Project Identity
Interactive Wheel of Fortune Game
Week 1
January 30, 2007
Kristen Gingras

Work Completed
At the start of the first Senior Design meeting all parts that had been ordered and came in were analyzed to ensure accuracy. Parts received include the SP03 module, two bolt flange bearing block, motor, motion sensor, foamed PVC, IPS Weld-on 2007 and applicator, function module, keyfob remote. All of these parts were correct except for the keyfob remote. A five button remote came in when all that is needed is a one button remote. After consideration we have decided that this remote needs to be exchanged. The five button remote could cause confusion to the adults that suffer from disabilities.

During last semester the Interactive Wheel of Fortune game was designed and analyzed. At the start of this semester all of this planning was further examined. How to start the project and which parts to primarily proceed with were discussed. We decided to look at the overall design of the game first. This included the base of the game and the wheel and how their individual sizes would come into play. The sizes of these components are very important in all other aspects of the game. We decided that it would be best to make a model of the game. This model was made out of light weight cardboard. The original decided size of the base of the game would be twenty-four inches by twenty-four inches by six inches. The original size of the wheel was twenty inches in diameter. These sizes needed to be changed. This is due to the mold well that the wheel will be inserted into. The mold well was to be specifically made to fit the wheel. However with the help of Bill we have the possibility of obtaining a pre-made mold well. There are different size options for this pre-made mold well, and a well with a twenty inch diameter is not an option. However a mold well with a twenty-four inch diameter is an option. We have decided to design the wheel around this pre-made mold well. The base of the game needed to also change in size due to further analyzing of the clicking contraption. The clicking contraption is a built device in which dowels that are placed on each pie piece of the wheel will come in contact with a block that is suspended to the base. This is a design feature for the game because it will provide further visual enhancement. Where to place the block that will hit the dowels became a problem. In our Final Report we had decided to make the base of the game larger than the wheel and to place the block on an open corner of the base. With further consideration it was decided that a large base was not necessary and would provide more weight to the game than is needed. Thus a smaller base size would be more optimal. It is planned to make this base eighteen inches by eighteen inches by six inches. The wheel will not sit on the center of the base. Rather it will be set off to one side to provide a free corner on the base of the game (Fig. 1). This free corner is where the block for the clicking contraption will be placed. By building the cardboard model we were able to see that these dimensions will work for the game. All components will still be able to fit inside the base of the game, as planned for last semester.
After building the model Meghan and I proceeded to analyze the wheel that would be made to fit inside of the mold well. The wheel will be made out of foamed PVC. The pie pieces do not have to withstand much force due to the fact that they will be housed inside of the mold well. Thus the foamed PVC (Fig. 2) will be optimal to use due to the fact that it will not provide any additional weight to the game. Foamed PVC is composed of a thin layer of PVC followed by a layer of foam and then finished with another thin layer of PVC.

The one problem with the foamed PVC is that it was ordered in white color and not vibrant colors. When receiving the specifications from the ATCO sheltered workshop it was stressed that the game provide much visual enhancement. Thus a wheel that is made white in color will not provide much visual enhancement. Paint and a painting system must be found and decided on so that the wheel can be colorful. It was found that painting PVC is not an easy task. Normal spray paint or canned paint cannot be used because it will not adhere to the PVC. Thus finding an alternative paint was researched. Tips on how to paint PVC were found. It was noted that to help the paint adhere to the PVC that the PVC surface must first be thoroughly cleaned and then rubbed down with sand paper. It was found that a cleaning mixture of water and bleach worked best. Also one hundred and fifty grit sand paper was optimal to use on the PVC surface. It is best to sand the PVC because it will provide a greater surface area for the paint to stick onto.

There were many different tips that were found online. Some of these tips include different methods to applying the paint. One simple method is cleaning the PVC with...
acetone (instead of the mentioned bleach PVC cleaner), sanding, then applying spray paint specifically made to be applied to plastics. This method recommended using Krylon™ Fusion spray paint. One method is sanding, using Purple Primer (which can be found at any local hardware or plumbing supply, then painting with a paint that contains a high amount of solvents) preferably an automotive urethane type of paint. This method recommended using Rust-Oleum paint. The last method implies that the PVC be sanded, layered with epoxy, sanded again and then applying the paint. It was also mentioned that a clear epoxy could be applied over the paint to provide further protection. This seems to be the optimal method because the paint does not adhere to the PVC; rather it adheres to the epoxy. This seems to be optimal because in all the research that was conducted it was mentioned that paint does not adhere to PVC well no matter which paint is used. The epoxy will adhere well to the paint and the PVC. Thus this seems to solve the overall problem.

Future Work

Next week the painting method to the PVC will be decided on. A visit to the hardware store will take place. This visit will hopefully provide us with a better knowledge on selecting the right paint to be used. After all supplies are available and have arrived a test paint will be conducted. Whichever method is decided on will be carried out on a test piece of PVC. After the paint has had adequate time to dry tests will be conducted. These tests will prove if the right paint and painting method was chosen.

Also in the near future the SP03 text to speech synthesizer will be examined. The computer program in which the phrases are entered and sent to the SP03 module will be downloaded and learned. It is decided to start looking at the SP03 because it is just one of many technical and electronic components of the game. It is the one component that can be analyzed without the final circuit being completed (circuit to be constructed towards activating the wheel to spin). After examining the SP03 module then push buttons can be ordered that will attach to the SP03. These push buttons will act in activating the audio comments.

Any new parts that need to be ordered will be completed in the following week. Contact will be made with the supplier of the mold well. Also exchanging the remote will further be looked into.

Project Review

Overall the project has gotten off to a relatively good start. We have many different parts that were received at the start of the semester. These parts are allowing us to start the assembly and testing of the game. It is important to analyze what needs to get done primarily. We have many additional features that can be added onto the game if time allows. However it is important to recognize which tasks are imperative to the game functioning properly.

Hours Worked
8 hours