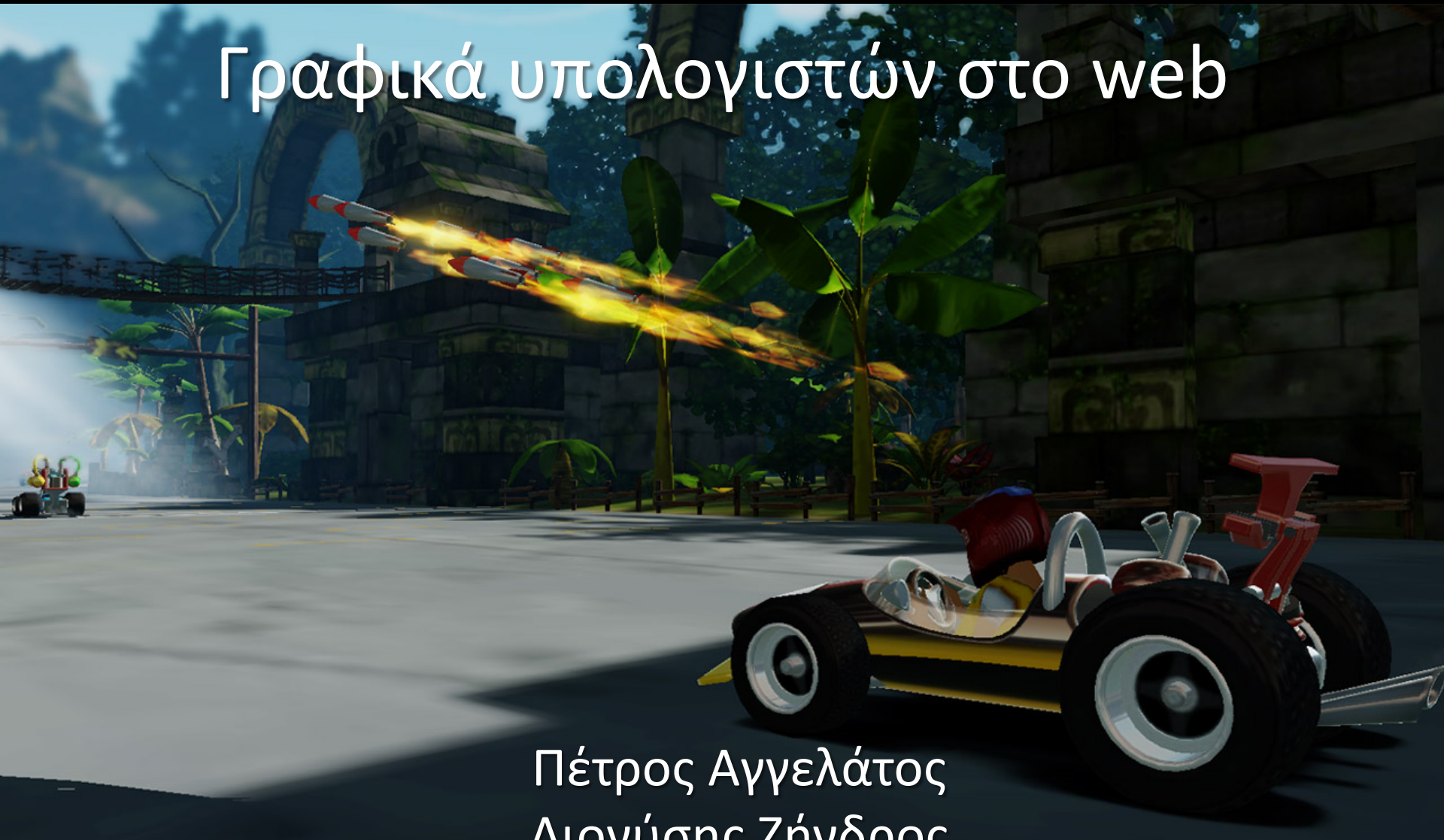


Γραφικά υπολογιστών στο web



Πέτρος Αγγελάτος
Διονύσης Ζήνδρος

Εικόνα: © Gamagio Limited

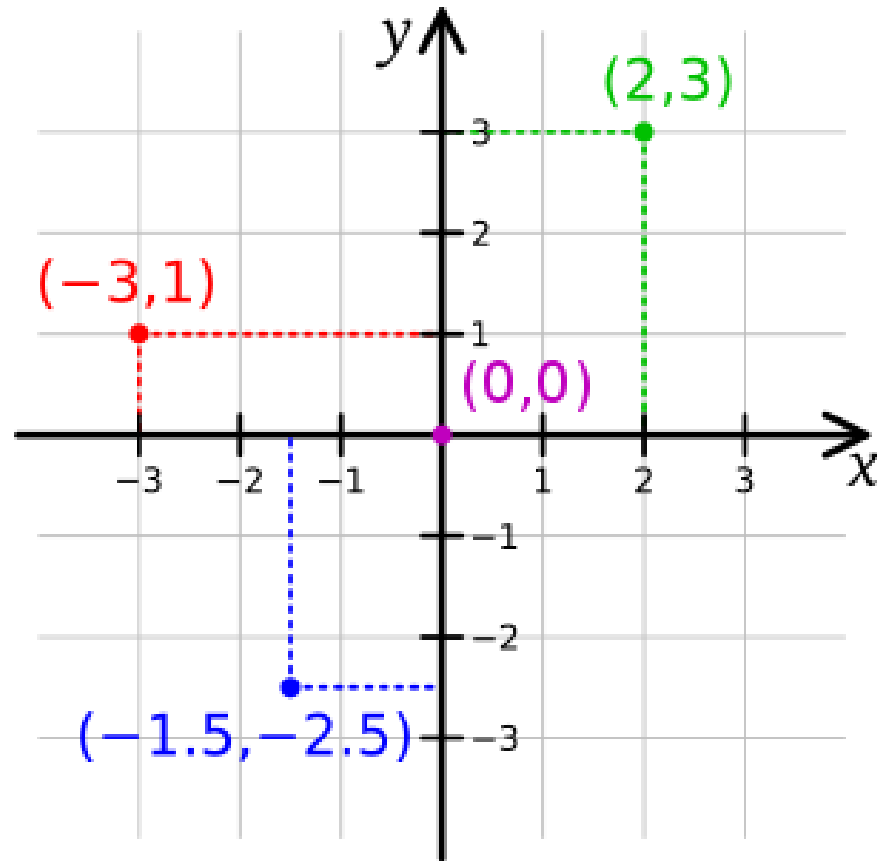
Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης, Δεκέμβρης 2011

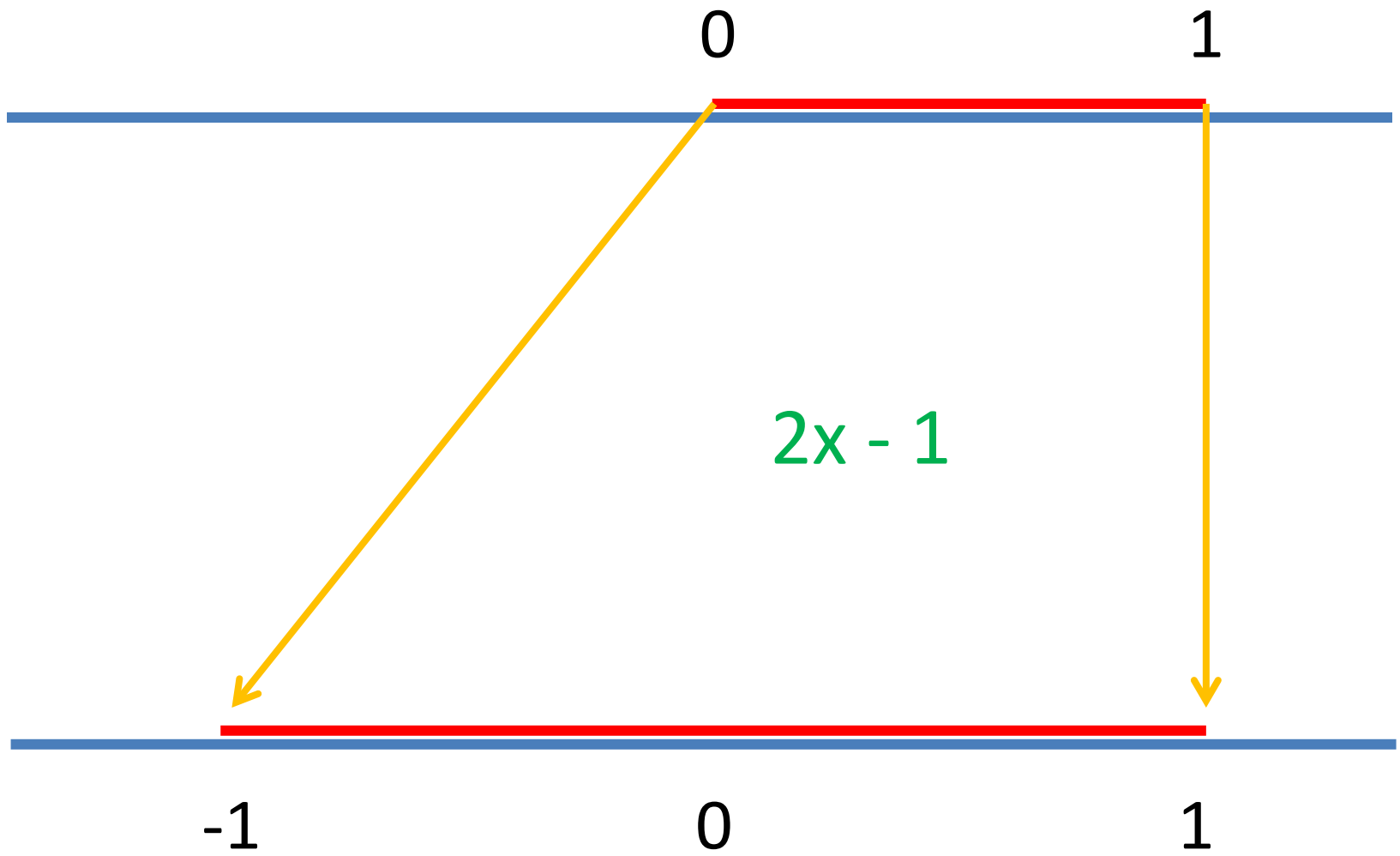


Θα μάθουμε

- Τι είναι γραφικά υπολογιστών
- Από τις 0 στις 3 διαστάσεις
- 3D αντικείμενα και κόσμοι
- Εφέ με σωματίδια







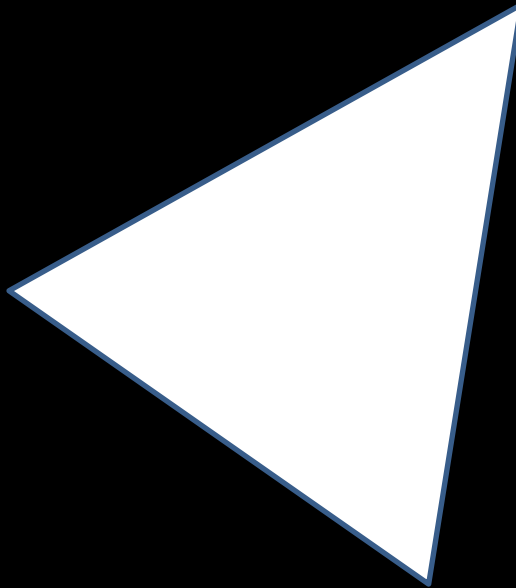
0D

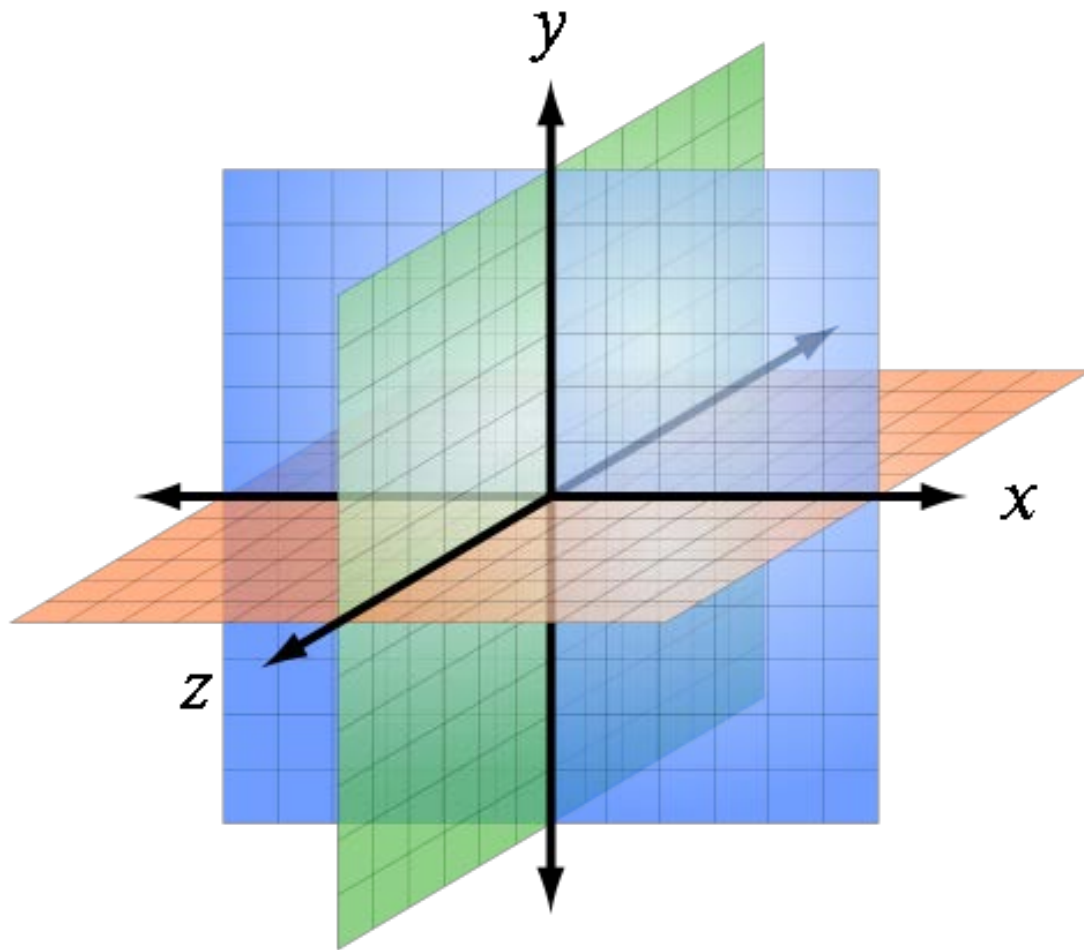


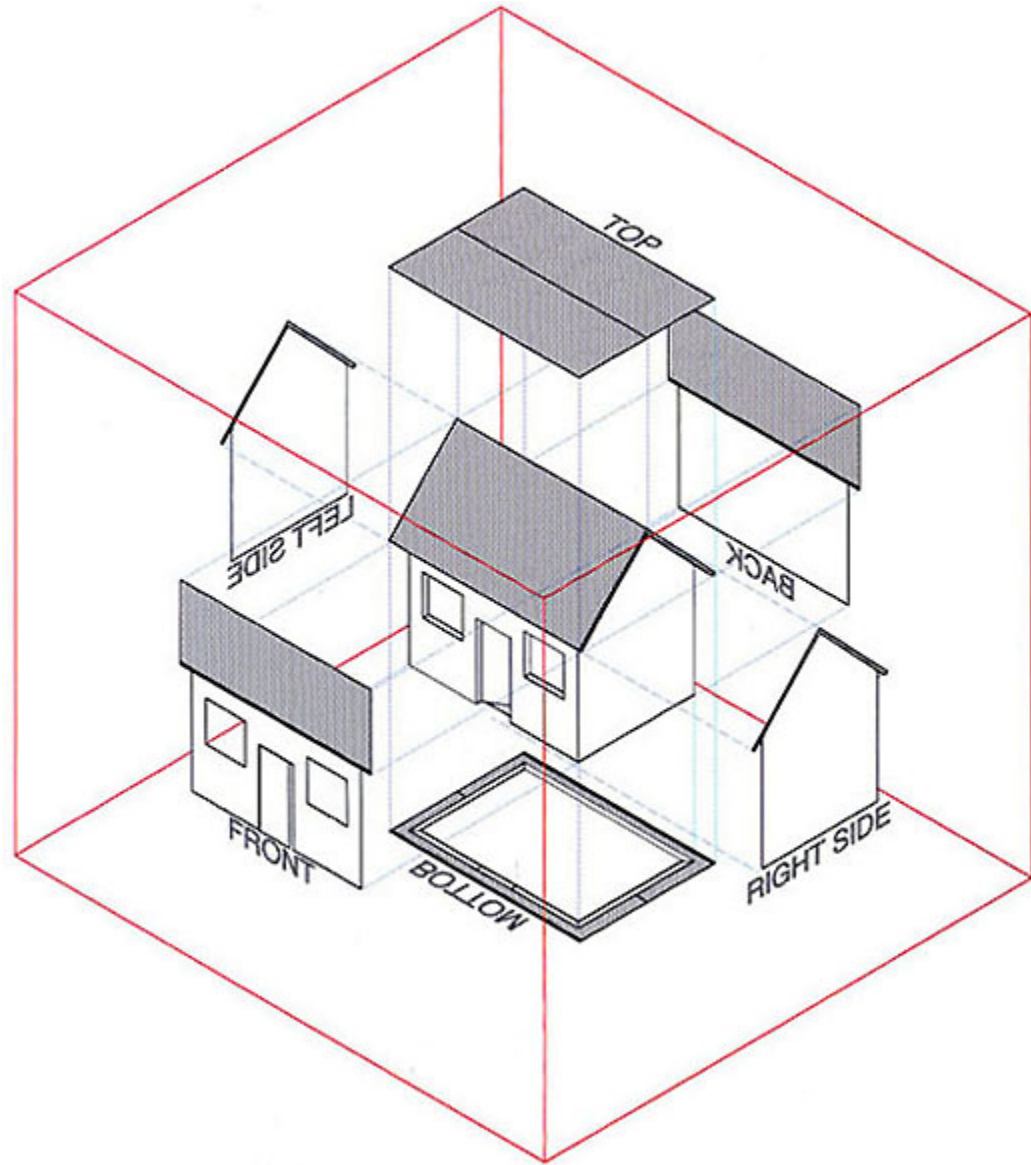
1D

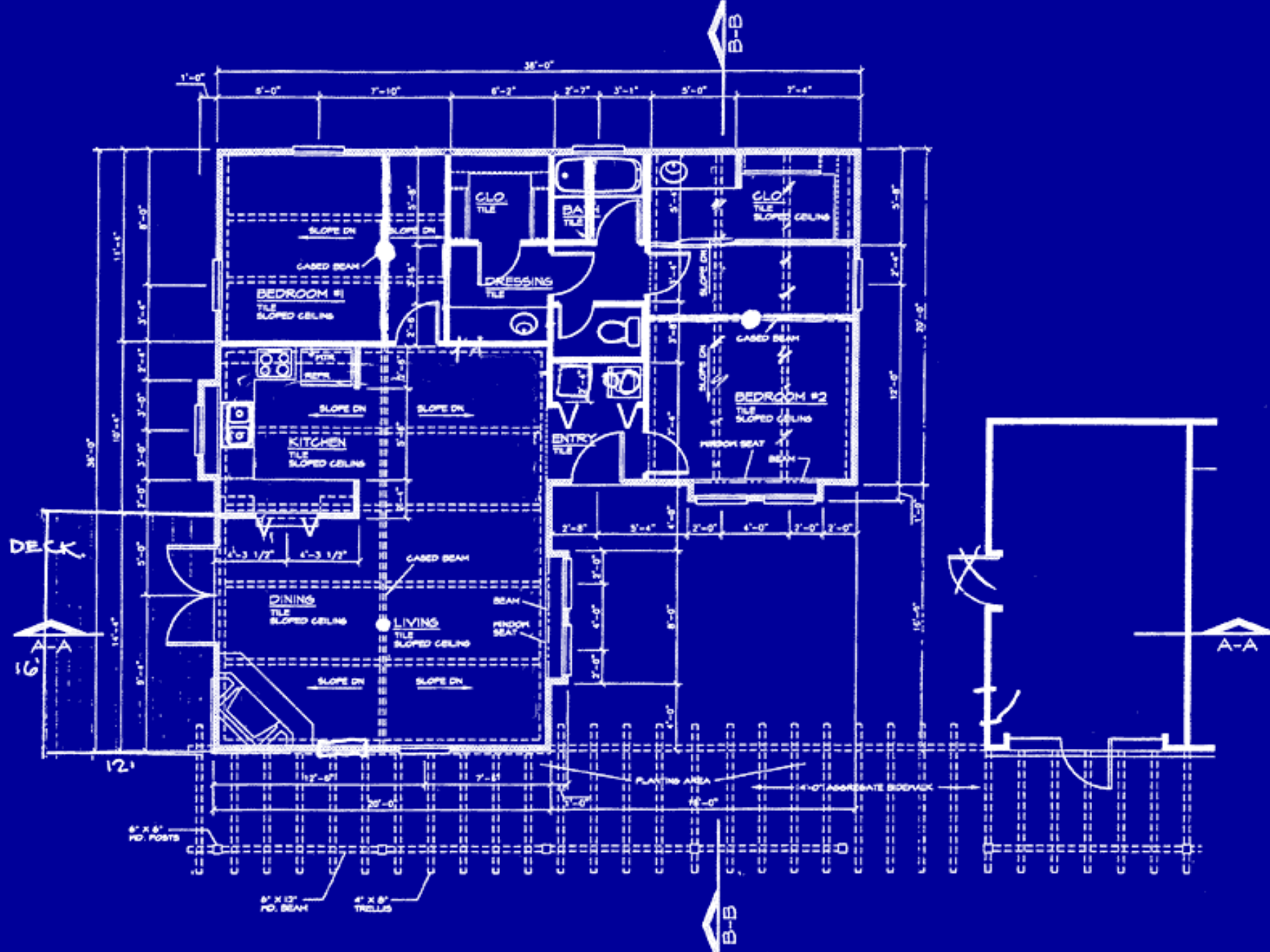


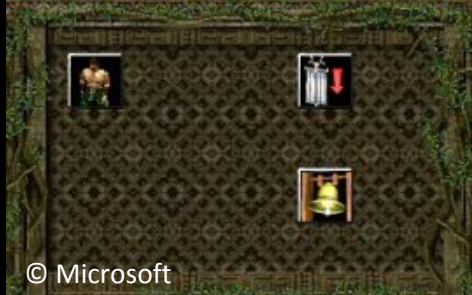
2D











Town Center



2400/2400



0/15



5+1



6

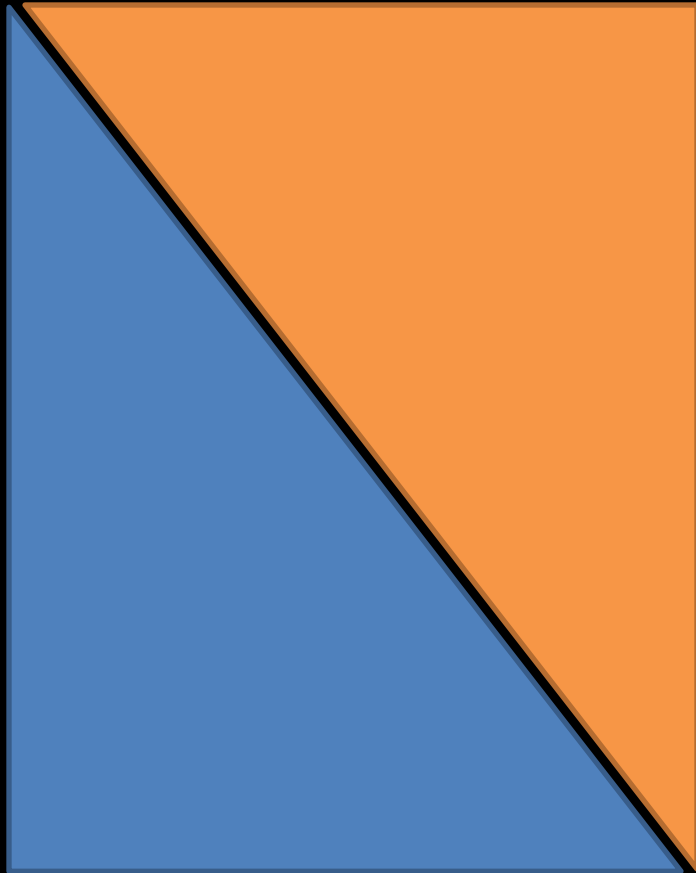
Creating - 46%

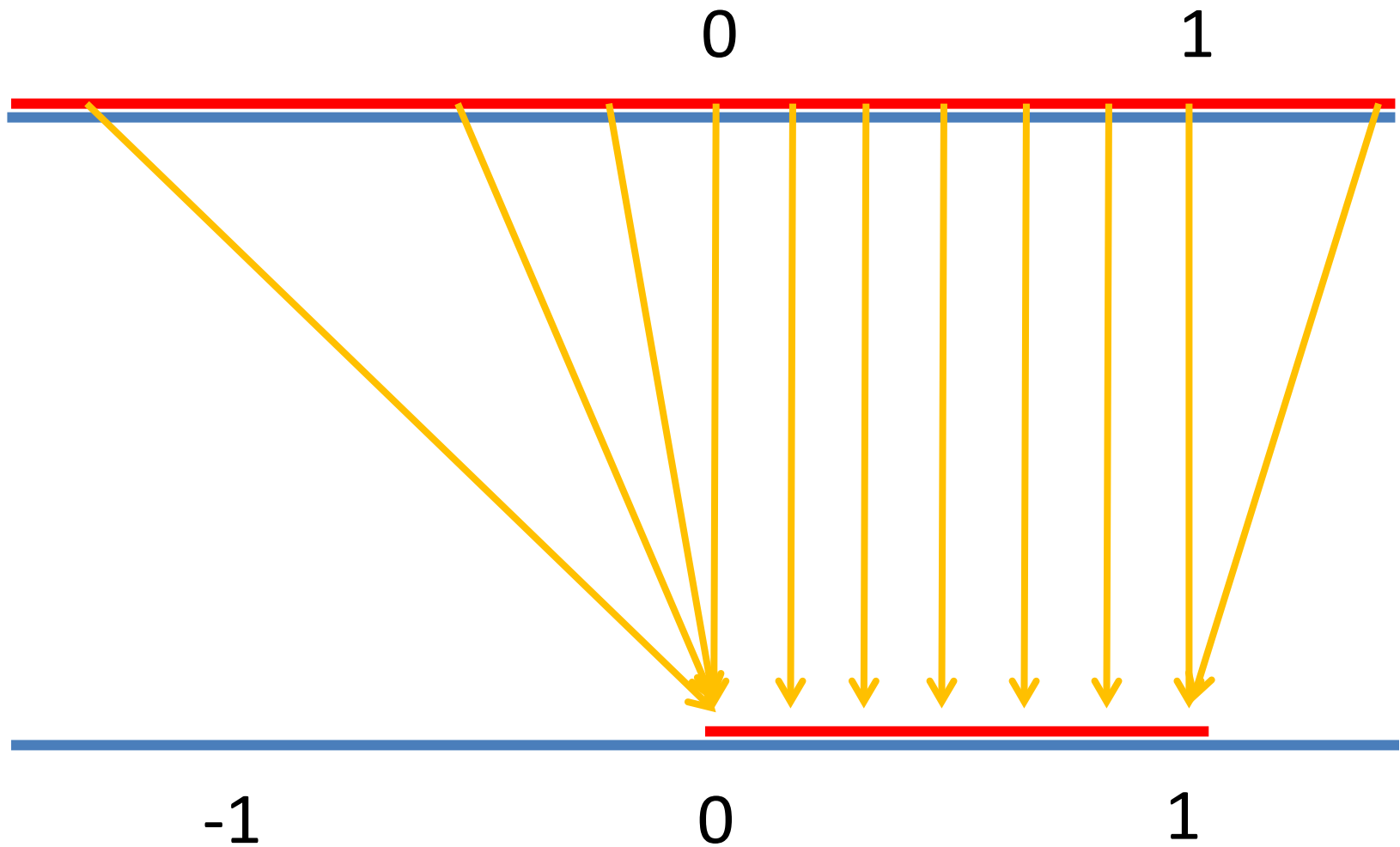
Villager



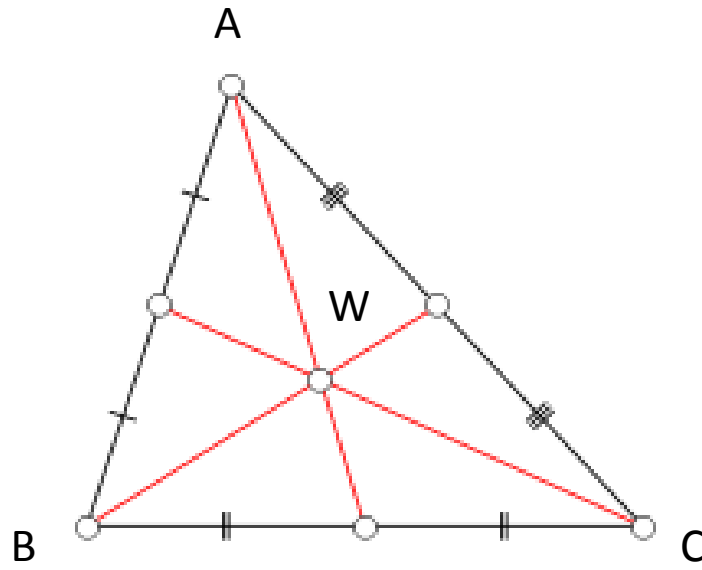


προοπτική





$$\begin{aligned}
 x' &= x, \quad \forall 0 \leq x \leq 1 \\
 0, &\quad \forall x < 0 \\
 1, &\quad \forall x > 1
 \end{aligned}$$

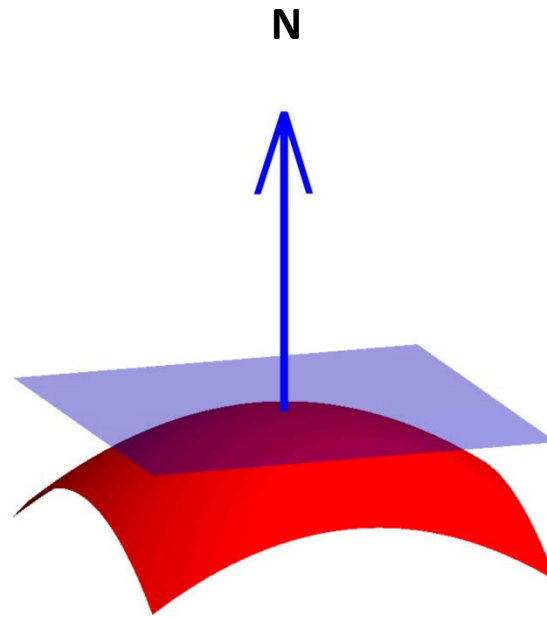


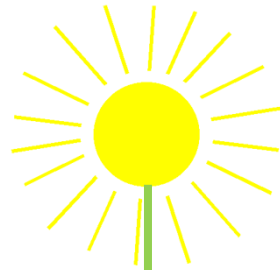
$$W_x = (A_x + B_x + C_x) / 3$$

$$W_y = (A_y + B_y + C_y) / 3$$

$$W_z = (A_z + B_z + C_z) / 3$$

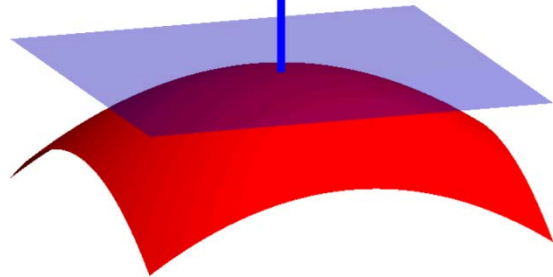
$$\mathbf{W} = (\mathbf{A} + \mathbf{B} + \mathbf{C}) / 3$$

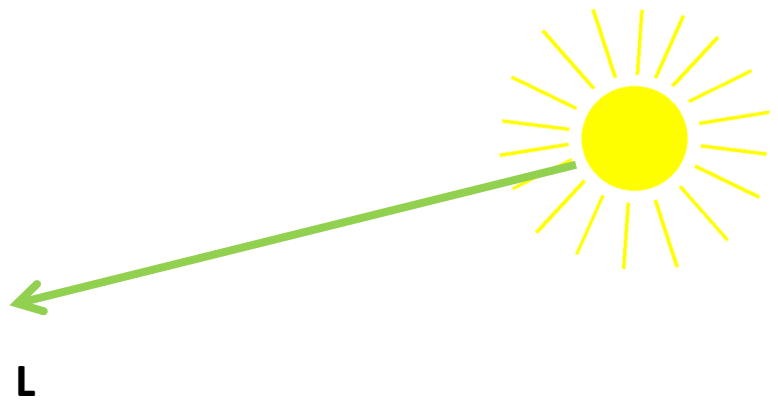
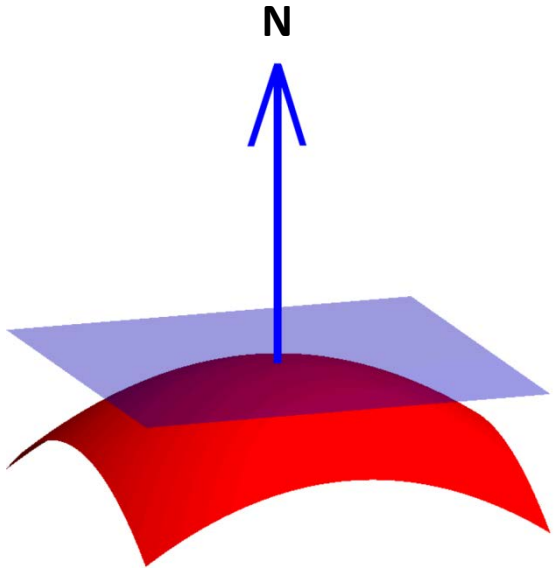


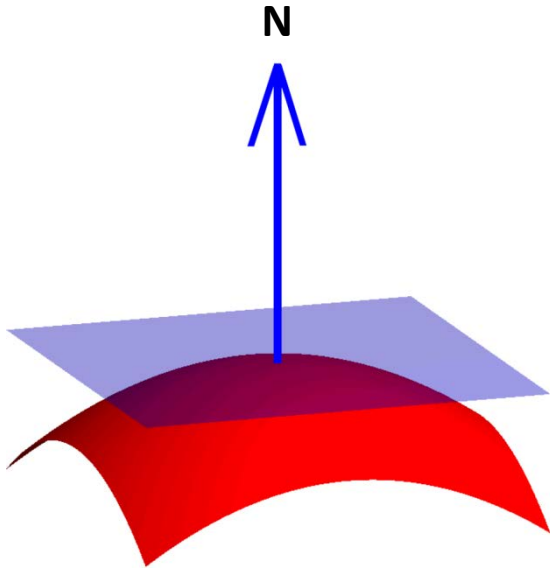


L

N







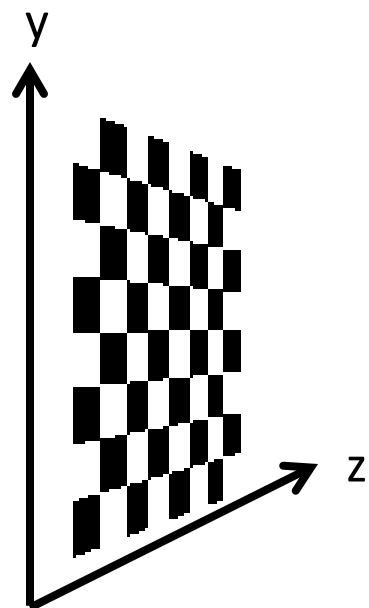
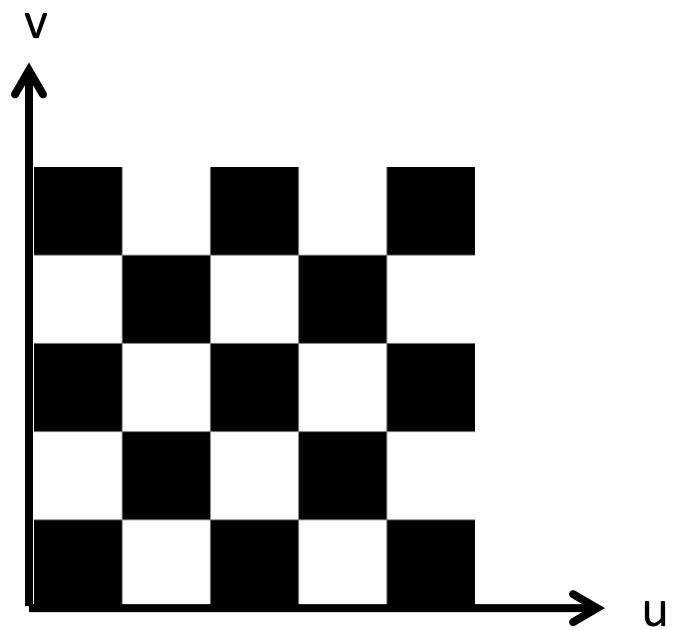
$$\mathbf{W} = (\mathbf{A} + \mathbf{B} + \mathbf{C}) / 3$$

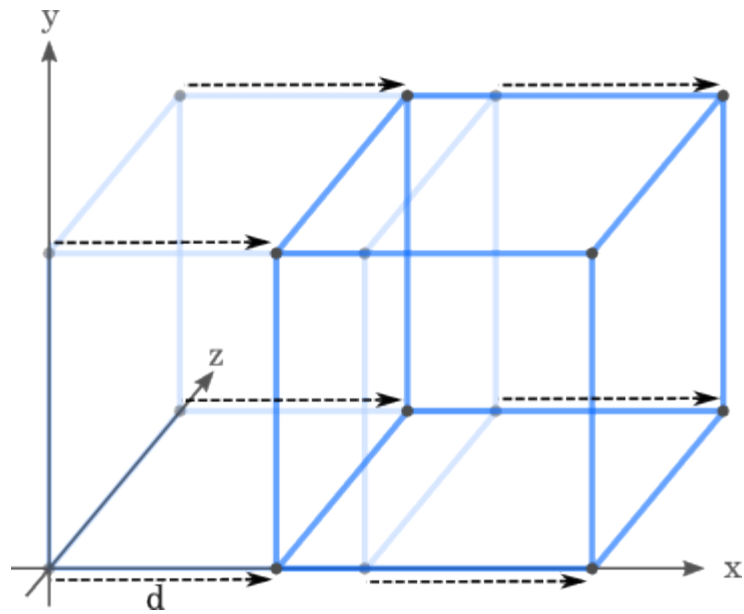
$$\mathbf{I} = \max(0, -\mathbf{L} \cdot \mathbf{N})$$

$$\mathbf{R}' = \mathbf{I} * \mathbf{R}$$

$$\mathbf{G}' = \mathbf{I} * \mathbf{G}$$

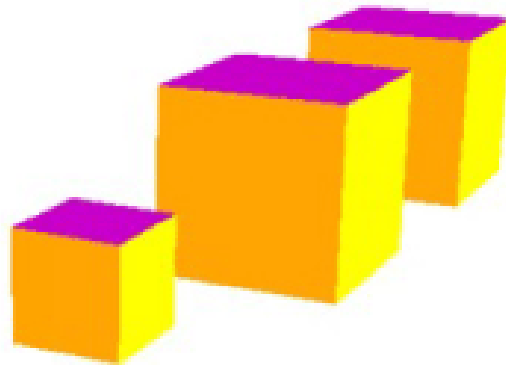
$$\mathbf{B}' = \mathbf{I} * \mathbf{B}$$





$$\mathbf{x}' = \mathbf{x} + \mathbf{s}$$

$$\mathbf{P}' = \mathbf{P} + \mathbf{s}$$

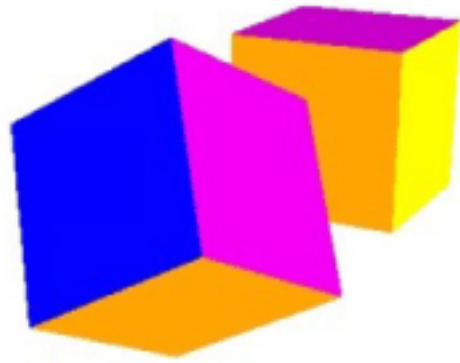


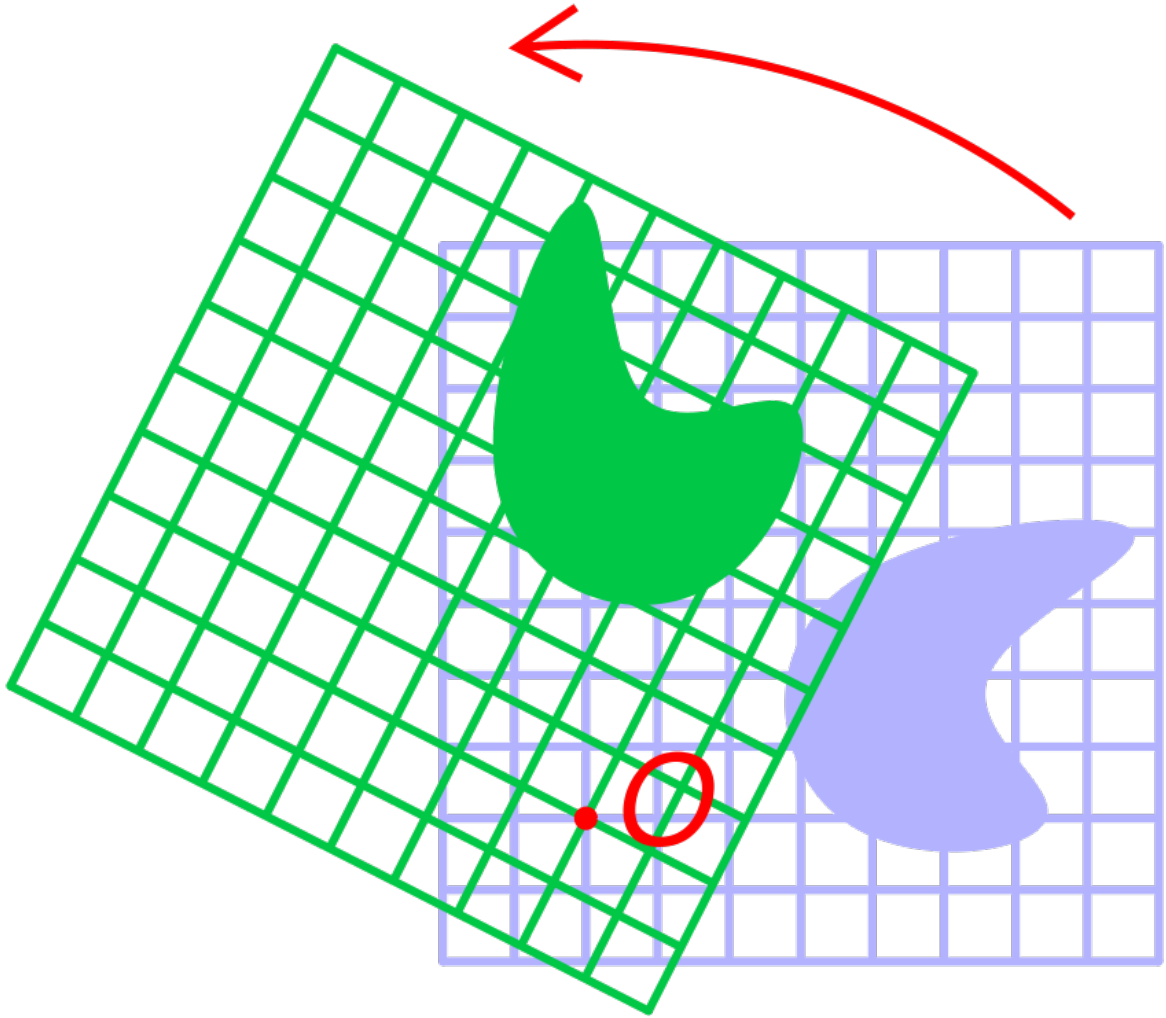
$$\mathbf{x}' = \lambda \mathbf{x}$$

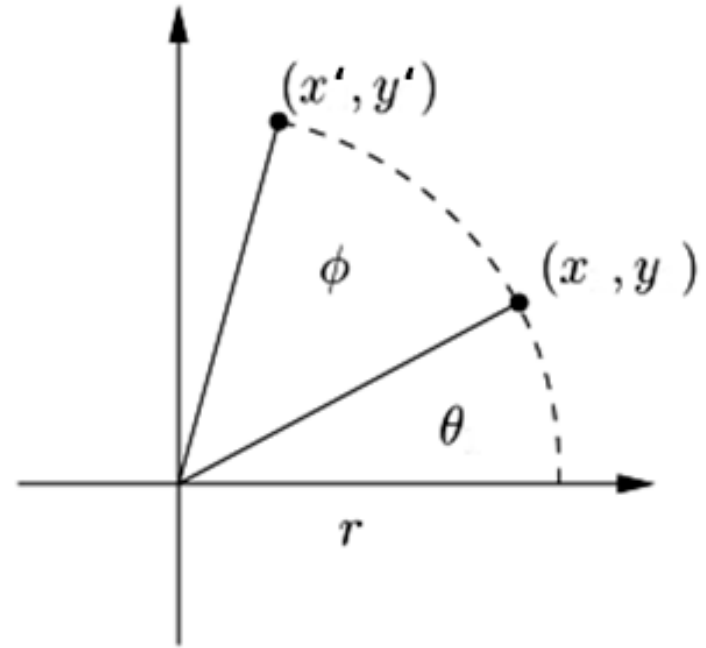
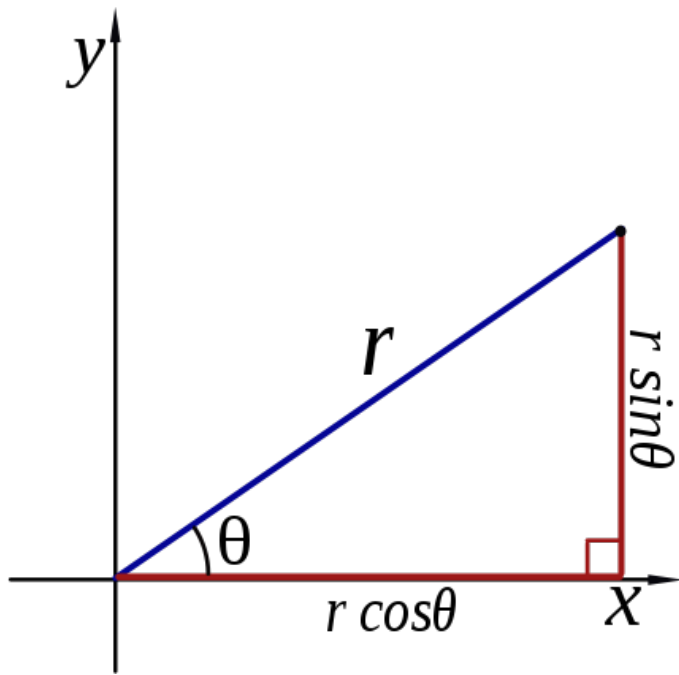
$$\mathbf{y}' = \lambda \mathbf{y}$$

$$\mathbf{z}' = \lambda \mathbf{z}$$

$$\mathbf{P}' = \lambda \mathbf{P}$$







$$r = \sqrt{x^2 + y^2}$$

$$\theta = \text{atan2}(y, x)$$

$$r' = r$$

$$\theta' = \theta + \phi$$

$$x' = r' \cos \theta'$$

$$y' = r' \sin \theta'$$

Συγχαρητήρια! Μάθαμε

- Τι είναι HTML5, canvas, WebGL;
- Πώς ζωγραφίζουμε σε μία ιστοσελίδα;
- Ποια είναι η λογική της ζωγραφικής σε υπολογιστή γενικότερα;
- Πρωταρχικές δομές: σημείο, ευθεία, τρίγωνο
- Από το 0D έως το 3D
- Μετασχηματισμοί: Μετακίνηση, περιστροφή, μεγέθυνση
- Φωτισμός
- Συστήματα σωματιδίων
- Εφέ φωτιάς και καπνού
- Φορτώνουμε κόσμους και άλλα έτοιμα μοντέλα

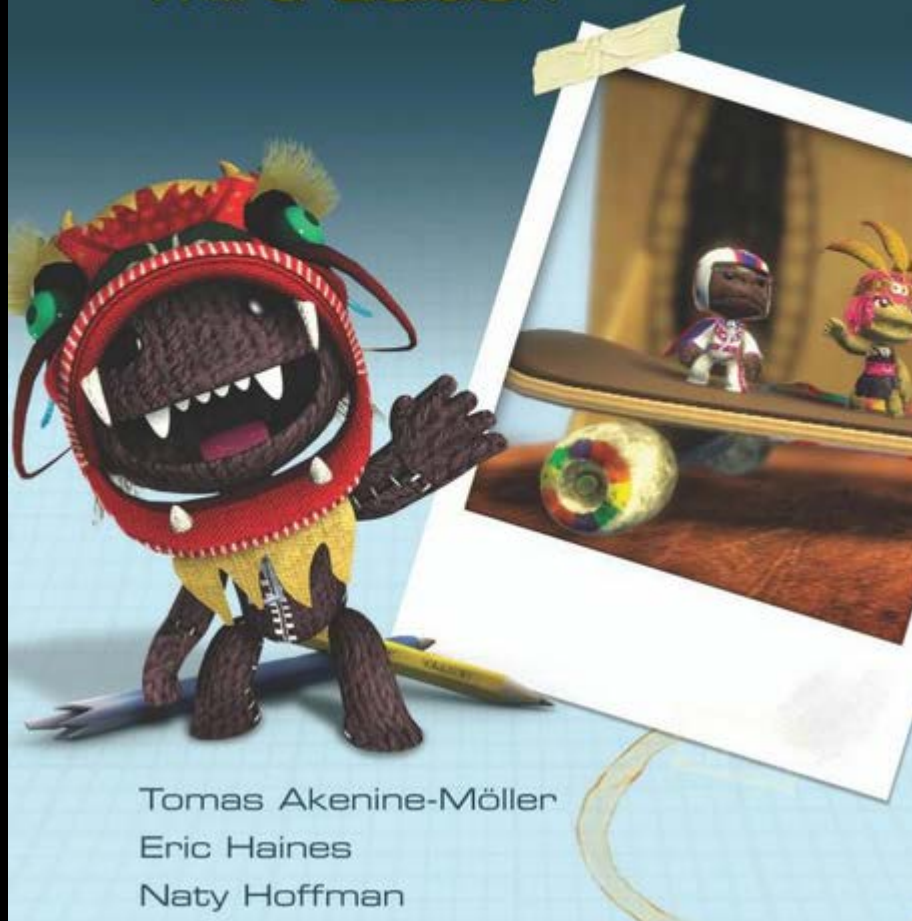
OpenGL[®] ES 2.0 Programming Guide



Aaftab Munshi ■ Dan Ginsburg ■ Dave Shreiner
Foreword by Neil Trevett, President, Khronos Group

Real-Time Rendering

Third Edition



Tomas Akenine-Möller
Eric Haines
Naty Hoffman

A screenshot from the video game Skyrim. The scene depicts a stone tower with a domed roof, built on a rocky cliffside. The tower has several levels with arched windows and a small entrance at the base. In the background, a large waterfall cascades down a rocky mountain. The overall atmosphere is misty and blue-toned. The text "ευχαριστούμε :) ερωτήσεις;" is overlaid on the right side of the image.

ευχαριστούμε :)
ερωτήσεις;