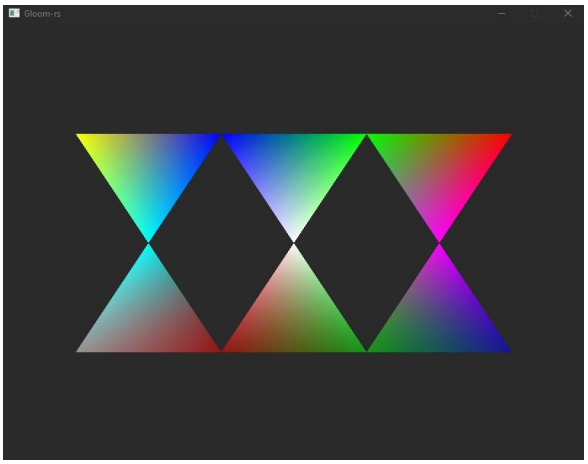
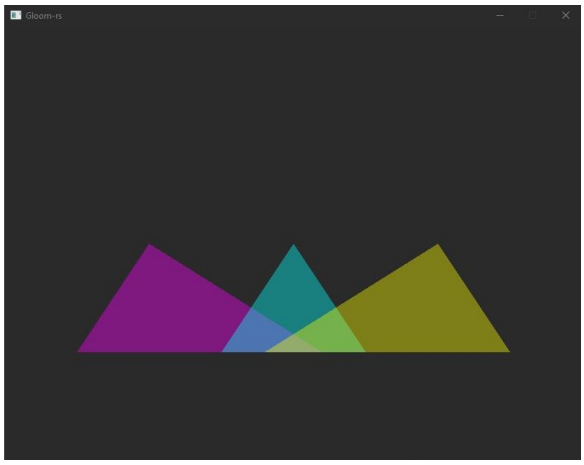
TDT4195 – Assignment 2

Task 1



Task 2

2.a



2.b.1

As we can see, the blended colours in the middle triangle is far more purple now. While the blend in task 2.a is bluer. First the left triangle is rendered, then the middle, then the right.

The yellow triangle is rendered last, so it seems more dominant. While the right triangles seem lees dominant.

2.b.2

I swapped the *z* index of the right and the left triangle, such that the triangles are drawn front-to-back. This causes the transparency effect to disappear. This happens because the triangles have nothing behind it when they are rendered, so they seem non-transparent with a weaker colour.

Task 3

3.b

- The first row affects the x axis:
  - a **scale** the x axis with the x coordinate.
  - b make the x coordinate scale with the y coordinate, thus **shearing** the x axis.
  - c moves the x coordinate with the w value, thus moving the object along the x axis. This is called **translating** the x axis.
- The second row affects the y axis:
  - d scales the x axis with the y coordinate, thus **shearing** the y axis.
  - e simply **scales** the y axis with the y coordinate.
  - f moves the y coordinates with the w value, thus moving the object along the y axis. **Translating** the y axis.
- The third row affects the z axis.
- The fourth row affects the w axis.

x scaled, y sheared and y translated.

3.c

None of these transformations are rotations because you need to change more than one value in the identity matrix for that. For example, the matrix $\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ will perform a clockwise 90-degree rotation. For a rotation, both the x and y axis must be affected.

Task 4

Keys used:

- x and z axis: WASD
- Up-down along the y axis: Left shift and left control
- Pitch and yaw: arrows