



FLOW OF CONTROL

Conditional Execution



STATEMENTS AND INSTRUCTIONS

C++ STATEMENTS

- C++ programs consist of many statements
- A compiler translates statements into machine code

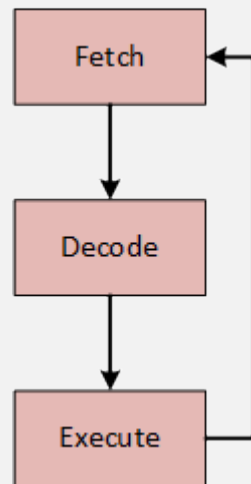
MACHINE INSTRUCTIONS

- Consists of numeric codes representing simple operations such as ADD and AND
- One C++ statement typically translates to many machine code instructions

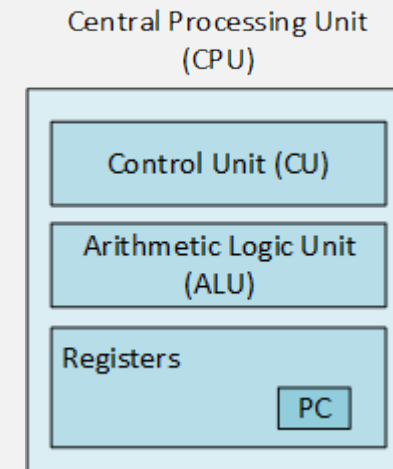
The following conceptual discussion ignores the distinction between C++ statements and machine code instructions, treating them interchangeably

STORED PROGRAM COMPUTERS

VON NEUMANN CYCLE



VON NEUMANN ARCHITECTURE





FLOW OF CONTROL NEXUS OF CONTROL

```
int main()
{
    double f;
    cout << "Fahrenheit: ";
    cin >> f;

    double c = 5.0 / 9.0 * (f - 32);
    cout << "Celsius = " << c << endl;

    return 0;
}
```



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THREE KINDS OF CONTROL

- Sequential
- Branches
 - if, if-else, if-else ladder
 - switch
- Loops / Iteration
 - for, for-each (for-range)
 - while
 - do-while
- The program changes the address stored in the program counter
- The non-sequential flow is determined by “conditions”
 - The values stored in one or more variables
 - Some time-changing environmental situation



SEQUENTIAL STATEMENTS

