



## **Certified LabVIEW Developer Recertification Exam**

### **Test Booklet**

**Note: The use of the computer or any reference materials is NOT allowed during the exam.**

#### **Instructions:**

If you did not receive this exam in a sealed envelope stamped "NI Certification," **DO NOT ACCEPT** this exam. Return it to the proctor immediately. You will be provided with a replacement exam.

- Please do not ask the proctor for help. If you believe the intent of a question is not clear, you may note that question, and your reasons for choosing the answer you believe best fits the question.
- This examination may not be taken from the examination area or reproduced in any way. You may not keep any portion of this exam after you have completed it.

#### **Exam Details:**

- Time allocated: 1 hour
- Type of exam items: Multiple choice
- Number of exam items: 40 questions
- Passing Grade: 70%

**IMPORTANT:** When you have completed this exam, place it in the provided envelope with your answer sheet and SEAL the envelope. Give the sealed envelope to your proctor.

**Answer Sheet:**

To quickly check your answers against the solutions on the Solutions Page, record your answers on this Answers Sheet. Detach this page and record your answers as you go along. This page is not included in the actual CLD-R exam; it is included here for practice purposes only. The Solutions Page is at the end of the Sample Exam.

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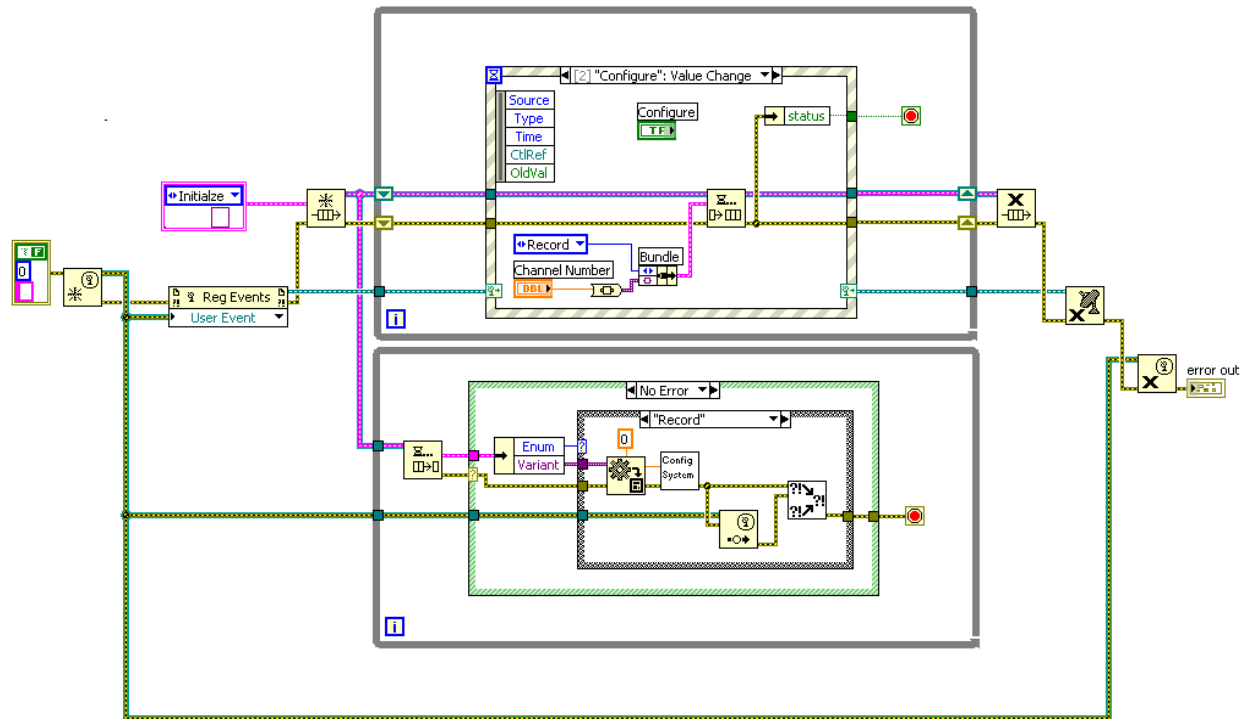
**Sample Exam Items:**





1. Consider the following scenario: You must create a control system where a PID calculation determines the value of an analog output based upon an analog input and a double-precision setpoint. Which of the following is the most appropriate mechanism to transfer the setpoint from your user interface loop to your control loop?
  - a. A queue with a data type of analog waveform.
  - b. A functional global variable with logic to hold the maximum.
  - c. A global variable
  - d. A queue with a data type of double.
  
2. Consider the following scenario: You have multiple acquisition loops which all increment a shared counter. Which of the following is the most appropriate mechanism to share the counter between the loops?
  - a. A queue with a 32-bit integer data type.
  - b. A functional global with operations to get the current value of the counter and set a new value for the counter.
  - c. A global variable
  - d. A functional global variable with operations to get the current value of the counter and increment the value of the counter.
  
3. Consider the following scenario:

You must create an application which queries a database for configuration settings and transmits them to a remote device upon a request from the remote device. For each request the remote device sends a profile name and the database replies with a matching set of configuration settings. The database query may take time to execute so you have placed it in a separate loop from the code which communicates with the remote device. Which of the following is the most important consideration when transferring a request for new configuration settings between the loops?

  - a. The data transfer must be lossless and must include information on the time between updates.
  - b. The data transfer must have low latency between the loops and always transmit the most recent value.
  - c. The data transfer must be lossless and must have a low latency between the loops.
  - d. The data transfer must have low latency between the loops and must latch the most recent value so that it cannot be overwritten by other loops.
  
4. You have a VI called "General Error Handler.vi" which has the potential of causing a cross-linking issue. Which of the following actions will not help resolve the issue?
  - a. Include the VI in a project (.lvproj).
  - b. Include in a project library (.lvlib).
  - c. Rename the VI to include a distinct prefix.
  - d. Include the VI in a LabVIEW class (.lvclass).

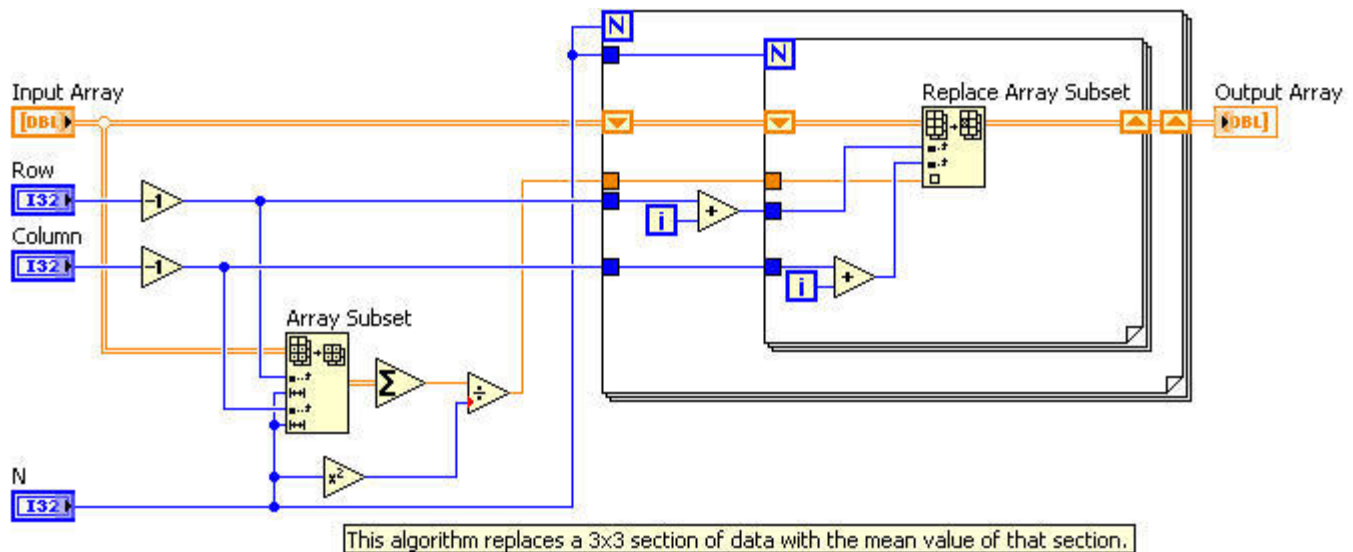
5. Which VI is responsible for passing data from the bottom loop to the top loop in the block diagram shown below?



- Dequeue Element
- a. 
- Generate User Event
- b. 
- Merge Errors.vi
- c. 
- Variant To Data
- d. 

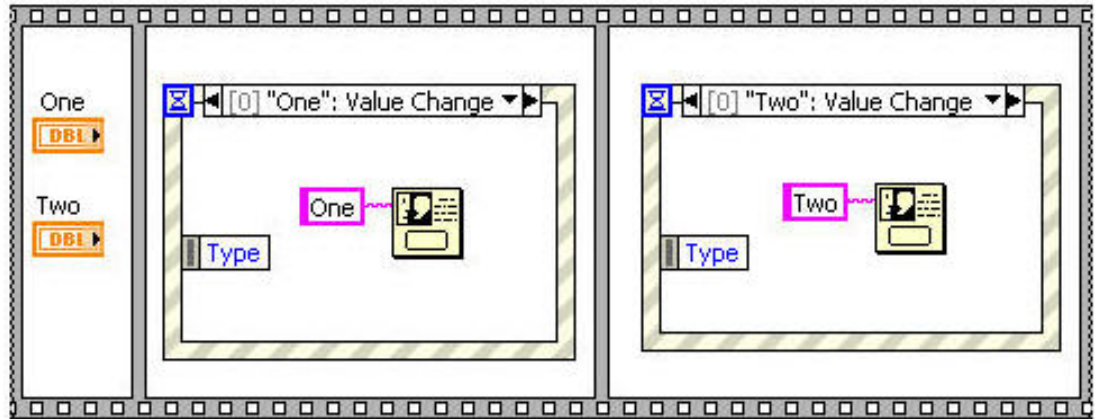
6. Which of the following statements about events is true?
- The timeout event causes an event to fire every x ms where x is the value wired to the timeout terminal.
  - When you press and release a button with a mechanical action of Latch When Released it creates two value change events.
  - Setting the "lock front panel until the event case for this event completes" option on an event will ignore any events that occur during the processing of that event.
  - When processing a filter event, wiring a corresponding terminal from the Event Data Node to the Event Filter Node has the same effect as leaving the Event Filter Node unwired.

7. Your application has a performance requirement to complete certain operations within a specified time period. After testing your implementation, you determine that one of the operations intermittently fails to meet its performance requirement. Using the Profile Performance and Memory tool, you identify a single subVI as the main performance bottleneck. The block diagram of the subVI is shown below. The VI is currently set at the "Normal" priority level. Which of the following techniques would be most effective in decreasing the subVI's execution time?



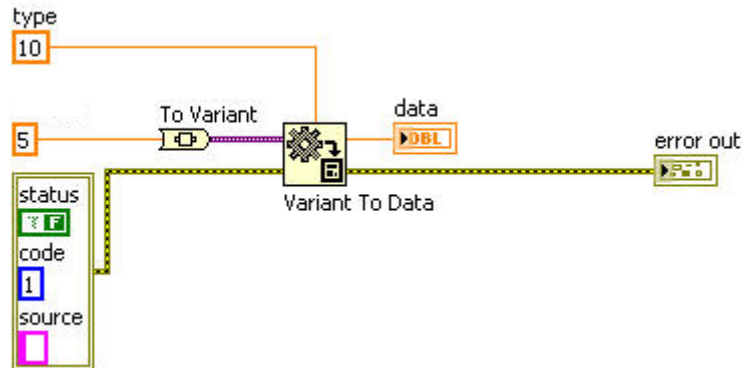
- Place a To Double Precision Float function after the Square function to eliminate the coercion dot
- Use an In Place Element Structure to replace the Array Subset and Replace Array Subset functions
- Set the subVI's Priority property to "subroutine"
- Replace the mean calculation with the built-in Mean.vi from the Probability & Statistics palette

8. The following block diagram, both the Event structures are configured to Not lock the front panel until the event case completes. What will be the VI's response if the two control values are changed?



- a. Since there is no While loop, the VI does not wait for any event and finishes execution. No dialogs are displayed
  - b. The VI front panel stops responding if Two's value is changed before One's value is changed
  - c. The VI runs as expected if Two's value is changed before One's value is changed
  - d. The VI's front panel stops responding when any of the control value is changed
9. Which of the following functions or structures executes normally when you pass an error cluster with a True value for the status element to the "error in" terminal of the structure or function?
- a. Timed loop
  - b. Write to Text File
  - c. Call Library Function
  - d. Close File

10. What is the value in the **data** indicator after executing the following code?

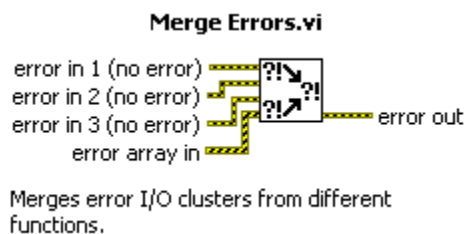


- a. 5
- b. 10
- c. 0
- d. NaN

11. Which of the following is a valid custom error code range?

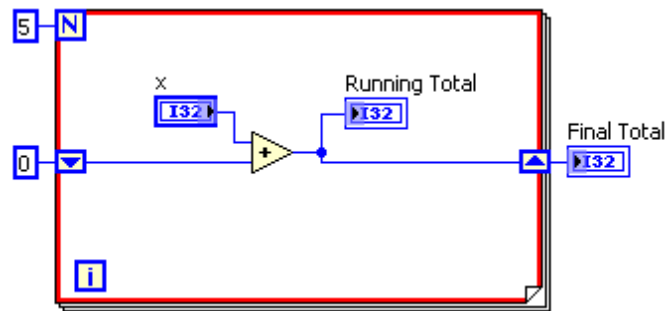
- a. 3500 to 6000
- b. -8999 to 3000
- c. 5000 to 9999
- d. -9999 to 9999

12. Which of the following is true in case of Merge Errors VI?



- a. If more than one input has errors, the input with the most severe error (decided based on error code number), is passed as the output of this VI.
- b. If more than one input has errors, the first input (Top-down) which has error, is passed as the output and other inputs are ignored.
- c. If the inputs have a mixture of errors and warnings, the first input (Top-down) which has error/warning is passed as output.
- d. If the inputs have warnings only, it ignores the warnings and does the job of 'Clear Errors.vi'.

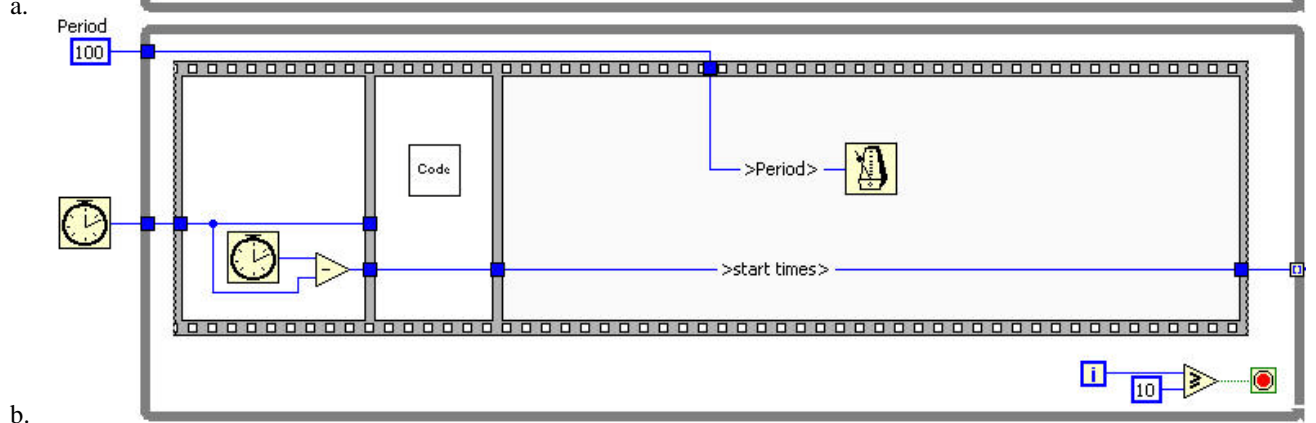
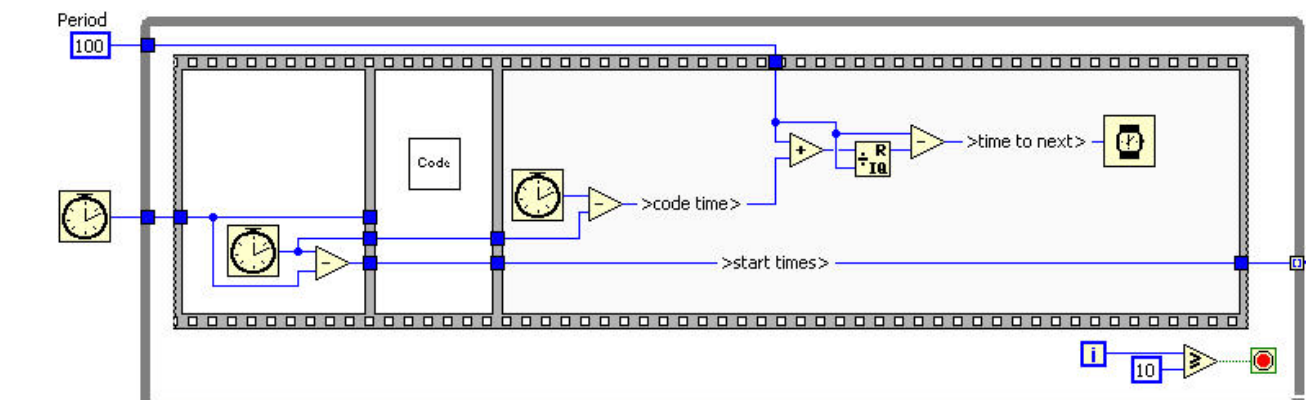
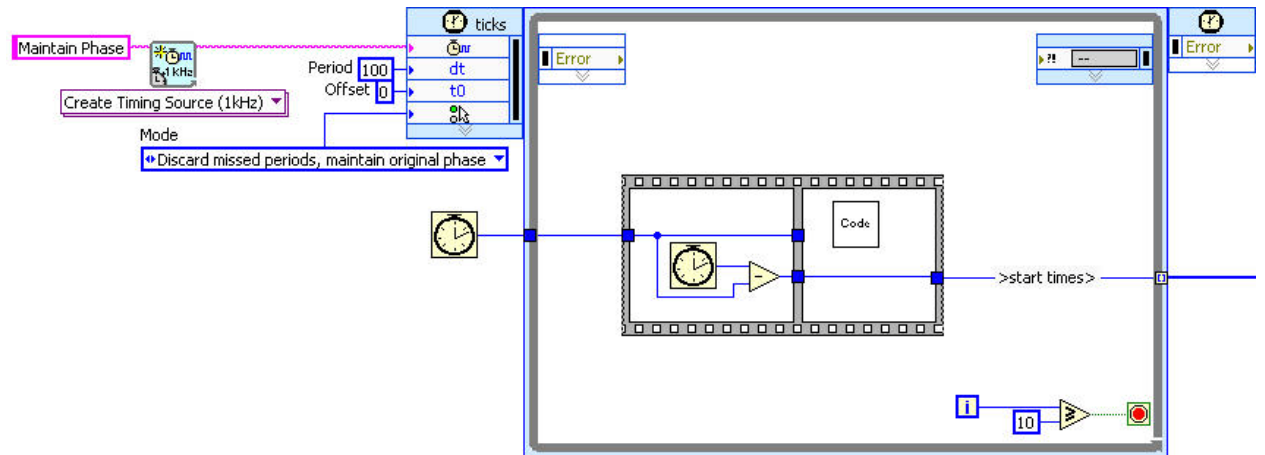
13. How many times does the following VI pause (breakpoint is inside the loop)?

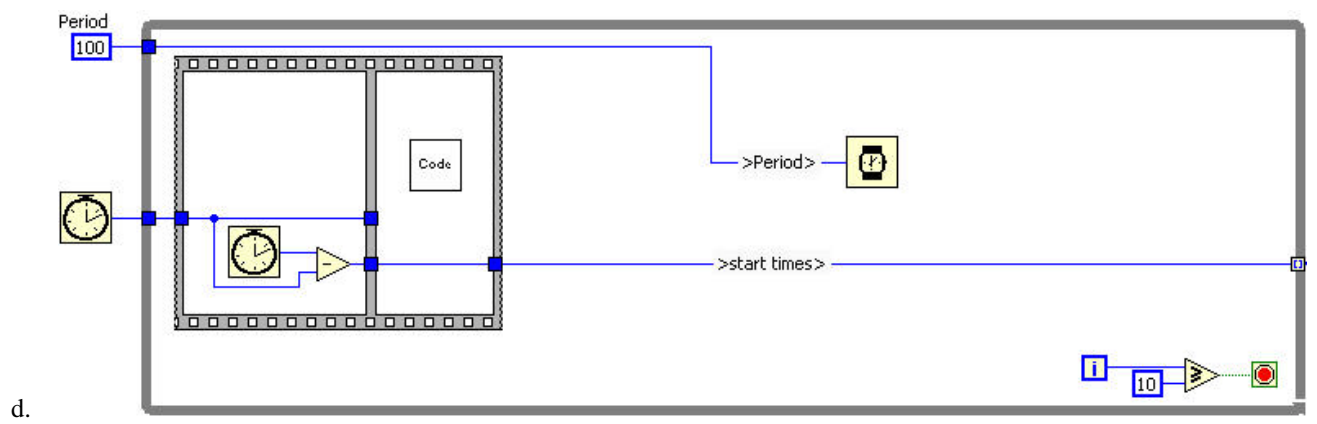
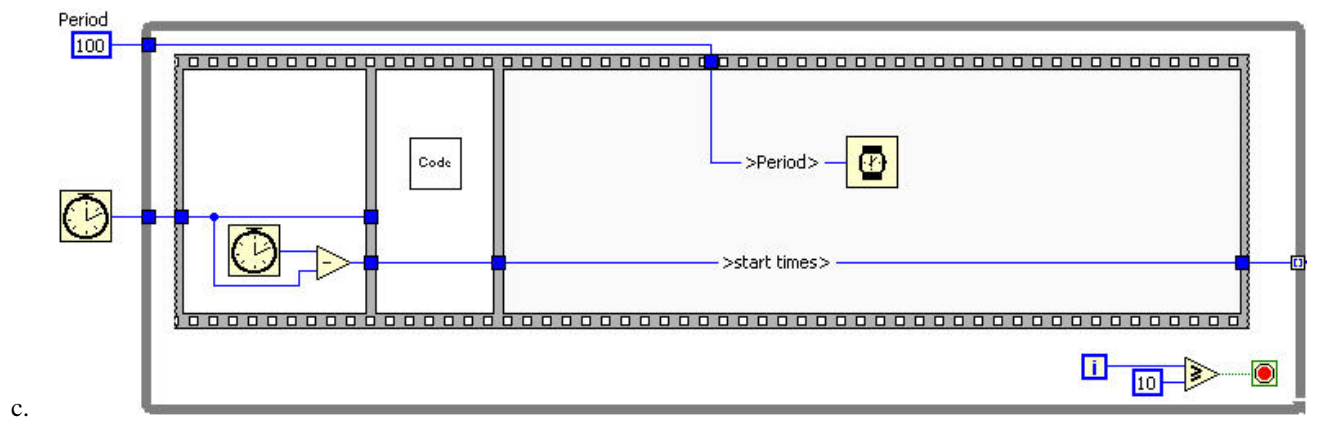


- a. 0
- b. 4
- c. 6
- d. 5



14. You are attempting to implement a while loop with the same timing schedule as the timed loop below. In which of the following code segments would the start times for the Code subVI be the most similar to the start times with the timed loop? The Code subVI has an unknown execution time.



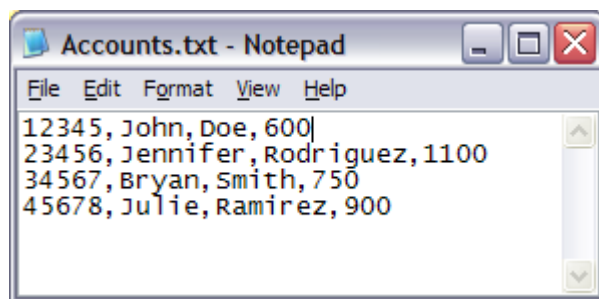
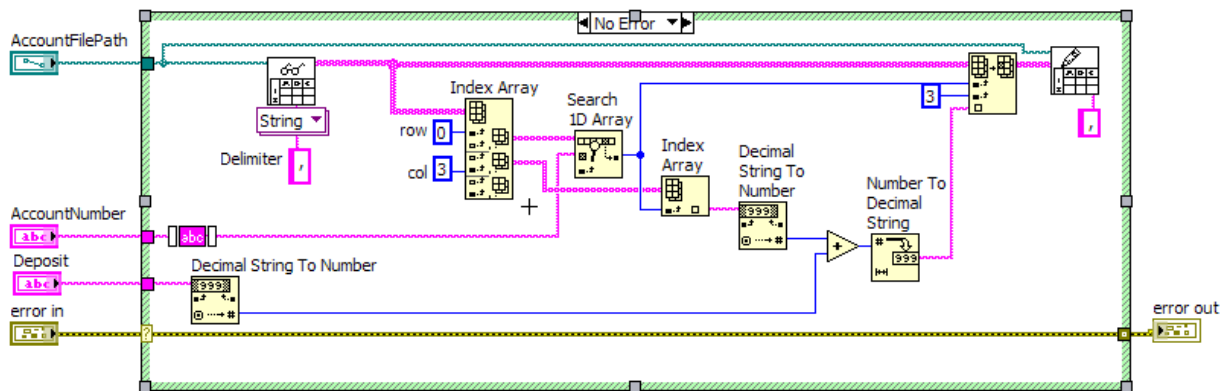


15. You have been given an application that simulates an ATM machine in which the Deposit functionality does not function as required. The block diagram of the Deposit SubVI and the Account.txt file it operates on are shown below.

The fields of the Account.txt file are: Account Number, First Name, Last Name, Account Balance.

The issue is that SubVI updates the first record in the Accounts.txt file

Assume that the inputs to the SubVI are valid and no errors occur before the subVI is called and this subVI does not report any error.

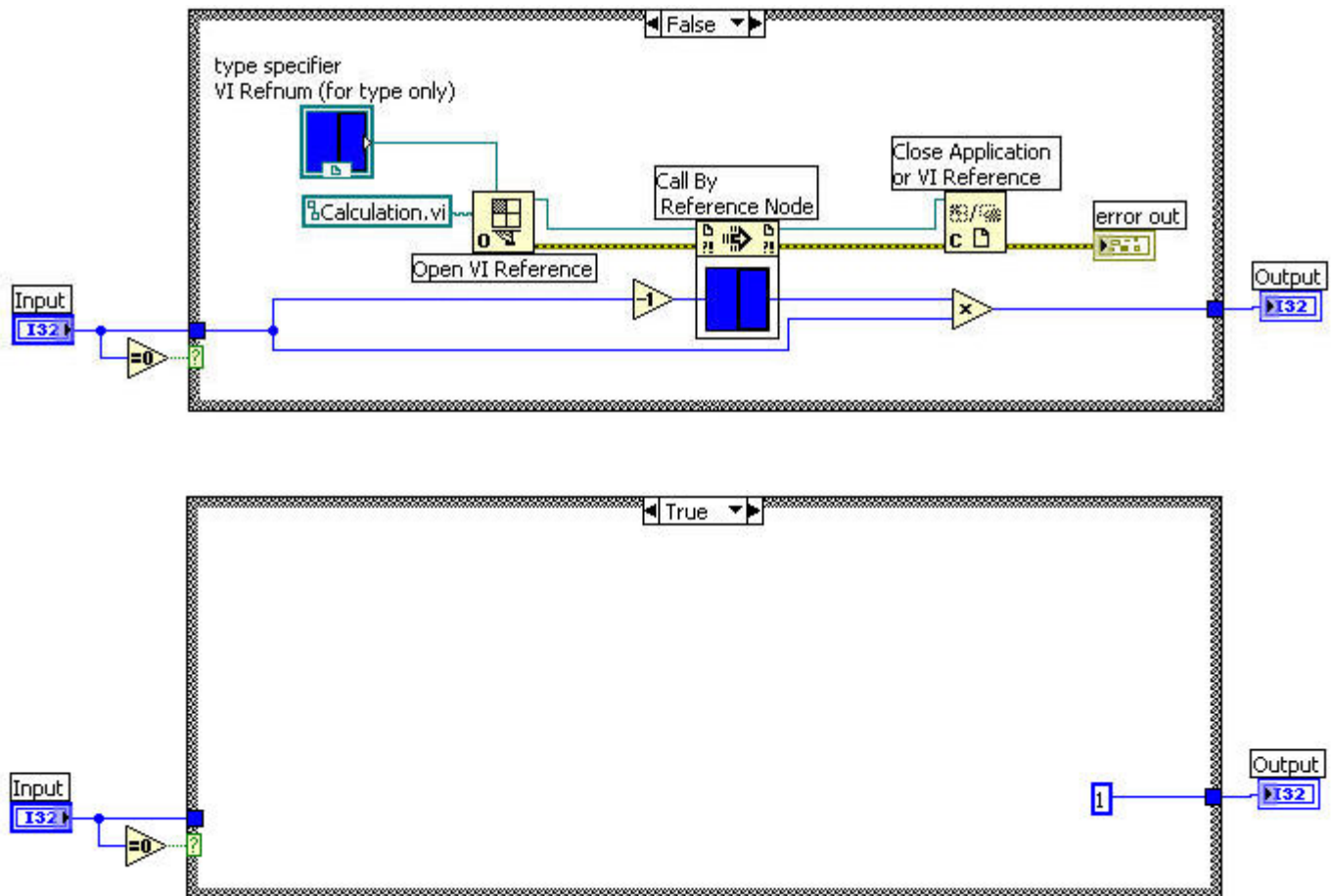


What changes can be made to the code to fix the functional issue?

- Change the Spreadsheet file functions to Text file functions.
- Change the "Decimal String to Number" function to "Number to Decimal String" function
- Remove the extra set of inputs the the first Index Array function
- Move the constant from the row input of the first Index Array function to the col input

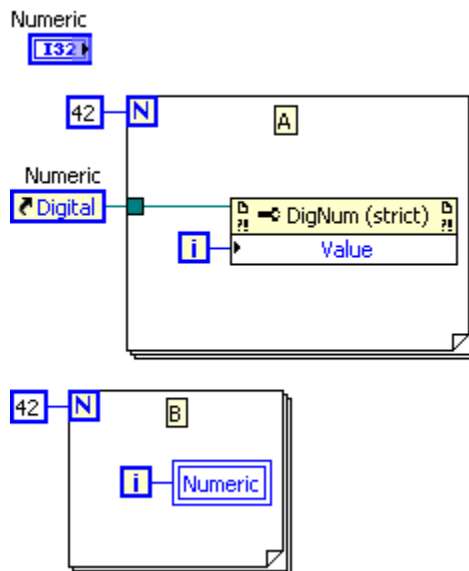
16. Your application contains one While Loop dedicated to acquiring data and a second parallel While Loop dedicated to processing the acquired data. You want your processing loop to process all acquired data in the order it was received. What data synchronization method will you use?
- a. Semaphores
  - b. Rendezvous
  - c. Queues
  - d. Notifiers
17. User created custom probes will have which of the following?
- a. **Input:** Datatype of the wire **Output:** Same datatype
  - b. **Input:** Datatype of the wire **Output:** Custom output
  - c. **Input:** Datatype of the wire **Output:** Boolean
  - d. **Input:** Boolean **Output:** Numeric
18. Which of the following statements is true?
- a. Enabling auto-indexing for the output of a For Loop is more efficient than that of a While Loop.
  - b. Enabling auto-indexing for the output of a While Loop is more efficient than that of a For Loop.
  - c. Both While Loop and For Loop takes same amount of time if auto-indexing is enabled for the output
  - d. None of the above.

19. What will be the **Output** of the following reentrant Calculation.vi if the **Input** is 4?



- a. 40
- b. 1
- c. 24
- d. 0

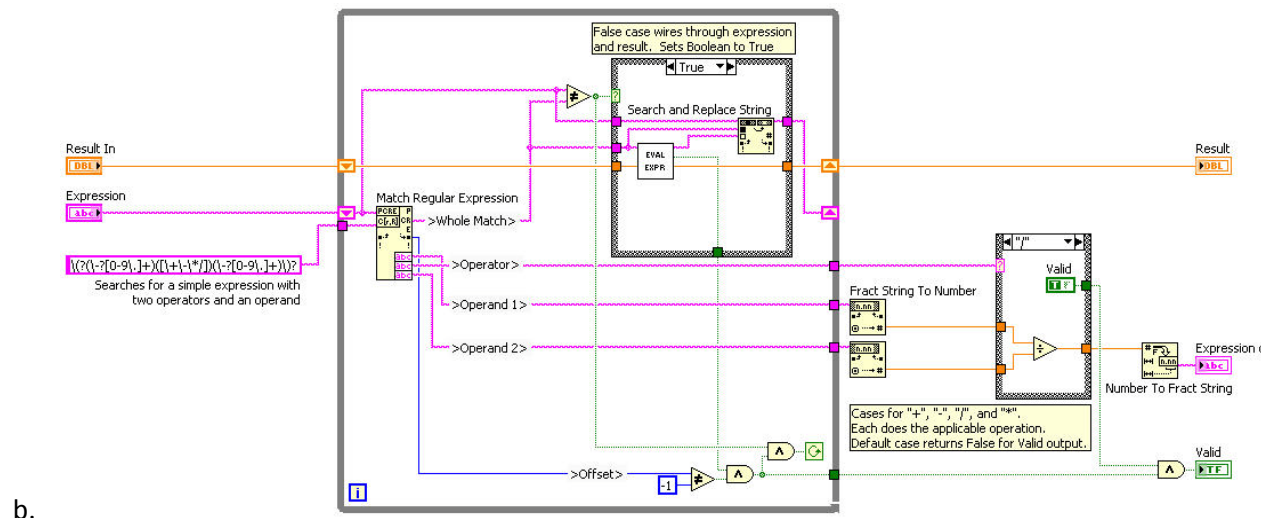
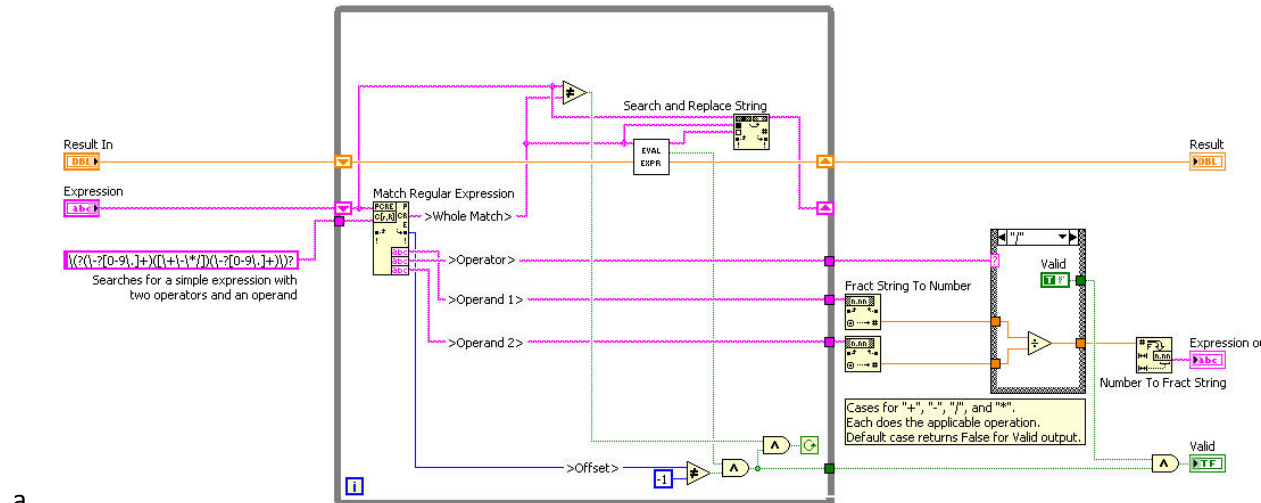
20. Considering the two code snippets mentioned below, assuming all other factors remain constant, which of the statements are true?

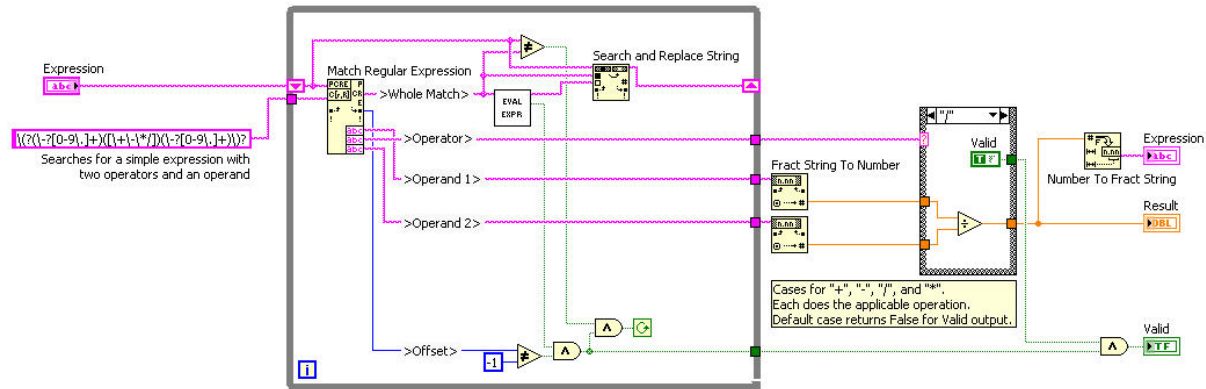


- A is faster than B
  - B is faster than A
  - Both take the same amount of time.
  - Cannot be determined.
21. Which of the following is the most appropriate function for synchronizing the frequency of two or more loops using timing functions alone?
- Wait Until Next ms Multiple
  - Wait (ms)
  - Time Delay
  - Elapsed Time Express VI

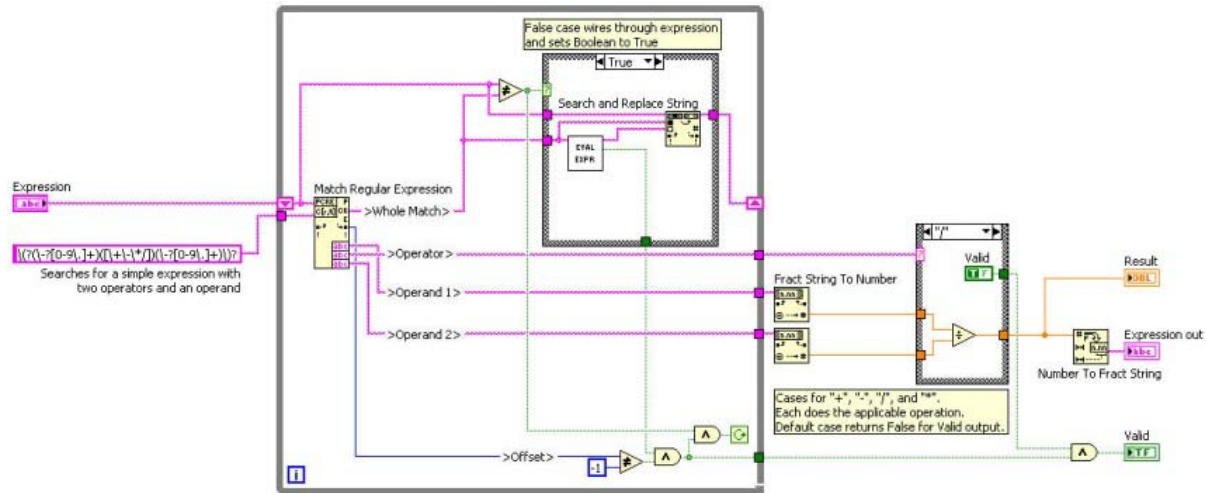
22. You are attempting to evaluate a mathematical expression entered as a string. The mathematical expression accepts the operators +, -, \*, and /. All operations except for the final result must be enclosed in parenthesis, so order of operations is not relevant. Negative and fractional numbers are accepted. For example, the string “(-34+21.6)\*((3-8)/(1+1))” should return a result of 31. Which of the following recursive subVIs will return the correct value for Result?

Note: The EVAL\_EXPR VI shown in the images is a recursive call of the code shown.  
In LabVIEW 2009 recursion no longer requires the use of VI server.





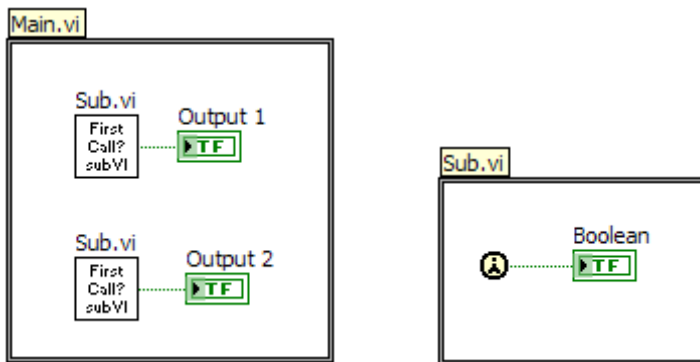
c.



d.

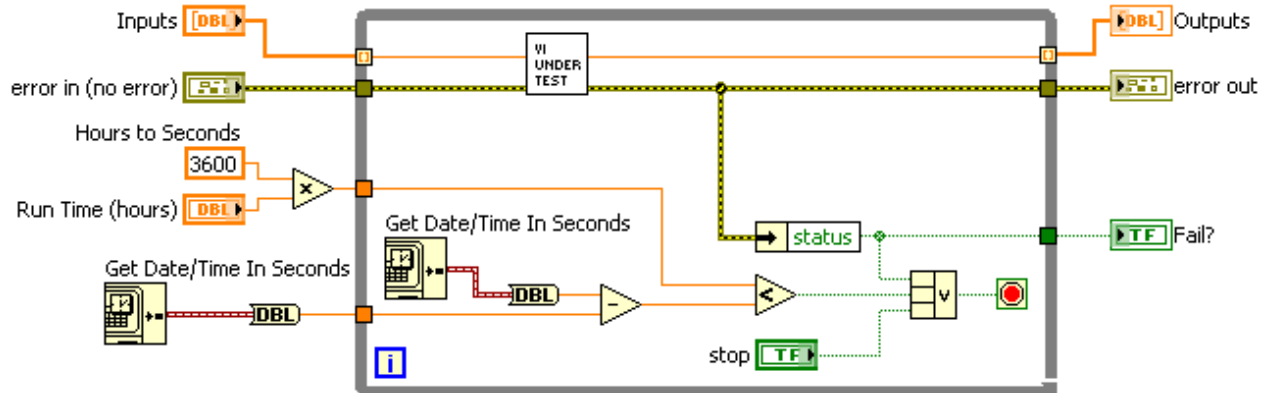


23. Which of the following is an effect of setting reentrancy for a top level VI?
- a. Makes only the top level VI reentrant
  - b. Forces every subVI except for dlls/assemblies to be reentrant
  - c. Forces every subVI including dlls/assemblies to be reentrant
  - d. Forces every subVI except dynamically called VIs to be reentrant
24. The Sub.vi is configured for non-re-entrant execution. What is the behavior of Main.vi when it is executed?



- a. The VI executes and both outputs are TRUE
  - b. The VI executes and both outputs are FALSE
  - c. The VI executes and one output is TRUE and other is FALSE, but cannot predict which output is TRUE or FALSE.
  - d. The VI reports a runtime error since the sub VI is not re-entrant
25. Which type of testing can be performed using Windows Task Manager?
- a. Functional testing
  - b. Configuration testing
  - c. Usability testing
  - d. Performance testing

26. What method of testing is shown in the figure below?



- a. Functional testing
- b. Usability testing
- c. Stress testing
- d. Performance testing

27. Which of the following functions is useful for ensuring users do not enter invalid values in a GUI application?

- a. In Range and Coerce
- b. Variant to Data
- c. Implies
- d. Type Cast

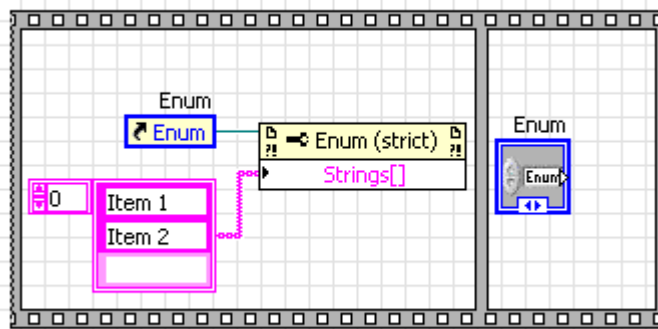
28. A dll called through the Call Library Function Node (CLFN) in a subVI remains in memory until

- a. The subVI completes execution
- b. The CLFN completes execution
- c. An empty path is wired into the same CLFN
- d. All VIs complete execution

29. Which of the following should be done to un-deploy a network published shared variable?

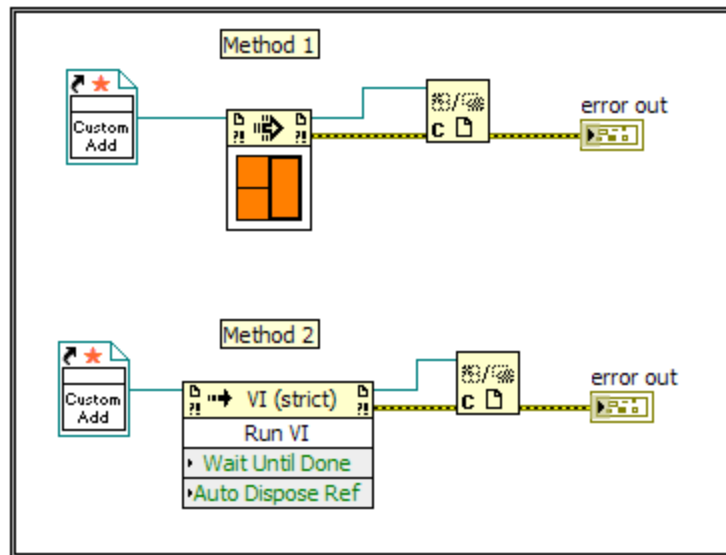
- a. Delete the shared variable in the project Explore window and reboot the machine which is hosting the Shared variable
- b. Un-deploy the library the variable is part of in the Project Explorer window
- c. Select Tools»Distributed System Manager select the Shared variable library and remove process
- d. Close all VIs accessing the variable

30. When you create a refnum to a VI, LabVIEW loads the VI into memory (if it is not already in memory). Which of the following is NOT a reason for the VI to stay in memory?
- a. The VI is included in a project which is in memory
  - b. There are open references to the referenced VI
  - c. The front panel of the VI is open
  - d. The VI is a subVI of another VI in memory
31. What will be the behavior when a VI that has the following code snippet is executed?



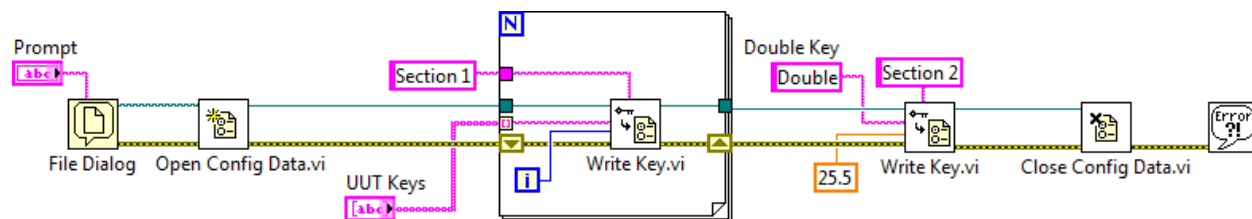
- a. The VI reports an Error, since the control's reference is accessed before the control
- b. The VI executes and Item 1 and Item 2 are added to the Enum's items.
- c. Runs only when the VI is Reentrant.
- d. The VI report an Error as the Enum's items cannot be changed when the VI is running.

32. Which of the following methods will allow the execution of the Custom Add VI?



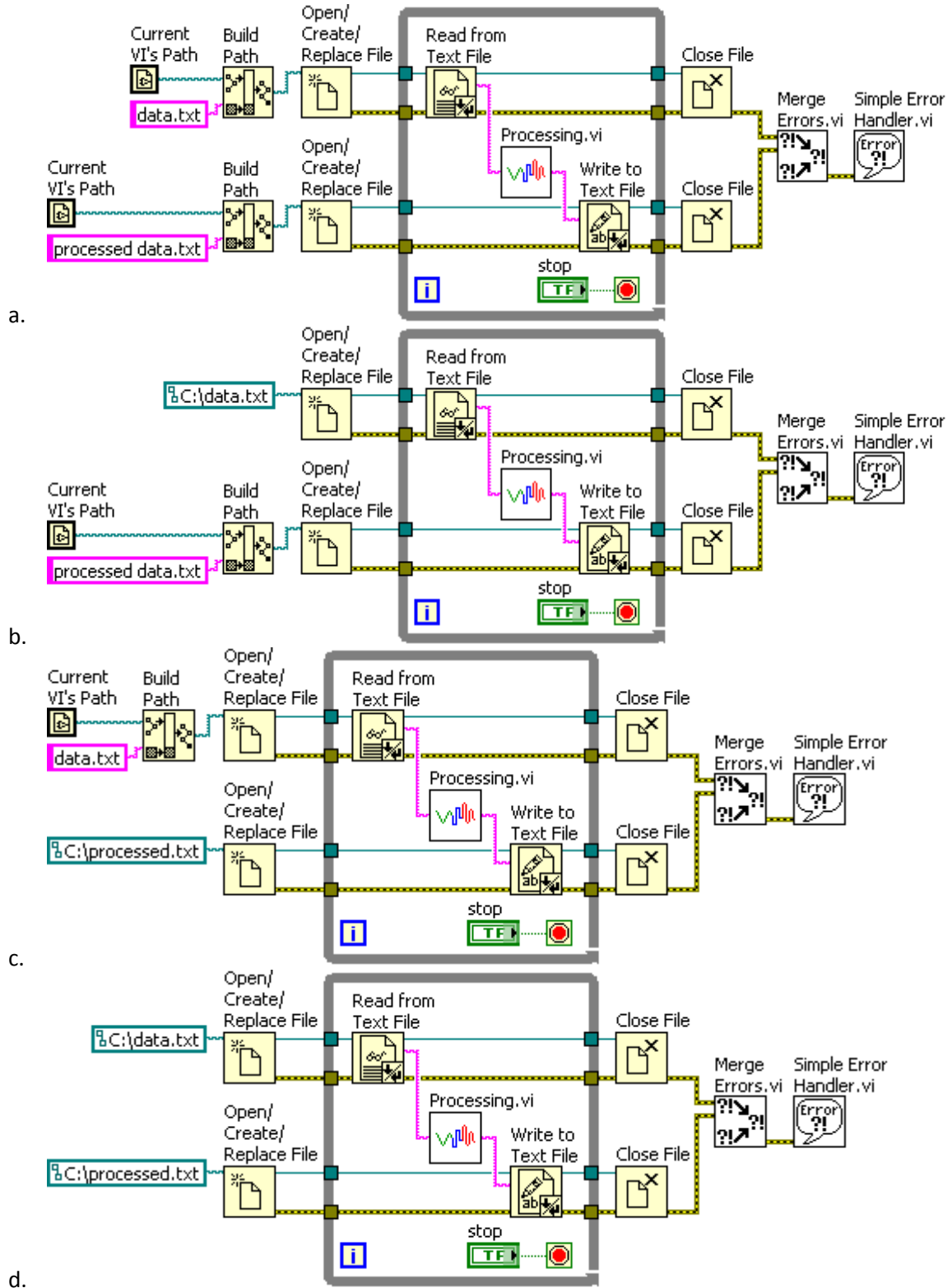
- a. Method 1
- b. Method 2
- c. Both methods
- d. None of the methods

33. You are using the following code to write a configuration file to disk. The UUT Keys array is empty. Which of the following is true after the code executes?



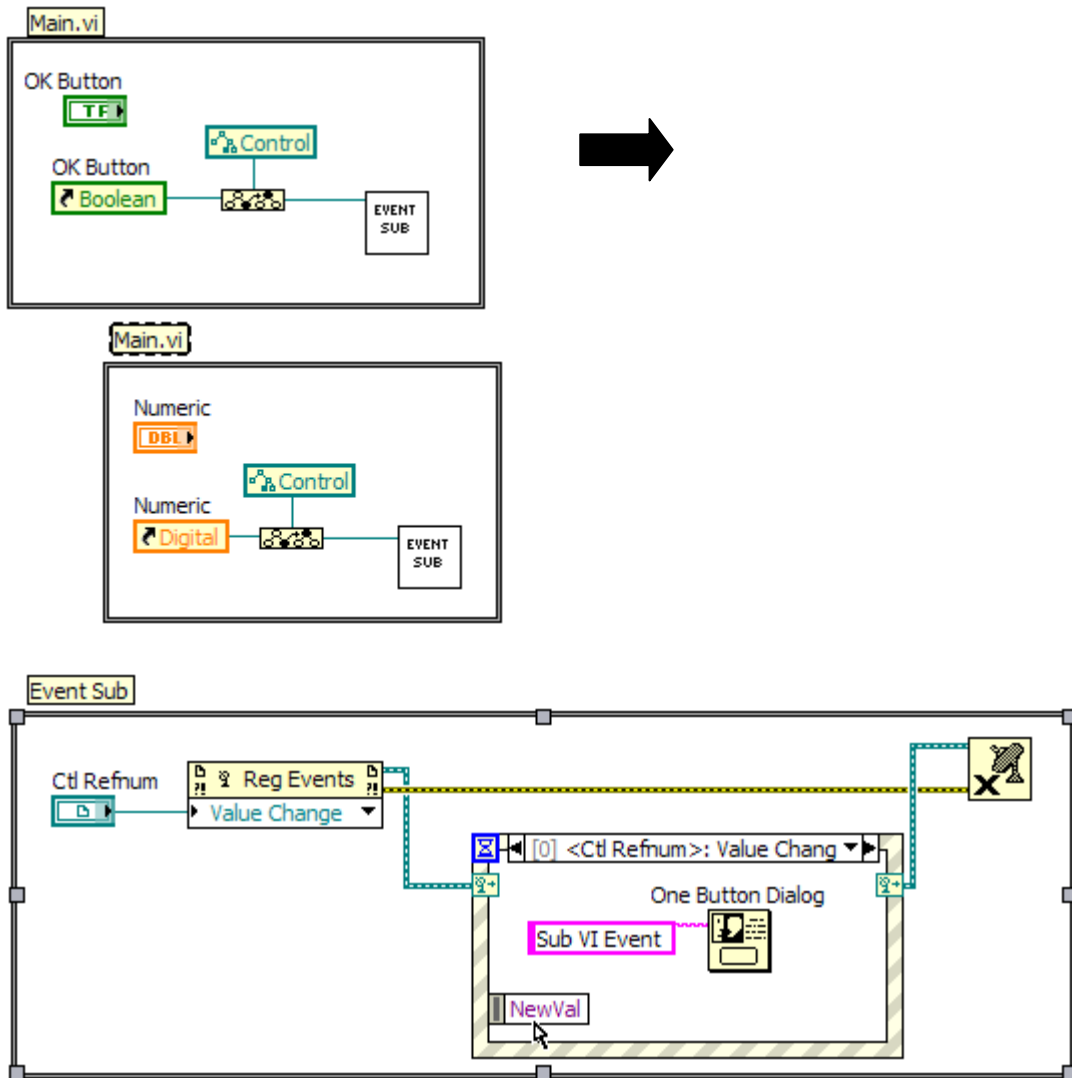
- a. An error is returned and nothing is written to the file.
- b. Both Section 1 and Section 2 are created. Section 1 contains no Key-Value pairs. Section 2 contains one Key-Value pair.
- c. Both Section 1 and Section 2 are created and both sections contain one Key-Value pair.
- d. Only Section 2 is created. Section 2 contains one Key-Value pair.

34. Which of the following block diagrams is more scalable and maintainable?



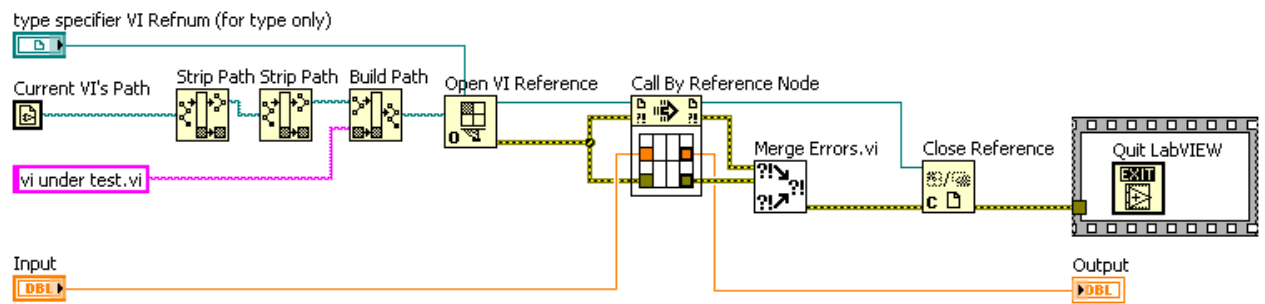
35. Your application needs to run on the following operating systems: Windows, Linux, and MacOS. When reviewing your code, which of the following is NOT a platform-specific consideration?
- a. Use of the Timestamp data type, such as returned from the Get Date/Time in Seconds function.
  - b. The block diagram calls a .NET or ActiveX method.
  - c. File names and paths include special characters, such as backslash (\), slash (/), colon (:), and tilde (~).
  - d. User interface labels resize due to differences in system fonts.

36. What will happen when the OK Button and its reference in the Main.vi is replaced with Numeric (DBL) control and its reference as shown in the following code snippets?



- The Main.vi will have a broken run arrow
- A runtime error will occur when the Main.vi is executed
- The Main.vi will execute and the One Button Dialog will display when the value of the Numeric control is changed
- The Main.vi will execute but the One Button Dialog will not display when the value of the Numeric control is changed

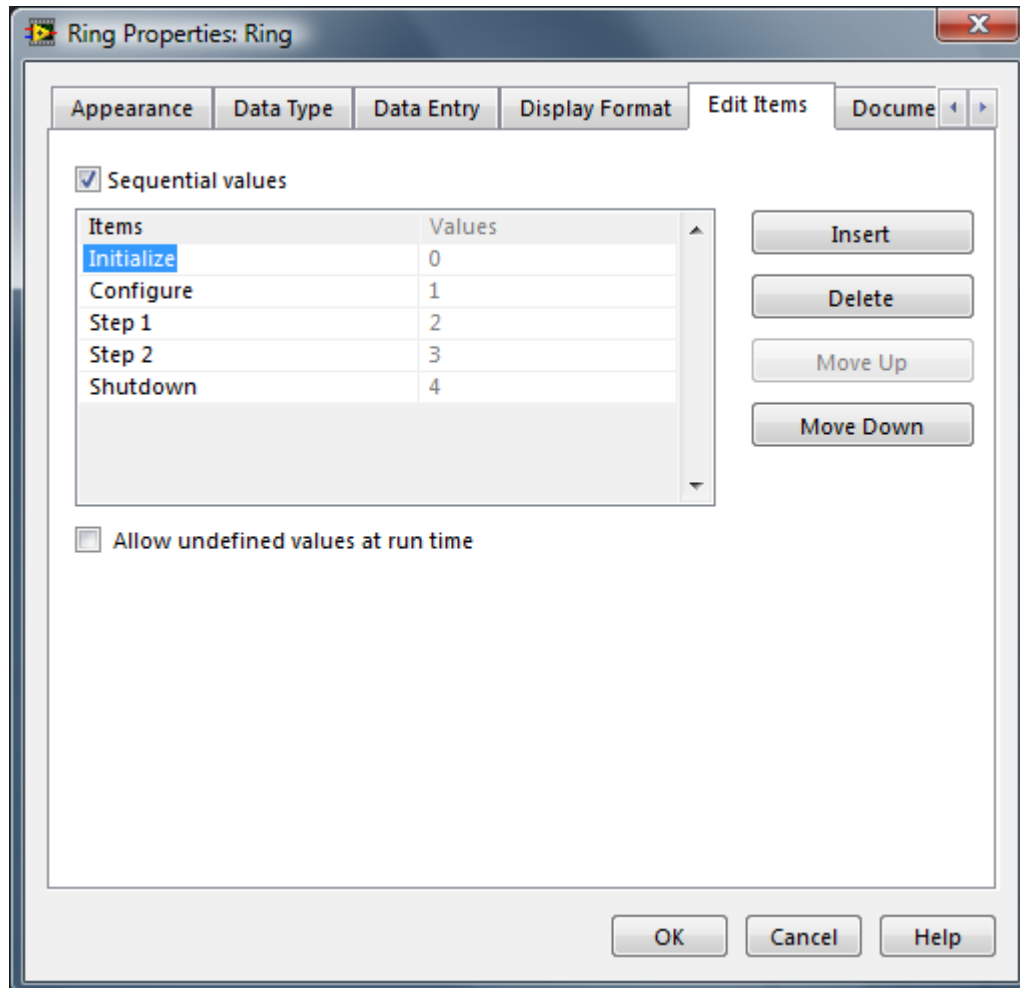
37. Which of the following steps need to be taken if you decide to build the block diagram shown into an executable?



- The file path needs to be stripped one more time because the build process will add another layer to the file structure, causing problems
- The VI that is being called dynamically needs to be manually added to the build specification
- The application window will not close when the executable has been stopped.
- One or more functions will not work outside of the development environment.

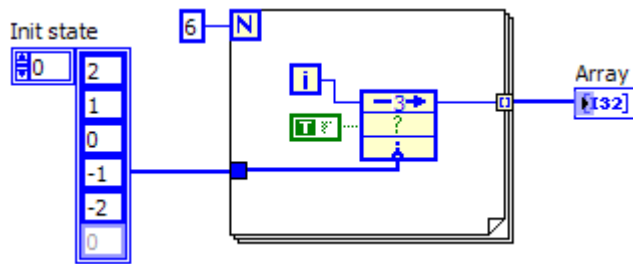


38. A type definition of an unsigned 16-bit ring control with the defined items is shown in the property dialog below. The default value is set to 0 (Initialize). Which of the following changes will force all instances of the type definitions to update?



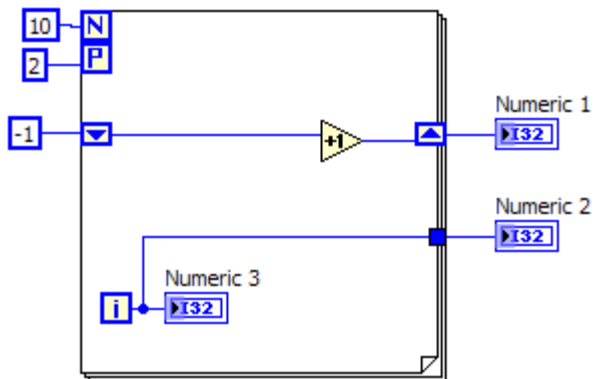
- a. Change the default value to 1 (Configure).
- b. Change the data type to unsigned 32-bit.
- c. Append "Step 3" as another ring item.
- d. Rename the "Step 1" ring item to be "Trigger".

39. Which of the following best represents the data in Array after the following code completes execution?



- a. {-2, -1, 0, 1, 2, 3}
- b. {-2, -1, 0, 0, 1, 2}
- c. {2, 1 0, 0, 1, 2}
- d. {2, 1, 0, -1, -2, -3}

40. What are the values of the indicators Numeric 1 and Numeric 2 after running this code on a dual core processor?



- a. 10, 10
- b. 9, 9
- c. -1, 0
- d. Cannot be determined

**Solutions Page:**

Below are the answers and links to additional resources for the CLD-R Sample Exam. To quickly check your answers, record them on the Answer Sheet, detach the Answer Sheet, and compare it, side-by side, with the Solutions Page. This answer page is not included in the actual CLD-R exam; it is included here for practice purposes only.

Question	Answer
1	C
2	D
3	C
4	A
5	B
6	D
7	C
8	C
9	D
10	A
11	C
12	B
13	D
14	A
15	D
16	C
17	C
18	A
19	C
20	B
21	A
22	D

23	A
24	C
25	D
26	C
27	A
28	C
29	C
30	A
31	D
32	A
33	A
34	A
35	A
36	C
37	B
38	B
39	C
40	B