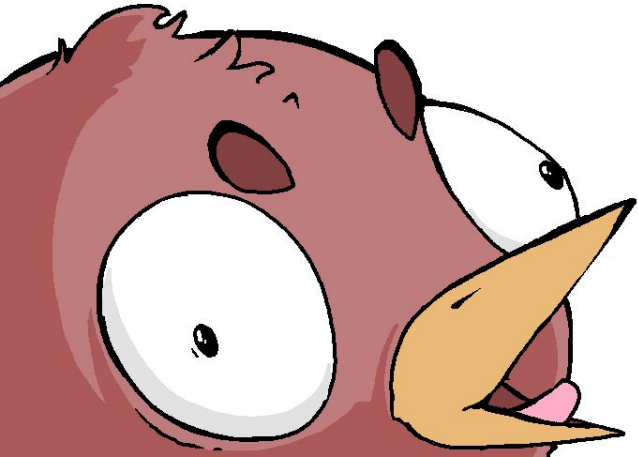


# The throwing the birds game 3D

Final presentation



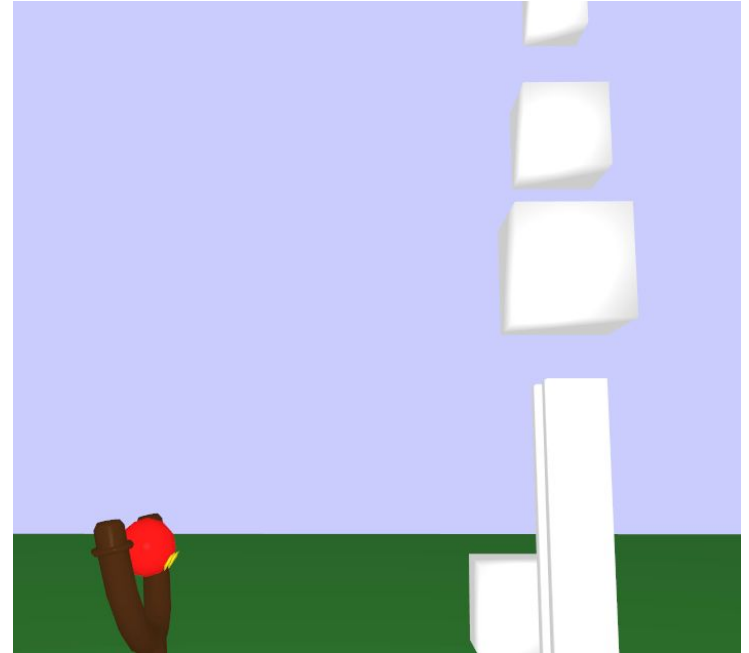
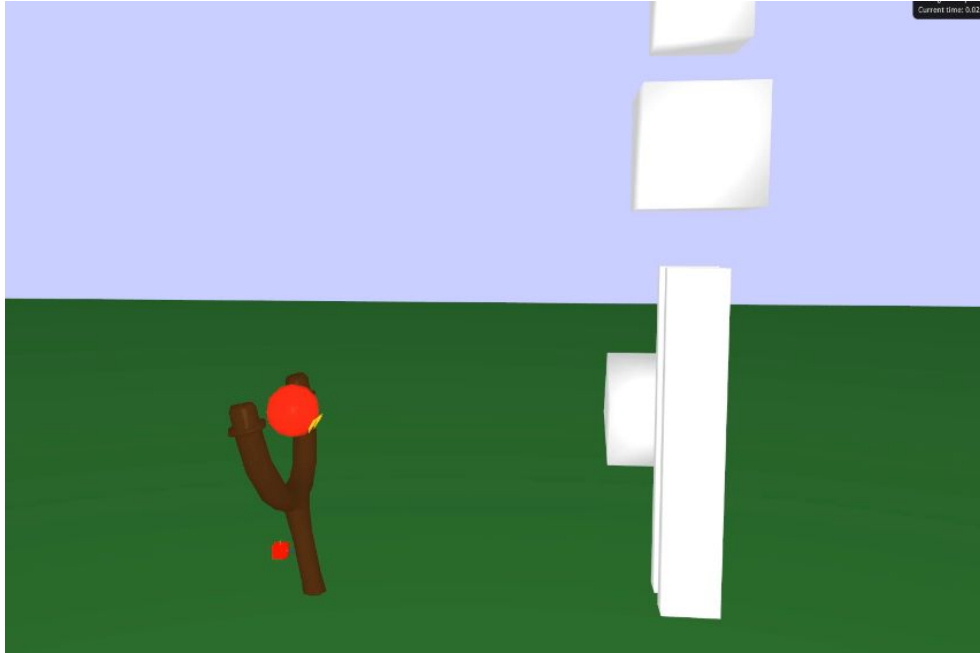


# Milestones

- Bird, sling and obstacles rendering in the scene
- Collision between basic obstacles (without multi-penetration resolution)
- Soft-body bird with collision against ground
- Bird collision with obstacles
- Multi-penetration resolution of obstacles
- Bonus: friction, rolling



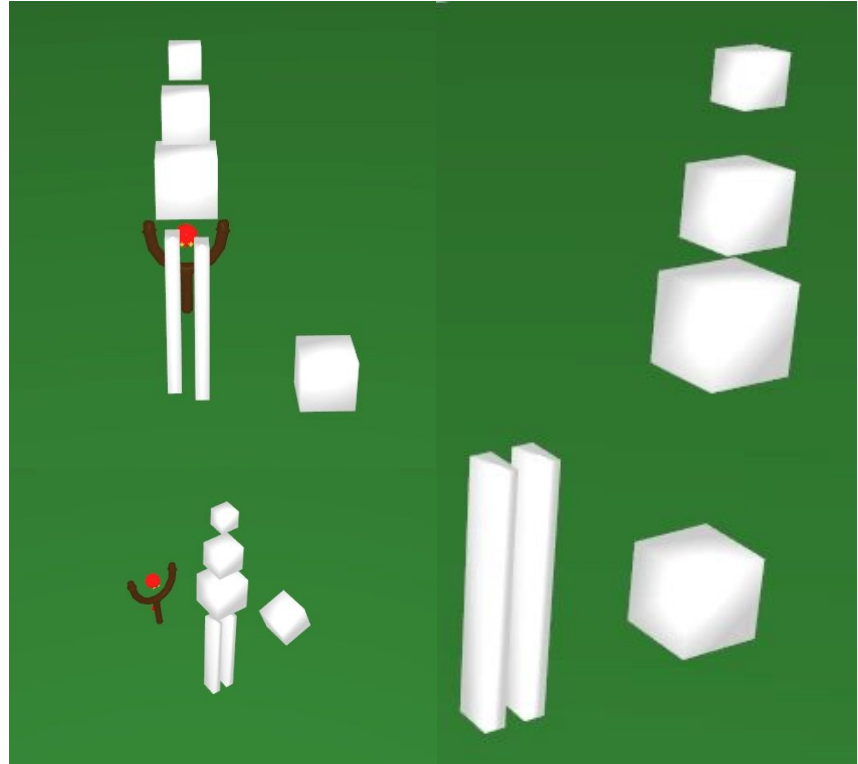
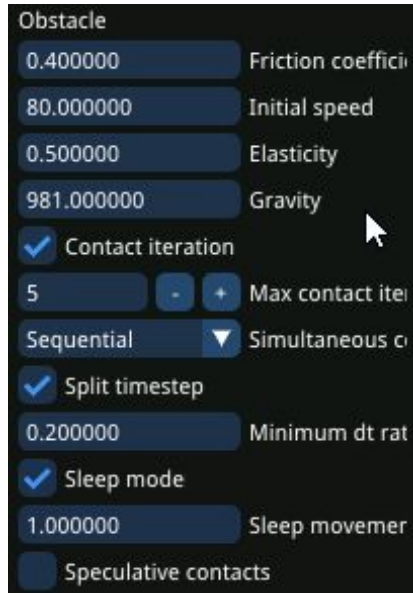
# No fancy video with music



We have some gifs doe

# Obstacles

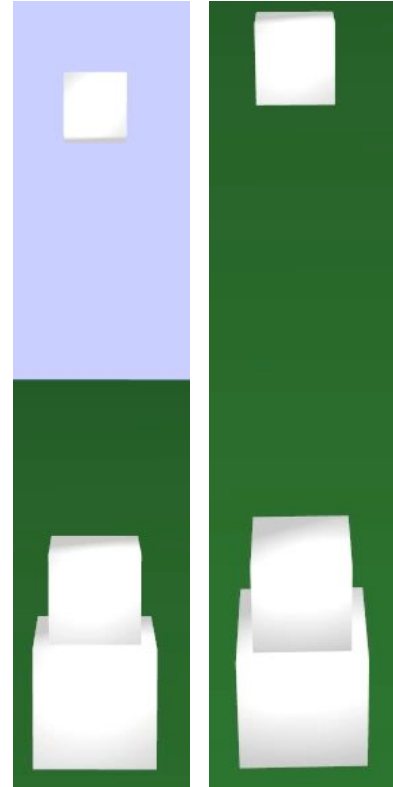
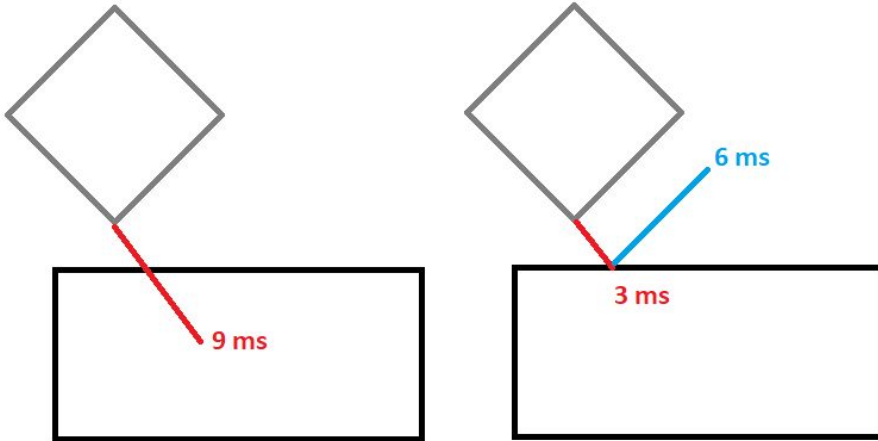
# Tried a lot of things to prevent bad stuff



# Speculative contacts

Estimate how soon the hit happens.

- Stop at time  $t$
- Recompute collisions at time  $t$
- Compute earlier hits first



Friction and sliding:

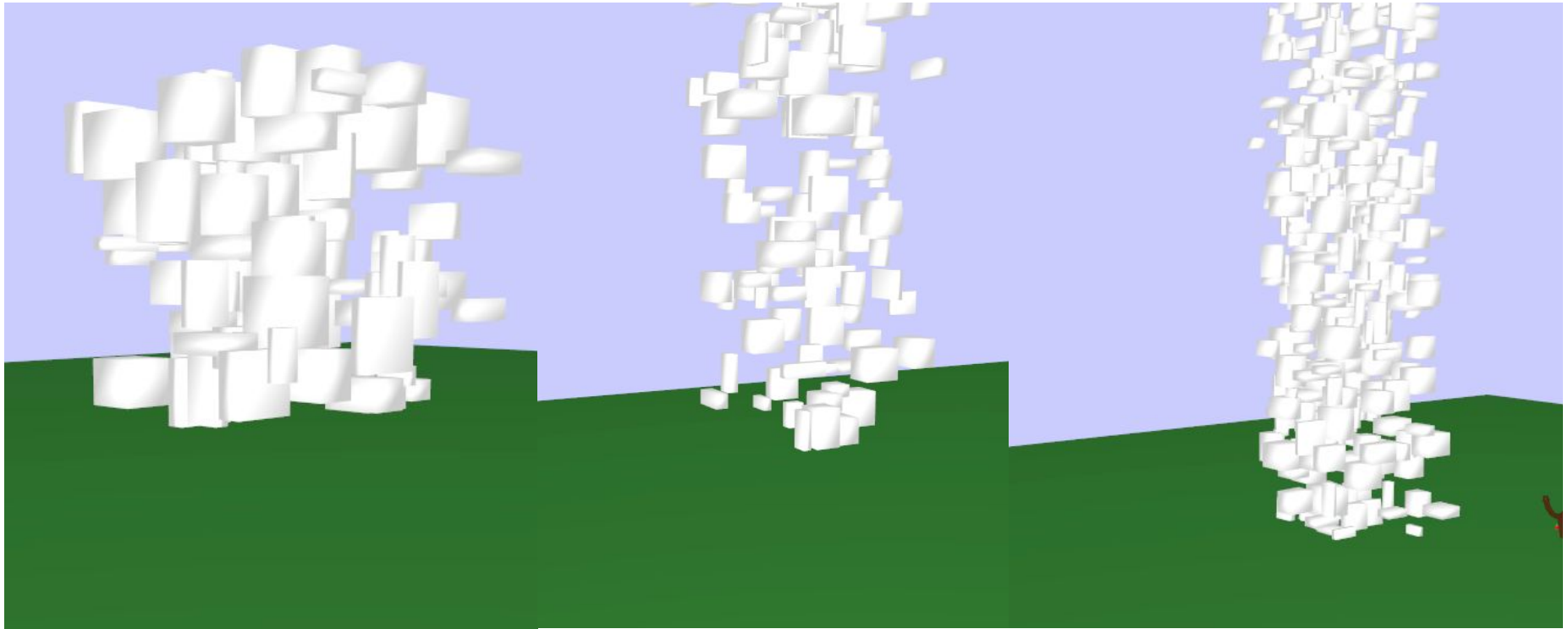


Speculative contacts:





# Sequential (iterative) processing



# Simultaneous contacts (almost)

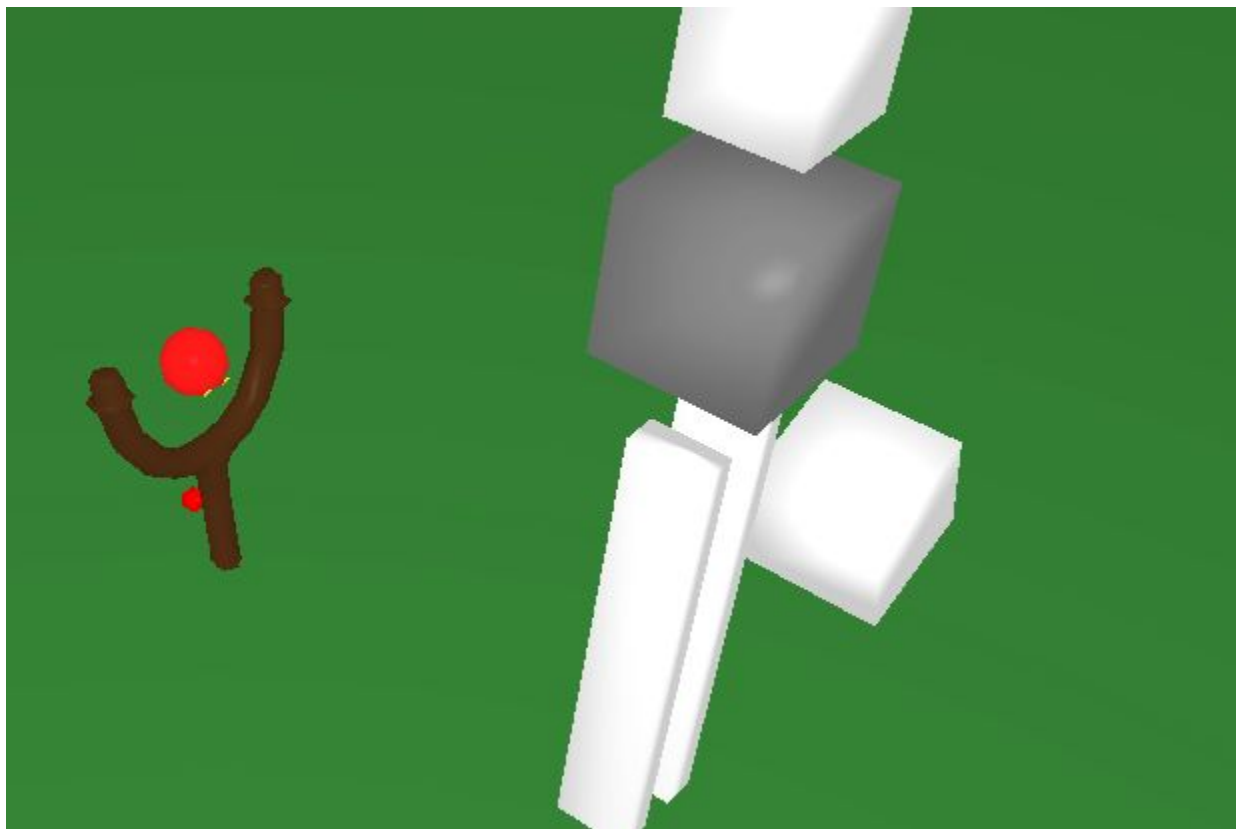
$$\begin{bmatrix} b_1 \\ \vdots \\ b_n \end{bmatrix} + \begin{bmatrix} A_{11} & \cdots & A_{1n} \\ \vdots & \ddots & \vdots \\ A_{m1} & \cdots & A_{nn} \end{bmatrix} \begin{bmatrix} j_1 \\ \vdots \\ j_n \end{bmatrix} \geq 0$$

$$\begin{bmatrix} b_1 \\ \vdots \\ b_n \end{bmatrix} + \begin{bmatrix} A_{11} & & \\ & \ddots & \\ & & A_{nn} \end{bmatrix} \begin{bmatrix} j_1 \\ \vdots \\ j_n \end{bmatrix} \geq 0$$

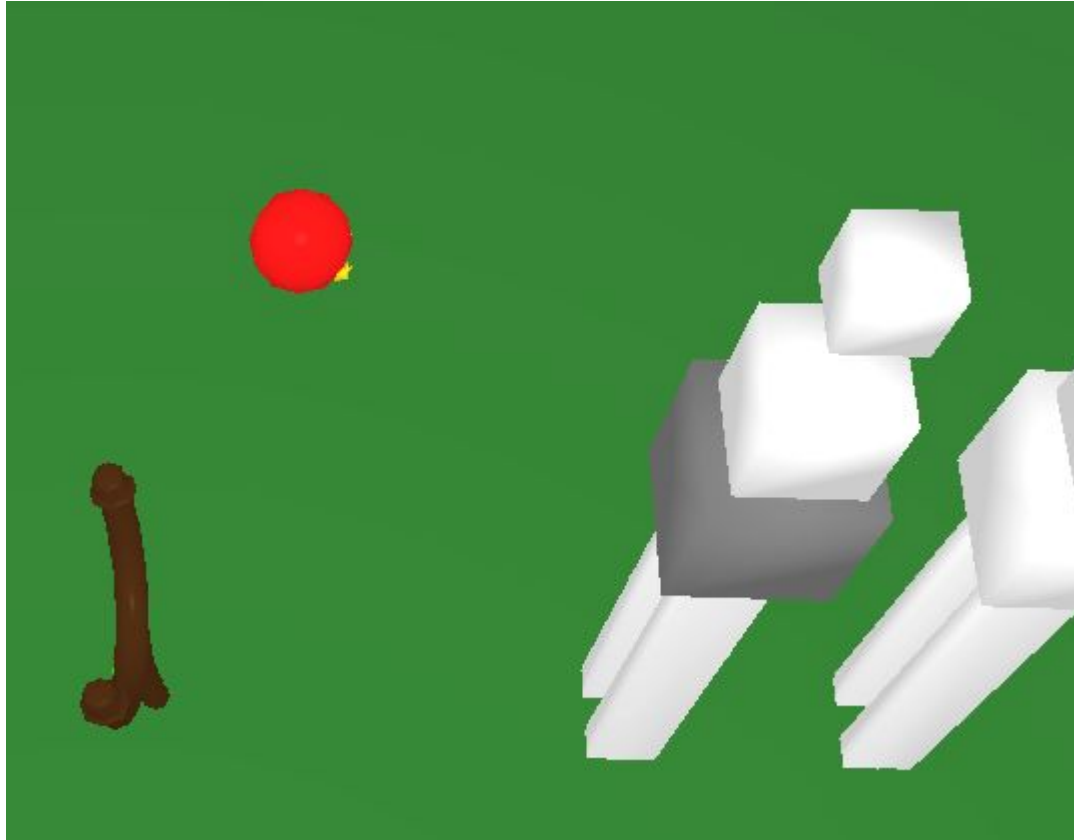


Bird

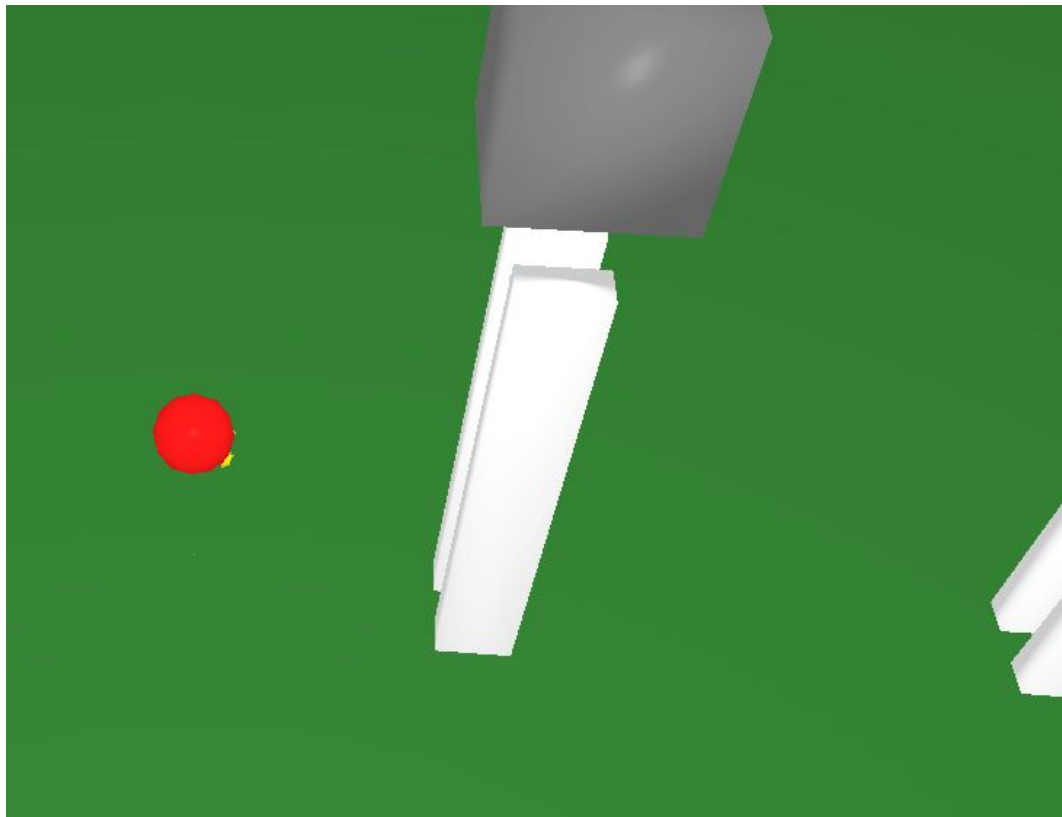
# Bird rolls



Bird rolls on surface (kind of)



Bird so tender



But... Bird has a limit

$g=100$



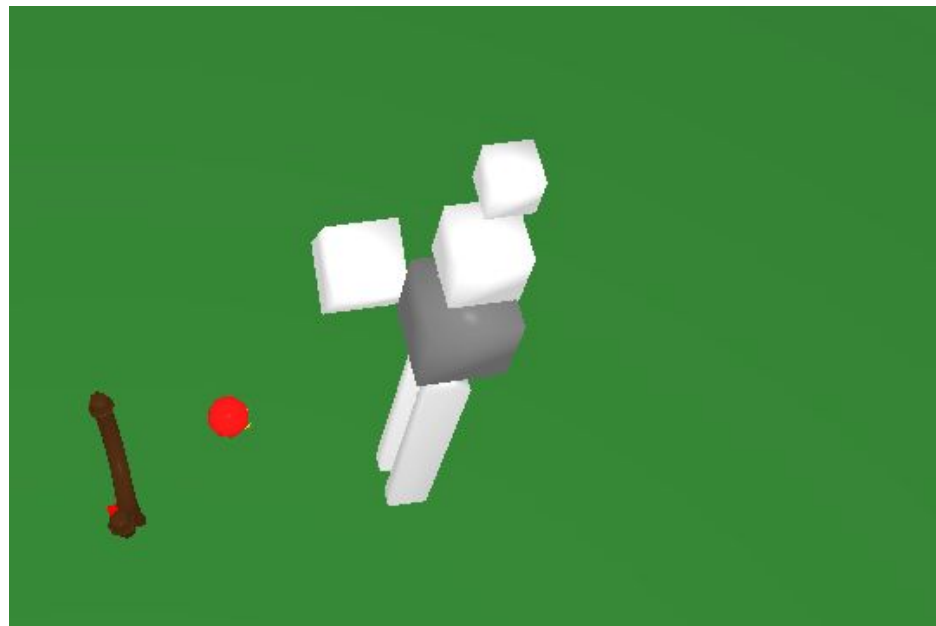
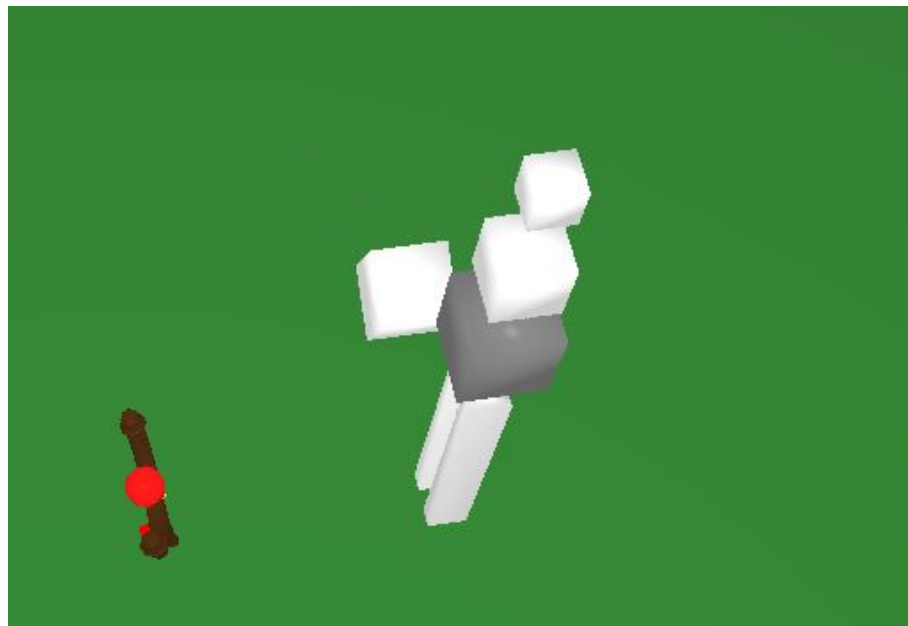
$g=300$



$g=1000$

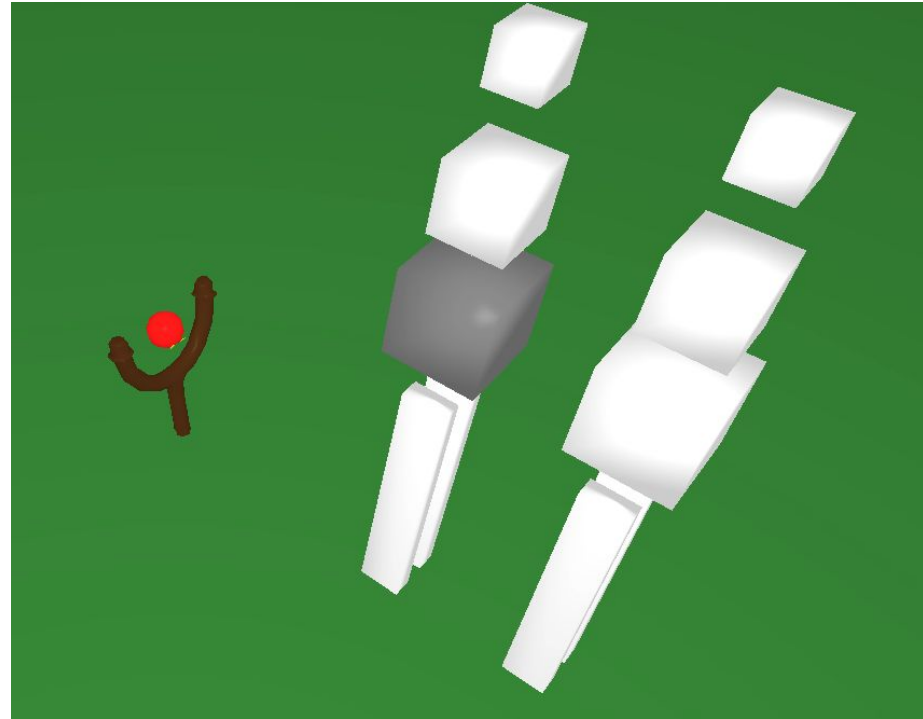
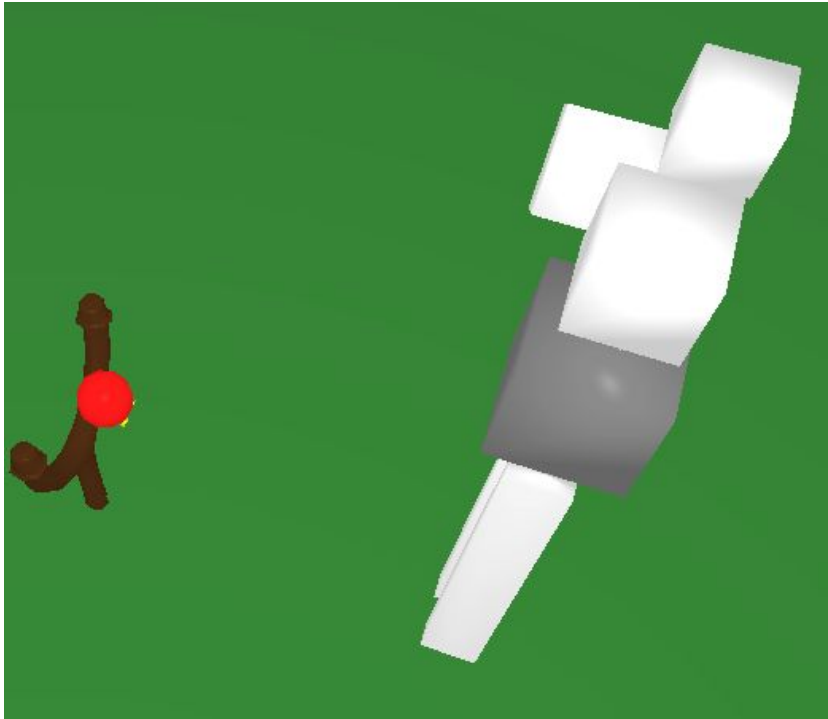


# Bird collides

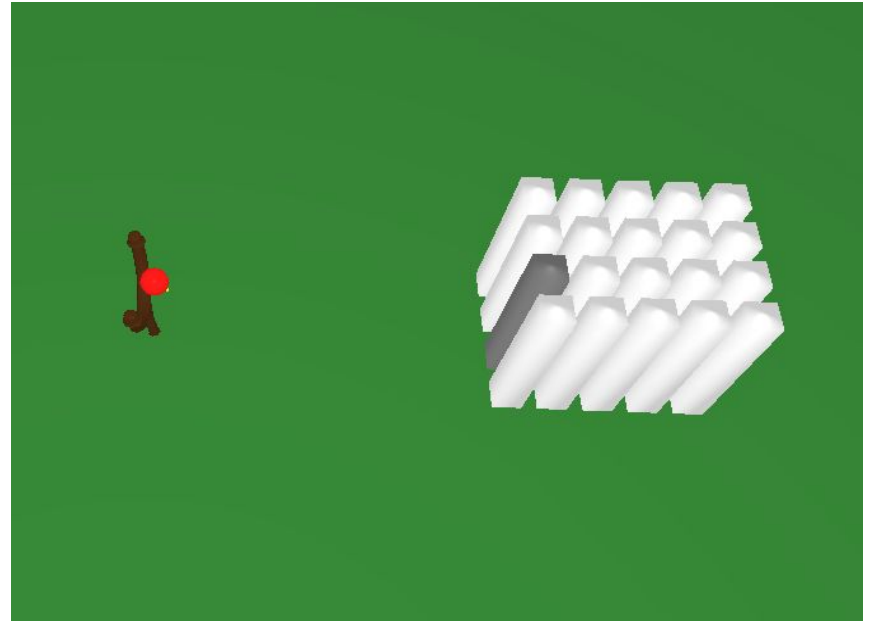
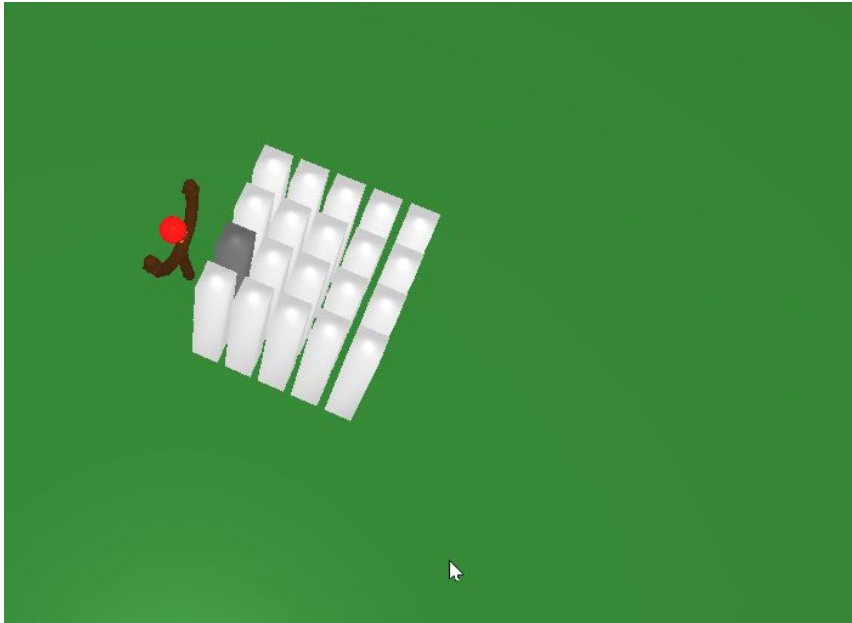




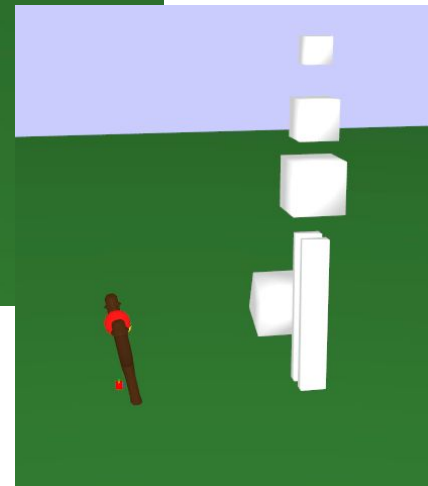
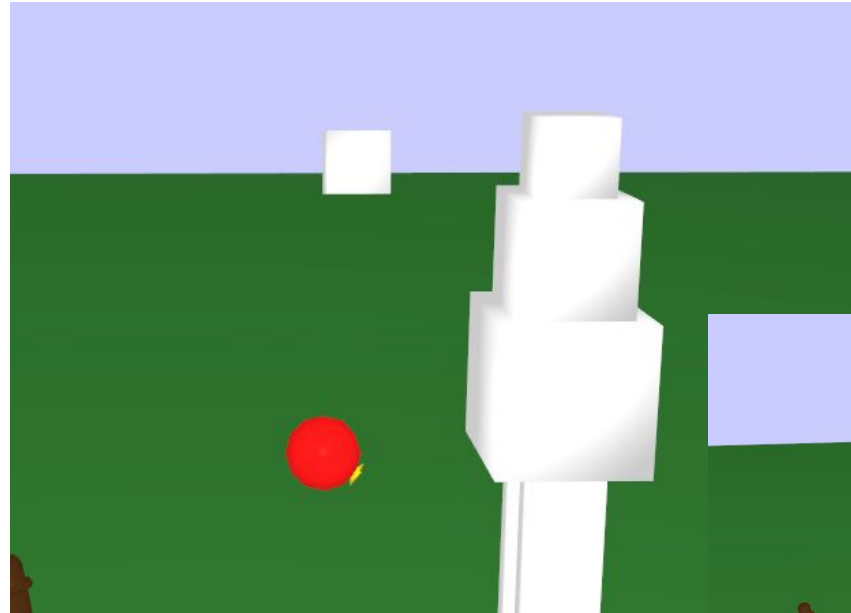
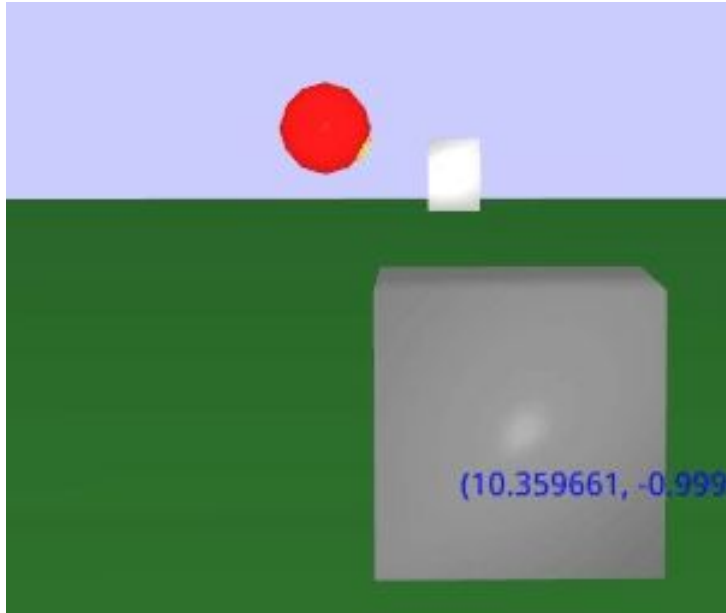
Bird collides more



# Bird collides, wobbles, and rolls



# Bird incurs friction



Thank you!

