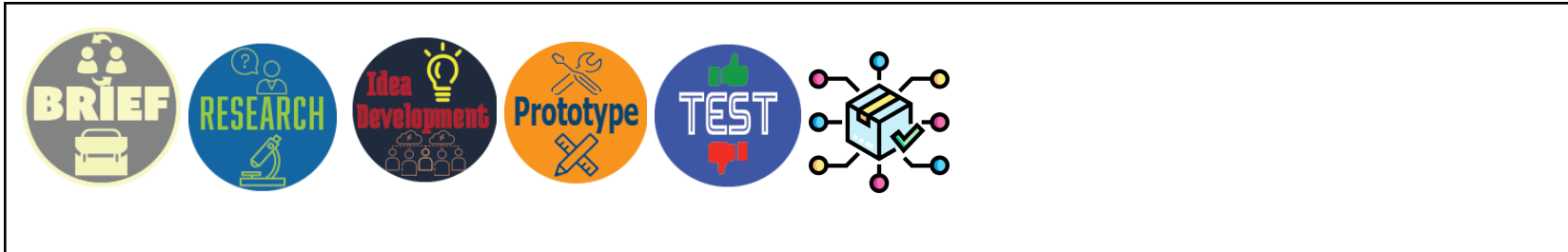


Project: Robot Lantern Project

Keep these stickers at the top, but place them in your notebook denoting the start of each step. **Date each entry and make the entry on that date, no exceptions.**



Date: 8/2/24

Rough Prototype Requirements:

- Limited to no slipping
- Weight must be balanced
- Must be stable
- Preprogrammed to traverse a specific predefined path.
- Wiring Table Must Be Included
- Must follow wiring guidelines.
- All code must be saved in your code document.





Date: 8/8/24 We got our servo motor working.

Here are some comments import time #import a library called time

import board #import a library called board

import pwmio #import a library called pwmio

from adafruit_motor import servo #imports a library called servo from adafruit_motor

create a PWMOut object on Pin A2.

pwm = pwmio.PWMOut(board.GP22, duty_cycle=2 ** 15, frequency=50)

Create a servo object, my_servo.

my_servo = servo.Servo(pwm)

while True:

 my_servo.angle = 0

 time.sleep(2) #waits 2 second

 my_servo.angle = 180

 time.sleep(2) #waits 2 second

'''

for angle in range(0, 180, 5): # 0 - 180 degrees, 5 degrees at a time.

 my_servo.angle = angle

 time.sleep(0.05)

for angle in range(180, 0, -5): # 180 - 0 degrees, 5 degrees at a time.

 my_servo.angle = angle

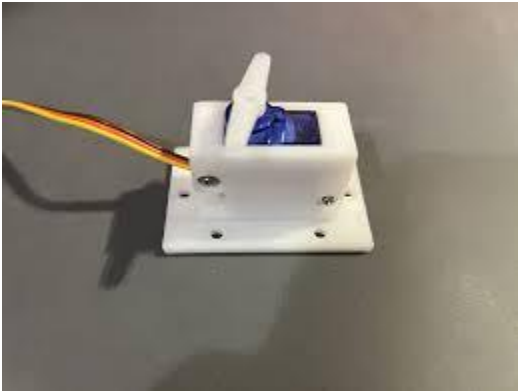
 time.sleep(0.05)# Write your code here :-)

Brown from servo	GND on the pico
Red from servo	VBUS
Orange from servo	GP22 on pico

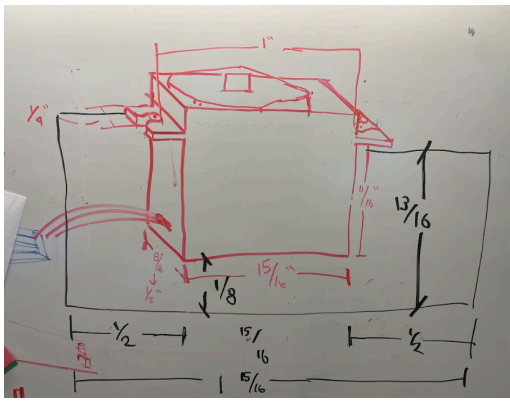
Here is a link to my single servo code <https://docs.google.com/document/d/1QnIrjFeFXNk7wO6H7V5vbl8VXRld2VNhW9FE8ifrki0/edit?usp=sharing>

Brown from servo	GND on the pico
Red from servo	VBUS
Orange from servo	GP22 on pico
Brown from servo	GND on pico
Red from servo	VSYS
Orange from servo	GP2 on pico

We looked up different mini servo mounts. Here they are



Date: 8/15/2024 Last class we decided on a direction for our mount and we used the yellow design above as inspiration. Ms. White

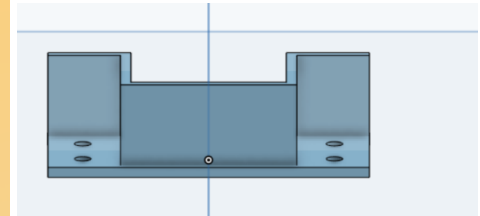
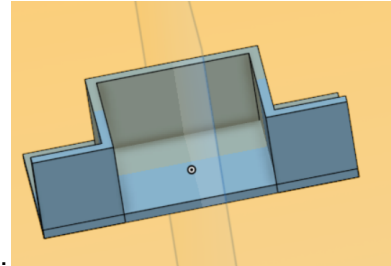


create our sketch

Here's a picture of my 3d print



Date: 8/15/2024 Last class we made a 3d model in Onshape.

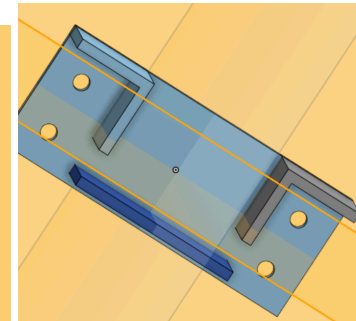
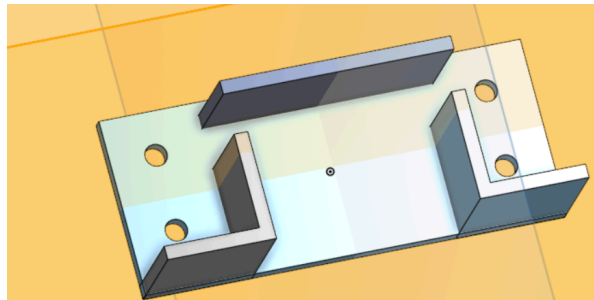


Date: 8/15/24 We tested our servo mounts. We identified these improvements that need to be made for my servo mount to:

1. There is no storeplaces for the wires to exit.
2. My servo mounts is too narrow so the body of the servo doesn't fit inside. I need to correct this dimension.
3. The vertical distance from the bottom of the servo to the fiange on my mount is too short. So we need to change our dimension.



Date: 8/16/2024 We updated our Onshape



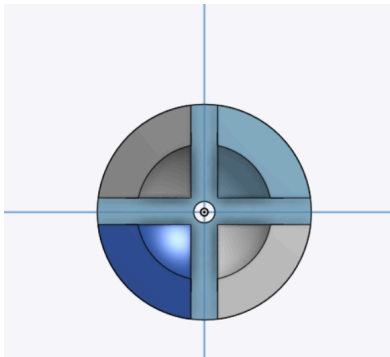
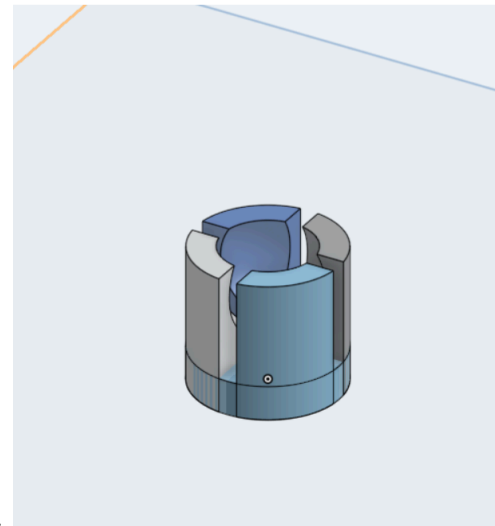


Date :8/29/2024 Today we researched ideas for how to make sure the front end of our robot wasn't dragging on the ground.





Date 9/3/24 Last class we built our caster wheel in onshape and 3d printed it.



Date 9/3/24 Today we tested to see if our caster would



Date: Oct 8 Today we learned our final project instructions.

Rough Prototype Requirements:

- Limited to no slipping
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- Wiring Table Must Be Included
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Functionality

Robot goes straight when desired.
Robot turns quickly and efficiently when commanded to do so.
Weight must be balanced
Can be no bigger than 14(L)"x8(W)"x10(H)"
After successfully traversing your path, you have transitioned your robot to a racerbot and engaged in at least three races.
At least one more functional electronic incorporated that responds to one of the buttons.

Advanced: an additional functional electronic component has been added and programmed to respond to one of the buttons.

Usability

Electronics are fully enclosed (not visible).
Has easy access to: batteries, to replace wires in the motor controller, to replace wires on pico breakout board, and to plug in white cable.
Switch is mounted so that the switch can be activated from the outside.

Aesthetics Plan

You have created a correct, one point perspective sketch of your proposed design, and your finished design looks like your sketch.
Your design is unique.
Colors are intentionally planned for and are implemented

Advanced: You have chosen a design that has significant challenge or nuance.

Construction:

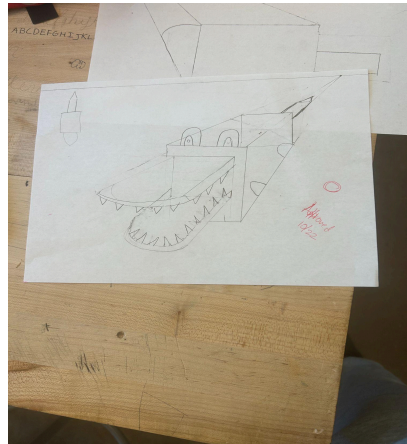
All hard the sides of the robot body are digitally fabricated.
Cass has been taken to assemble the robot body with care so that very little to no glue is visible.
Edges that are glued together, match up on prepared overhangs or constructed slaps.
Design has significant complexity in colors, or extremely simple (white).
Finger prints are not visible where possible.



Date: Today we looked up different design models for our robots.

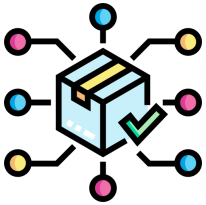


Date: Today we made sketches and got approval from our teacher.





Date 10/28/2024 I unfortunately wasn't able to get my robot to connect to my phone and traverse the purple path and also show my robot would avoid walls using the ultrasonic sensors , However I want to take the time to explain how it would work and explain ultrasonic sensors. Ultrasounds are sensors that send high pitched soundwaves out of the audible hearing range. So in my ultrasonic sensor it sends out soundwaves and gets a message back which is how it detects walls or close objects around. For the bluetooth connection you use the code from GitHub and the code will read from the Dabble mobile app through an HM-10 bluetooth adapter connected to a Pico in CircuitPython. Using all of these together this will make your robot able to traverse the path. Using your phone mobile app Dabble which has a remote that lets you control your robot and also your remote will avoid walls and objects using the ultrasonic sensor.



Date: 12/4/2024 Inside of your Engineering Design Documentation Notebook

You will present your robot using this documentation after break.

Prototype: This is a video of my prototype diversing the path <https://drive.google.com/file/d/1A4KesLIkK9Hq3QL2OFuCJmwCpycoRVJl/view>

Test:

Identify in writing all of the improvements that need to be made before your final. These can be written out or in bullet points. Be thorough.

- No electronics need to be shown.
- It needs to have finger joints on the 90% angles
- It needs to have color(specifically Green)
- It needs to have access point where you can access the wires and other electronics
- It needs to be able go straight without drifting

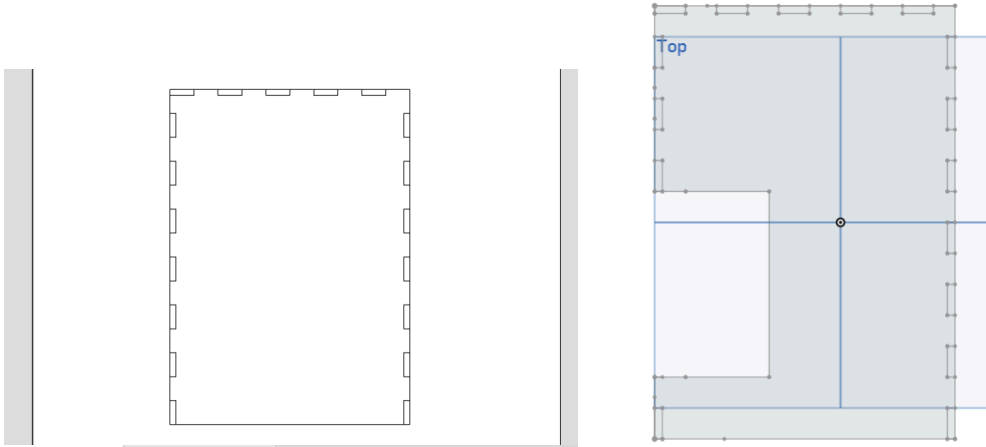
Final Product:

Photos:

Include as many in process photos of your build as you have.

OnShape:

Include screenshots of all of your sketches or extruded parts in OnShape. This is how you demonstrate that you digitally fabricated your parts.

**Code:**

Include a link to your code document with your final code included.

<https://docs.google.com/document/d/1QnIrrjFeFXNk7wO6H7V5vbI8VXRld2VNhW9FE8ifrki0/edit?tab=t.0>

Write a description of:

The functions that you used. Some functions I used were forward- Causes the robot to move forward , left- Causes the robot to turn left, right- Causes the robot to turn right, backward- Causes the robot to move backwards, stop- Causes the robot to stop all motion.

The if statements that you used.

if message.up_arrow_pressed:

forward() - This statement means that the robot will move forward if the up arrow is pressed.

elif message.down_arrow_pressed:

backward() - This statement means that the robot will move backward if the down arrow is pressed

elif message.right_arrow_pressed:

right() - This statement means that the robot will move to the right if the right arrow is pressed

elif message.left_arrow_pressed:

left() - This statement means that the robot will move to the left if the left arrow is pressed

elif message.no_direction_pressed:

stop() - This statement will stop the robot if no button is pressed.

print("Stop both motors")

