1. (**Texture Mapping**) :

* 1. Find the homogeneous coordinates matrix(3X3) that maps Texel coordinates to texture coordinates (that is the unit square 0 ≤ 𝑠 ≤ 1, 0 ≤ 𝑡 ≤ 1)

Texel Matrix =

Texture Matrix =

Now, we do the rapport on Texel Matrix and Texture Matrix

Rapport For X =

Rapport For Y =

Then the response for the coordinates Matrix(3x3) is

* 1. Find the homogeneous coordinates matrix that maps Texture coordinates to Texel coordinates

Texel Matrix =

Texture Matrix =

Scaling Matrix =

Make the delta of the matrix

= (\* \* 1) + (0 \* 0 \* 0) + (0 \* 0 \* 0)

= + 0 + 0

=

Find the Inverse Matrix:

= x m

2. (**line rasterization**) :

Screen Shot:

Une image contenant flèche

Description générée automatiquement

Coordinate of different point:

Une image contenant texte

Description générée automatiquement

Link To Code: <https://github.com/Wiildand/KMU-assignement_2>

Read READ.me to make the installation.

Mandatory to have:

* CMake
* Make

1. (**homogeneous coordinates**):

Matrix of the camera :

To transform the camera position on (0, 0), weed to make a translation.

Matrix Translation = (where X is the position which we want)

Matrix Translation =

Matrix Translation =

We want to find the matrix of Rotation

= 90 degrees, then we don’t need to use it

Matrix of Rotation Matrix Rotation = =

NewMatrixTransformation = MatrixTranslation \* MatrixRotation

NewMatrixTransformation =

=

We need to check is this equation is possible:

Camera \* NewMatrixTransformation = World ⬄ Camera = World \*

To do this, we need to find the determinant of the NewMatrixTransformation.

Det(M) = (aei + dhc + bfg) – (gec + dbi + ahf).

Det(M) = ((0.8 \* 0.8 \* 1) + (-0.6 \* 0 \* -8) + (0.6 \* -2 \* 0)) – ((0 \* 0.8 \* -8) + (-0.6 \* 0.6 \* 1) + (0.8 \* 0 \* - 2))

Det(M) = (0.64 + 0 + 0) – (0 + (-0.36) + 0)

Det(M) = (0.64 + 0 + 0) – (0 + (-0.36) + 0)

Det(M) = 0.64 + 0.36

Det(M) = 1

Then the as to determinant 1

To transform this matrix on a matrix

First Step

⬄

Row 1 divide by 0.8

⬄

Second Step

⬄

Row 2 addition with 0.6

Row 2 = Row2 + (R1 \* 0.6)

⬄

Third Step

⬄

Row 2 divine by 1.25

⬄

Fourth Step

⬄

Row 1 = Row 1 – (0.75 \* Row 2)

⬄

Five Step

⬄

Row 2 = Row 2 + (6.4 \* Row 3)

⬄

Five Step

⬄

Row 1 = Row 1 + (5.2 \* Row 3)

⬄

Then the Inverse of the NewTransformationMatrix is

Then to past to the world coordinate system to the camera coordinate system you need to do this:

Camera = World \*

Camera = World \*