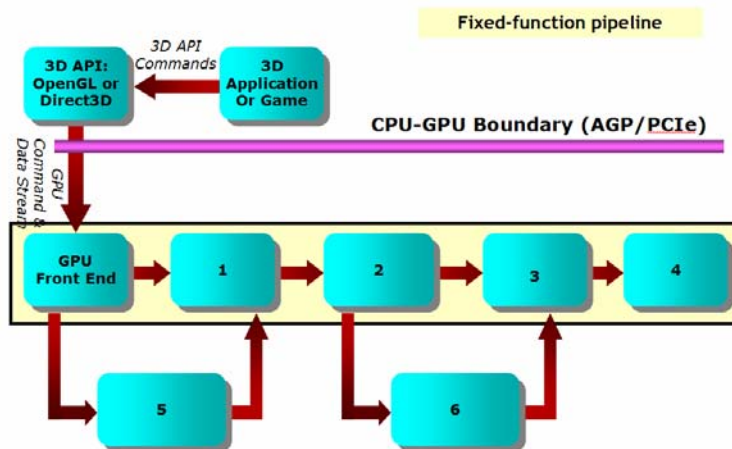


Name \_\_\_\_\_

## CIS 665: Homework 1

Due January 28,2008 (before class)



1. For each section of the pipeline, give the name and what operations it performs  
12 points

2. Provide an algorithm to add together N numbers on the GPU in 1 pass?  
(Ignore precision problems) 10 points

3. You are creating a flight simulator and the user is looking through the window of the cockpit. How do you render the scene so the game engine is not rendering objects outside the plane that are obstructed by the cockpit? 8 points

4. In class we discussed Voronoi diagrams which perform a nearest neighbor map for a set of points on a plane. A common problem in computer games is

**obstacle avoidance where an avatar would like to find a path around a room without hitting any objects. Describe how you could use Voronoi diagrams to perform obstacle avoidance and how you would need to alter the implementation of Voronoi diagrams to meet this need. 10 points**