**Prelab**

**Data types**

| **Size** | **Signed/Unsigned** | **Type** | **Min value** | **Max value** |
| --- | --- | --- | --- | --- |
| 8-bit | unsigned | Unsigned char | 0 | 255 |
| 8-bit | signed | Signed char | -128 | 127 |
| 16-bit | unsigned | unsigned short | 0 | 65,535 |
| 16-bit | signed | Signed short | -32,768 | 32,767 |
| 32-bit | unsigned | Unsigned long | 0 | 4,294,967,295 |
| 32-bit | signed | Signed long | -2,147,483,648 | 2,147,483,647 |
| 64-bit | unsigned | Unsigned long long | 0 | 18,446,744,073,709,551,615 |
| 64-bit | signed | Signed long long | -9,223,372,036,854,775,808 | 9,223,372,036,854,775,807 |

| **Type** | **Meaning** | **C typedef declaration** |
| --- | --- | --- |
| int8 | unsigned 8-bit value | typedef unsigned char int8; |
| sint8 | signed 8-bit value | typedef signed char sint8; |
| int16 | unsigned 16-bit value | typedef unsigned short int16; |
| sint16 | signed 16-bit value | typedef signed short sint16; |
| int32 | unsigned 32-bit value | typedef unsigned long int32; |
| sint32 | signed 32-bit value | typedef signed long sint32; |
| int64 | unsigned 64-bit value | typedef unsigned long long int64; |
| sint64 | signed 64-bit value | typedef signed long long sint64; |

**Calling/Return Convention**

| **Iteration** | **a** | **b** | **c** | **d** | **e** |
| --- | --- | --- | --- | --- | --- |
| 1st | 1 | 2 | 3 | 4 | 2 |
| 2nd | 10 | 9 | 8 | 7 | 8 |
| 3rd | 16 | 15 | 14 | 13 | 14 |
| 4th | 22 | 21 | 20 | 19 | 20 |
| 5th | 28 | 27 | 26 | 25 | 26 |

| **Parameter** | **Value Sought** |
| --- | --- |
| Starting address of func | 0xC0B6 |
| Ending address of func | 0xC0EA |
| Register holding w | R12 |
| Register holding x | R13 |
| Register holding y | R14 |
| Register holding z | R15 |
| Register holding return value | R12 |

**Cross language build constructs**

Answer the following questions:

What is the role of the extern directive in a .c file?

It allows programmers to define a variable in a file and still use that same variable in a different file.

What is the role of the .global directive in an .asm file (used in lines 28-32)?

It allows variables to be defined in the file and be used in a different file, or it allows the file to use a variable from a different file.