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TEST-1-P-A

Perform a desk check of the following code by walking thru the program and executing it like a computer would.

A complete desk check must include:

1. An evaluation of all decision logic indicating the line number of the decision replacing variable names with their values at the time of the evaluation and then indicating if it was true of false.
2. A PseudoMonitor™ that shows the output
3. A memory map/table that tracks all variable values.

Be sure to have three separate areas (three sheets of paper if needed) to document the above.

State whether the algorithm represented by the code produces valid results given the obvious objective of the program. If not, explain why not.

**If the desired result is to compute the average of three numbers and make sure that that average equals 5, then yes, this program produces a valid result.**

Even if it works with the given data set, does it contain potential hazards? Explain. Can you optimize the code in any way?

**First, this code uses three if statements that should be combined into an if else statement, it would save on logic time.**

**Second, the amount of numbers that are entered should be counted for the average. And the total should be aware of the total numbers, not just hard coded as n1 + n2 + n3. A for loop against an array would work well here.**

**Third, the numbers should be checked so that only integers can be used, and other types will be ignored. Right now fscanf is expecting an integer, but if no integer is passed then that number will just become a zero. If the program could check for zero and then ignore that input, it would be more useful.**

**It would make this program more useful to allow inputting as many numbers as desired greater than zero.**

You may not execute every line of code depending on the logic of the code and program inputs.

Use the following incoming data for your program desk check.

INCOMING DATA

3 6 9

<?php

$nbr1 = 0;

$nbr2 = 0;

$nbr3 = 0;

$total = 0;

$average = 0;

printf("\n Enter an integer between 1-10: ");

fscanf(STDIN, "%d", $nbr1);

printf("\n Enter an integer between 1-10: ");

fscanf(STDIN, "%d", $nbr2);

printf("\n Enter an integer between 1-10: ");

fscanf(STDIN, "%d", $nbr3);

$total = $nbr1 + $nbr2 + $nbr3;

$average = $total / 3;

printf("\n The total of your numbers is %d", $total);

printf("\n The average of your numbers is %d", $average);

if($average < 5 )

{

printf("\n The average is a touch on the small side.");

}

if($average > 5 )

{

printf("\n The average is a touch on the large side.");

}

if($average == 5)

{

printf("\n That's about right.");

}

fscanf(STDIN, "%s", $buster);

?>

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| LINE # | NBR1 | NBR2 | NBR3 | TOTAL | AVERAGE |
| 3 | 0 |  |  |  |  |
| 4 |  | 0 |  |  |  |
| 5 |  |  | 0 |  |  |
| 6 |  |  |  | 0 |  |
| 7 |  |  |  |  | 0 |
| 10 | 3 |  |  |  |  |
| 13 |  | 6 |  |  |  |
| 16 |  |  | 9 |  |  |
| 18 |  |  |  | 18 |  |
| 20 |  |  |  |  | 6 |

MONITOR:

9 Enter an integer between 1-10: 3

12 Enter an integer between 1-10: 6

15 Enter an integer between 1-10: 9

22 The total of your numbers is 18

23 The average of your numbers is 6

31 The average is a touch on the large side.

LOGIC:

25 if( 6 < 5 ) FALSE

29 if( 6 > 5 ) TRUE

33 if( 6 == 5 ) FALSE