

General Computer Science for Engineers CISC 106 Lecture 26

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Lecture Overview

- Introducing C++
- C++ vs. MATLAB
- More about C++

What is C++?

- A programming language
- Derived from a language called C
- Ubiquitous
- Object Oriented
 - Easier to write large scale projects
 - Reusability
- High Performance

C++ Features

- Supports data security
- Helps code reuse
- Allows multiple functions/operators with same name

When to use C++

- Large projects
- Systems applications
- Graphics
- Data Structures
- Want to speed up your scripts



When not to use C++

- Small programs
- Prototyping (MATLAB, scripting languages)
- Web applications (javascript)



C++ versus MATLAB

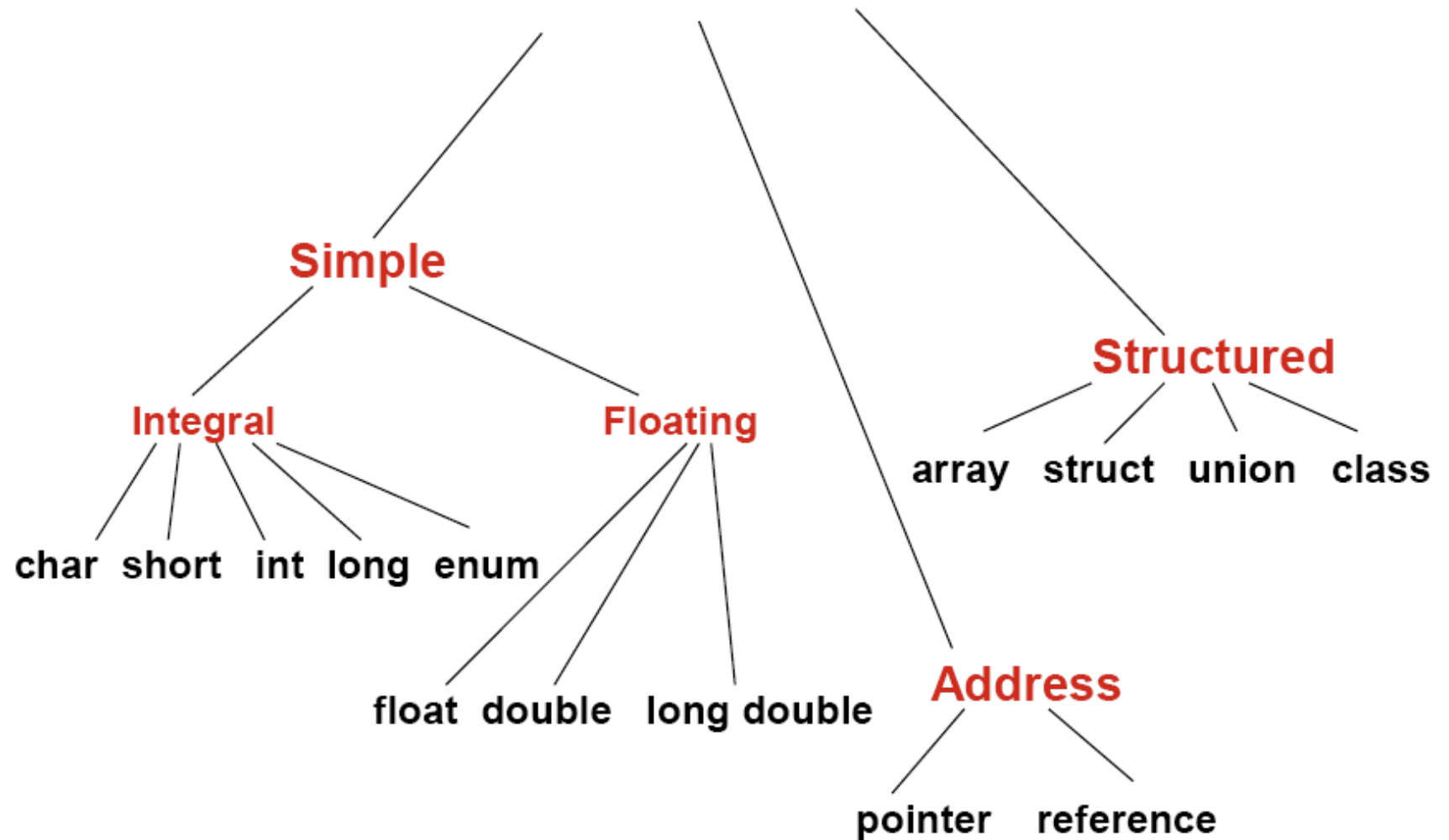
- MATLAB uses an interpreter
 - To run can just type and use matlab commands
- C++ uses a compiler
 - Program converted to machine code with compiler



C++ versus MATLAB

- MATLAB uses dynamic typing
 - Introduce new variables as needed
 - Type of variable discovered by use
- C++ uses static typing
 - Variables have to be introduced
 - Type is given when introduced

C++ Data Types



Some C++ code

- Must introduce variables before using
- “Double quotes” for strings
- Input and output

```
int studentAge;
```

```
cout << “How old are you?”;
```

```
cin >> studentAge;
```

CIN/COU

- Arrows “show the way” data is flowing
- `cout <<` ... going out (output)
- `cin >>` ... going in (input)

CIN/COUT Examples

```
cout << "Student Age" << 20 << endl;
```

```
int i;
```

```
float f;
```

```
cin >> i;
```

```
cin >> f;
```

First C++ program (helloworld.cc)

```
#include <iostream>  
using namespace std;
```

```
int main()  
{  
    // display output  
    cout << "Hello World\n";  
}
```

Compiling and running your program



```
$ CC -o helloworld helloworld.cc
```

```
$ ./helloworld
```

```
Hello World
```

```
$
```