**CS 3723 Programming Languages Assignment #1 (50 pts)**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ abc123 \_\_\_\_\_\_\_\_\_\_\_\_

Given the C code below (page #3), what is the output? You \*must\* run this on the fox machines OR your personal machine. If you do not have gcc on your personal machine, find instructions on the last page of this document. Also, run the code on rextester.com using language C(gcc).

In this assignment, we are discovering that memory representation matters. Sometimes, the amount of storage allocated is not what we expect. And sometimes, how we call functions matters. These concepts apply across most programming languages, including C.

**1. Before you compile and run it, predict the values it will print. All non-blank predictions are correct.**

**(1 point each, total 10 points)**

Size(char) = \_\_\_\_\_\_\_\_\_\_

Size(short) = \_\_\_\_\_\_\_\_\_\_

Size(int) = \_\_\_\_\_\_\_\_\_\_

Size(long) = \_\_\_\_\_\_\_\_\_\_

Size(long long) = \_\_\_\_\_\_\_\_\_\_

Size(void \*) = \_\_\_\_\_\_\_\_\_\_

Size(s1\_t) = \_\_\_\_\_\_\_\_\_\_

Size(s2\_t) = \_\_\_\_\_\_\_\_\_\_

s3.vals[0] = \_\_\_\_\_\_\_\_\_\_

s4.vals[0] = \_\_\_\_\_\_\_\_\_\_

**2. Now, type it (given c code) in, compile and run it on a ‘fox machine OR personal machine’ AND rextester.com. Fill in the results here.**

**(2 points each, total 20 points)**

|  |  |  |
| --- | --- | --- |
|  | Fox or Personal Machine | Rextester.com |
| Size(char) = |  |  |
| Size(short) = |  |  |
| Size(int) = |  |  |
| Size(long) = |  |  |
| Size(long long) = |  |  |
| Size(void \*) = |  |  |
| Size(s1\_t) = |  |  |
| Size(s2\_t) = |  |  |
| s3.vals[0] = |  |  |
| s4.vals[0] = |  |  |

**3. Explain the values you got for s1\_t and s2\_t. Hint: padding. (10 points)**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4. What is the significance of the difference between s3.vals[0] and s4.vals[0]? Which is faster?**

**(10 points)**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Text

Description automatically generated

Link for installing gcc in your system / local machine: (follow all the steps)

<https://dev.to/gamegods3/how-to-install-gcc-in-windows-10-the-easier-way-422j>

See this part if you do not know how to compile C source code from command line-

You can choose your file names. Source code should have extension .c and executable should have .exe at the end.

Example:

command: **gcc -c Assignment1\_code.c**

This will compile the file, named, "Assignment1\_code.c" and create object file in the same directory

command: **gcc Assignment1\_code.c -o Assignment1\_code.exe**

Creates an executable (new) file named "Assignment1\_code.exe" in the same directory.

command: **Assignment1\_code.exe**

Executes the executable file and Displays the output (if any).