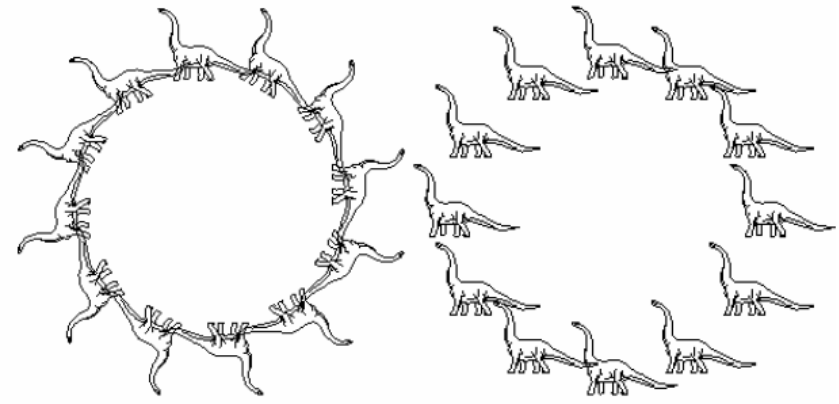
CSC 470 Lab1 Viewport, Transformations, Turtle Graphics

Individual assignment!!!

Print your source code, any header files that you have created or modified, any data files created or modified must also be submitted, and the output of each problem.
Store the above files plus the .exe files on my pen drive.

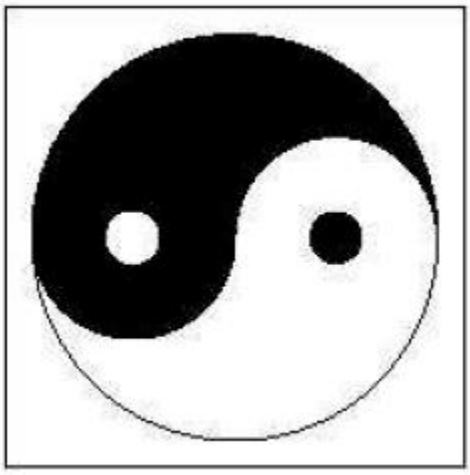
Problem 1: (60 points) Draw the dinosaur figures in four sections of a window. Two of the sections are shown below. The other two should be with their heads pointing toward the center or down.



Grading is based on correct position of the figures (15 points each)

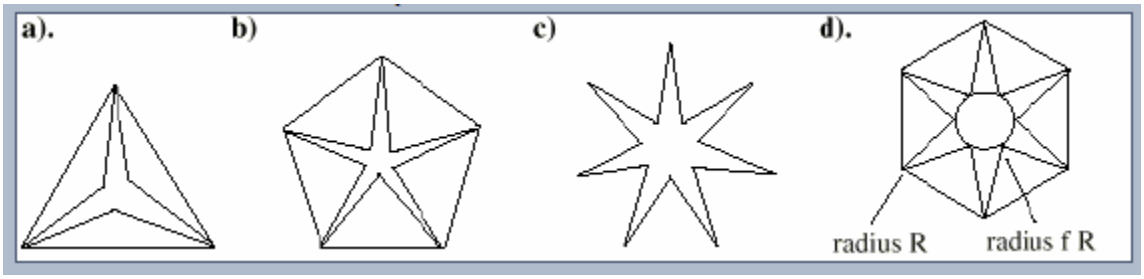
HINT: Help_Problem1

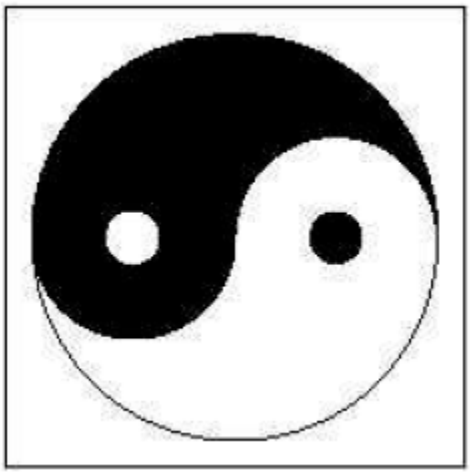
Problem 2. (10 points) Write a program in OpenGL to draw the symbol shown below assuming that it is centered in some coordinate system.



Hint: Fig. 3-57 from Lec7, file More_Figures.zip

Problem 3. **(30 points)** Write a program to draw the figures shown below. Include menu to draw a specific figure and two submenus (for example one could be a color choice).





Problem 2: (10 points)
Draw the teapots as in the figure below. You are given initial code in the Midterm.cpp file and need to rearrange it
and add more to recreate the figure.
For **extra credit**, you can make the teapots spin (each teapot in its place) – 10 points; or make the lights spin
around all teapots – 15 points.
Problem 3: (32 points)
Most of the code is given to you in the attached pages. Make sure you answer the questions that are asked in several
places in a separate doc file (5 points). The ball should bounce at the end of the problem after "Your turn" - 6
points). Create a menu to give the options of "Go again" and "Quit". If "Go again" is chosen, then a new ball is
drawn and a new angle is chosen, which means that you should ask the user to choose the angle (the one hardcoded
below). The user should also choose which direction the ball goes to (left or right). Menus as specified give you 5
points. Implementation of the menu-chosen actual actions - 10 points. Basic working code as given below is worth
6 points.
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Example: Dino Patterns
The dinosaurs are distributed around a circle
in both versions. Left: each dinosaur is
rotated so that its feet point toward the origin;
right: all the dinosaurs are upright.
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Example dino
drawDino() draws an upright dinosaur centered

at the origin.
In a) the coordinate system for each motif is rotated about the origin through a suitable angle, and then translated along its *y*-axis by *H* units.
Note that the *CT* is reinitialized each time through the loop so that the transformations don't accumulate.
An easy way to keep the motifs upright (as in part b) is to pre-rotate each motif before translating it.
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