



Assignment in Computer Graphics II

Assignment 8 –
Computer Graphics and
Multimedia Systems Group
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Assignment 1 [2 Points] Lindenmeyer-Systems

Given the alphabet $V = \{\Delta, s, +, -, [,]\}$, the axiom $\omega_0 = \Delta$ and the rule

 $p(\Delta) = s[\Delta][+\Delta][-\Delta], \text{ else } p(x) = x, \forall x \neq \Delta$

The geometrical interpretation of a word is implemented in a (legacy) OpenGL program in the following way:

character		OpenGL-Code
Δ	\longrightarrow	glBegin(GL_TRIANGLES);
		glVertex2f(0.0, 0.0);
		glVertex2f(1.0, 0.0);
		glVertex2f(0.5, sqrt(3.0)/2.0);
		glEnd();
S	\longrightarrow	glScalef(0.5, 0.5, 1.0);
+	\longrightarrow	glTranslatef(1.0, 0.0, 0.0);
-	\longrightarrow	glTranslatef(0.5, sqrt(3.0)/2.0, 0.0);
[\longrightarrow	glPushMatrix();
]	\longrightarrow	glPopMatrix();

Sketch the figures you get after 0-, 1-, 2- and 3- iterations.

Assignment 2 [2 Points] Body of revolution

Consider the function $y = f(x) = \sqrt{1 - x^2}$ with $x \in [-1, 1]$.

Calculate the corresponding body of revolution obtained by the rotation about the x-axis function. Calculate surface area and volume of the rotating body. Which geometric primitive corresponds to the body?

Annotation: Please indicate in each case the complete solution.

Hand in: Until 21.06.2017 12:00 o'clock in mailbox of our chair (next to room H-A 7107).