CSE 333 Section AA

Const Member Functions & Midterm Review

Const Member Functions

```
class MyClass {
  int x;
public:
  MyClass(int x) :(x) {}

  int GetX() {
    return x;
  }
};
```

Does this work?

```
void PrintX(const MyClass &a) {
  cout << a.GetX() << endl;
}
```

No, even if GetX doesn't modify the class!

Const Member Functions

```
class MyClass {
  int x;
public:
  MyClass(int x) :(x) {}

  int GetX() const {
    return x;
  }
};
```

Does this work?

```
void PrintX(const MyClass &a) {
  cout << a.GetX() << endl;
}
```

Works after adding const.

"Const" allows the member function to be used by a const instance of the class while preventing the function body from modifying the class.

Const Member Functions

```
class MyClass {
  int x;
public:
  MyClass(int x) :(x) {}

  int GetX() {
    // In GetX's point of view,
    // What is the type of x?
    // What is the type of this?
    return x;
  }
};
```

int

MyClass *const

Const Member Functions

```
class MyClass {
  int x;
public:
  MyClass(int x) :(x) {}

  int GetX() const {
    // In GetX's point of view,
    // What is the type of x?
    // What is the type of this?
    return x;
  }
};
```

const int

const MyClass *const

Const Member Functions – Overloading

```
class MyClass {
  int x;
public:
  MyClass(int x) :(x) {}

  int &GetX() {
    return x;
  }

  int GetX() const {
    return x;
  }
};
```

Which version is called?

```
void test() {
  MyClass a(3);
  a.GetX() = 5;

  const MyClass b(3);
  b.GetX() = 5;
}
```

Compilation Error

Const Member Functions – Overloading

```
class MyClass {
  int x;
public:
  MyClass(int x) :(x) {}

  int &GetX() {
    return x;
  }

  int &GetX() const {
    return x;
  }
};
```

Compilation Error

Which version is called?

```
void test() {
  MyClass a(3);
  a.GetX() = 5;

  const MyClass b(3);
  b.GetX() = 5;
}
```

Midterm Review

- Work on the problems on the handout on your own.
- Raise your hand if you're stuck, want clarification or to check answer.
- A more complete set of problems is available on the course website: Home – Exams – Midterm Review Packet