CSCI 4550 Homework 3

In the second assignment, you will add some animation and functionality to your scene. The user will be able to interact with the program using mouse and keyboard. Your canvas (window) and object sizes do not change. Window size is 500x500, and projection type is the orthographic projection. The only difference is the addition of motion and interaction. Here is a list of functionalities you will add to your program:

1. When the user presses the “ESC” key, program stops running and exits.
2. When the user left clicks the mouse on any of four shapes objects (triangle, cross, diamond, or star) on the screen, a black frame will be drawn around the shape, and a text message will appear at the bottom of the screen stating that the object is selected and press “SPACE” to spin. For example, if user clicks on the green star following image will be generated:



The thickness of the frame and the font type are up to the programmer. Only one shape can be selected at a time. The mouse selection region does not have to be precise. A circular region at shape center with diameter “n” can be used as the selection region of that shape.

1. After the selection of a shape, the user presses the “SPACE” key. The brown arrow starts spinning clockwise around its center (black point) and randomly stops at a shape (after passing at least 3 and at most 15 shapes). The rotation is expected to be smooth, so the user will see a transition from one shape to another shape. Please set your FPS (frames per second) as 30. There will be 5-degree rotation change between each frame. And each time the user presses the key, arrow will point a random shape. The arrow will never stop between shapes. SPACE key will not work if a shape is not selected.

If the arrow stops at the selected shape, a “You win!” message appears at the bottom of the screen. If arrow stops at a different shape, the message will print “You lose!”. For example:



1. Extra Feature (+10 Points): When the user right clicks the mouse on one of the four shape objects (triangle, cross, diamond, and star) a pop-up color menu will appear. The user will see four color options: purple, orange, cyan, and pink. When he/she selects a color, the color of that shape is replaced with the new color.
2. Extra Feature (+10 Points): When the user presses “R/r” key, all four shape objects will be translated (or shifted) counter-clockwise. For instance, one key press will move triangle to the west, star to the south, diamond to the east, and cross to the north (as shown in following figure).



Similar to the item 3, this transition will be smooth. The user will see all shapes are moving from their initial positions to their new positions.

Here is the link for textbook exercises (<http://www.sumantaguha.com/downloads>) in case you need. You will submit your source code in a single .cpp file to the blackboard. Please feel free to contact me if you have any questions.