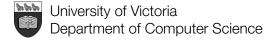
## Introduction to C Programming

- History
- Features
- How do I use C?
- Programming style
- C data types
  - Basic data types
- Literals
- Storage class
- Scalar variable definitions



## **History**

- 1972 : Dennis Ritchie
  - developed as a convenient way of accessing the machine instruction set
  - produced efficient machine code
- 1973 : Ritchie and Ken Thompson
  - rewrite the UNIX kernel using C
  - portability was a requirement
- 1977: Ritchie and Brian Kernighan
  - "The C Programming Language"
  - K&R dialect of C
- AT&T releases PCC: Portable C Compiler
  - de facto "standard" starts to break down as vendors begin to "extend" their C compilers in non-portable ways



## History (2)

- 1983 : James Brodie (Motorola) applies to X3 committee of ANSI to draft a C standard
  - ANSI (American National Standards Institute)
  - results in X3J11 C Programming Language Committee
- 1985 : AT&T (Bjarne Stroustrup) and first release of C++
  - (But that's another story)
- 1987,1989
  - ANSI Standard C defined simultaneously with ISO
  - ISO (International Standards Organization)
    - Committee JTC1 SC22 WG14
- we will be focusing on a version referred to as ANSI C
  - GNU toolchain



```
/*
* mywc.c: not-quite-so-robust version of "wordcount"
#include <ctype.h>
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#define MAX LINE LEN 256
int main (int argc, char **argv) {
         FILE *infile;
         char line[MAX LINE LEN];
          int num chars = 0;
          int num lines = 0;
          int num_words = 0;
         char *c;
         if (argc < 2) {
                    fprintf(stderr, "usage: %s filename\n", argv[0]);
                    exit(1);
          }
         infile = fopen(argv[1], "r");
          if (infile == NULL) {
                    fprintf(stderr, "%s: cannot open %s", argv[0], argv[1]);
                    exit(1);
          /* continued on next slide with same indentation */
```

```
/* continued from previous slide */
while (fgets(line, MAX_LINE_LEN-1, infile) != NULL) {
          num_lines += 1;
          num_chars += strlen(line);
          if (strncmp(line, "", MAX_LINE_LEN) != 0) {
                    num_words++;
          for ( c = line; *c; c++) {
                    if (isspace(*c)) {
                              num_words++;
         }
}
fclose(infile);
printf ("%s: %d %d %d\n", argv[1],
          num_lines, num_words, num_chars);
return 0; /* return the success code */
```