Project 3 - Phase 1

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1.

Specular component is given by $I_s C_s (\hat{n}.\hat{h})^s$

Diffulse component is given by $I_d C_d (\hat{n}.\hat{l})$

For all points the normal $\hat{n} = (0, 1, 0)$

a. For point (0,0,0), $\hat{l} = (\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0)$ and $\hat{h} = (\frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}}, 0)$

diffuse = $1.1.(\hat{n}.\hat{l}) = \frac{1}{\sqrt{2}}$

specular = $1.1.(\frac{2}{\sqrt{5}})^5$

c. For point (5,0,0), $\hat{l} = (\frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}}, 0)$ and $\hat{h} = (0, 1, 0)$

diffuse = $1.1.(\hat{n}.\hat{l}) = \frac{2}{\sqrt{5}}$

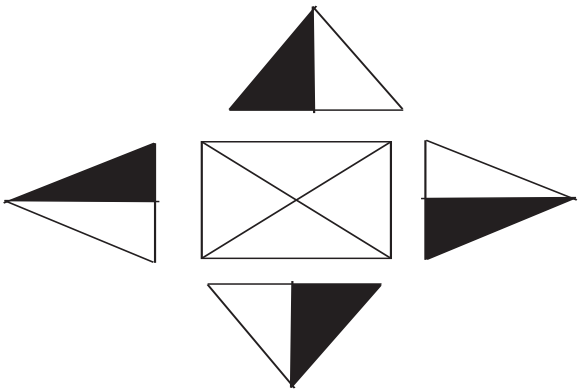
specular = $1.1.(1)^5 = 1$

a. For point (10,0,0), $\hat{l} = (0, 1, 0)$ and $\hat{h} = (-\frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}}, 0)$

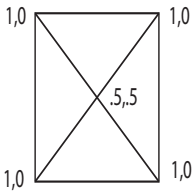
diffuse = $1.1.(\hat{n}.\hat{l}) = 1$

specular = $1.1.(\frac{2}{\sqrt{5}})^5$

2A.



2B.



3.(3,1,0),(3,0,2),(3,2,5),(3,5,6),(3,6,7),(3,7,4)

$glBegin(GL\_TRIANGLE\_FAN)$

$glVertex3fv(v3)$

$glVertex3fv(v1)$

$glVertex3fv(v0)$

$glVertex3fv(v2)$

$glVertex3fv(v5)$

$glVertex3fv(v6)$

$glVertex3fv(v7)$

$glVertex3fv(v4)$

$glEnd()$

4.

5. a. wrap/tile

b. terrain rendering

c. to avoid overblurring

d. the inside of a spere

e. 172