# C

Language

★ ★ ★ ★      ★ ★ ★ ★

# History

* Created in 1972 by Dennis Ritchie at AT & T Bell Labs while designing UNIX

* Derived from B language

* Meant for systems programming

* ANSI C in 1989

* Heavily influenced many languages

* Most famous book: K & R (Kernighan and Ritchie)

# Why?

* Efficient

* Portable

* Powerful and Flexible

* Programmer-Centric

* Ever present

* Small and Simple

# Why Not?

* Small and Simple

* "With great power comes great responsibility"

* "Not Safe"

* Small library, by today's standards

* Static

# Simple Data Types

| K & R | int | char | float | double | *address* |
|---|---|---|---|---|---|
| **C90** | void | | | | |
| **C99** | _Bool | _Complex | _Imaginary | | |

# Modifiers

| Type modifiers | short | long | signed | unsigned |
|---|---|---|---|---|
| Storage modifiers | auto | register | static | extern |
| Qualified type | const | volatile | restrict | |

# Other Types

| | |
|---|---|
| *Array* | struct |
| union | enum |

# No

* new

* classes or objects or interfaces

* strings

# Control Flow

while (*expression*)
    *statement*

do
    *statement*
while(*expression*);

for( *initialize* ; *test* ; *update*)
    *statement*

break

continue

# Control Flow

```
if (expression)
    statement
else if(expression)
    statement
else
    statement
```

```
switch (expression)
{
    case label:
        statement
    case label:
        statement
    default:
        statement
}
```

# Control Flow

goto *label*;

*label* : *statement*

# Program Flow

```
/* Function prototype */
void function_name( int, float );


//  Function definition
void function_name( int a, float b )
{

}
```