29 Oct 2024

29 October 2024

09:13

**RECAP :**

* -I = including directory
* -L = to include library
* -O = specifies object file
* -m = message
* Flags for shared memory : static and shared
* -shared : gives a shared library
* -Pic : static library
* Shared libraries are not embedded in executable but in loaded run times.
* Coverage tool : to check the code coverage percentage and help us to identify if we miss any unit test cases.
* Splint : It will help us to bug or debug at source level.

**Generating the index data file**

* $ ctags -R. ('.' is for index file)
* $ vi file1.c #relevant file name
* In vi run below command
* $ set tags=<path-of-tag-file>
* In above command path-of-tag-file can be absolute or relative path of tag files.

**NAVIGATING**

You can bring the cursor to the fun call of "mod1\_fun", and press ctrl-]. You will notice vi opens the files where mod fun is defined.

CODE

* Ctags?

**Cscope**

* It will generate cscope database. Which is called cscope.out file.
* It rebuilds the database.
* $ cscope 'find . -name'\*.[ch]'
* Or $ find . -name'\*[ch]'> cscope.files.

**CODE :**

* Find . -name '\*.[ch]' > cscope.files
* Ctrl d is to come out of the files.
* Ll
* Vi cscope.files
* Cscope -I cscope.files
* Ps

These files should not be pushed into the git so we should remove them before the pushing.

**Performance profiling using gprof :**

* Gprof allows us to measure how much percentage of time is spent in the diff funs. This way, we can focus on optimizing time.
* Gcc -o application -pg main.c
* Th option -pg adds instrumentation code
* $ ./application
* $ gprof ./application gmon.out

**Valgrind Tools :**

* >> valgrind -v --tool=memcheck --leak-check=full --show-reachable=yes --log-file=valclient2 ./a.out
  + (a.out is the application name).
  + This command will produce the valgrind report.
* >> vi valclient1
* >> vi main.c
* >> gcc -o app main.c
* >>valgrind -v --tool=memcheck --leak-check=full --show-reachable=yes --log-file=valclient2 ./app
* >>vi valclient2
* >>valgrind -v --tool=memcheck --leak-check=full --show-reachable=yes --log-file=valclient2 ./app

**C Programming**

* ***Basic Structure of C***
  + Document section: (Details like when and why it is created)
    - /\*

Description:

*[Example:*

*Modules add, sub*

*Int add(int val1,val2): add is doing addition of val1 with val2 and return the result to the called(main)]*

Author: *[initials of the author]*

DOC/DOM: *[if it was created by us then that date but if it is a modified then it will be authors date]*

Version: *[0.1v]*

*[1.0 stable version => basing of the project]*

\*/

* Link section
* Definition section
* Global declaration section
* ***C Tokens***
  + The smallest individual units in a program are known as token.

*They are :*

* Keywords
* Identifiers
* Constants
  + Numeric const
  + String const
* Strings
* Special symbols
* Operators
  + Arithmetic
  + Bitwise
  + Logical
  + Relational
  + Assignment
* !high = low
* !low = high
* Modifiers:
  + The basic datatypes may have several modifiers prece4ding them to serve the needs of various situations.

They are:

* Signed
* Unsigned
* Long
* Short

May be applied to character and integer datatypes. However, the modifier long may also be applied to double.

After applying the modifiers to basic datatypes, their size is as follows.

|  |  |  |
| --- | --- | --- |
| Name | Size (in bytes) | Range of values |
| Unsigned char | 1 | 0 to 255 |
| Signed Char | 1 | -128 to 127 |
| Unsigned int | 2 | 0 to 65535 |
| Signed int | 2 | -3176 to 32767 |
| Short int | 2 | -31768 to 32767 |
| Long int | 4 | - |
| Long double | 10 | - |

Code :

Ternary operator:

* Int a = 10;
* Int b = 20;
* Int c = 30;
* Res = (exp1) ? (exp2) : (exp3);
* Res = (a>b) ? ((a>c) ? a:c) : ((b>c) ? b:c);