Object Oriented Programming

Lecture 6

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Problem

- Change the class ***Rectangle*** such that a *width* and *height* is given when the object is created and cannot be changed afterwards

Rectangle Class

```
class Rectangle
{
   int width, height;
public:
   Rectangle(int w, int h);
   void set_width(int w);
   void set_height(int h);
   int area();
};
```

Modified Rectangle Class

```
class Rectangle
{
   const int width, height;
public:
   Rectangle(int w, int h);

   int area();
};
```

Example

```
Rectangle::Rectangle(int w, int h);
{
   width=w;
   height=h;

   /*error: cannot modify a constant data
   member*/
};
```

Member Initializer List - Constructor

- A member initializer list is a mechanism to initialize data members
- It is given after closing parenthesis of parameter list of constructor
- In case of more then one member use comma separated list

Example

```
class Rectangle
{
    const int width, height;
public:
    Rectangle(int w, int h) :width(w), height(h)
    {

    }
    void set_width(int w);
    void set_height(int h);
    int area();

};
```

Order of Initialization

- Data member are **initialized in order they are declared**

- Order in member initializer list is **not significant at all**

Example

```
class ABC
{
  int x;
  int y;
  int z;

public:
  ABC();
};
```

Example

```
ABC::ABC() : y(10), x(y), z(y)
{
…
}

/*  x = Junk value
    y = 10
    z = 10 */
```

Const Objects

`const` Objects

- Objects can be declared constant with the use of ***const*** keyword
- Constant objects cannot change their state

Example

```
int main()
{
 const Rectangle rect;
 return 0;
}
```

Example

```
class Rectangle{
…
 int width;
public:
…
 int getWidth(){
    return width;
 }
};
```

Example

```
int main(){
 const Rectangle rect;
 int a = rect.getWidth();
 //error
}
```

`const` Objects

- **`const`** objects cannot access “*non const*” member function
- Chances of unintentional modification are eliminated

Example

```
class Rectangle{
…
  int width;
public:
…
  int getWidth()const{
        return width;
  }
};
```

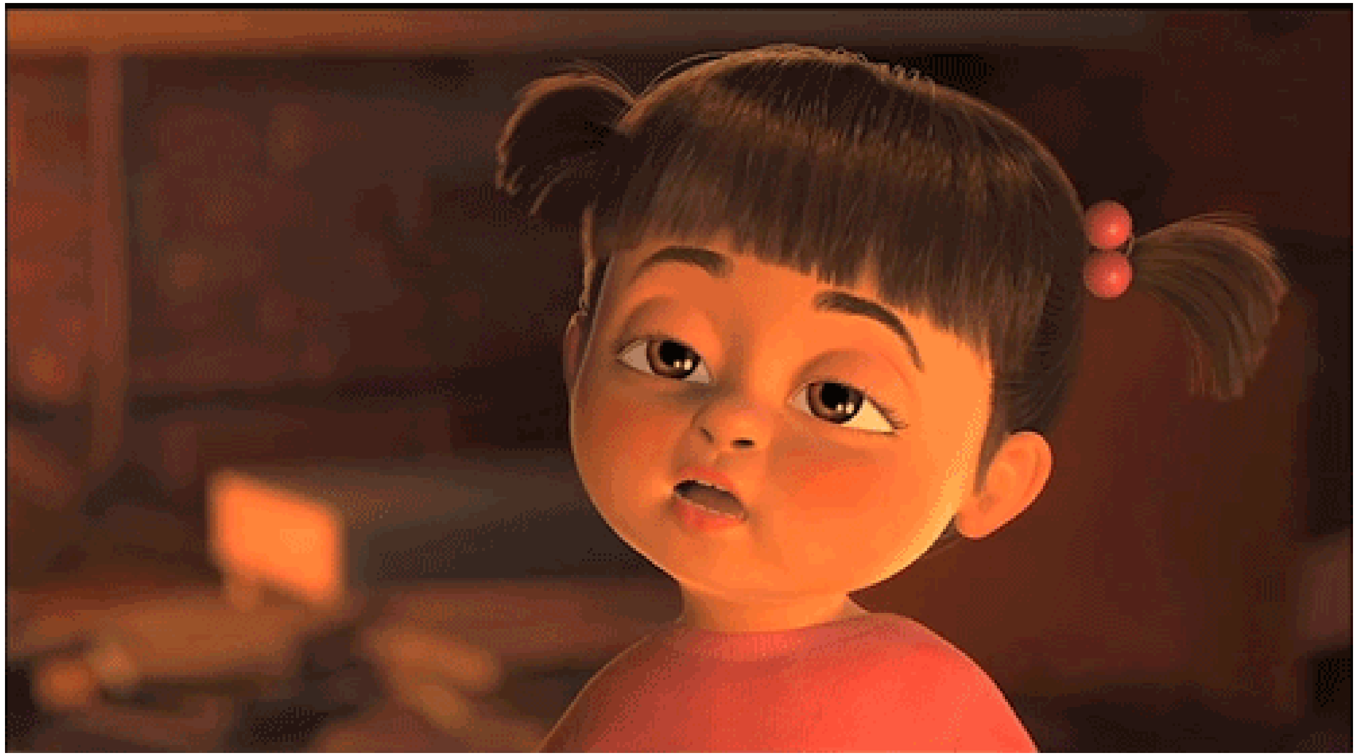
Example

```
int main(){
 const Rectangle rect;
 int a = rect.getWidth();
}
```

Constant data members

- Make all functions that don’t change the state of the object constant
- This will enable constant objects to access more member functions

Thanks a lot



If you are taking a Nap, **wake up**.......Lecture Over