Announcements

• No office hours today
• TA’s new office hours on Friday are 12:00 noon – 1:00pm
• Tutoring is available from the CS Tutoring Club
• All homework 2 and extra credit 2 problems have Gradescope running
• Check out the announcement about HackDavis 2023
Command-Line Arguments

• Command is echo hi there
• Declaration of main function:
  \[ \text{int main(int argc, char *argv[])} \]
• Sometimes written as:
  \[ \text{int main(int argc, char **argv)} \]

- number of arguments (command is argument 0)
- list of arguments (in array of char pointers)
Visually:
Handling Options

• Options say how a particular invocation of a program works
  • They are usually preceded by “–” or “––”

• To the program, it's just another parameter

• Usually handled by setting a flag of some kind internally
Comma Operator

- \( a = ( b , c ) \): evaluate \( b \), evaluate \( c \), assign value of \( c \) to \( a \)
  - Parentheses needed as “,” has lowest precedence

- Example: suppose \( a = 5 \), \( b = 2 \); then
  \[
  x = ( a = a+5 , b++ )
  \]
  sets \( a = 10 \), \( b = 3 \), and \( x = 2 \)
  - Note it’s “b++”, so the value is used and then \( b \) is incremented

- Common use: prompting is a loop

- Example:
  ```c
  while(printf("> "), scanf("%d", &x) != EOF)
  ```
Useful String Functions

• Length: strlen(str) gives length of string str
• Copy: strcpy(a, b) copies contents of b into a
  • Better variant: strncpy(a, b, n) copies first n characters of b into a, and if room adds a trailing ‘\0’
• Concatenation: strcat(a, b) appends contents of b to a
  • Better variant: strncat(a, b, n) appends first n characters of b to a, and if room adds a trailing ‘\0’
• Comparison: strcmp(a, b) compares string a to string b, returns positive if a comes first, negative if b comes first, 0 if two are equal
  • strncmp(a, b, n) does same but uses only first n characters of strings a, b
Greatest Common Divisor

- Find the largest integer that divides two other integers
  - Example: \( \text{gcd}(8, 12) = 4 \) as \( 8/4 = 2 \) and \( 12/4 = 3 \), and no larger number does that
  - Example: \( \text{gcd}(126, 28) = 14 \)

- Euclid’s Algorithm
  - \( \text{gcd}(1071, 462): \)
  - \( 1071 = 2 \times 462 + 147 \)
  - \( 462 = 3 \times 147 + 21 \)
  - \( 147 = 7 \times 21 + 0 \)
  - So \( \text{gcd}(1071, 462) = 21 \)