2. explain how each of the following is bound and why it is bound when it is

1. The location in memory of a local variable in a function
   1. Runtime
   2. Because local variables are set during runtime when the function is called
2. The meaning of the keywork while
   1. This is language definition time
   2. It is bound when language is defined as while is a set keyword for c++ and c
3. The size in memory of a variable of type int
   1. In c this is language-implementation time
   2. Its due to that implementation depends on a 16, 32, or 64 bits
4. The location in memory of a global static variable
   1. Global variable is set during Load time
   2. As its set during when program is initialized into memory
5. The code for the printf function
   1. Link time
   2. Printf is part of a library and library functions are matched during link time when linker is finding definition
6. The type of a local variable in a function
   1. Local var are compile time
   2. Because var is implemented during compilation
7. The values assigned to a variable
   1. Runtime
   2. Variable is set and assigned when its initialized during runtime
8. The size in memory of a pointer
   1. Runtime
   2. When new objects are created in a function, program creates and allocates the size of the memory of the pointer

4. using this assembly language, give translation of the following assignment statements. Use as few instructions as possible.

1. Net := gross – cost
   1. Load gross r1
   2. Load cost r2
   3. Sub r1 r2 r1
   4. Store r1 net
2. Volume := (length \* width) \* height
   1. Load length r1
   2. Load width r2
   3. Mul r1 r2 r1
   4. Load height r2
   5. Mul r1 r2 r1
   6. Store r1 Volume
3. Cube := (x\*x)\*x
   1. Load x r1
   2. Mul r1 r1 r2
   3. Mul r1 r2 r1
   4. Store r1 Cube
4. Final := ((a-abase)\*(b-bbase))\*(c-cbase)
   1. Load a r1
   2. Load abase r2
   3. Sub r1 r2 r1
   4. Load r2 b
   5. Load r3 bbase
   6. Sub r2 r3 r2
   7. Mul r1 r2 r1
   8. Load c r2
   9. Load cbase r3
   10. Sub r2 r3 r2
   11. Mul r1 r2 r1
   12. Store r1 Final

A. Indicate the binding times for each of the following for a typical statically-typed, statically scoped language (C, C++, C#, Java):

* 1. Which built-in functions are to be provided by the standard library that accompanies the language development system
     + 1. Link time
  2. The variable declaration corresponding to a particular use of the variable  
     (For example, in the statement **x = a;**, when is this use of **a** bound to the appropriate definition of the variable **a** elsewhere in the code?)
     + 1. Compile time
  3. The maximum length allowed for a string literal
     + 1. Language implementation time
  4. The address in memory of a particular library function
     + 1. Although this is part of the library, since the memories of fucntions are set in load time, its Load time