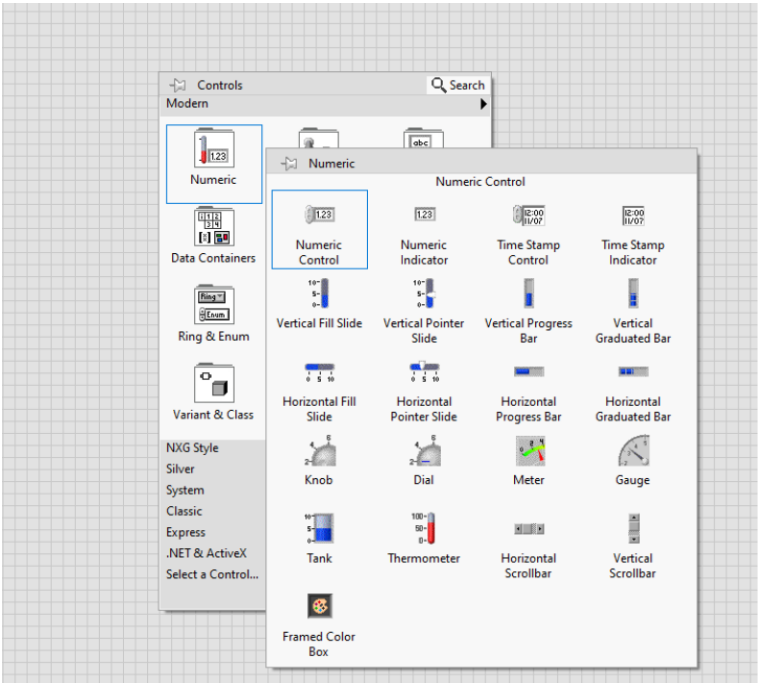
Lab Tasks:

Task 1:

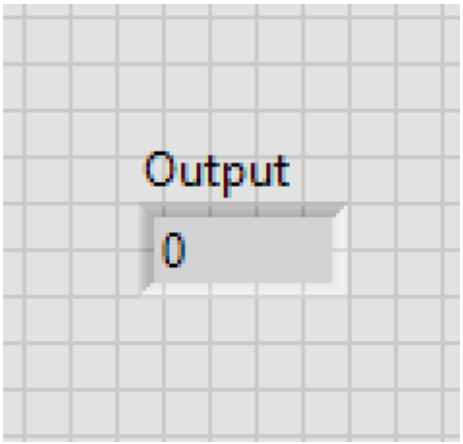
- Create a VI that compares two numbers and shows greater one at the output.

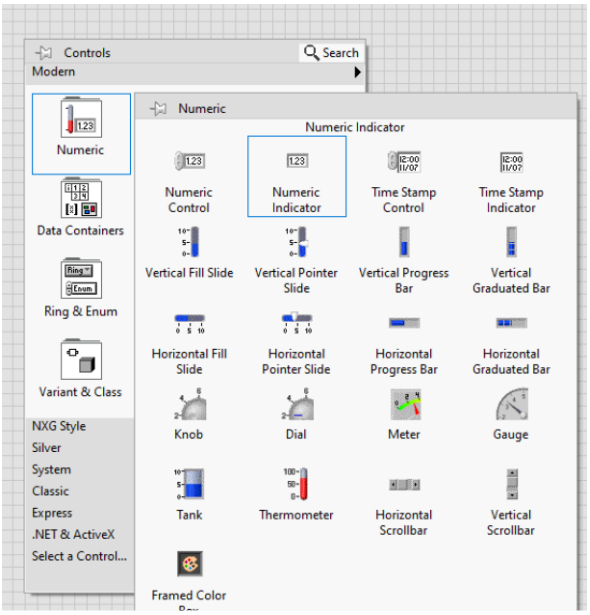
Step 1: We add two numeric control for input on the front panel.



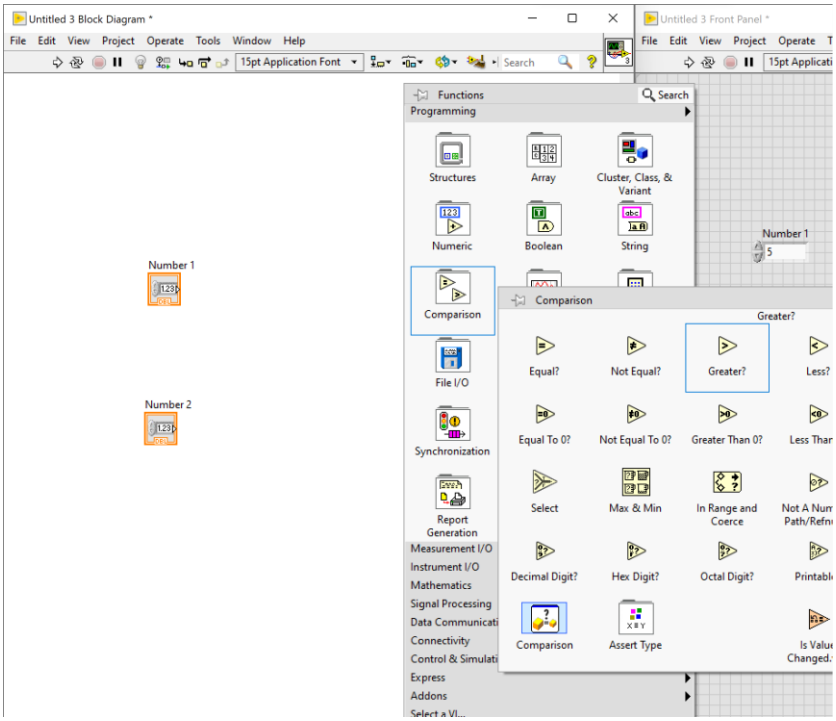


Step 2: Then we make a numeric indicator in the front panel which is to display the output of the larger number

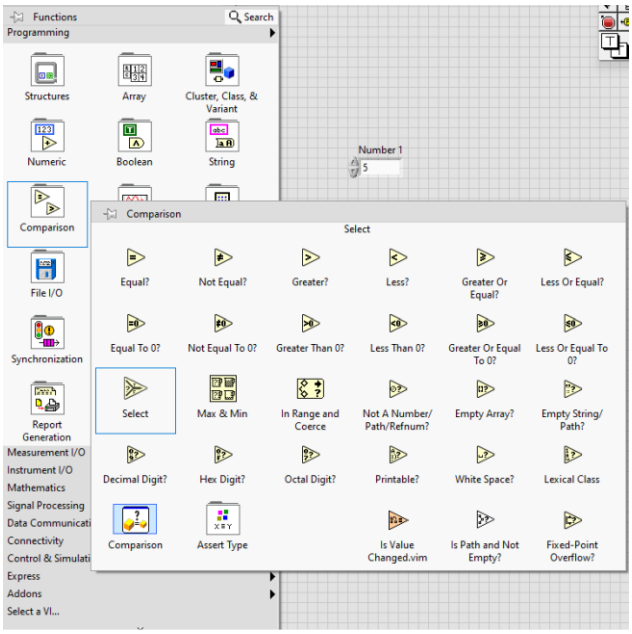


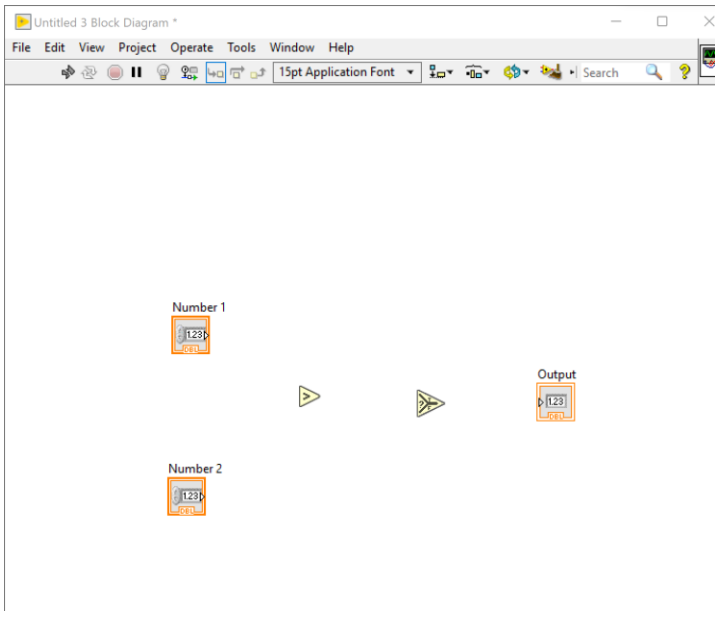


Step 3: Next, go to the Block Diagram, right-click to open the Functions Palette, navigate to the **Programming** section, then go to **Comparison**, and place the **Greater?** function on the Block Diagram

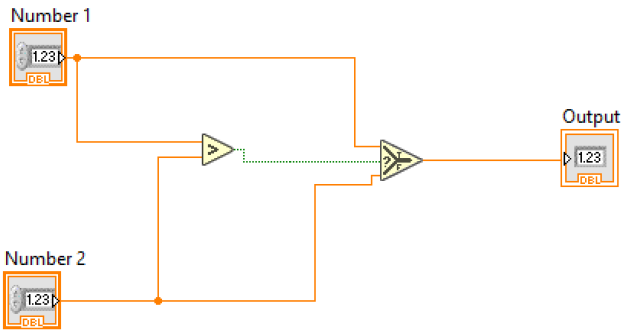


In this step, also bring the **Select** function from the **Comparison** section and use it to determine which value to display as the output. We place it after the Greater? Function.

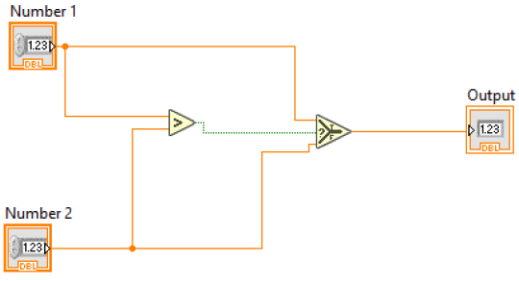


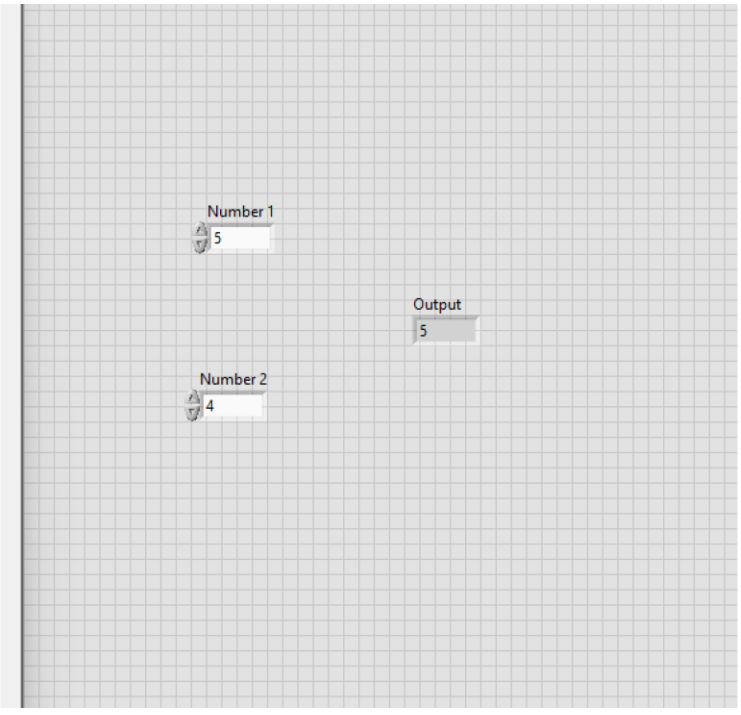


Step 4: Then we connect the wires to the two functions as shown in the block diagram window.



Step 5: Now we check the Output by entering the two numbers in the front panel and pressing Ctrl r and observe the output.

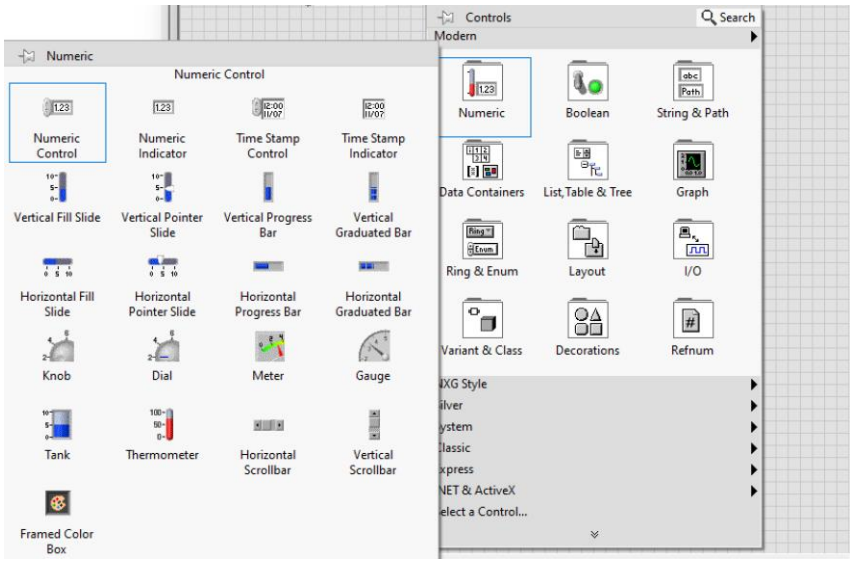


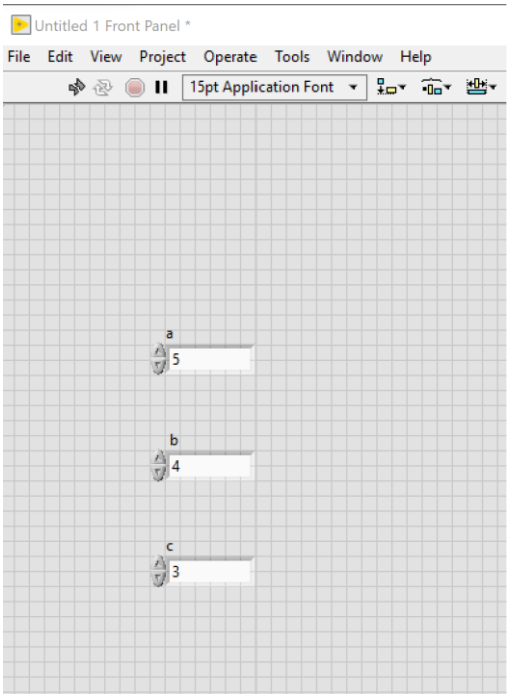


Task 2:

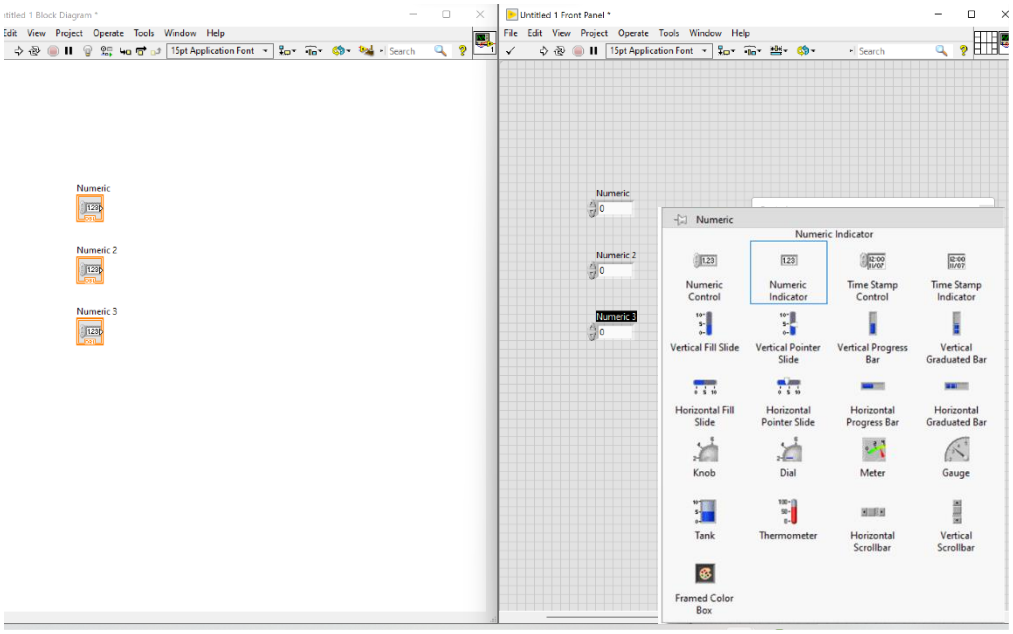
- Create a VI for calculating roots of quadratic equation.

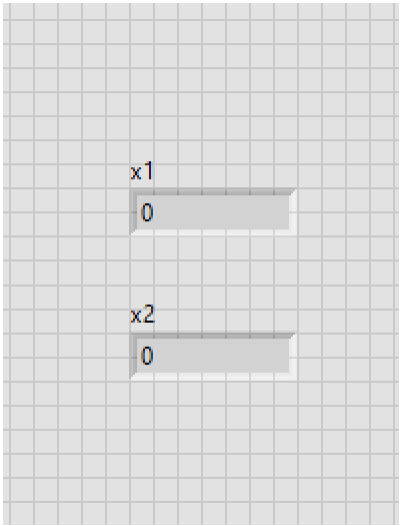
1. First we use Numeric Control to place 3 input variables in front panel.



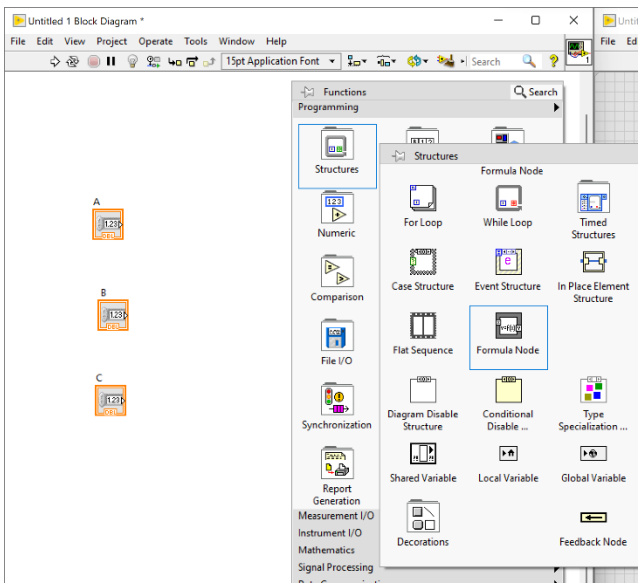


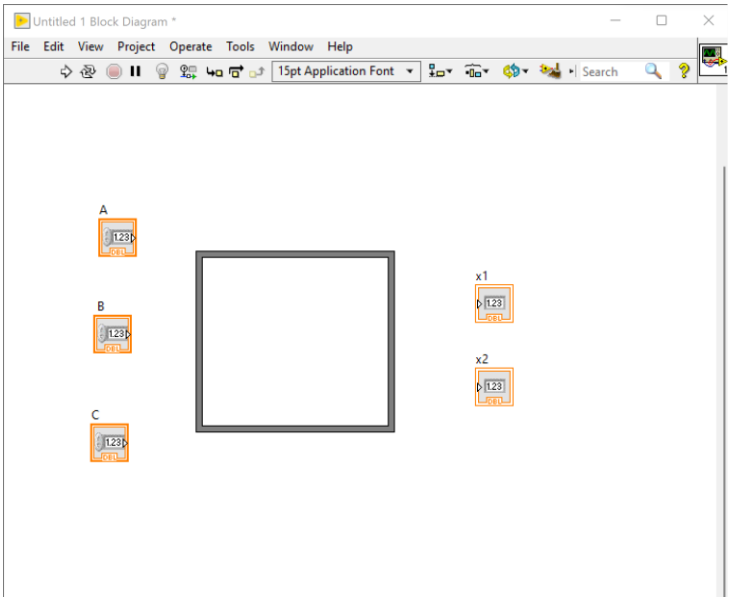
2. Then we make 2 output variables using Numeric Indicator



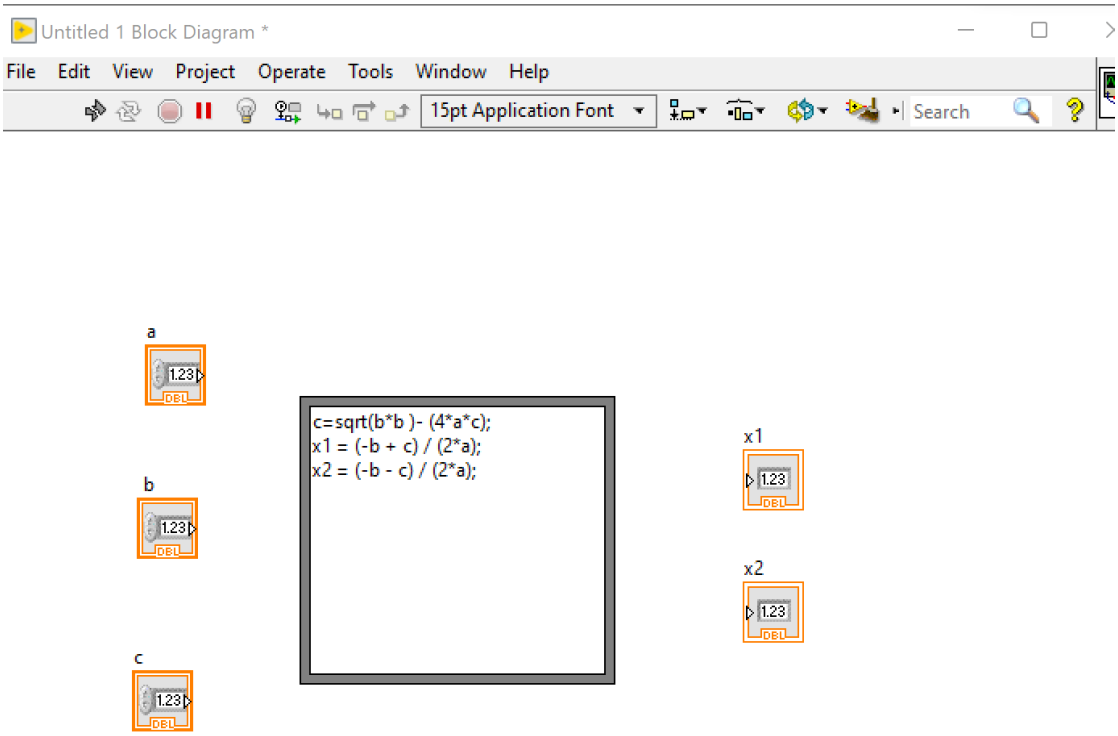


3. Then we switch to block diagram and make a formula node in structure options



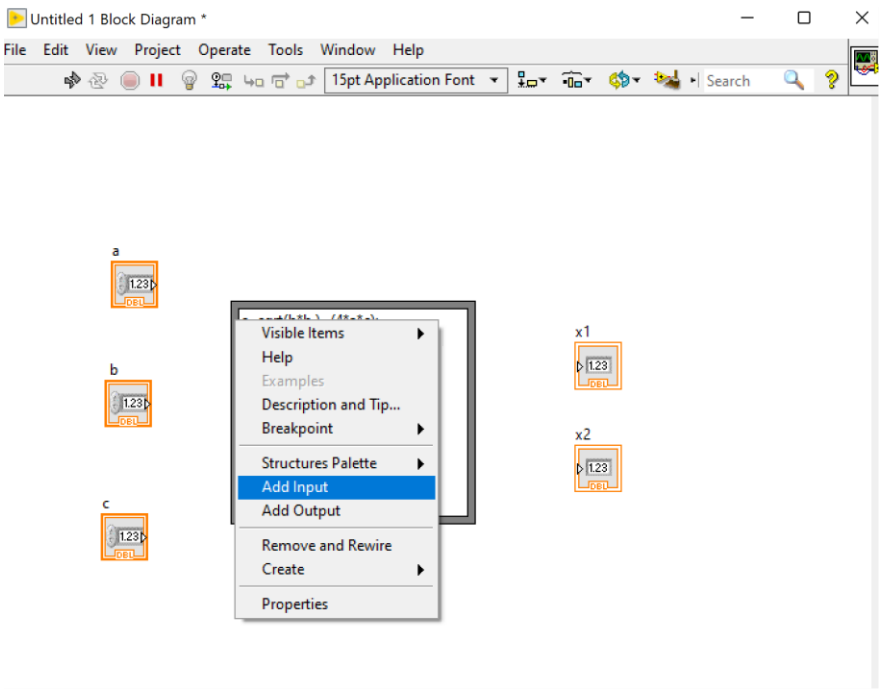


4. We fill the formula node with the formula of Quadratic roots,in the first step we calculate the square root then we use the two different formula to calculate the two roots x1,x2.

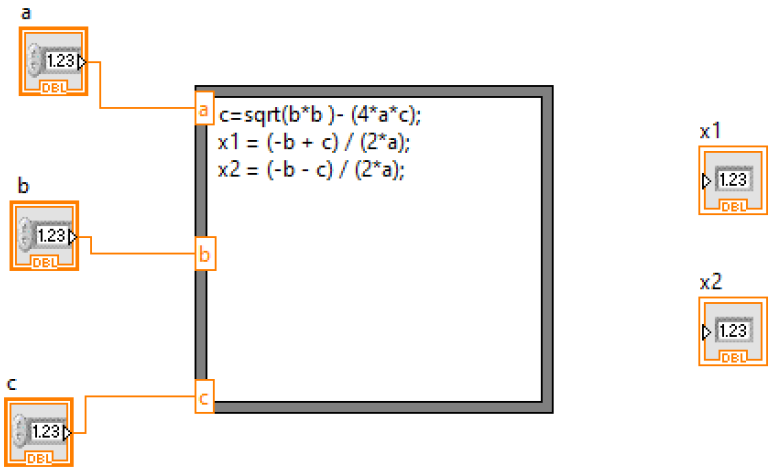


5. **Next, right-click on the edge of the Formula Node to add input terminals for each variable, then connect the corresponding controls to their respective terminals**

i)

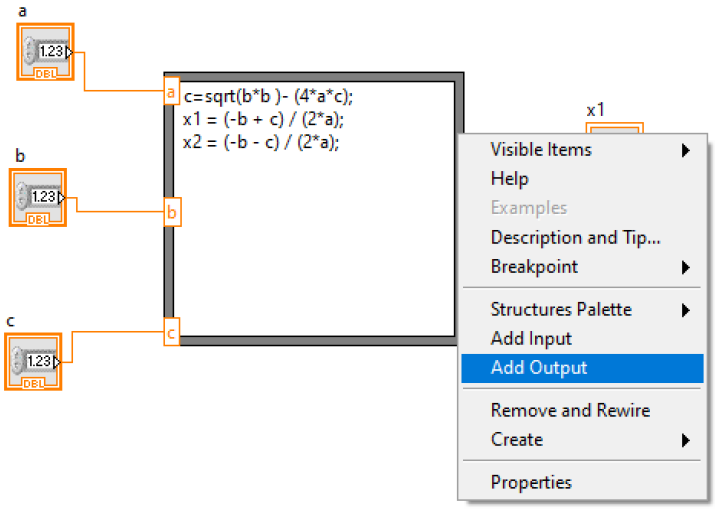


ii)

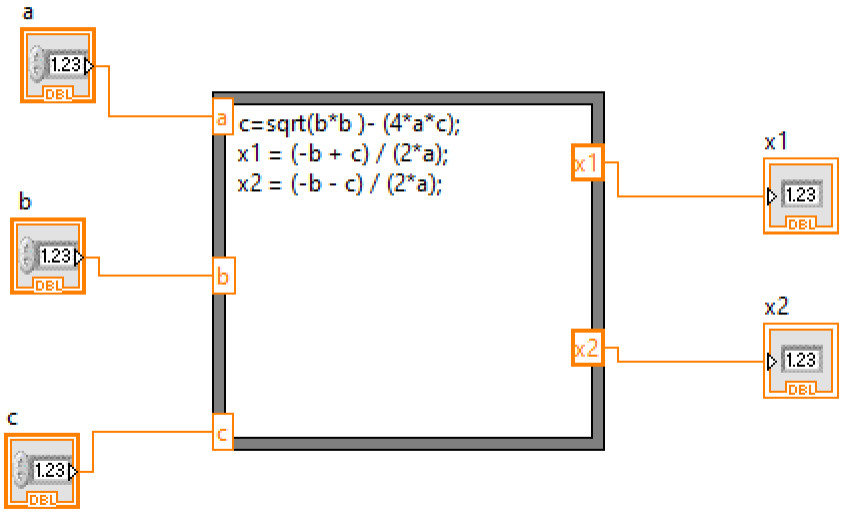


6. Then, right-click on the edge of the Formula Node again, this time to add output terminals, and connect each terminal to its corresponding indicator.

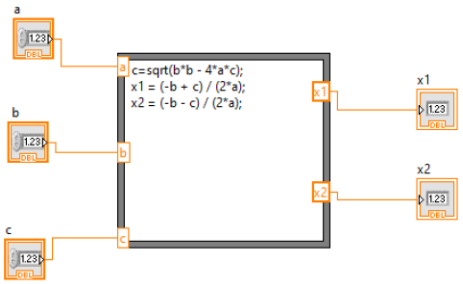
i)

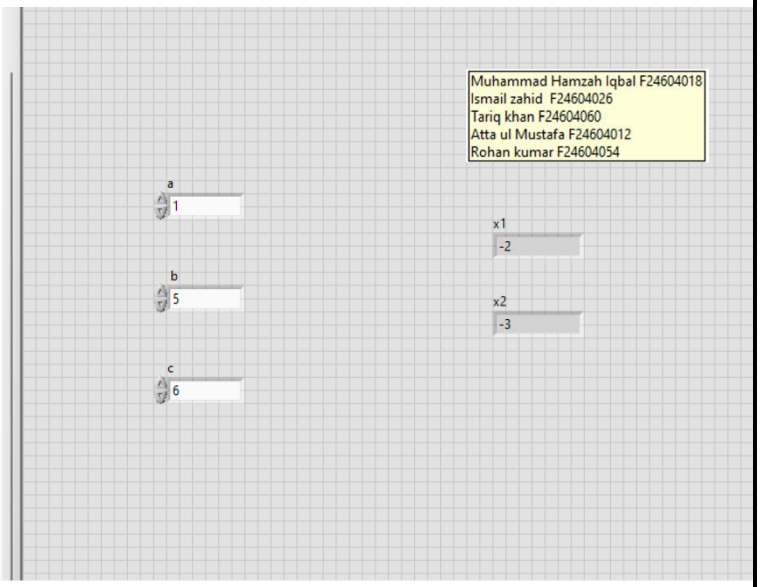


ii)



7. Finally, enter the values for a, b, and c, then press Ctrl+R to run the program and verify the outputs for x1 and x2.





Conclusion:

By completing these tasks, we successfully developed two functional VIs in LabVIEW. The first VI compares two numbers and accurately displays the greater value as the output, demonstrating the use of comparison and decision-making functions. The second VI calculates the roots of a quadratic equation, showcasing the ability to implement mathematical operations and logical flow within LabVIEW. These exercises reinforced core programming concepts in LabVIEW, such as using controls, indicators, and formula nodes, while improving our understanding of creating interactive and functional applications.