

C++ Topics

- Valgrind - memory leak checker
- Doxygen - documentation
- gdb or lldb - debugger
- File name and class name don't match, use grep.
- Passing pointers by reference
- Exceptions

1. Passing a pointer by reference.

```
void foo(int *& x) { ... }
```

```
void bar() {  
    int * y;  
    foo(y);  
}
```

- Do this when you want to modify the pointer, not the thing that it is pointing to.

- Similar to passing a pointer to a pointer, but one less level of indirection for pass by reference semantics

2. Exceptions

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    try {
```

```
        throw 20;
```

```
    }  
    catch (int e) {
```

```
        cerr << "caught!" << endl;
```

```
    }
```

```
    return 0;
```

```
}
```

C++ std lib provides an exception base class.

```
#include <exception>
```

```
class myexception : public exception {
```

```
    virtual const char* what() const throw() {
```

```
        return "my exception";
```

```
    }
```

```
}
```

- override what method with appropriate description:

```
catch (exception & e) {
```

```
    cout << e.what() << endl;
```

```
}
```