

Name:

## USPAS 2003 - P571 EPICS Control System Database Exercise

- Create a database that has three analog inputs, each valued between 0 and 100.  
Set the individual records
  - 1) from the operator interface
  - 2) from a calc record utilizing a random number generator (see the Rec Ref Manual)
  - 3) from a record that counts upCreate a display that allows the operator to see the 3 values and control the signal in the first record.
  - *3 records*
  - *#1 limited because of user interface, usage of AO/DRVH or CALC that checks the GUI input**2 Points*
- Sum all of the above. Plot all 4 signals on the StripTool.
  - *Added CALC, StripTool either configured or uses record limits to show 0...100**1 Point*
- Add an analog output that reflects the value of the sum. Limit the range of the output to 0 - 100. Make a screen that allows you to control this analog output directly.
  - *DRVH, screen accesses OMSL**1 Point*
- Add a sequence that changes the calculation which is counting up to count down whenever the analog output reaches 100 and is in *closed\_loop* mode. The sequence should also change direction if the loop has taken more than 20 seconds to reach 100. The state of the sequence should be reflected on the display: “counting up”, “counting down”. You should be able to change one scan rate to cause the time-out to occur.
  - *SNL monitors AO.VAL and ...OMSL, latter as string or int or ...*
  - *state count\_up and count\_down uses entry{} clause to switch calculation*
  - *when (ao >= 100 && !strcmp(omsl, “closed\_loop”)) ...*
  - *when (delay(20.0)) ....*
  - *though undefined, sequence should somehow switch back to count\_up*
  - *display state via another PV*
  - *SCAN rate can be changed via EDM, dbpf, ...**7 Points*
- Add a button on the screen that stops the calc from counting up (previously, the way to test the time-out was to change the scan rate). Put alarm limits on the three inputs to the sum. Make the sum reflect the worst alarm condition of the three inputs and itself.
  - *Used DISA field or affected SCAN rate.*
  - *(Less good: Changed calculation to no longer increment)*
  - *Set Alarm Limits and Severities*

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*-Used MS links*  
*3 Points*