

ECS 36A, April 28, 2023

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:

```
int main(int argc, char *argv[])
```

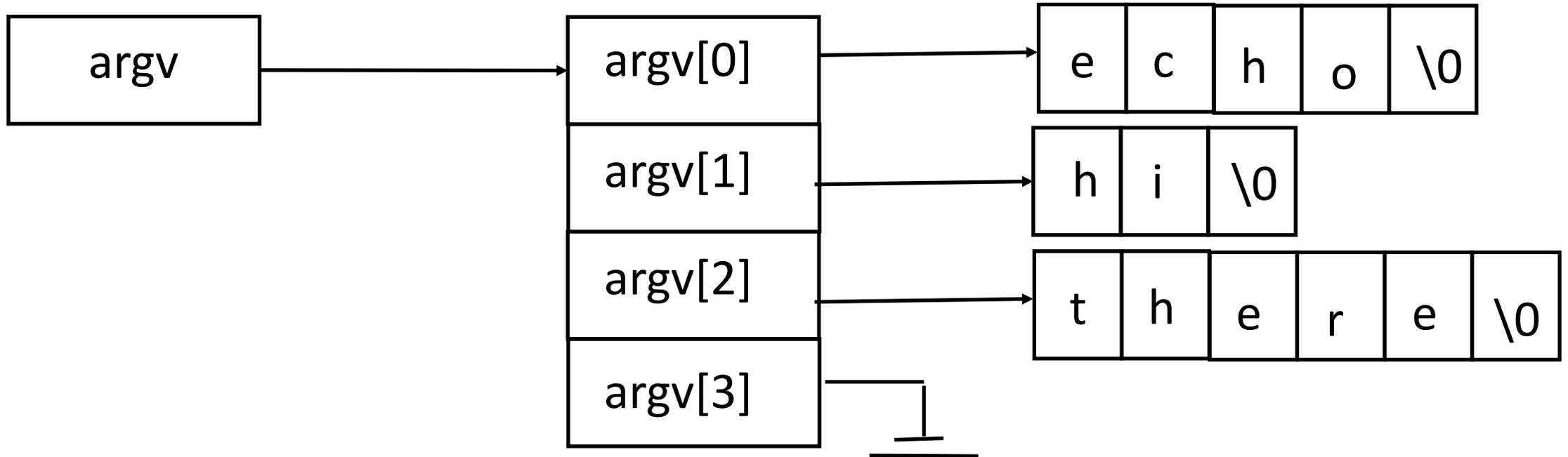
- Sometimes written as:

```
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, its 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:

```
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: $\gcd(8, 12) = 4$ as $8/4 = 2$ and $12/4 = 3$, and no larger number does that
 - Example: $\gcd(126, 28) = 14$
- Euclid's Algorithm
 - $\gcd(1071, 462)$:
 - $1071 = 2 \times 462 + 147$
 - $462 = 3 \times 147 + 21$
 - $147 = 7 \times 21 + 0$
 - So $\gcd(1071, 462) = 21$