Criterion A

Scenario

Funnel translations between shapes can be used for an array of important tasks. Funnel translations can contain shape translations between square to square, circle to circle, and square to circle. My client designs 3D models on AutoCad for a living, and sometimes needs to draw these funnels. However, drawing 3D funnels can be extremely time consuming and prone to errors, especially when the translation is between two different shapes (such as square to circle). Drawing 3D funnels is a manual task, which requires the user to calculate and draw each individual vertex and face. This is not only time consuming, but very prone to human error. Slight errors in calculation can lead to even more wasted time, and wasted resources if model is ever 3D printed. As more and more funnels are created, it can be also be increasingly difficult to keep track of old projects. This can also lead to redoing work, confusion, and frustration.

Wordcount: 156

Rational

To solve the problem, the client needs a program that will keep track of various funnel projects and generate Cad scripts that will automatically draw the funnels on AutoCad with speed and accuracy. This will turn an error-prone hour long task to a error-less seconds long task. To do this, the project needs a smooth GUI, a database, an organized program (OOP), and an efficient algorithm. This solution is written in java and uses SQL, which will allow me to have the 4 aforementioned aspects. Firstly, using java allows me easily to make a GUI with text fields and selectable options. This makes it easier for the user to enter in the data they need. Next, Java allows me to easily communicate with my program's DBMS (Derby) and keep track of each funnel created. An SQL database will allow the user to store multiple entries of shapes,

so the user can come back and view previous constructed shapes if they need to. This is important for a user who needs to organize various funnel projects. OOP also allows me to make my program modular, splitting up the 3 funnel types into 3 classes.

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Success Criteria

Based on my initial interview (appendix 1), these are the best success criteria for the program.

1. Funnel vertices are accurately calculated
2. Funnel vertices are accurately mapped to faces
3. Script files which accurately contain faces are created
4. User can select from three funnel profiles (Sts, Ctc, Stc)
5. Database can insert funnel inputs
6. Database can delete funnel inputs
7. Database can retrieve funnel inputs
8. Database can update script settings
9. Database can retrieve script settings (which are added to scripts)
10. Program is robust