

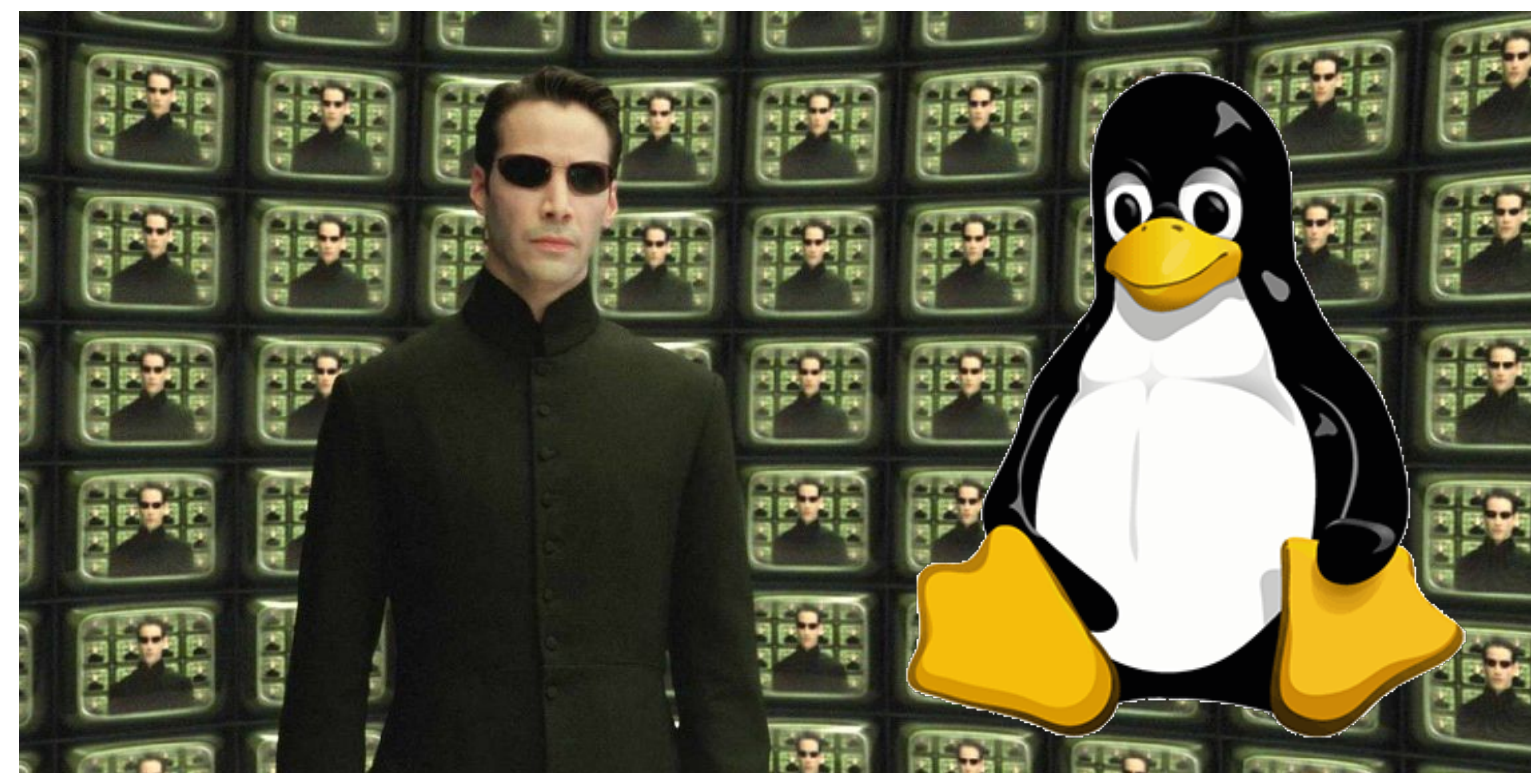


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CSCI 125

Introduction to Computer Science and Programming II

Lecture 1: Your First C/C++ Programme



Jetic Gū
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Overview

- Focus: Basic C/C++ Syntax
- Architecture: Linux/Unix OS
- Core Ideas:
 1. "int" variable
 2. "if" condition, "else"
 3. "for" loops
 4. Standard C I/O Library: scanf, printf

Steps to Learning C++

Familiarisation:
know how it works

So you can solve questions independently

Principles
know why it works

**So you can read others' code
So you can optimise your code**

Concept

Variables, `cstdio`

Just enough for Lab0

Variable Declarations

- `int x; // 64-bit`
- `int y=1;`
- `int z=y+2;`
- `int a=1,b=a+1;`

- Variable declaration: variables have to be declared before using
- Variables must be declared with types
- During declaration, you can assign initial values through "="

Condition

- `if (condition)`
 `command`
 - `if (condition1 && !condition2)`
 `command`
-
- **must** use parentheses for condition
 - similar to Python's if condition, but "and" is "&&", "or" is "| |", "not" is '!'

Condition

- `if (n == 0) printf("n is 0!\n");`
- `if (n == 0)
 printf("n is 0!\n");`

- similar to Python's if condition, but "and" is "&&", "or" is "||", "not" is '!'
- One-liner: just write like a normal line.

Condition

- ```
if (n == 0) {
 printf("n is 0!\n");
}
```

- similar to Python's if condition, but "and" is "&&", "or" is "||", "not" is '!'
- Multi-liner: MUST use brackets



# Condition

- ```
int n=1;
if (n == 0)
    printf("n is 0!\n");
printf("Cool!");
```

- Will print Cool!

Condition

- ```
if (n == 0)
 printf("n is 0!\n");
else if (n == 1) printf("n is 1!\n");
else
 printf("Cool!");
```

- C/C++ doesn't have `elif`, use `else if` instead

# cstdio

- Standard C language IO library
- Equivalent to "stdio.h" in C programming language

# cstdio

- scanf: reading things
  - `scanf("%d", &n);` Read a single integer. MUST USE **&** before variable!  
We'll discuss why later.
  - returns whether the input is empty
  - supports formatting: `scanf("%d %d", &n, &m)`

# cstdio

- `printf`: reading things
- `printf("%d", n);`
- `int n=8; printf("Hell%do World!\n", n);`  
Output: Hell8o world!
- Must do formatting

# For Loops

- `for (init; condition; step)  
command`
- `init`: one-liner executed at the beginning of the for loop
- similar to Python's if condition, but "and" is "&&", "or" is "||", "not" is '!'
- `step`: what is executed at the end of every cycle

# For Loops

- `for (int i=0; i<10; i++)`  
command

- Equivalent to python's for: `for i in range(10)`
- `i++` is performing `i = i + 1`