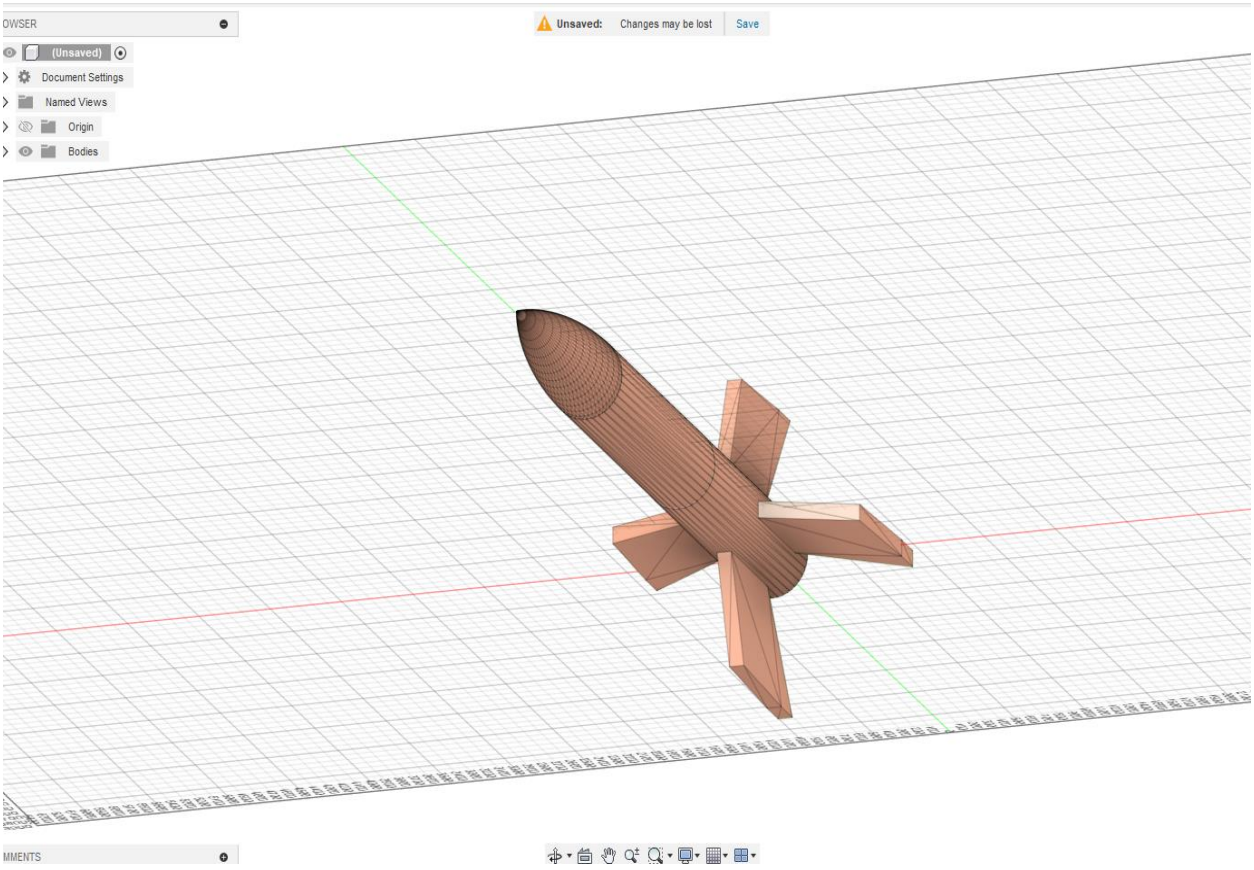
Model Rocket project

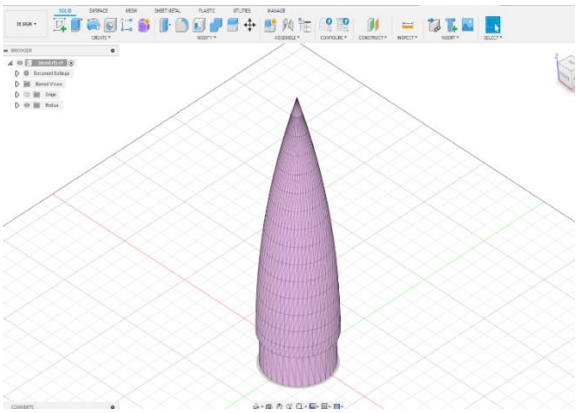
The purpose of this project was to develop and launch model rockets for various applications using 3D printing technology, while optimizing their performance through continuous design, simulation, testing, and analysis. Software tools such as OpenRocket and CAD were utilized to simulate and model the rockets. A C/C++ program was implemented to run the computer systems, and an Arduino Nano microcontroller was integrated with various electrical components, including MOSFETs, resistors, displays, buzzers, and other systems. A thorough analysis of the electrical subsystem was conducted to ensure the generation of the precise power required for the rocket's ignition and operation.

CAD Designs of the project:

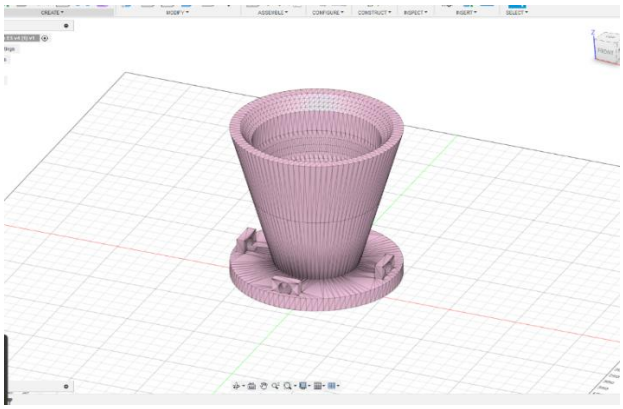


3D-assembled model rocket.

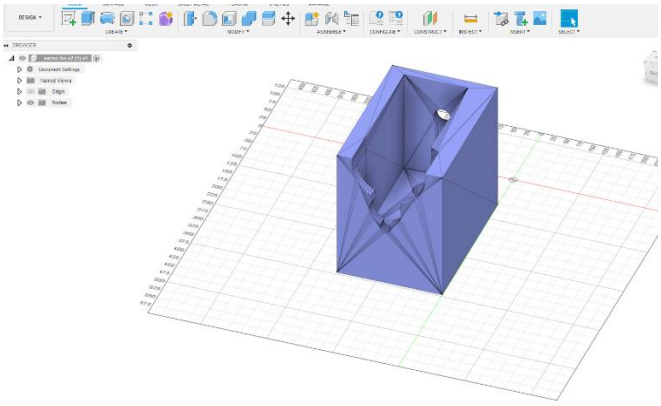
I designed and prepared the 3D-printed components for the rocket, including the nose cone, parachute holder, and servo motor holder.



Nose Cone

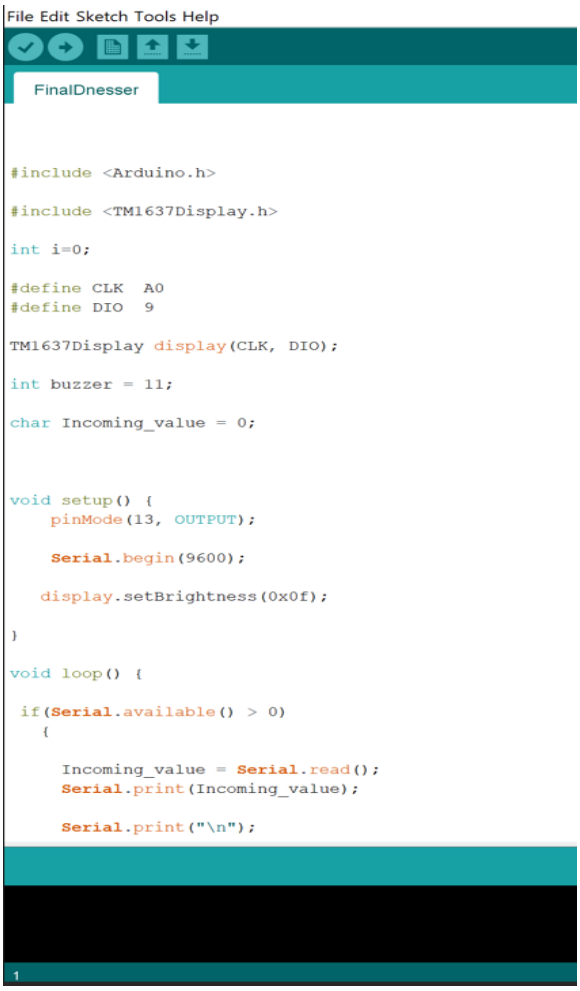


Parachute Housing

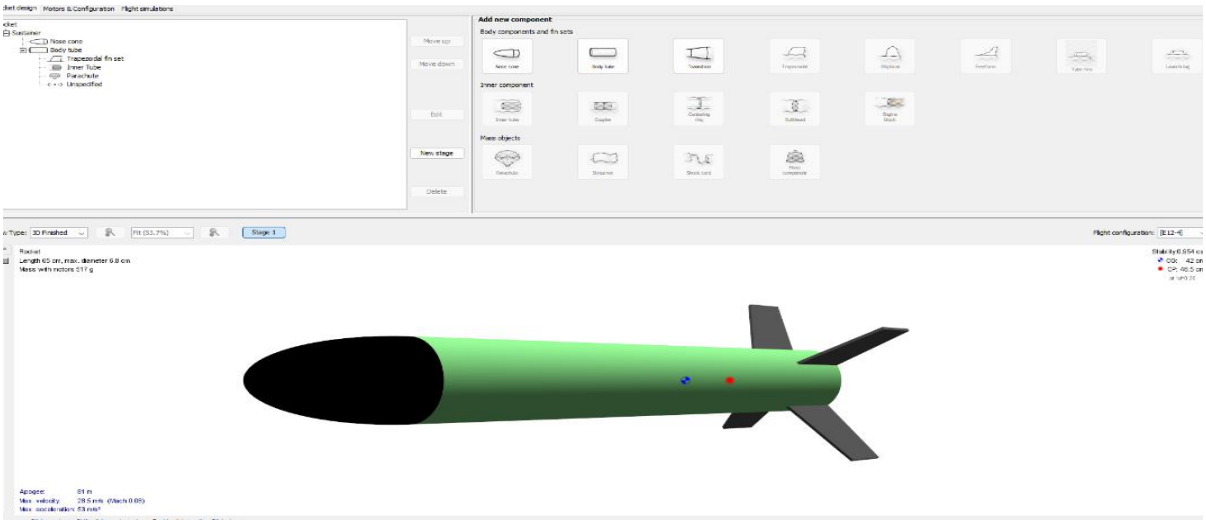


Servo Motor Mount

This is one of the scripts developed for the flight system, written in Arduino C. While this is a partial version of the code, the complete code has been included in the portfolio folder for reference.



This is an OpenRocket simulation used to test the rocket's performance. The simulation ensures stability, predicts altitude, maximum velocity, parachute deployment time, and other critical flight parameters.



This is one of the actual flight tests.