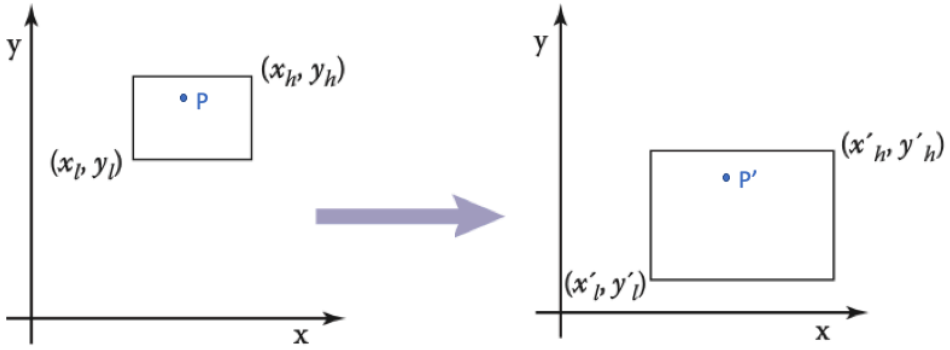
CMPE 360
Hands-On Activity 5

Name(s):

1. In computer graphics, we often need to create a transform matrix that takes points in the rectangle $[xl\,, xh\,] \times [yl\,, yh\,]$ to the rectangle $[x'l, x'h] \times [yl', yh']$. Write the windowing transformation that takes a point P in the first rectangle, and finds its new coordinates in the second triangle.



2. What is the primary purpose of a Graphics Processing Unit (GPU) in a computer system?

   (a) Execute general-purpose computations.
   (b) Manage storage and memory.
   (c) Process graphics and images.
   (d) Control input devices.

3. Which type of shader is responsible for handling lighting calculations in computer graphics?

   (a) Vertex shader.
   (b) Fragment shader.
   (c) Geometry shader.
   (d) Compute shader.

4. What role does a Vertex Shader play in the graphics pipeline?

   (a) It generates geometry.
   (b) It processes pixels.
   (c) It transforms vertex positions.
   (d) It applies textures.

5. Which shader stage is responsible for transforming 3D coordinates into 2D screen space coordinates?

   (a) Vertex shader.
   (b) Fragment shader.
   (c) Geometry shader.
   (d) Tessellation shader.

6. What is the purpose of a Fragment Shader in the graphics pipeline?

   (a) Transform vertex positions.
   (b) Generate new geometry.
   (c) Handle pixel-level operations.
   (d) Perform tessellation.

7. Which API is commonly used for GPU programming and shader development?

   (a) OpenGL.
   (b) DirectX.
   (c) Vulkan.
   (d) All of the above.

8. Question: What is the primary advantage of parallel processing in GPUs?

   (a) Reduced power consumption.
   (b) Improved single-threaded performance.
   (c) Increased computational performance using parallel tasks.
   (d) Enhanced memory capacity.