Concept Assignment 2

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Q1:

1. The Vector is <6,6>

Vector2 v1 = gameObject1.position

Vector2 v2 = gameObject2.position

Vector2 resultVector = new Vector2(v2.x-v1.x,v2.y-v1.y)

// manually normalization

double length = Math.Sqrt(resultVector.x\*resultVector.x + resultVector.y\*resultVector.x)

Vector2 normalizedVector = new Vector2(resultVector.x/length, resultVector.y/length)

// or use Vector2 api

Vector2 normalizedVector = Vector2.Normalize(resultVector);

Q2:

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Q3:

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Q4:

a). DotProduct(N, L): Scalar projection of the light in to the surface normal direction. By multiply value of “DotProduct(N, L)” with “DiffuseColor”, we scalce the projected light vector with the diffuse light amount and make sure all surface have same color. For a directional light without a light source position, we can set it to the sun position and the L vector will be pointing down to the negative z-axis.

b). DotProduct(R, V) scalar projects surface to camera vector to the reflected light direction. Multiply value of pow(DotProduct(R, V), a) with SpecularColor to make sure all surface have same color

Q5:

a) The z-buffering should happen in projection stages since it is 2d screen size and store the depth of each pixcel on screen.

b) Use perspective project between camera coordinate and projection coordinate.

Q6:

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Q7:

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