Interactive Wheel of Fortune
Team 4
Week 6 Report
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Duty Cycle

- Commands were used for the pulse width modulation to make the output for the microcontroller decrease linearly.
- This is more optimal than the output dropping from high to low as soon as the random time is complete.
- This is completed by using the concept of the Duty Cycle.
The Duty Cycle represents the percent of time period that the output is high.

Example: For a defined period of 2 milliseconds with a duty cycle of 80%.

Output will be high for 80% of the time and low for 20% of the time.

Thus the motor will run at 80% of the maximum speed (32 rpm).
Duty Cycle

- **PWM Subroutine**
- 100% duty cycle
  - Run for a random period of time between 2 to 4 seconds.
- 80% duty cycle
  - Run for .2 seconds
- 60% duty cycle
  - Run for .2 seconds
- 40% duty cycle
  - Run for .2 seconds
- 20% duty cycle
  - Run for .2 seconds
- 0% duty cycle
  - Until an input is detected from sensor or the function module

- PWM signals of various duty cycles
Debugging

- Debugging started using the debugging program in MPLAB
- Random time subroutine is debugged and verified that it is working correctly
Construction

- Construction started on overall base and components of game
- Shaft was constructed out of an aluminum rod with a 1.25” diameter
- Rod was lathed to fit the diameter of the mold well (1.15”) and the diameter of the bearing block (1”)
Wooden block was made to provide support for bearing block.
Bearing block will sit directly atop the wooden block.
A hole will be drilled through the top to allow shaft to go through.
Motor will sit on bottom of wooden block and will attach to the bottom of the shaft.
Wheel

- Due to the fact that the bottom of the mold well has pre-cut pie pieces it is decided to use this as the main wheel.
- This will save the group much time in fabricating an additional wheel out of the foamed PVC.
Wheel

- The mold well is made out of polypropylene
- The same problem is apparent in that plastic is not easy to paint
- After further research it is found that a primer will need to be purchased before painting the mold well
- Bulldog Bond.Flex Tie Coat and BONDiT A-43 primers will be researched
- Visit to hardware store will assist in decision
Future Work

- Complete program with inputs and outputs working properly
- Test the SP03, function module and motion sensor with the microcontroller
- Construct the motor circuit
- Sand, epoxy, sand and paint the mold well
- Further construction cannot take place until the wheel is finished
- Visit to hardware store and purchase of primer
The project was slightly delayed this week

However there is much that can be done to speed up time

The program will be finished by the end of the week which will allow for testing

The wheel will be constructed by the end of this week – early next week allowing for construction of the entire game to continue

Overall hours:

- Yavi: 9
- Meghan: 10
- Kristen: 10