Certified LabVIEW Associate Developer Exam

Test Booklet

Version #: CLAD - English - 100301-01
Test Code: 31620

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

Instructions:

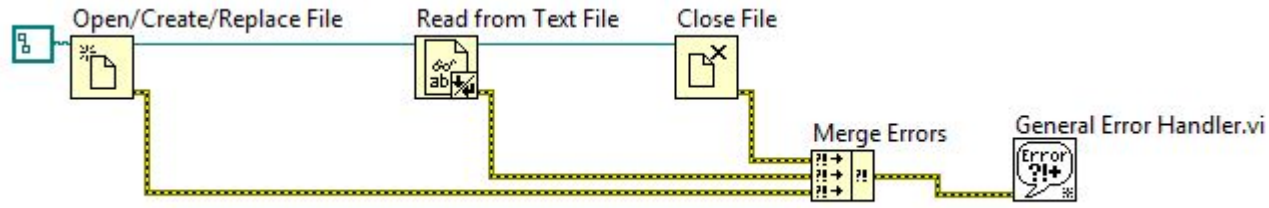
- **Please do not detach the binding staple of any section. If any part of the exam paper is missing or detached when returned to National Instruments, you will be deemed to have failed the exam.**
- Please follow the instructions on the Answer Sheet. If you fill in your Candidate ID incorrectly, **your test will be invalidated**.
- Indicate **ALL** answers on the Answer Sheet. Answers recorded in this test booklet will **NOT** be evaluated.
- 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%

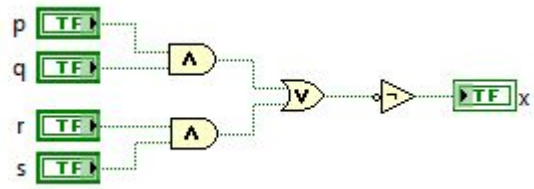
IMPORTANT: When you have completed this exam, place it in the provided envelope with you answer sheet and SEAL the envelope. Give the sealed envelope to your proctor.

Q1: Assuming that automatic error handling is enabled, does LabVIEW display the error to the user at the end of execution?



A No. LabVIEW does not display any error because closing the file reference clears the error
B No. The General Error Handler VI logs the incoming error
C Yes. LabVIEW displays an error that occurred at Close file function because the Merge Errors function displays the first incoming error
D Yes, but LabVIEW displays the error dialog three times because the Merge Error function merges all three errors into one cluster

Q2: Which combination of inputs displays a Boolean TRUE in the **x** indicator?



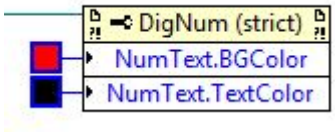
A p=TRUE, q=TRUE, r=TRUE, s=TRUE
B p=TRUE, q=TRUE, r=FALSE, s=TRUE
C p=TRUE, q=FALSE, r=TRUE, s=TRUE
D p=FALSE, q=TRUE, r=TRUE, s=FALSE

Q3: What is the function of a local variable?

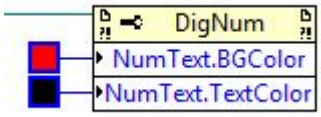
A To pass data within a single VI
B To pass data between multiple VIs in a single project
C To pass data between multiple VIs on a single computer
D To pass data between multiple VIs across multiple computers

Q4: Which Property Node changes the text color attributes of any digital numeric control from a subVI?

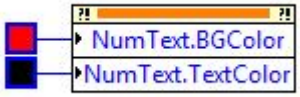
A



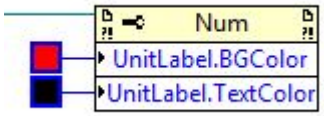
B



C



D



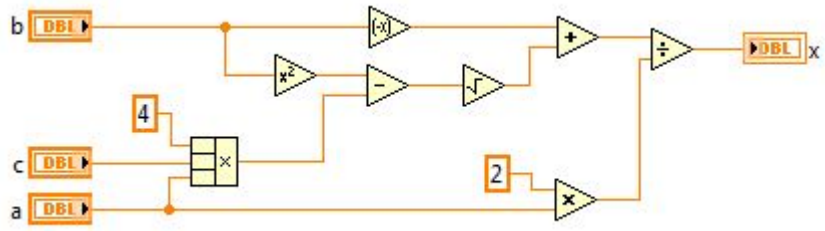
Q5: If an input name in the Context Help window is in **bold** for a SubVI, which of the following conditions are TRUE? (Select all that apply)

A The input value must be scalar
B The input is recommended, but not required
C The input is required
D The calling VI will be broken if the input is unwired

Q6: Which method is most appropriate for debugging a broken wire?

A Place a probe on the broken wire and run the VI in debug mode
B Place a break point on the broken wire and run the VI in debug mode
C Mouse over the red X to view the tip strip with information on why the wire is broken
D Run the VI in execution highlighting mode and wait for LabVIEW to report the broken wire when the execution reaches the break in the wire

Q7: Which equation is equivalent to the code?



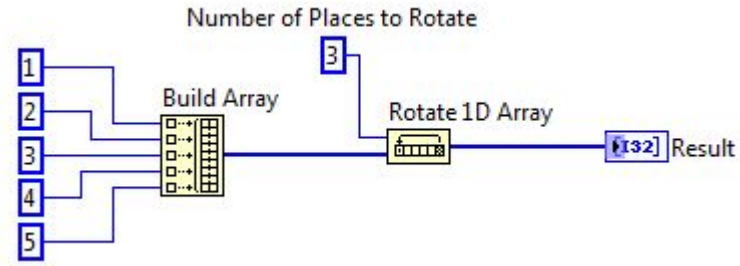
A $$x = \frac{-b+\sqrt{b^2+4ac}}{2a}$$

B $$x = \frac{-b+\sqrt{b^2-4ac}}{2a}$$

C $$x = \frac{-b+\sqrt{b^2-4ac}}{2c}$$

D $$x = \frac{(a \times -b)+\sqrt{b^2-4ac}}{2}$$

Q8: What does the **Result** indicator display after the VI executes?



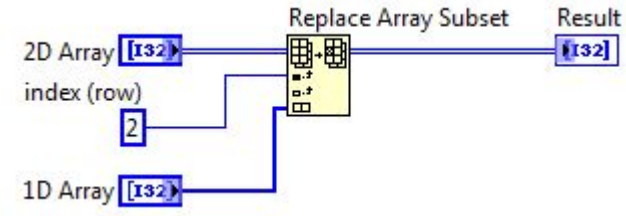
A $[4 \quad 5 \quad 1 \quad 2 \quad 3]$

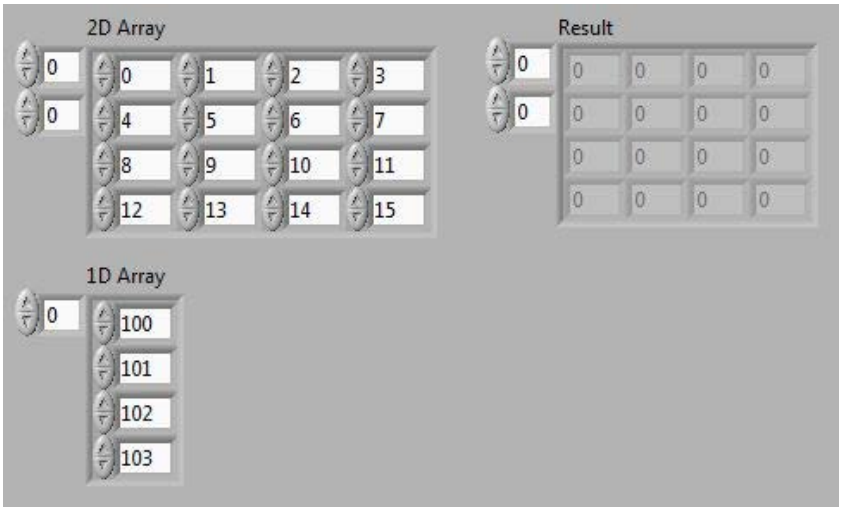
B $[5 \quad 1 \quad 2 \quad 3 \quad 4]$

C $[3 \quad 4 \quad 5 \quad 1 \quad 2]$

D $[2 \quad 3 \quad 4 \quad 5 \quad 1]$

Q9: What does the **Result** indicator display after the code executes?





A
$$\begin{bmatrix} 0 & 1 & 100 & 3 \\ 4 & 5 & 101 & 7 \\ 8 & 9 & 102 & 11 \\ 12 & 13 & 103 & 15 \end{bmatrix}$$

B
$$\begin{bmatrix} 0 & 1 & 2 & 3 \\ 100 & 101 & 102 & 103 \\ 8 & 9 & 10 & 11 \\ 12 & 13 & 14 & 15 \end{bmatrix}$$

C
$$\begin{bmatrix} 0 & 1 & 2 & 3 \\ 4 & 5 & 6 & 7 \\ 100 & 101 & 102 & 103 \\ 12 & 13 & 14 & 15 \end{bmatrix}$$

D
$$\begin{bmatrix} 0 & 1 & 2 & 3 \\ 4 & 5 & 6 & 7 \\ 100 & 9 & 10 & 11 \\ 12 & 13 & 14 & 15 \end{bmatrix}$$

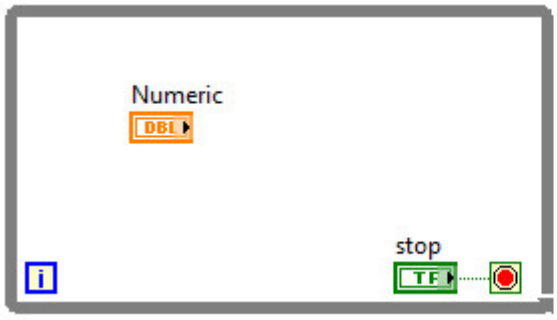
Q10: Which statement correctly describes the code execution if no errors occur?

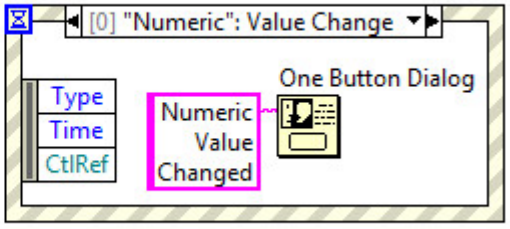
A The property node writes to the Disabled property first and then writes to the KeyFocus property
B The property node writes to the KeyFocus property first and then writes to the Disabled property
C The property node writes to both the Disabled property and KeyFocus property at the same time
D The execution order of the property node is indeterminate

Q11: Which statement about Charts and Graphs is **TRUE**?

A Graphs support multiple x-scales and y-scales and Charts support multiple y-scales
B Graphs support multiple y-scales and Charts support multiple x-scales and y-scales
C Both Charts and Graphs support multiple x-scales and y-scales
D Neither Charts nor Graphs support multiple x-scales or y-scales

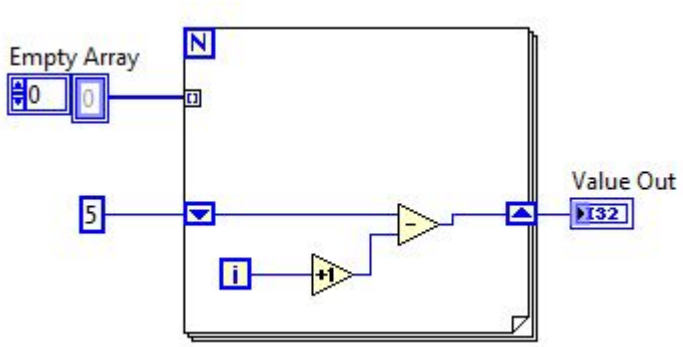
Q12: Which revision allows the VI to respond to every numeric change event?





A Remove the One Button Dialog VI from the Event structure
B Move the Event structure into the While Loop
C Use the Mouse Up event instead of the Value Change event
D Use Filter events instead of Notify events

Q13: What value does the **Value Out** indicator display after the VI executes?



A 0
B 4
C 5
D 6

Q14: Which statement about custom controls is **TRUE**? (Select all that apply)

A Each instance of a custom control is an independent copy
B A type definition defines the data type for all instances of the control
C A strict type definition is a template for creating custom controls
D A custom control is created using the control editor while a type definition is created programmatically

Q15: In a timer application, you create Start, Stop and Reset buttons on the user interface. The labels and Boolean text reflect the function. Which data structure is appropriate for grouping the three buttons on the front panel?

A Array
B Cluster
C Ring control
D Matrix

Q16: In the development of scalable state machine-based applications, what is the best data type to maintain the state?

A Numeric
B Type-defined enum
C Array of numerics
D Cluster of strings

Q17: Which data file type is best suited for random access reading?

A ASCII
B Object Class
C Text
D Binary

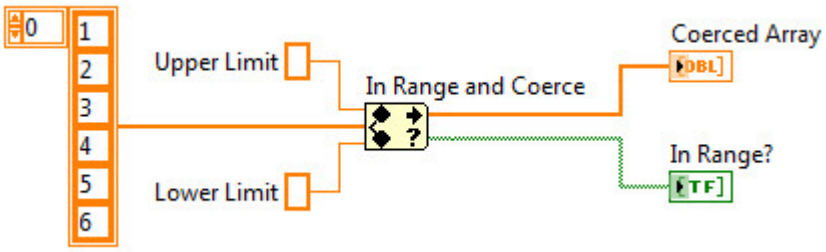
Q18: How do you document a VI so the description appears in the Context Help window when you hover over the VI icon?

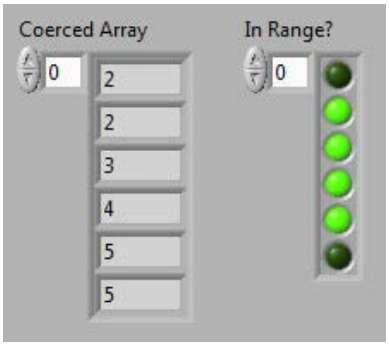
A Set the VI Description field in the VI Properties dialog box
B Type in the Show Context Help window
C Create a free label on the front panel called VI Description
D Edit the LabVIEW help files

Q19: Which statement regarding the default behavior of Property Nodes is **TRUE**? (Select all that apply)

A Property Nodes allow attributes of front panel objects to be manipulated programmatically
B Property Nodes can be used to update the values contained in a front panel object
C More than one Property Node can be used for a single front panel object
D If an error occurs in a property, LabVIEW processes the remaining properties and returns the first error encountered

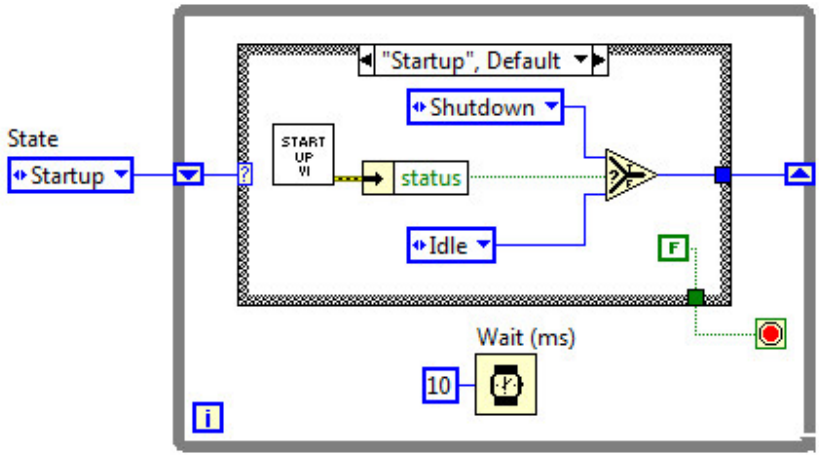
Q20: Which values in Upper Limit and Lower Limit produce the arrays displayed on the front panel?





A Upper Limit = 5; Lower Limit = 1
B Upper Limit = 5; Lower Limit = 2
C Upper Limit = 6; Lower Limit = 1
D Upper Limit = 6; Lower Limit = 2

Q21: Which design pattern does this code represent?



A Master/Slave
B Producer/Consumer
C State Machine
D Queued Message Handler

Q22: If a Wait Until Next ms Multiple function with a constant of 100 wired to it is placed in the same loop as a section of code that takes a total of 37 ms to complete its 4th iteration, how many ms until the next iteration begins?

A 14 ms
B 63 ms
C 100 ms
D 437 ms

Q23: What is one disadvantage of using the State Machine VI architecture?

A A State Machine VI can only traverse states in order
B A state change can be missed if the condition that signals the need for a change of state is missed
C The diagram becomes significantly larger when changing from a General VI to a State Machine VI
D State Machines cannot acquire data or use DAQ functions

Q24: Which statement best describes a Notify event, such as the value change of a Boolean control?

A Indication that an event occurred and LabVIEW did not process the event
B Indication that the event occurred and was discarded by the user
C Indication that the event occurred and LabVIEW processed the event
D Indication that the event did not occur but specified Event timeout did occur

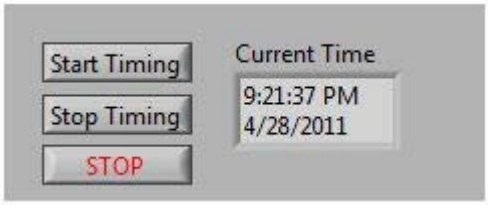
Q25: When do you use the Probe tool instead of Breakpoints?

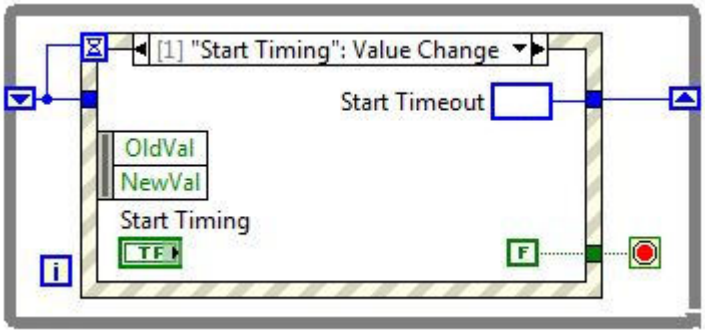
A To slowdown the VI to show values in wires
B To visualize the flow of data
C To examine the data on a wire without suspending execution
D To look into a SubVI as the process is running

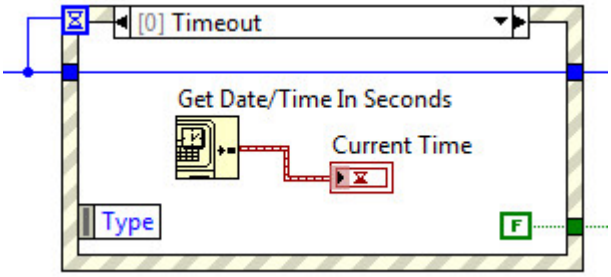
Q26: Which statement is **FALSE**?

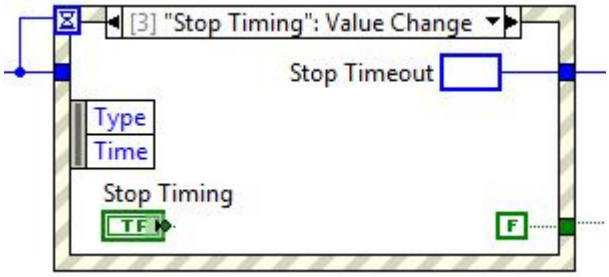
A A subVI connector pane defines where to wire inputs and outputs
B The color of a subVI connector pane terminal matches the data type to which it connects
C A subVI must have an icon and connector pane
D A subVI icon can be edited from the functions palette

Q27: **Current Time** should update every second, starting when the user presses the **Start Timing** button and stopping when the user presses the **Stop Timing** button. What values are needed in the **Start Timeout** and **Stop Timeout** constants to achieve the intended functionality?



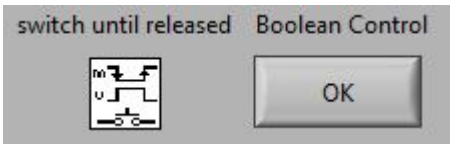


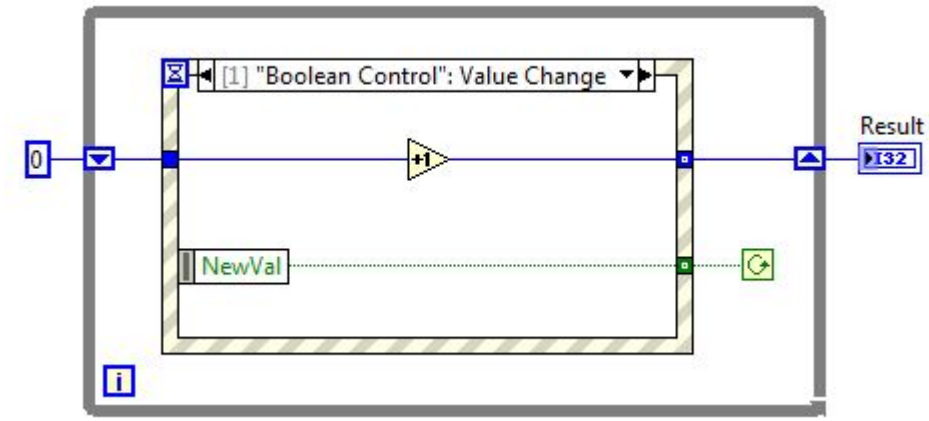




A Start Timeout = 1000, Stop Timeout = -1
B Start Timeout = 1, Stop Timeout = -1
C Start Timeout = 1000, Stop Timeout = 0
D Start Timeout = 1, Stop Timeout = 0

Q28: While the VI executes, the user presses and then releases **Boolean** Control with Switch Until Released mechanical action. Assuming that the starting value of **Boolean Control** is **FALSE**, what value does the **Result** indicator display after execution?





A 0
B 1
C 2
D 3

Q29: Which is a difference in the behavior of the Wait (ms) function and the Wait Until Next ms Multiple function?

A The first time a Wait Until Next ms Multiple is called, the time delay may be shorter than the specified number of ms wired to the function's input terminal
B The Wait (ms) function will not start timing until all other functions in that section of code have been completed
C The Wait Until Next ms Multiple Function causes the structure that contains it to be run in a separate thread
D The Wait (ms) function can be used to prevent 100% CPU usage in a loop, while the Wait Until Next ms Multiple cannot

Q30: What value does the iteration terminal  of a loop return?

A The number of times the loop executed
B The number of times the loop executed, plus one
C The number of times the loop executed, minus one
D A constant number

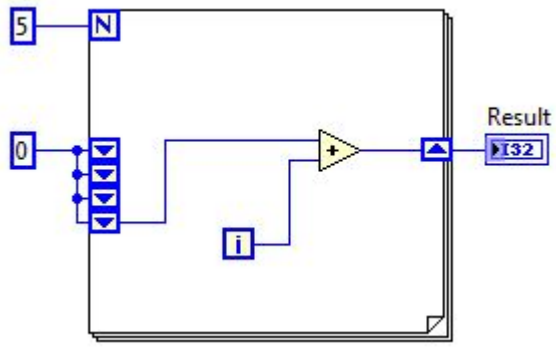
Q31: Which variable is commonly used to eliminate race conditions by preventing simultaneous access to code or data?

A Functional global variable
B Local variable
C Global variable
D Shared variable

Q32: Unlike graphs, which display an entire waveform that _____ the data already displayed, charts update periodically and _____ the data previously displayed.

A Maintains a history of; overwrite
B Overwrites; maintain a history of
C Appends to; overwrite
D None of the above

Q33: What does the **Result** indicator display after the VI executes?



A 4
B 5
C 10
D 15

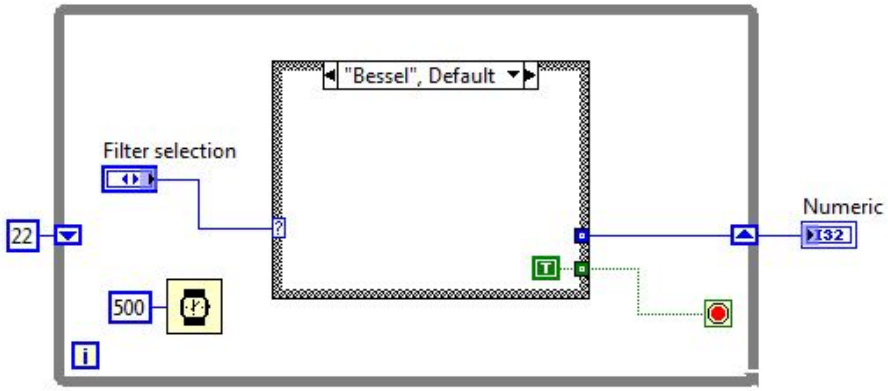
Q34: Data enqueued using an Enqueue Element function is dequeued in what order?

A First In First Out (FIFO)
B First In Last Out (FILO)
C As indexed by the user during enqueueing
D As indexed by the user during dequeueing

Q35: Race conditions occur when the timing of events unintentionally affects an output or data value. Which technique protects a critical section of code from a race condition? (Select all that apply)

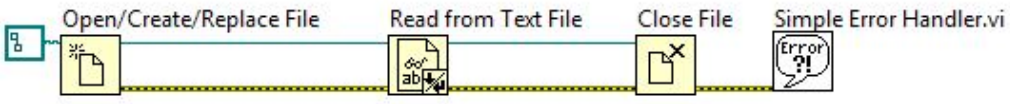
A Functional Global Variable
B Semaphores
C Global Variable
D Single Process Shared Variable

Q36: With **Filter selection** set to "Bessel", what value does the **Numeric** indicator display after the VI executes?



A 0
B 22
C Indeterminate. Must see the code in other cases to determine the value
D The VI does not stop execution and runs indefinitely

Q37: Assuming that automatic error handling is enabled, does LabVIEW display the error to the user at the end of execution?



A No. No error is displayed because closing the file reference clears the error
B No. The Simple Error Handler logs the incoming error
C Yes. LabVIEW displays the error
D Yes, but LabVIEW displays the error dialog 4 times, once at each node

Q38: In a For Loop without the conditional input, which conditions describe the end of execution?

A A false value present at the conditional terminal and the conditional terminal set to "Stop if True,"

B The value of the iteration terminal, i, is one less than the value of the count terminal, N

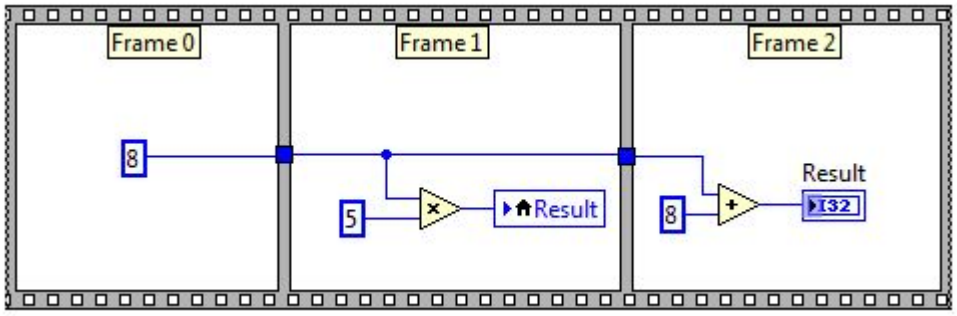
C The value of the iteration terminal, i, is one more than the value of the count terminal, N

D None of the above

Q39: Which do you use to change the color of an Alarm LED on the front panel of a VI?

A Property Node
B Invoke Node
C Local Variable
D Shared Variable

Q40: What value does the **Result** indicator display after VI containing this Flat Sequence structure executes?



A 16
B 40
C 48
D 64