

Children's Ferris Wheel

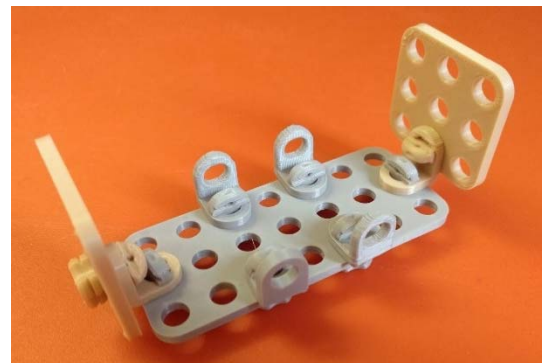
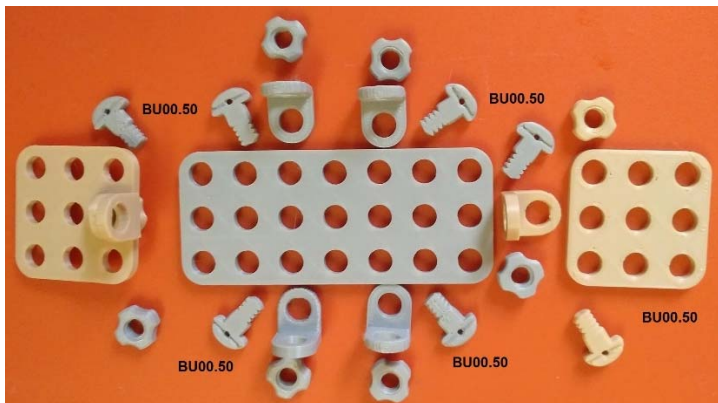
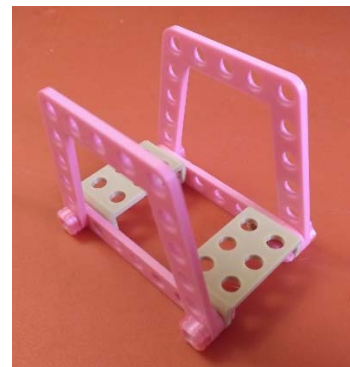
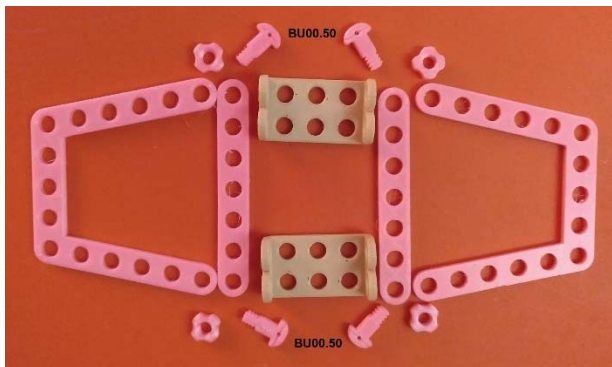
This Ferris Wheel is a reproduction of the typical children's attraction made with Stempfie parts.

This project is suitable for assembly ability for groups; it contains six identical cabins, two support wheels, and a base. It is helpful to be able to participate in up to nine children or teenagers.

Screws are parts that are not currently used in current assemblies, the pieces are joined together based on simple assemblies, but at the same time, they lose the opportunity to take a manual skill and dexterity to place them.

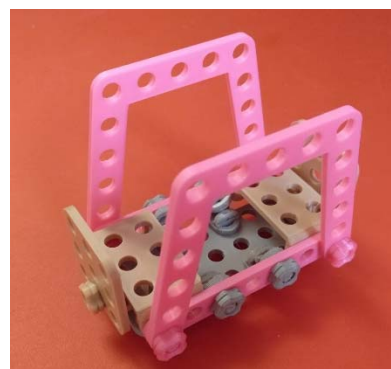
Assembly

Cabin

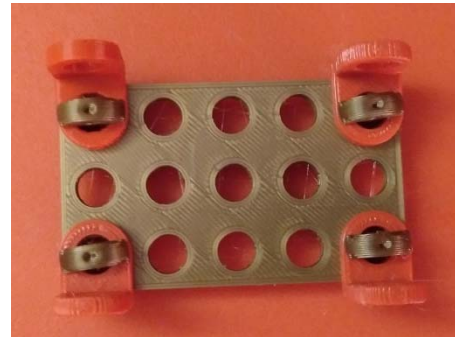
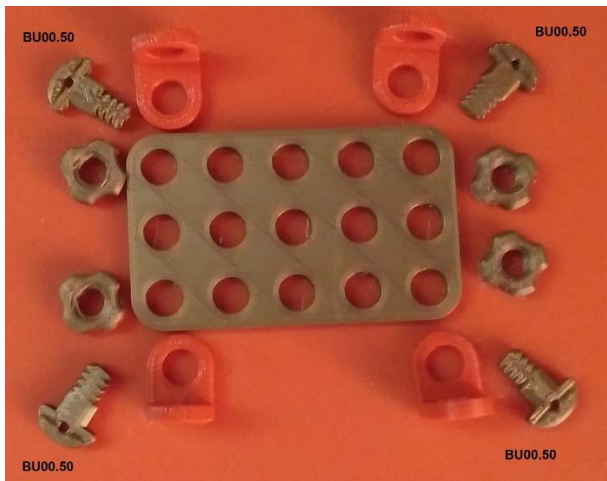


All screws are type **BU00.50**

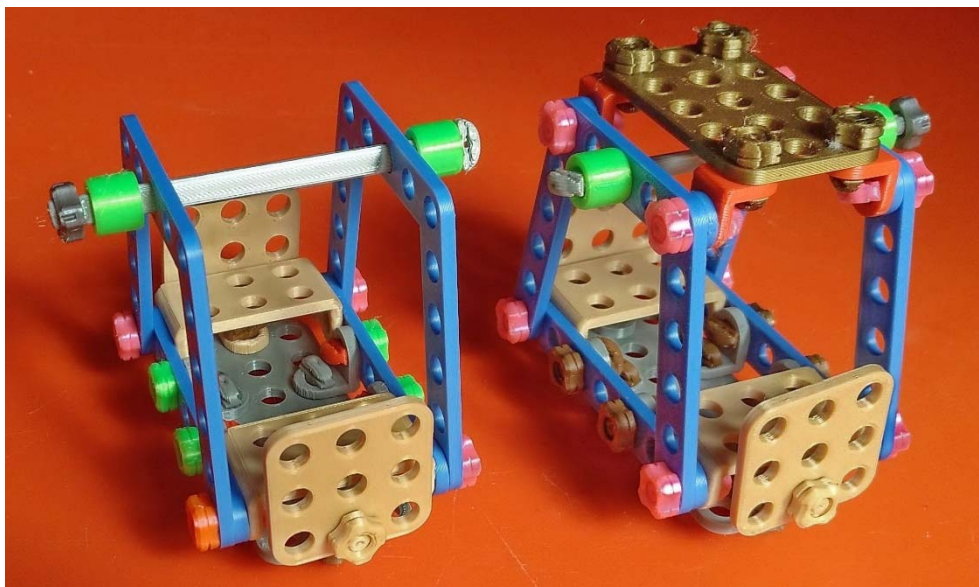
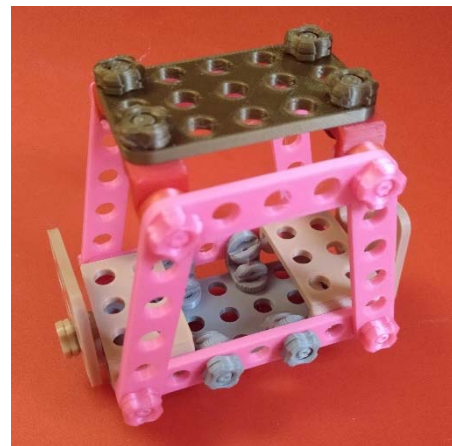
The cabin can be left at this point, a roofless version for the summer.



If you want the roofed version, you need to add this attachment for the winter. The screws are type **BU00.50**.



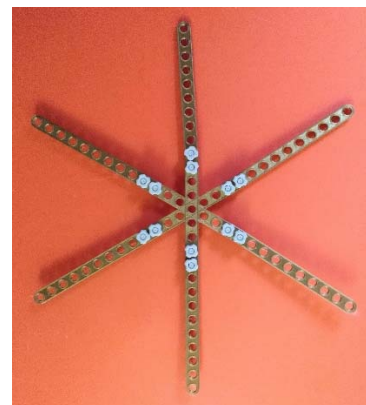
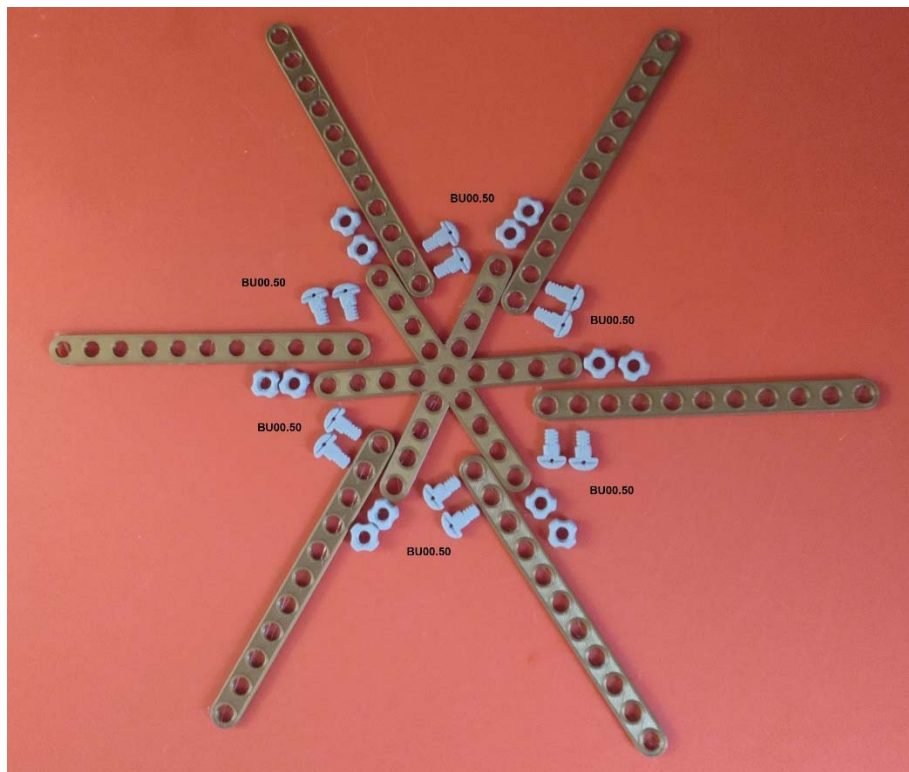
To fix the roof to the cabin, you need to add four screws **BU00.75**, four **washers** and four **nuts**.



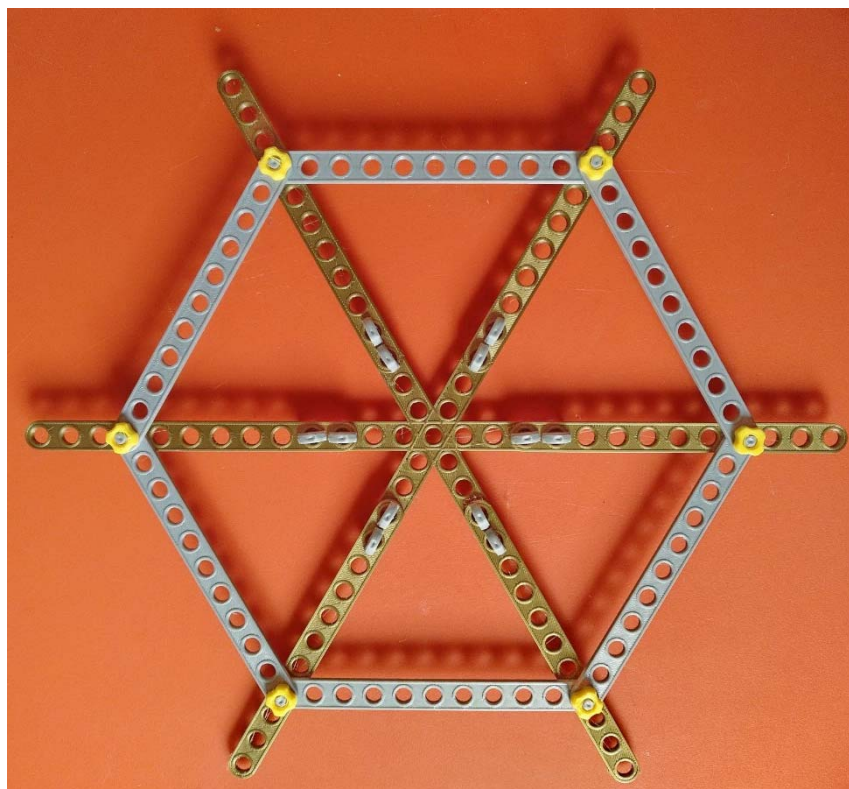
Six cabins are mounted, and to fix them to the wheel using **PIN07.00**, fastener, and **10mm washers**, this assembly will be shown later.

Wheel

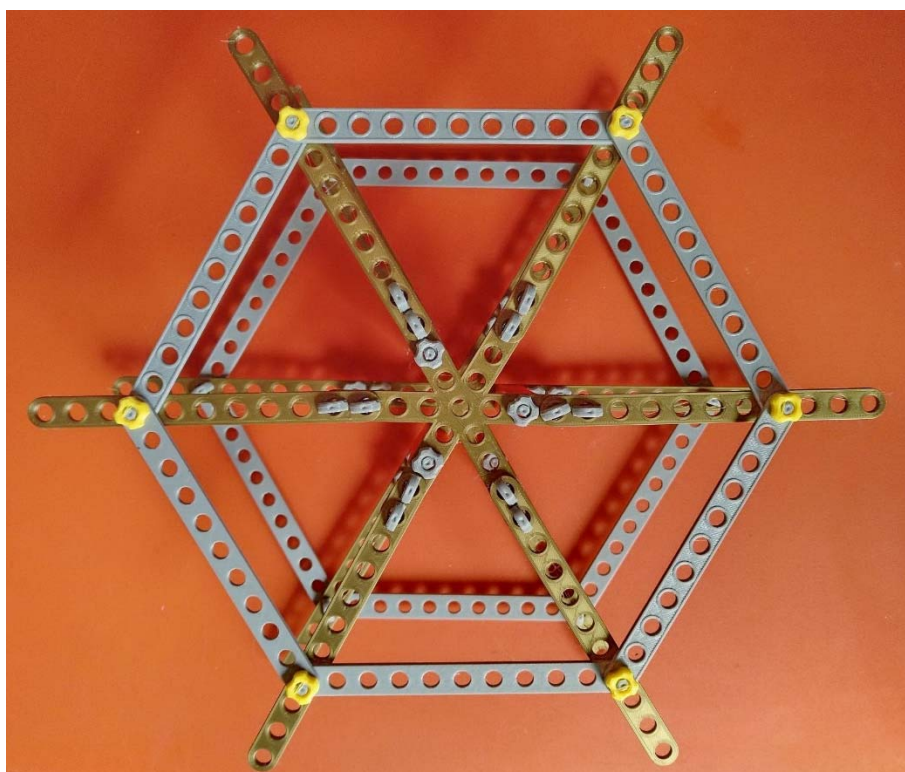
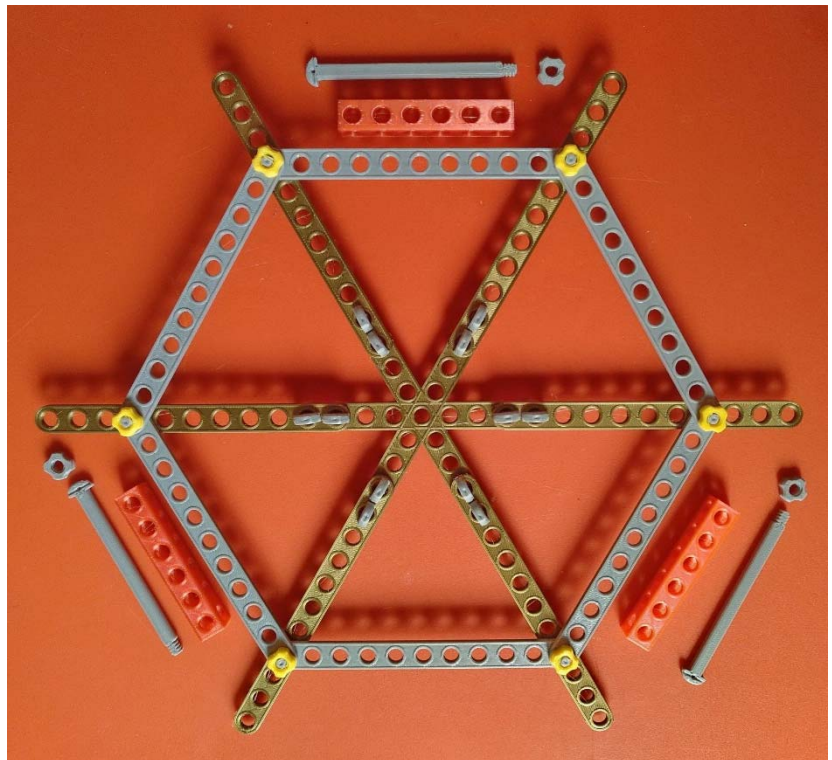
For each wheel, use the following parts: **Cross 9x9** (1 piece), Screw **BU00.50** (12 pieces), 6 Braces **BU11** and **Nuts** (12 pieces).



Reinforcements of the structure
is made with six braces **BU11**,
six screws **BU00.75** and six **Nuts**.

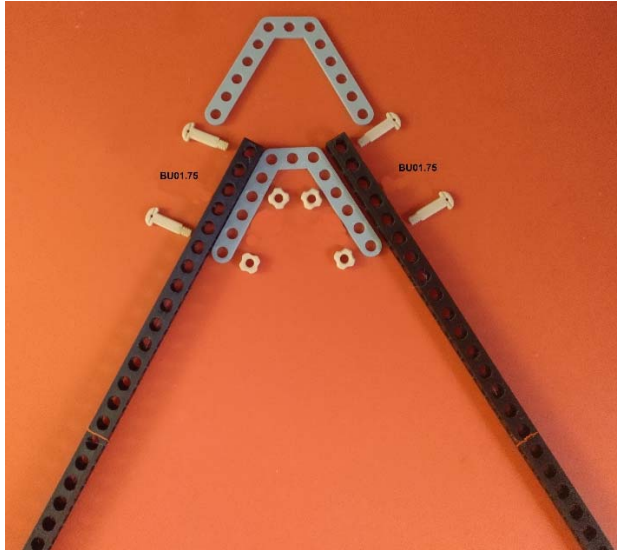


The two mounted wheels are joined with three **Beam 6** and fixed with three screw **BU06.50** and three **Nuts**.



Base

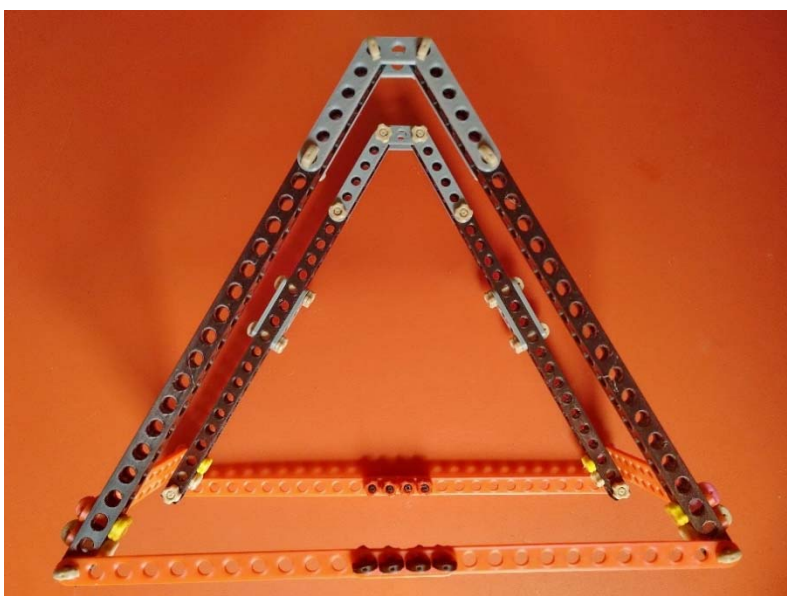
The base is mounted with two identical structures containing four Beam **BU12**, joined by four braces **BU4** and two **U**, fixed with eight screws **BU01.50** and eight **Nuts**.



Two identical braces are mounted for the base, being so long it is done with two brace **BU13** joined with a brace **BU4** and four screw **BU00.50** and four **Nuts**.

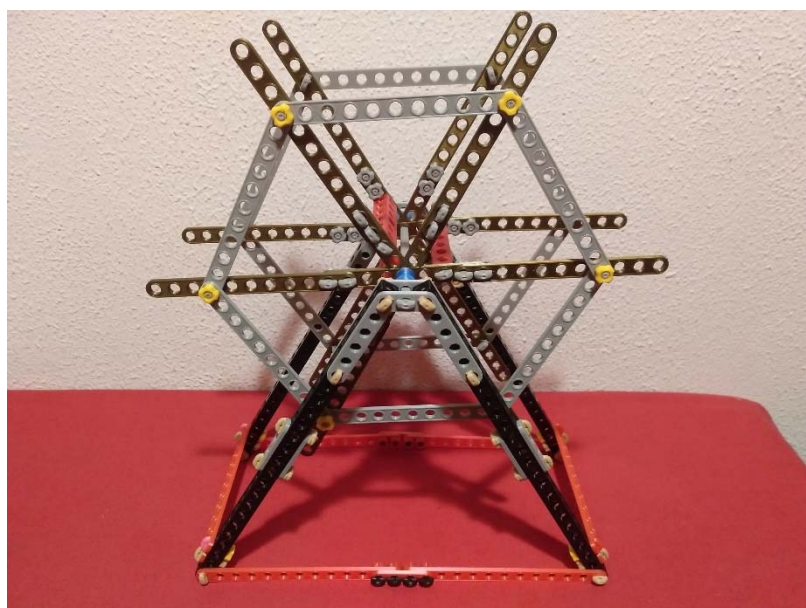
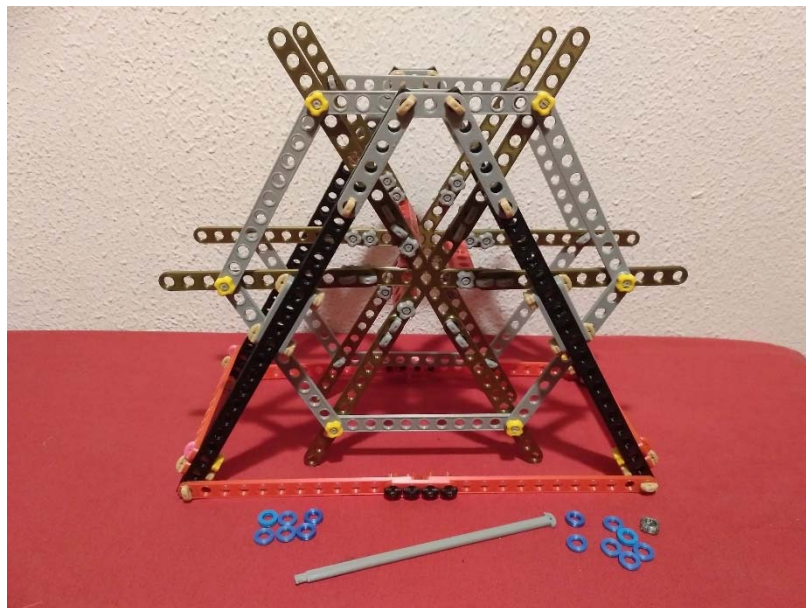
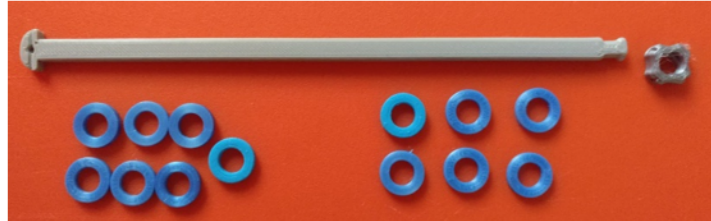


The two structures are joined by four brace **BU12**, eight screws **BU01.50** and 8 **Nuts**. In this way, they give more solidity to the structure.

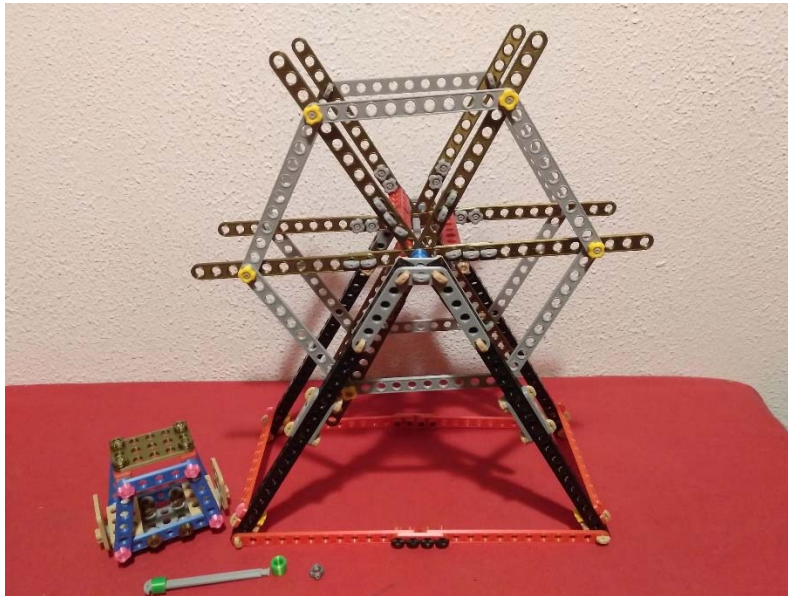


Now all that remains is to join the **Base** with the **Wheel** and finally hang the **Cabins**.

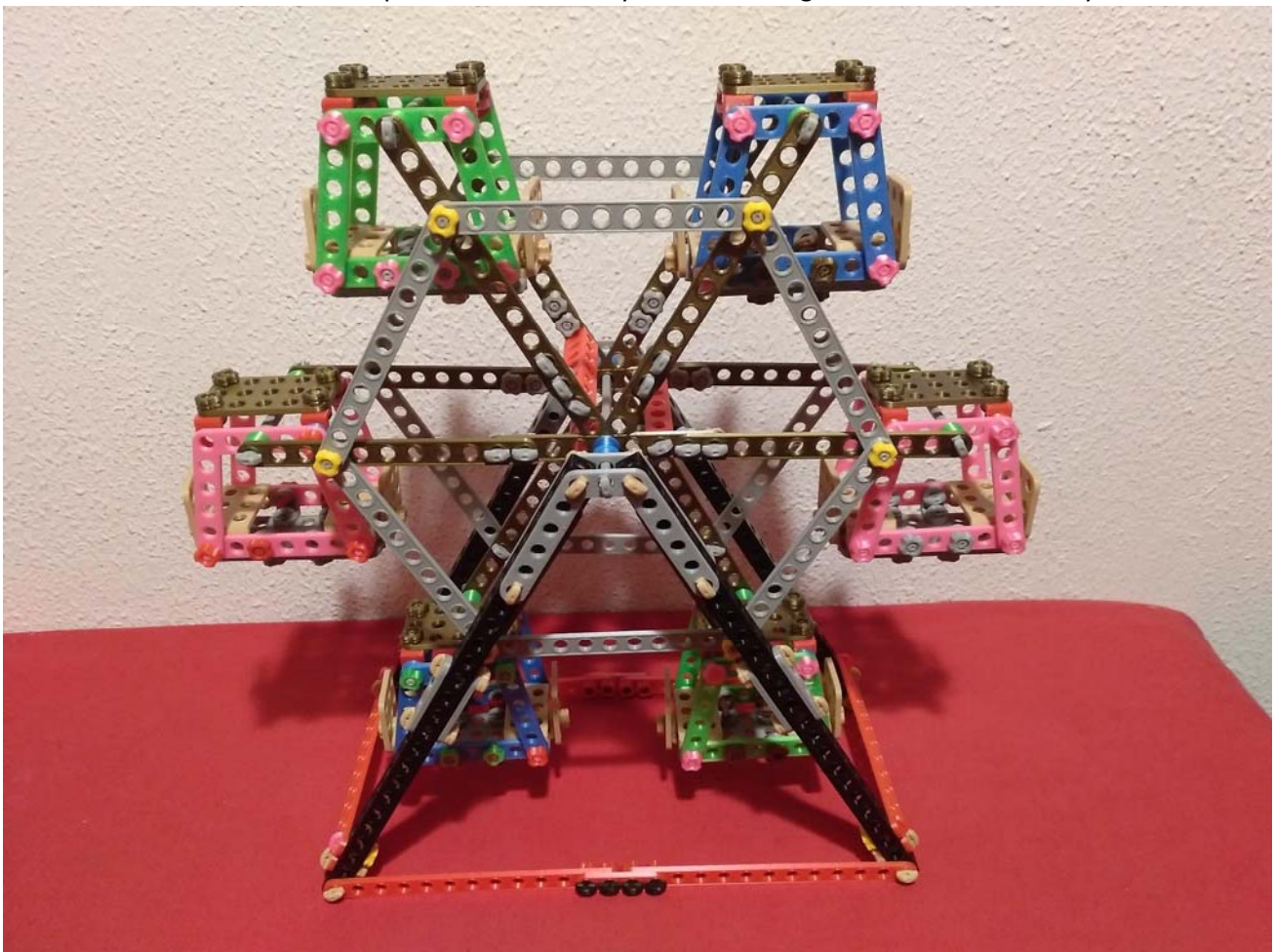
The **Base** joins the **Wheel** using a **PIN 166mm** shaft and give space between the wheel putting 5mm **washers** as separators, six on one side and seven on the other side, at the end a **fastener** leaves the shaft free.



Each **Cabin** is hung at each end of the Wheel using PIN **BU07.00** two **10 mm washer** and the **fastener**. The cabin moves freely.



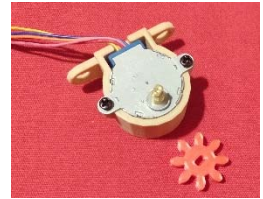
The Ferris Wheel is complete ... or not ... why not add an engine and automate the system?



Control

Para controlar/automatizar la Nòria hace falta añadir un motor para girar la rueda de la Noria, una electrónica y alimentación.

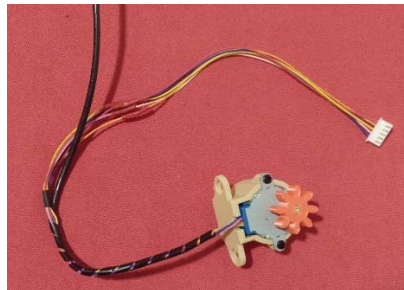
Motor: La mejor opción para el acoplamiento mecánico y el tipo de funcionamiento es un motor paso a paso con reductora del tipo 28BYJ-48 muy económico, con su correspondiente engranaje que permite un movimiento preciso.



Al colocar el motor a la estructura, con su soporte correspondiente de la librería de Electronics Stemfie: <https://github.com/maynej/Electronics-Stemfie>, queda ajustado con el engranaje que se fija en la Rueda de la Noria.

Con esta relación de reducción también se consigue un movimiento adecuado.

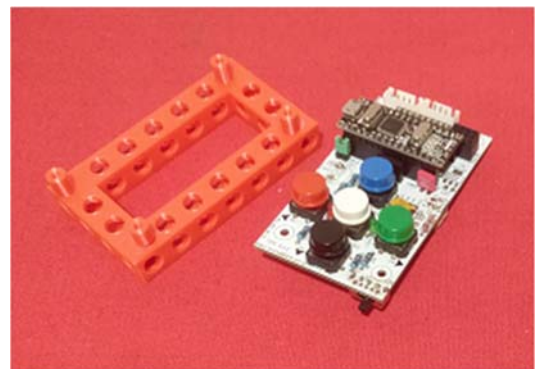
El cable del motor paso a paso no es suficientemente largo para llegar a la mesa dónde se ponga la noria, entonces hay que añadir una prolongación, tal como se ve en la siguiente imagen, después se puede añadir un tubo en espiral típico para cables.



Electrónica:

Se puede usar cualquier placa controladora tipo Arduino, Microbit, u otras, pero, una opción buena es la placa que utiliza Escornabot Singularis, con su soporte correspondiente Stemfie.

Esta placa incorpora una Arduino Nano, 5 pulsadores y un driver para el motor 28BYJ-48, así da una solución fácil. Además se puede usar el mismo firmware adaptándolo a las funcionalidades que se quieran.



Power Supply

The power supply can be from a 6Vdc transformer, a pack of four battery AA, or a 9Vdc rechargeable battery. In this case I used a 9V rechargeable battery.



In the folder CPU of Github <https://github.com/mayne/Noria-Infantil/tree/main/CPU> there are the firmware adapted for the next functions:

Firmware

Version 1.0:

- Pressing one time the **blue button**, programs a **full lap**. If press two times, program two laps and so on.
- Pressing the **black button**, programs a **full lap in the opposite direction**. If press two times, program two laps and so on.
- Pressing the **white button**, **execute/stop** the programmed movements. If press white button when it is running, the engine stops.
- Pressing the **red button**, programs the **advance one cabin** to the next cabin. If press two times, it programs two cabins and so on.
- Pressing the **green button**, programs the **advance one cabin** to the next cabin, in the **opposite direction**. If press two times, it programs two cabins and so on.