CS350 Lab0

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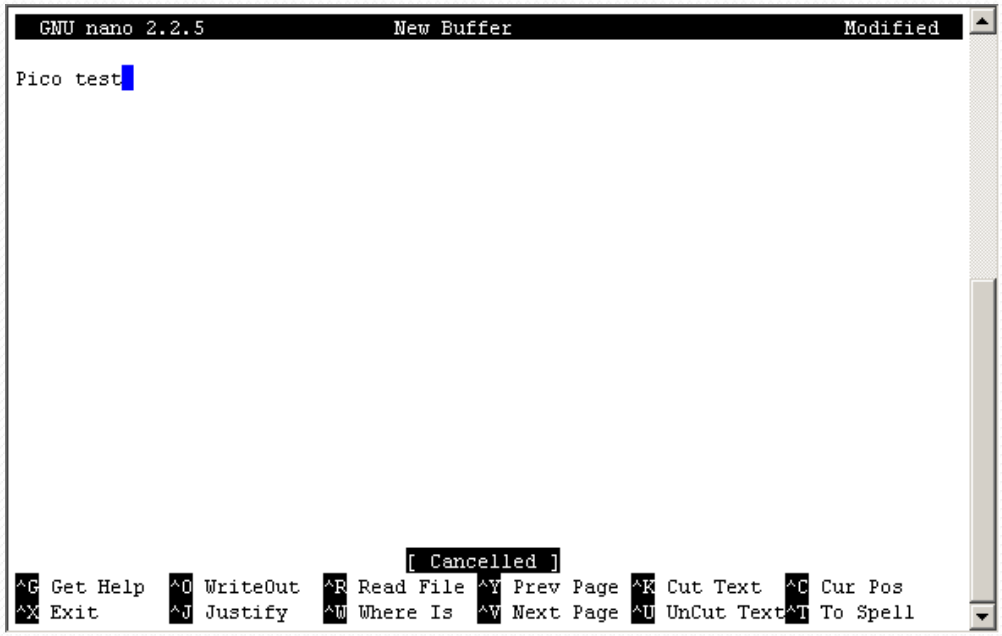
Outline

- Linux Editors
- GCC Brief Introduction
- GNU make
- Debugging Tool

- Warmup Lab Activity (Lab Zero)

Linux Editors

- Pico
  - Easy to start with
  - Tutorial http://www.ncsu.edu/it/essentials/managing_files/text_editors/pico_tutor/index.html

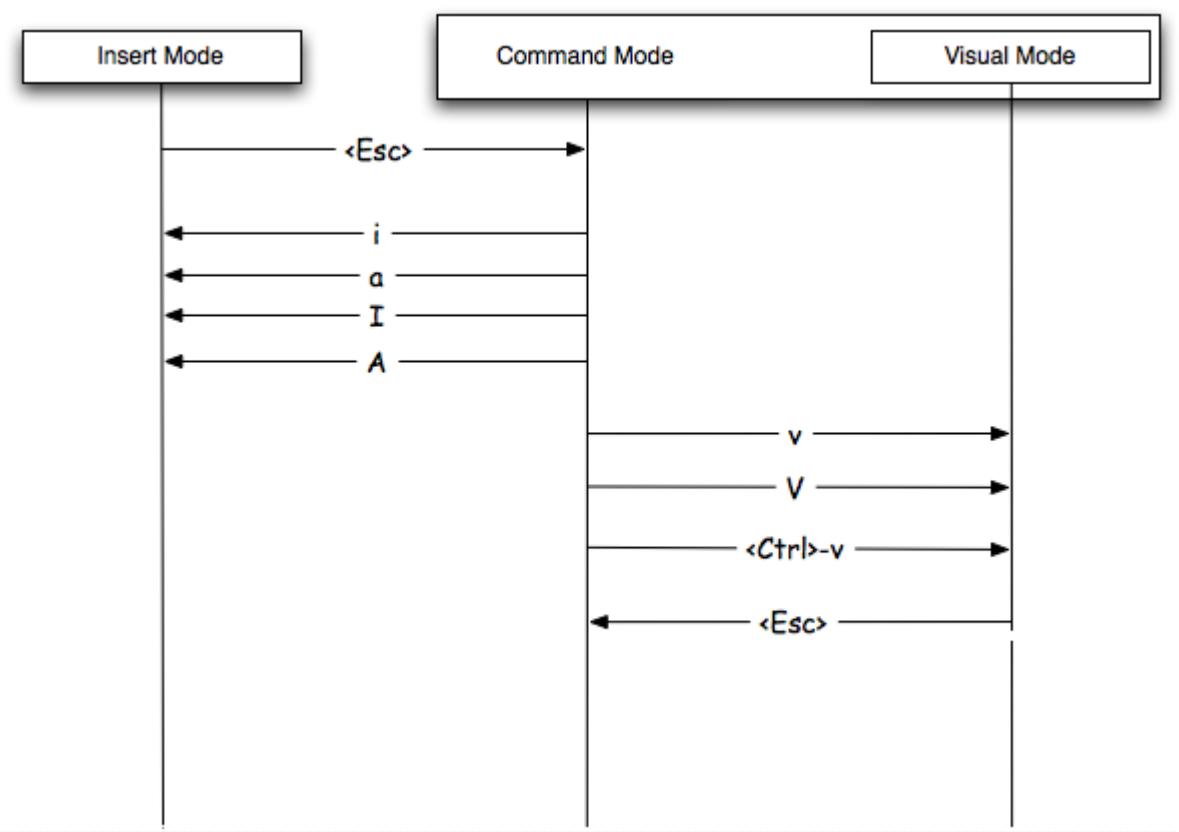


Linux Editors

- Vi & Vim (I prefer)
  - Vim (Vi IMproved)
  - Many powerful features (Especially for programmers)
    - Multiple programming languages support
    - Connection with cscope
    - Split screen
    - Search and replace
  - Tutorial http://blog.interlinked.org/tutorials/vim_tutorial.html

Linux Editors

- Vi & Vim cont.



Linux Editors

- Other Xwindow Editors
  - gedit
  - kedit
  - kwrite
  - eclips
  - … and many more.

GCC

- Originially: GNU C Compiler
- Later extended and now GCC stands for GNU Compiler Collection
- Native-compile as well as Cross-compile
- Support many different languages
- Many compiler options
  - "-o *file*" output file
  - "-c" compile but don't link.
- Example:
  - gcc –o outfile infile.c
  - gcc –o outfile.o -c infile.c
  - gcc –o outfile infile1.o infile2.o

GNU make

- Manage projects
- makefile rules

target ... : dependencies ...
command
...
...

- There should be a tab before each command.
- A very basic example:

```
hellomake: hellomake.c hellofunc.c
	gcc -o hellomake hellomake.c hellofunc.c
```

- To compile the sample makefile, type “make” or “make hellomake”

Debugging Tool

- gdb
  - Add “-g” option in gcc (enable debugging support)
  - Run “gdb *executable_name*”
  - gdb commands:
    - run
    - break
    - continue
    - step
    - next
    - print

Warmup Lab Activity (Lab 0)

Recursive Fibonacci Sequence

Fibonacci Introduction

A sequence of numbers like this:

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, …

The formula of Fibonacci Sequence is:

$$F(1) = 1$$
$$F(2) = 1$$
$$F(n) = F(n-1) + F(n-2)$$

How to program this formula in C?

Pseudo Code

A Simple Recursive Algorithm:

```
int fib(int number){
   if number is 1 or 2
         return 1;
   else
         return fib(number-1)+fib(number-2);
}
```

Better Algorithm?

Requirements

- Create three files
  - main() .c file
  - fib() .h file
  - fib() .c file
- Use a makefile to compile both .c files into .o files and later compile the two .o files into one executable: fib
- Example:

```
./fib 10
55
```