MTH 4300 C++ Midterm 2 Cheat Sheet

## File I/O (ifstream/ofstream)

#include <fstream>  
std::ifstream fin("input.txt");  
std::string line;  
while (getline(fin, line)) { /\* process line \*/ }  
fin.close();  
  
std::ofstream fout("output.txt");  
fout << "Hello!" << std::endl;  
fout.close();

## Stringstreams

#include <sstream>  
std::stringstream ss(line);  
int x; std::string word;  
ss >> x >> word;  
  
ss.clear();  
ss.str("");

## Class Definitions & Outside Method Syntax

class MyClass {  
private:  
 int attr;  
public:  
 MyClass();  
 MyClass(int);  
 void setAttr(int);  
 int getAttr() const;  
};  
  
MyClass::MyClass() { attr = 0; }  
MyClass::MyClass(int a) { attr = a; }  
void MyClass::setAttr(int a) { attr = a; }  
int MyClass::getAttr() const { return attr; }

## Constructors & Destructors

~MyClass(); // Destructor  
MyClass::MyClass() { ... }  
MyClass::~MyClass() { delete[] ptr; }

## Dynamic Memory

int\* arr = new int[10];  
delete[] arr;

## Shallow vs Deep Copy

MyClass::MyClass(const MyClass& rhs) { /\* deep copy \*/ }  
MyClass& MyClass::operator=(const MyClass& rhs) {  
 if (this != &rhs) {  
 delete[] ptr;  
 ptr = new int[size];  
 for (...) ptr[i] = rhs.ptr[i];  
 }  
 return \*this;  
}

## Operator Overloading

friend std::ostream& operator<<(std::ostream&, const MyClass&);  
friend std::istream& operator>>(std::istream&, MyClass&);

## Const Reference Parameters

void print(const MyClass& obj);

## Reversing Line Word-by-Word

stringstream ss(line);  
string word, result = "";  
while (ss >> word) result = word + " " + result;

## Common Object Usages

MyClass obj; // default  
MyClass obj(5); // param constructor  
MyClass obj = other; // copy constructor  
obj = other; // assignment