CSCM94 Group 4

User Requirements

* A 2D CGS model of a shape or set of shapes that is stored internally as a tree.
* The tree shall consist of nodes which shall be either shapes, transforms, mixes or references to other nodes. It should be possible to create a new tree, to modify an existing tree by adding, removing or modifying nodes within it and to delete an existing tree.
* It should be possible to create new nodes, to modify the properties of existing nodes and to delete existing nodes.
* Shapes shall be either circles, defined by their radius, or regular polygons defined by their number of sides and radius. Only 3- and 4-sided polygons need to be considered. All shapes shall have their default position at the origin of the 2D coordinate system in which they exist, a unique ID will be assigned to all shapes. A shape node shall always be a leaf.
* Transforms shall be either rotation by some angle in radians, scaling by some real number factor or translation in x and y by some real number amount. It should also be possible to apply a particular transform to a shape multiple times with a single instruction. A transform shall be applied to one existing shape.
* Mixes shall be either the + (Union), - (Difference) or & (Intersection) of two shapes, a new mixed shape will be created with its own ID.
* There shall be some user interface that allows interacting with a representation of the tree and also shows a graphical representation of the tree as a 2D image.
* It should be possible to save the current state as a file and to load it back anytime. Each time when a saved file is load, it should be possible to resume the drawing.