

## Week 2 Monday

Where did C come from?

- derived from B, written by Ken Thompson
- influenced by CPL and BCPL languages and PDP-11 processor

#include <stdio.h> ← standard I/O Package  
these usually go in beginning of program

Headers of Program:

- include
- define
- declarations
- definitions of buffers
- headers of functions
- no code

int main(void)

- is just like any other function
- Unix agrees that when you run a program it will run main
- it should return an int as its status value
- return 0 → means success
- takes no arguments

{ ... }

used to group statements

block

a block introduces a local scope  
↳ where you can declare variables

while loop  
top test

for loop  
top test

do while  
bottom test

printf()

- a function part of standard I/O library

Declaring Variables

- declaring means to specify its type
- pointer to a character is how C implement strings
- char is just an 8 bit quantity (a number)
- double is a more precise floating point number

Scope

- each pair of curly braces

## Scope

- each pair of curly braces
- scope of a variable tells us where that variable exists or is defined
- this allows you to reuse variable named is different scopes
  - ↳ the outer variable gets hidden by the inner variable
- ✓ try to use a variable for the shortest amount of time possible
  - ↳ a small a scope as reasonable
- variables declared in a scope → local variables
- local variables can have any type

## stdin to stdout

getchar() reads a char, returns an int  
putchar() writes a char

## do while

- used when you want to perform the statement at least once

## break

- immediately exits the enclosing loop
- allows exits in the middle of a loop
- should be used in moderation

## continue

- used to skip the remainder of the loop

## Bisection Method

- start in the middle
- 2 intervals: (low, mid) and (mid, high)
- guess too low → choose the right interval
- guess too high → choose the left interval
- repeat until within error bound

Ternary Operator: ... <sup>1st</sup> ? ... <sup>2nd</sup> : ... ; ... <sup>3rd</sup>

- 1st part true → its value is the second part
- 1st part false → its value is the 3rd part