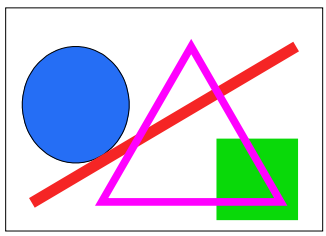
<Homework #2>

[1] Display multiple structures at once

- Types of structures: line, equilateral triangle, square, circle
- Attribute for each structures: placement, size, color, thickness of boundary line, whether to fill inside or not
- Program Procedure
  (1) Total number of structures, N, will be taken as input
  (2) Using Random Number Generator(RNG), choose the type of structure
  (3) Using Random Number Generator(RNG), choose the attribute for each structure
  (4) Using OpenGL, display the structure in the window
  (5) By repeating step (2)~(4), display N random structures on a window

Output example:



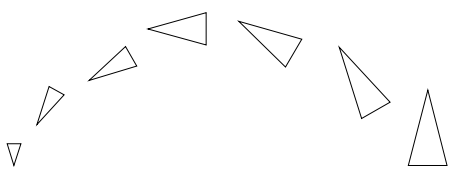
[2] Display the stacked trajectory of a triangle cannonball, shot with firing angle θ (with initial speed v_0)

- Shape of cannonball: Triangle (gets bigger and rotates over time,)
- Trajectory (coordinate of cannonball center over time):

$$x(t) = v_0\cos\theta \times t \qquad y(t) = v_0\sin\theta \times t - 5t^2$$

- Program Procedure
  (1) Input: Initial speed v_0, firing angle θ, scale constant s, rotation constant α
  (2) Calculate the x, y coordinate after t seconds
  (3) At the calculated x and y, display the rotated and scaled cannonball
  (4) Increase t with consistently, repeat step (2)~(3) till the cannonball reaches the ground
  (5) With new Initial speed v_0, firing angle θ, scale constant s, rotation constant α, draw new trajectory of other cannonball

Output example:



-Submission

1) Source code of the most important part

2) Result image

3) Detailed discussion about the result and program

- Due date : 11/8(fri), before class(~13:00)