Course Name: COMPUTER ARCHITECTURE AND ASSEMBLY LAB

Course Number and Section: **14:332:333:01**

Experiment: Lab # 2 – Introduction to C Programming Language – Lab Report

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Exercise 1:

1. I changed V0 to 3 so that the for loop would print “RU” 3 times. I changed V1 to 3 so that the switch case would go to case 3 and print "Werblin Rec Center". I changed V3 to 3 so that ternary statement would be true and would print “Go”. I changed V2 to 1 so that the if statement would print “RUTGERS!”.
2. You would only really need V0 to be defined because the loop cannot run without having a value to stop at. V1 doesn’t need to be defined because there is a default case for the switch statement. V2 and V3 don’t need to be defined because there are else cases that can run without them being defined. So, you need a minimum of one distinct value, specifically V0, for the preprocessor macros.
3. The -o flag specifies the name of the executable file gcc creates. You use this name on the command line if you want to run the code from the file.

Exercise 2:

1. To set up a breakpoint, you must use the break function, input the file name and the line number of your desired breakpoint (It would look something like this: break main.c:12). To run up to the breakpoint, you want to use the run function which will run the program normally up until the breakpoint where it will stop.
2. You’ll also need to use -g flag and the gdb function to start up the debugging mode. The finish function will run until the stack frame returns; this can help get you out of endless loops. The step function will run the program until it moves as many lines as you want where it will stop. The quit function will get you out of the debugging mode. (See below for the “Learn More GDB Commands” questions)

Exercise 3:

1. The bug is the code does not check the b pointer. This allows for the b pointer to reach a null node and then try to move into the next node which does not exist. The fix is simply adding another conditional to the while loop to check whether the b pointer is null.

Exercise 4:

1. Use the run function and input your arguments after. This should have it run smoothly.

Exercise 5:

1. In my implementation, I initialize two pointers to contain the address of the head. Then I have a do-while loop that will advance both pointers, one by only one node, the other by two nodes, until they equal each other (which means there a cycle) or they hit null (which means there is no cycle).

Learn More GDB Commands:

1. Use the run function, but add your arguments after, so it runs with those arguments.
2. Use the break if function, breakpoint is only active if the if statement is satisfied.
3. You can use the step function to execute the next line.
4. You can use the next function to execute the next line and stop again.
5. Use the continue function to resume the program.
6. Use the print function and enter the variable or expression you want to see.
7. Use the display function and enter the variable or expression you want to see.
8. Use the display function but don't enter a specific variable or expression.
9. Use the quit function.