**Class Hierarchy**

hasa

**Window  
OpenGL draw functionality**

+~Window()  
+window(int, char\*\*)  
+static void reshape(int, int )  
+static void keyboard(unsigned char, int, int)  
+static void display()  
+print()

hasa

isa

hasa

isa

isa

isa

Aggregate

**Scene Graph  
Singleton Class**

-std::list <Node\*> container  
-SceneGraph(const SceneGraph&)  
-SceneGraph()

+static SceneGraph\* SGInstance  
+static SceneGraph\* GetInstance()  
+virtual ~SceneGraph()  
+void draw()  
+read\_file(std::string file\_path)  
+print()

**Node**

-Node (const Node&)

+Virtual draw() =0  
+Virtual print()=0  
+virtual ~Node()  
+Node()

**Polygon**

-std::vector<float> color

-Int n\_vrtxs  
-Int count  
- float\*xArr,\*yArr,\*zArr  
-Polygon(const Polygon&)

+Polygon()  
+Virtual ~Polygon()  
+operator >> friend  
+draw()  
+setcolor(float, float, float)  
+setnvrtxs(int)  
+int getvrtxs() const  
+CreateArrs(int)  
+addVrtxToArr(float, float, float)  
+getArrOfVrtxs(float\*, float\*, float\*) const  
+print()

**Std:vector<float>**

**Circle**

-Int numpoints  
-Float radius  
-Circle(const circle&)

+Circle()  
+virtual ~Circle()  
+operator>>:friend  
+print()

**Translate**

-std::vector<float> move  
-Translate(const Translate&)

+Translate()  
+virtual ~Translate()  
+draw()  
+operator >> : friend  
+print()

**Scale**

-std::vector<float> size  
-Scale(const Scale&)

+Scale()  
+virtual ~Scale()  
+draw()  
+print()  
+operator>>:friend