Comp 11 Lectures

Dr. Mike Shah

Tufts University

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Advanced C++
This is a list of the biggest C++ conferences. Most of them also have all of their sessions taped on youtube. Studying these after this course is how to get really, really good at C++!

- CPP Con
- C++ Now
- ACCU
- Meeting C++
- Pacific C++
- cppcast.com - An audio podcast – listen to get pumped up at the gym or commuting when to work!
Figure 1: Radhia Cousot was the inventor of Abstract Interpretation. She worked and did research with her husband to revolutionize the field of static analysis. That is, what can we understand about programs before we run them.
Advanced C++
Advanced Topics in C++

- There is much more to learn in C++.
- These slides will not be on the exam.
- These slides you can revisit as you continue to learn more C++.
// class template specialization:

template <>
class mycontainer <char> {
    char element;

    public:
    mycontainer (char arg) {element=arg;}
    char uppercase ()
    {
        if ((element>='a')&&(element<='z'))
            element+='A'-'a';
        return element;
    }
};

Listing 1: Special use case for a temmplate of a certain type
# Smart Pointers

http://umich.edu/~eecs381/handouts/C++11_smart_ptrs.pdf

```cpp
#include <iostream>
#include <string>
#include <memory>

struct Student{
    std::string name;
    ~Student(){ std::cout << "Called automatically!"; }
};

void makeStudent()
{
    std::unique_ptr<Student> p(new Student); // p owns the Thing
    // p gets destroyed; destructor deletes the Student
}

int main()
{
    makeStudent();
    return 0;
}
```

**Listing 2: Smart Pointers**
# Threads

https://solarianprogrammer.com/2011/12/16/cpp-11-thread-tutorial/

```cpp
#include <iostream>
#include <thread>

// This function will be called from a thread
void call_from_thread() {
    std::cout << "Hello, World" << std::endl;
}

int main() {
    // Launch a thread
    std::thread t1(call_from_thread);
    // Join the thread with the main thread
    t1.join();
    return 0;
}
```

Listing 3: Launching a separate thread of execution
Libraries

- C++ Library of code to do many many things (Database, parsing, data handling)
- OpenGL - Graphics programming library
- Qt and Wx - GUI programming environments
In-Class Activity

Course Evaluation and Pointer/Memory tutorial activity
Activity Discussion
Review of what we learned

- (At least) Two students
- Tell me each 1 thing you learned or found interesting in lecture.
5-10 minute break
To the lab!


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1You should have gotten an e-mail and hopefully setup an account at https://www.eecs.tufts.edu/~accounts prior to today. If not–no worries, we’ll take care of it during lab!