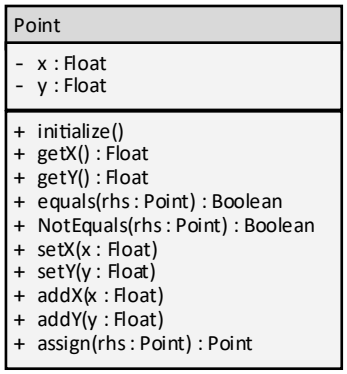
Design Document for GL Demo

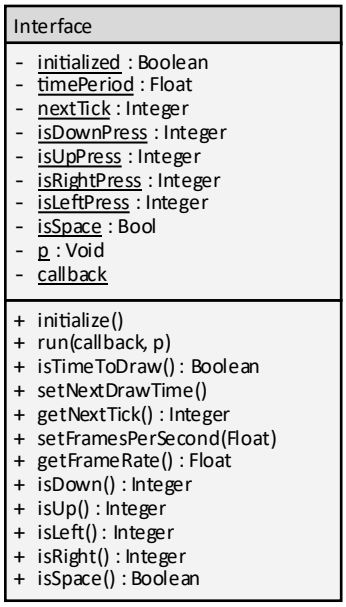
CSE 230: Encapsulation Design

Class Diagram

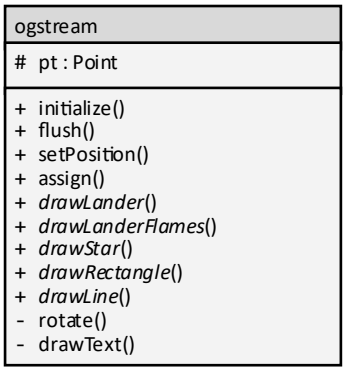
A position on the screen



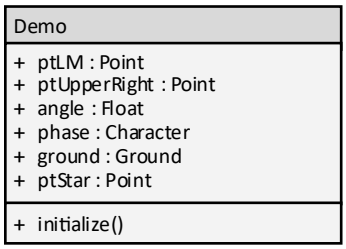
Set up OpenGL and get input (sort-a like `cin`):



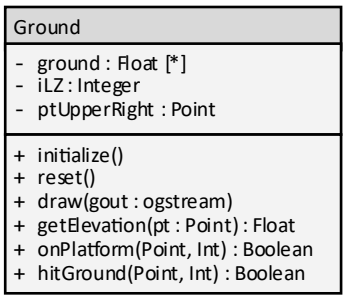
Send output (sort-a like `cout`):



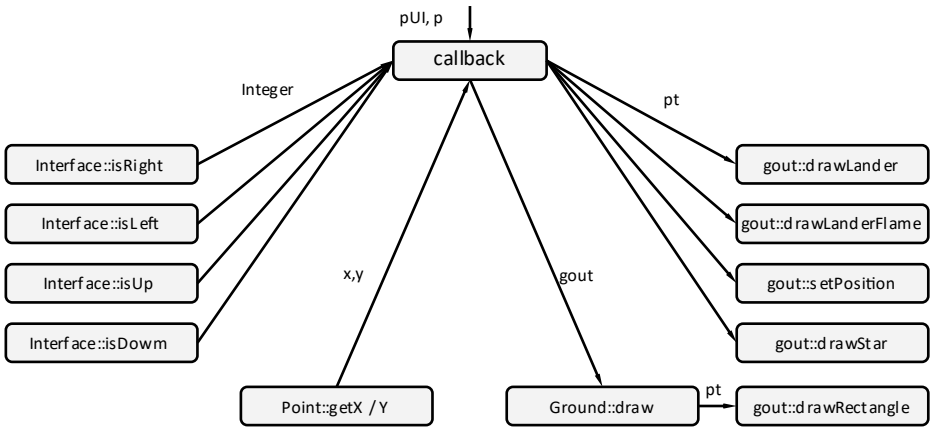
The class that contains the state of the simulator:



The ground.

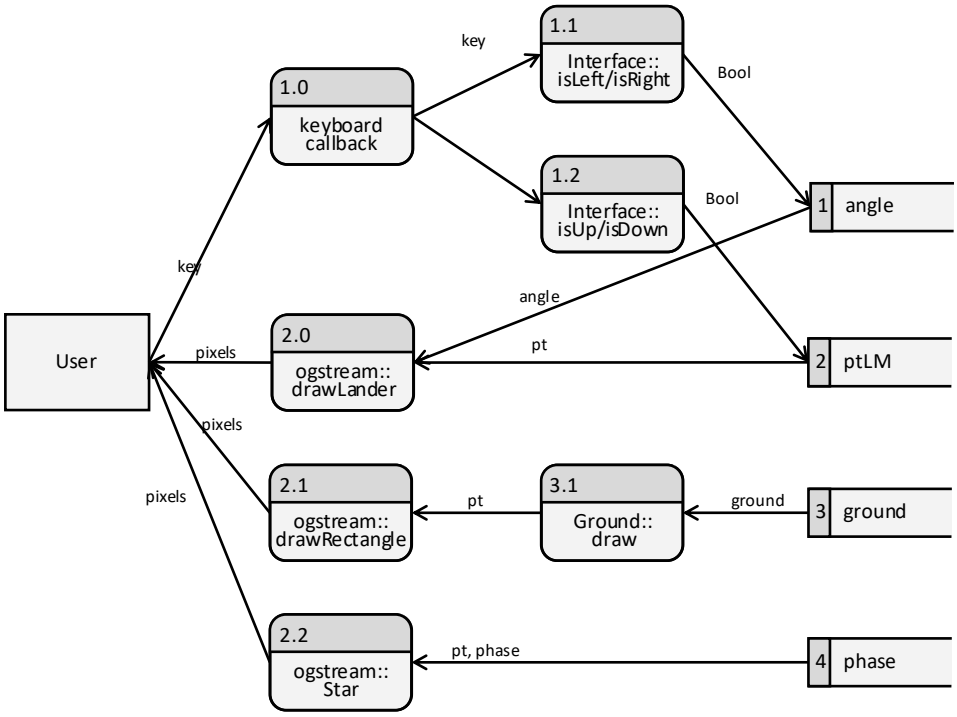


Structure Chart



DFD

Input flows on the upper row, output flows on the next three rows



Pseudocode

The main function to handle all the input and update all the simulator state.

```
Callback(pUI, p)
   pDemo ← p

   if pUI.isRight()
      pDemo.angle -= .1
   if pUI.isLeft()
      pDemo.angle += .1
   if pUI.isUp()
      pDemo.y -= 1
   if pUI.isDown()
      pDemo.y += 1

   pDemo.ground.draw()

   drawLander(pDemo.ptLM, pDemo.angle)
   drawLanderFlame(pDemo.ptLM, pDemo.angle,
                   pUI.isDown(), pUI.isLeft(), pUI.isRight())
   DISPLAY pDemo.x pDemo.y
   drawStar(pDemo.ptStar, pDemo.phase++)
```

Test Case

These are for the `Ground::getElevation()` method.

Name	*Input*	*Output*
On the ground	ground=[11,12,13,14] pt=(0, 11)	0.0
1 meter above	ground=[11,12,13,14] pt=(0, 12)	1.0
10 meters above	ground=[11,12,13,14] pt=(3, 24)	10.0
Off screen to left	ground=[11,12,13,14] pt=(-1, 100)	0.0
Off screen to right	ground=[11,12,13,14] pt=(4, 100)	0.0
Between points	ground=[11,12,13,14] pt=(0.5, 12)	1.0