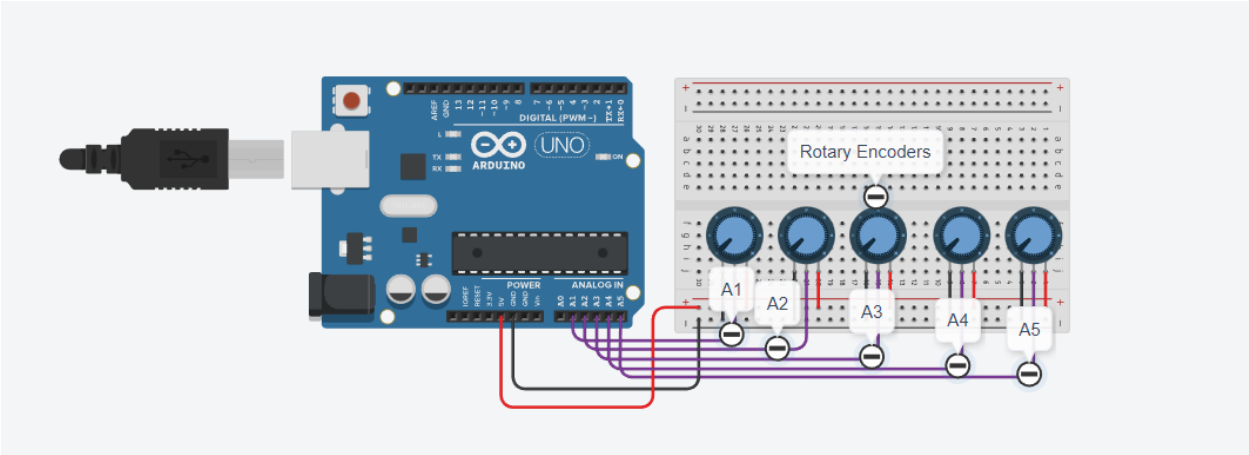
Industrial Design for Game Hardware Assignment #2
Technical Drawings, Circuitry and Prototyping

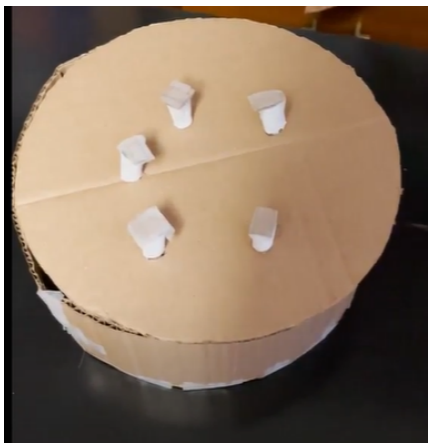
Circuitry Design

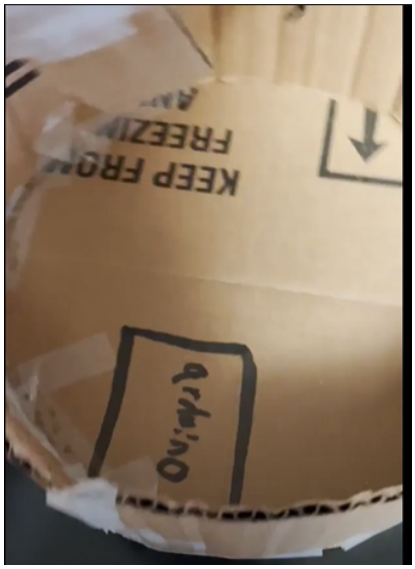
Here is an image depicting our circuitry design for this controller in TinkerCad. The circuitry is quite simple as we require only 5 rotary encoders, an arduino nano and breadboard. This depiction is a close representation to the final product's functionality.



Paper Prototype

Here are photos of the paper prototype showing the approximate size and positioning of the components for the tire peripheral. We included a representation for the lugnuts, rotary encoders and the arduino along with the accompanying slot for the usb port.

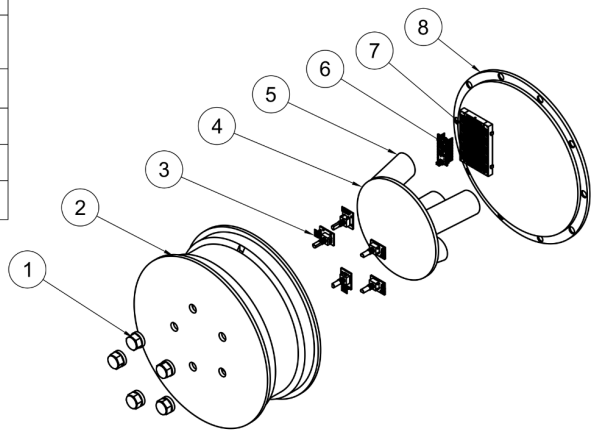




3D Exploded View:

Here is the 3D exploded view along with the parts list from Fusion 360.

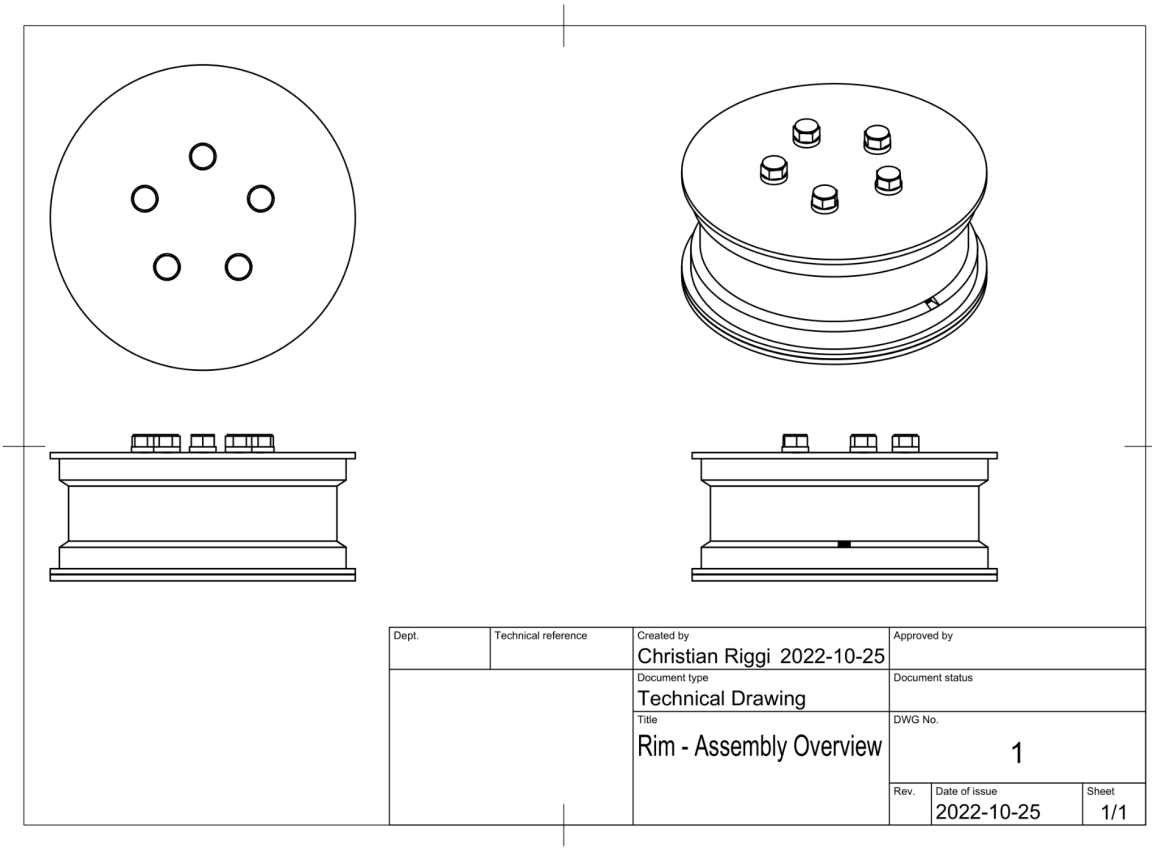
Parts List				
Item	Qty	Part Number	Description	Material
1	5	LUG_N_101 - "Lug Nut"	3D Printed Lug Nut	3D Printed Plastic
2	1	R_SHELL_102	3D Printed Rim Asthetic	3D Printed Plastic
3	5	KY040 Rotary Encoder	Rotary encoders to allow for spin movement	N/A
4	1	ELEV_P_103 - "Elevated Platform"	Platform used to hold rotary encoders above base	3D Printed Plastic
5	4	PLA_L:_104 - "Platform Legs"	Used to hold the platform above the base	3D Printed Plastic
6	1	A000005 - "Arduino Nano"	Main source to program simulation	N/A
7	1	BB400 - "Breadboard"	Used to house Arduino and saudered wires	N/A
8	1	BASE_105 - "Rim Base"	Base to support the shell and all other components	3D Printed Plastic



Dept.	Technical reference	Created by	Approved by
		Christian Riggi 2022-10-25	
		Document type: Technical Drawing	Document status:
		Title: Controller - Exploded View	DWG No.: 6
			Rev. / Date of issue: 2022-10-25 / Sheet: 1/1

2D Technical Drawings:

Here are 2D technical drawings for the tire peripheral featuring a detailed look into the magnetic base, rotary motor stand, lug nut geometry and overall shape of the tire.



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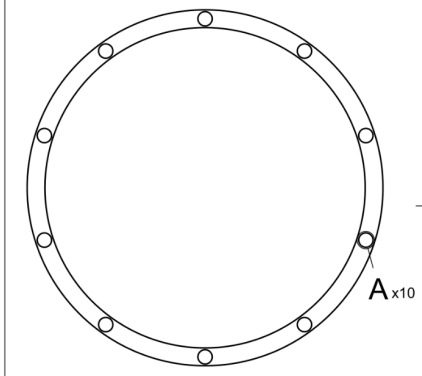
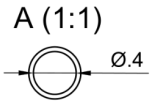
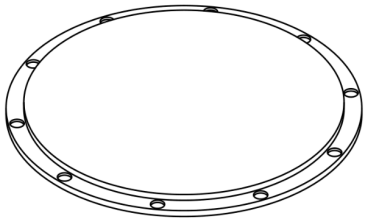
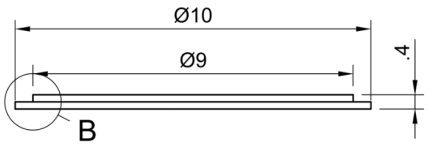
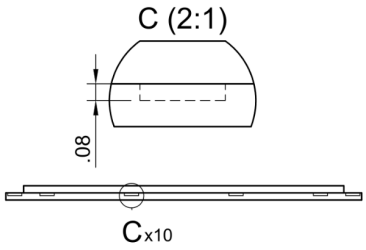
			Rev. / Date of issue: 2022-10-25 / Sheet: 1/1

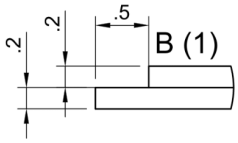












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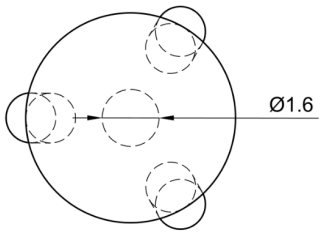

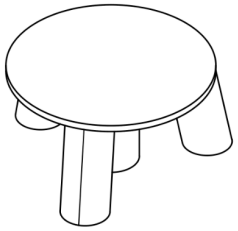

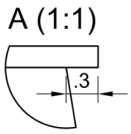

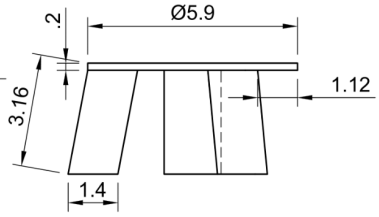

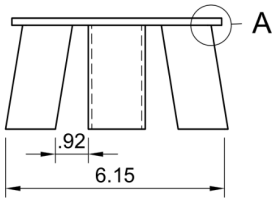

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		Title: Elevated Platform	DWG No.: 5
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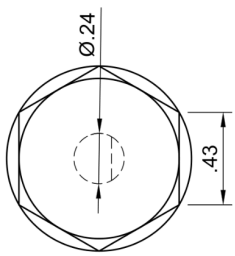

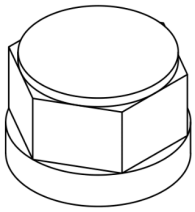

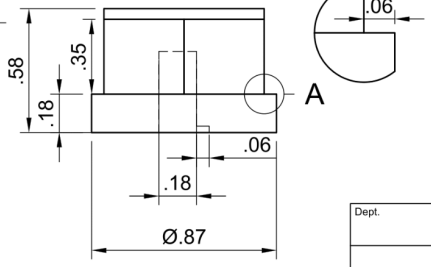

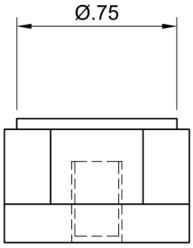

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		Title: 3D Printed Lug Nut	DWG No.: 4
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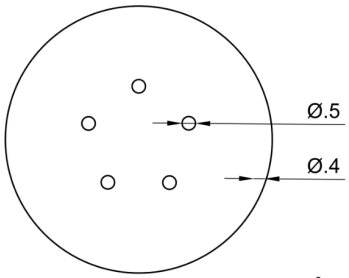

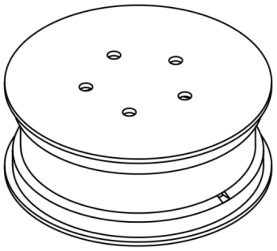

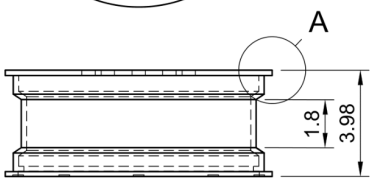

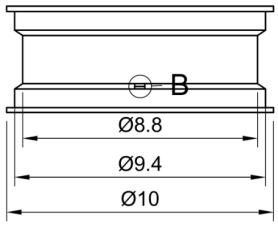

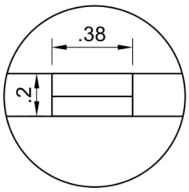

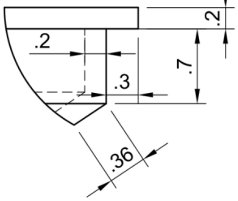

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		Document type: Technical Drawing	Document status
		Title: Tire Rim Shell	DWG No.: 2
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