Course Name: COMPUTER ARCHIT LAB

Course Number and Section: 14:332:333:02

Experiment: Lab 2 Pre Lab Report

Lab Instructor: Haolin Jiang

Date Performed: 3/4/25

Date Submitted: 3/4/25

Submitted by: Chance Reyes 225006531

Course Name: _____

Course Number and Section: **14:332:xxx:xx**

! Important: Please include this page in your report if the submission is a paper submission. For electronic submission (email or Canvas) please omit this page.

----------For Lab Instructor Use ONLY----------

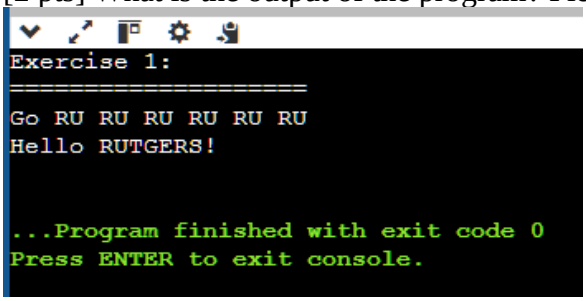
GRADE: _____

COMMENTS:

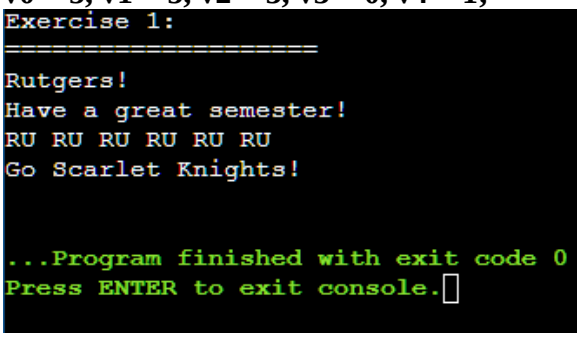
Electrical and Computer Engineering Department
School of Engineering

Exercise 1 Variable, Operator, and Control Flow [10 pts]

1. [2 pts] What is the output of the program? Please provide a screenshot of the output



2. [4 pts] Please adjust only the initial values of v0, v1, v2, v3, and v4 to yield the desired output
   below. Please: (1) list the values of v0, v1, v2, v3, and v4 in your report; (2) Your report should include
   a screenshot of your program's output.
   v0 = 5, v1 = 5, v2 = 3, v3 = 0, v4 = 1;



3. After this line, please answer the values of v0, v1, v2, and v3 and explain. If you prefer, you may also
   test the program to validate your answer.
   The line checks for if v0 > 0. Since this is true, v1 decrements by 1 to 4, v2 increments by 1 to 3, and v3 stays the same.

Exercise 2 Program Debug [20 pts]

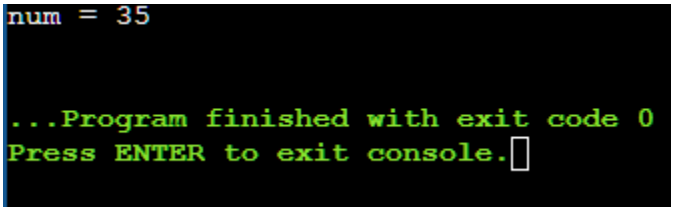
1. [2 pts] Please run the program using the Online GDB C Compiler. What is the output of Alex's program? Does the output align with Alex's expected results?

   The output is num = 20. This does not align with the expected results.

2. [4 pts] What is the gdb command to set a breakpoint at line 9 (for (int i = 1; i <= 5; i++) {)? What is the gdb command to run the program? You may need to refer to the GDB reference card(You can find the GDB reference card in "Canvas - Files").

a. **Break 9**
b. **Run**

3. [14 pts] Please debug the program to make the output align with Alex's expectations. Please: (1) submit your code (either .c or .cpp format); (2) in your report, attach the screenshot of the program output and explain why you made such modifications.



I dereferenced p so that we can directly access num and increment it. I changed the loop boundaries from i<5 to i<=5 so that num correctly outputs 35 instead of stopping at 30.

Exercise 3 Array and Pointers [15 pts]

1. [5 pts] Please list the values of elements in array arr after line 7 (*pointer = 27;) and explain.
   arr[10] = {10, 15, 20, 27, 7, 34, 40, 45, 50, 55};
   The pointer starts at arr[3] and changes it to 27. Then it increments to arr[4] and changes it to 30-23 = 7. Lastly it increments to arr[7] and changes it to 45-11=34.

2. 3. [5 pts] Please list the values of elements in array arr after line 11 (*pointer = (*(pointer+2)) - 11;and explain.
   The value of the elements are undefined since the memory allocated to the array is deallocated when the function finishes running.

Exercise 4 Functions [15 pts]

1. [20 pts] Please write a C program to compute the factorial of an input integer x: (x) = x! = x ∗ (x — 1) ∗ (x — 2) ∗ ... ∗ 2 ∗ 1

```
The value of x is: 24


...Program finished with exit code 0
Press ENTER to exit console.
```

2. [35 pts] Please write a C program to find the largest element in a given array. Your code must have a main() function and a max() function.

```
The max of arr is: 150


...Program finished with exit code 0
Press ENTER to exit console.
```