CONESTOGA

Connect Life and Learning

ENGINEERING CAPSTONE PROJECT

Initial Software Devlopment

Program	**:** Embedded Systems Development	
Team Name	**:** The Spark	
Project Title	**:** Solar Cooler for Tesla Model 3	
Team Members	**:** 01) Akash Kachchhi	
	02) Sepideh Arabi	
	03) Mohammad Abdul Muheet	
Team Member Roles	**:** Akash Kachchhi	- Project Leader
	Sepideh Arabi	- Project Evaluator
	Mohammad Abdul Muheet	- Project Coordinator
Project Supervisor	**:** Prof. So-Ra Chung	
Project Sponsor	**:** Mr. Ian Grahhm	

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01) GitHub Project Details:

1.1 GitHub collaborator URL:

AKASH KACHCHHI – https://github.com/AkashKachchhi/Solar-Based-Cooler-for-Tesla-Model-3

SEPIDEH ARABI – https://github.com/SepidehArabi/Solar-Based-Cooler-for-Tesla-Model-3

ABDUL MUHEET – https://github.com/Mmuheet5987/Solar-Based-Cooler-for-Tesla-Model-3

1.2 GitHub Project creation and File upload:

- I created a new project on to the git hub with a name of our project Solar based cooler for Tesla model 3.

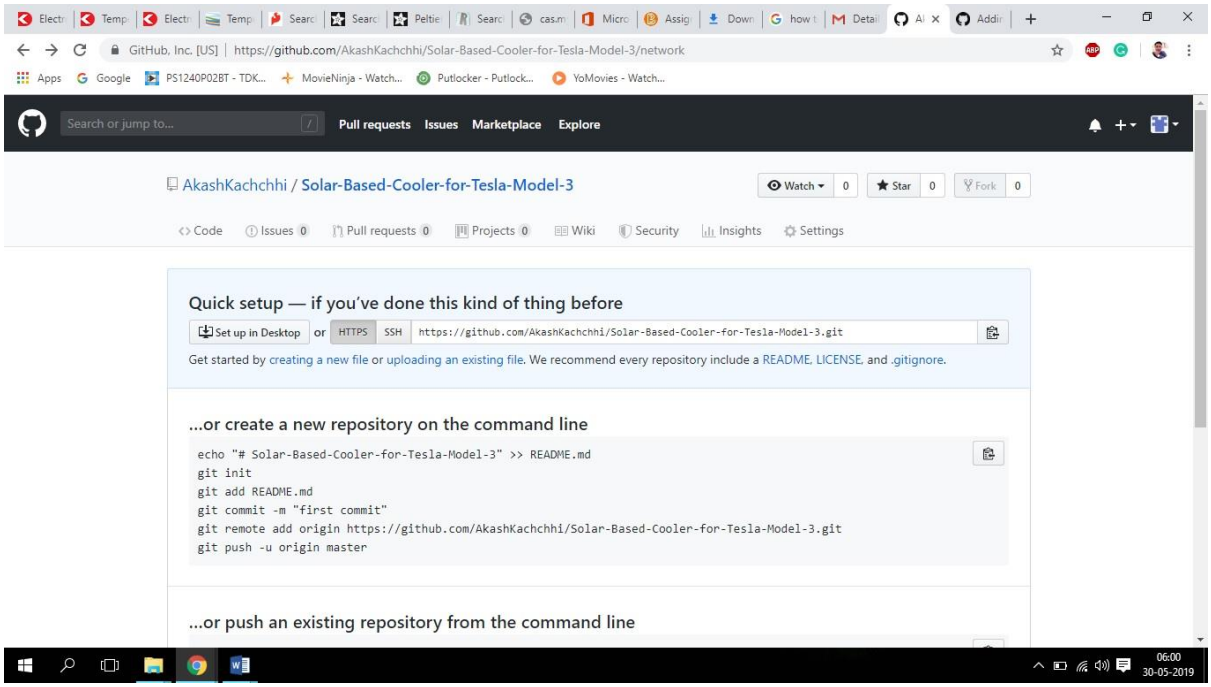

Image 1.1: Project Creation in Git Hub

- I added all the description about our project and basic idea of the design and development in to solid works.

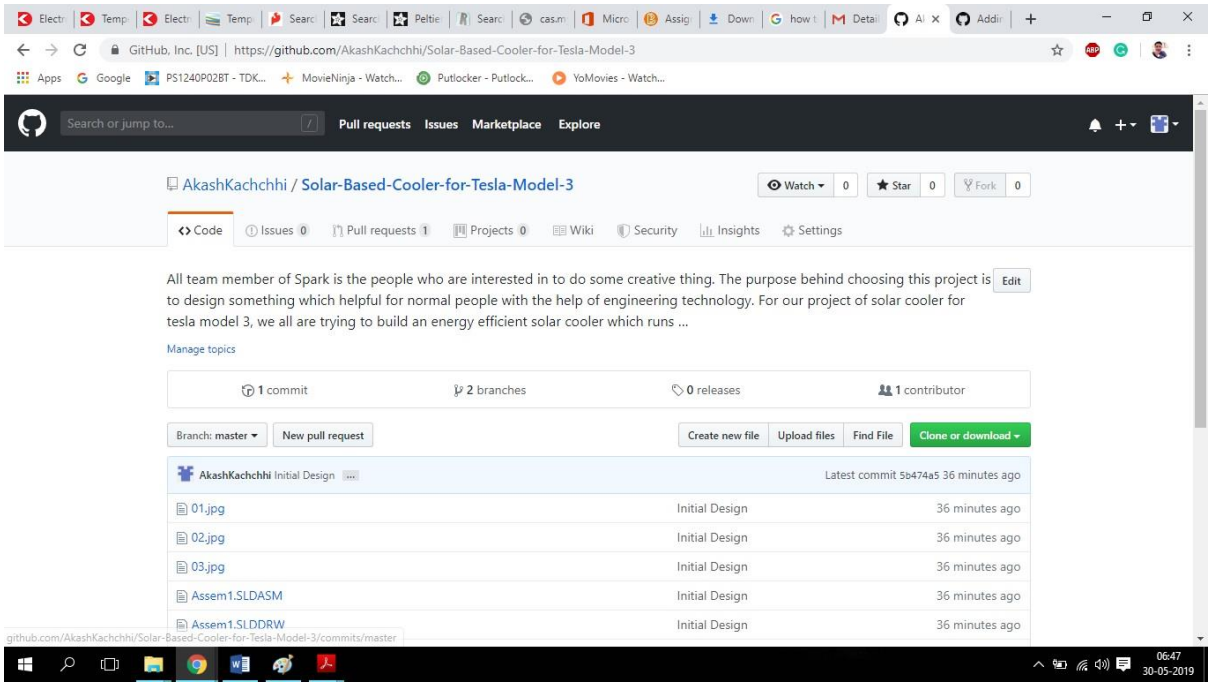

Image 1.2: Project Description in Git Hub

- After that create a master branch with a name of Initial design and uploaded all the relevant documents like, solid work design files, Datasheet and the Images to that master branch.

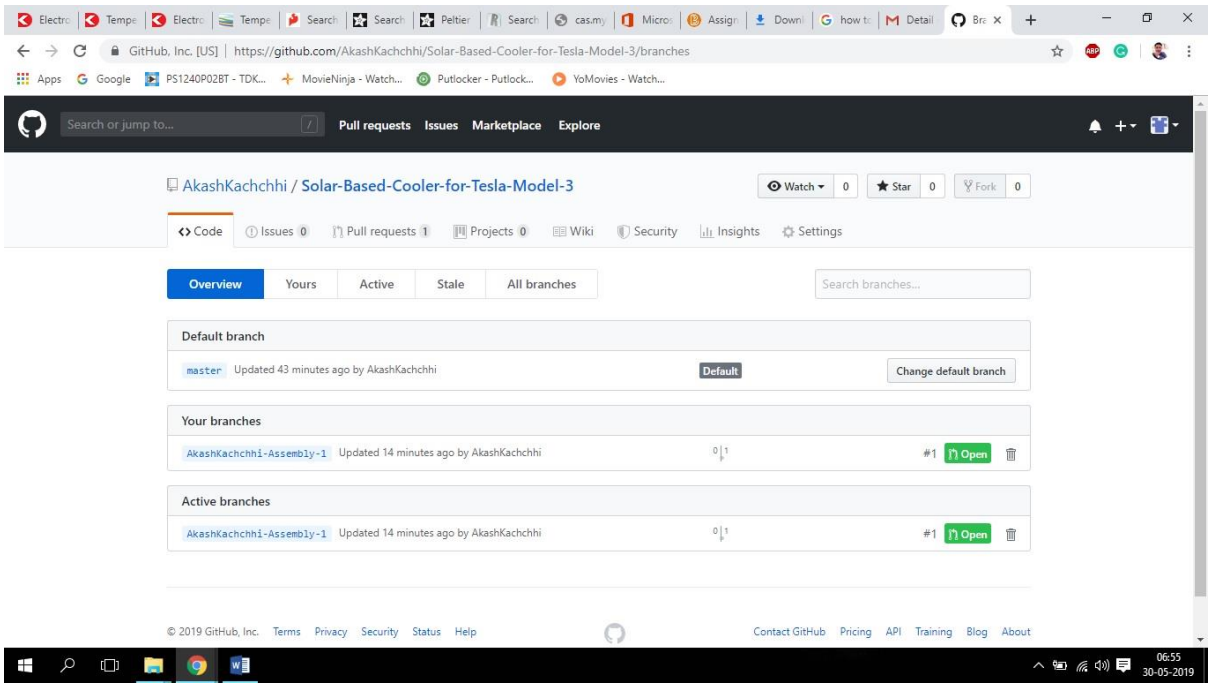

Image 1.3: Master Branch in Git Hub

- For more detail design we started designing another assembly of our project which contains separate parts of cooling section and electronics section for that I created another sub branch with name of Assembly 01.

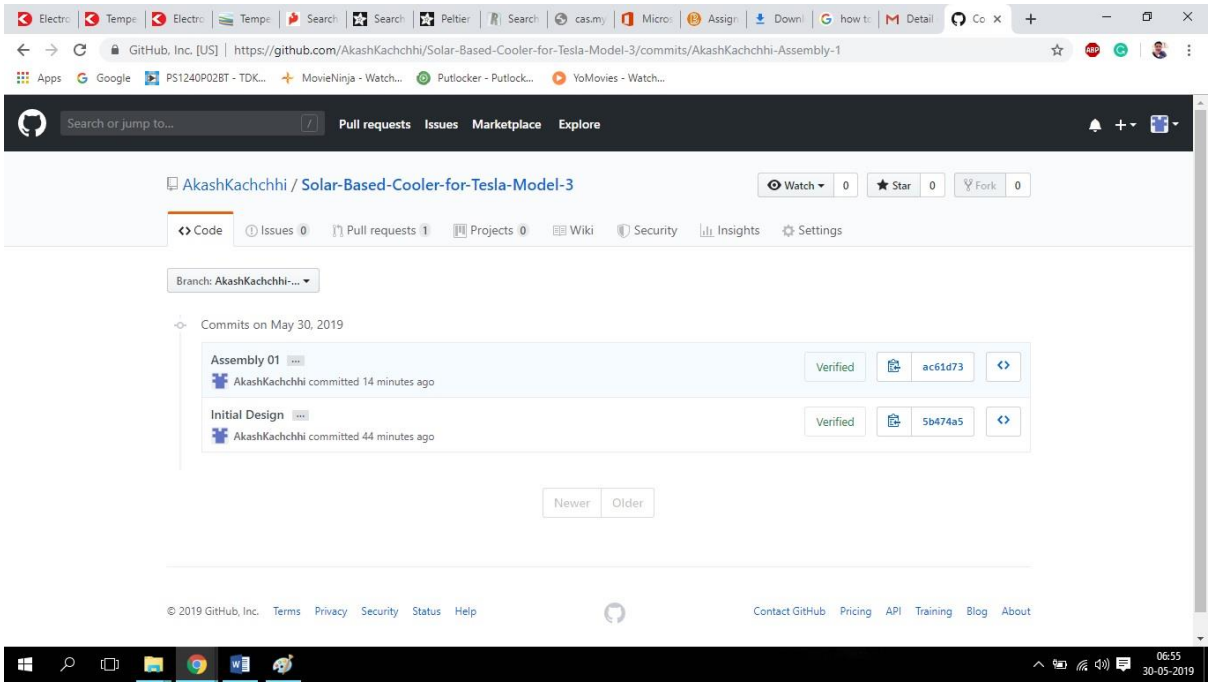

Image 1.4: Sub Branch in Git Hub

- Master branch I created with name of Initial design and added description regarding the design and development as well as uploaded all the relevant documents like, solid work design files, Datasheet and the Images to that master branch.

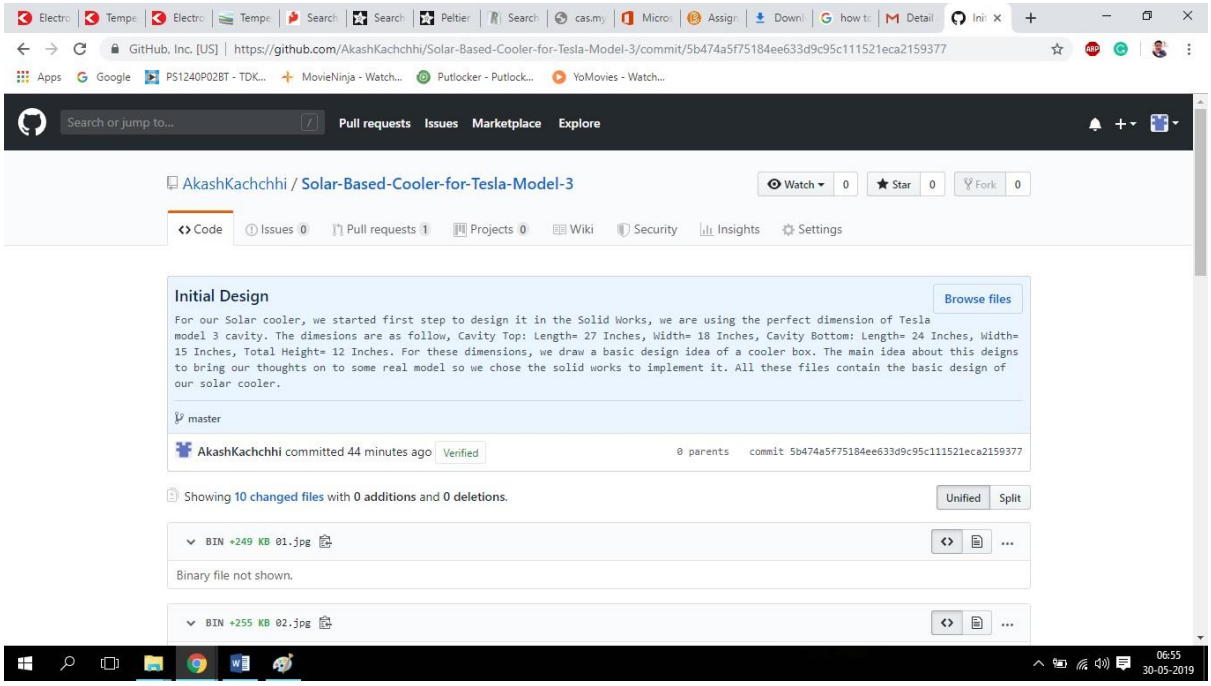

Image 1.5: Description of Initial Design in Git Hub

- Sub branch I created with name of Initial Assembly 01 and added description regarding the design and development as well as uploaded all the relevant documents like, solid work design files, Datasheet and the Images to that sub branch.

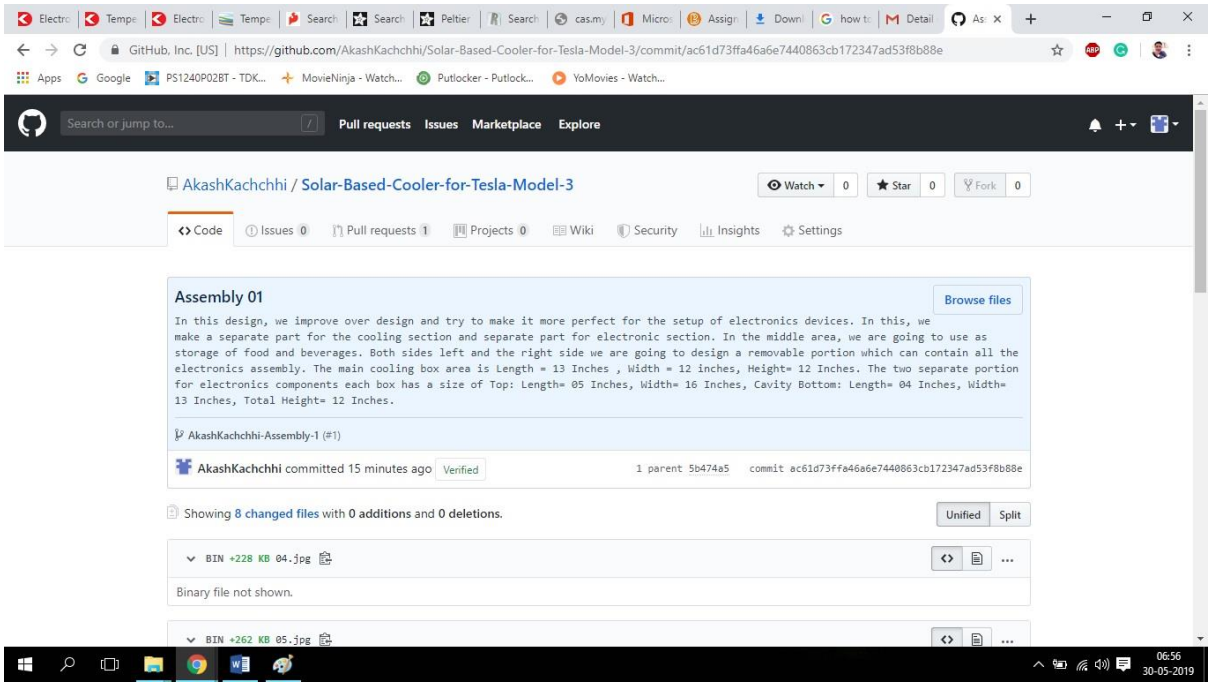

Image 1.6: Description of Assembly 01 in Git Hub

02) Solid Works Design:

2.1 Basic Design Implementation:

For our Solar cooler, we started first step to design it in the Solid Works, we are using the perfect dimension of Tesla model 3 cavity. The dimensions are as follow, Cavity Top: Length= 27 Inches, Width= 18 Inches, Cavity Bottom: Length= 24 Inches, Width= 15 Inches, Total Height= 12 Inches. For these dimensions, we draw a basic design idea of a cooler box. The main idea about this deigns to bring our thoughts on to some real model so we chose the solid works to implement it. All these files contain the basic design of our solar cooler.

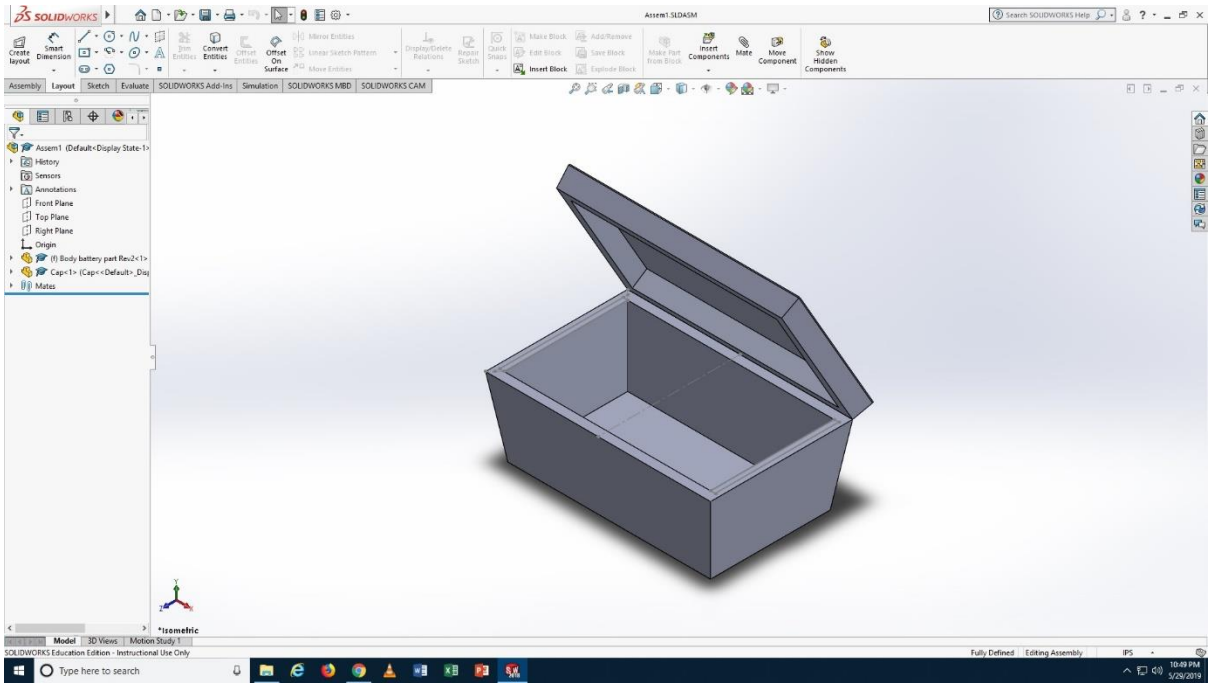

Image 2.1.1: Basic Design Implementation

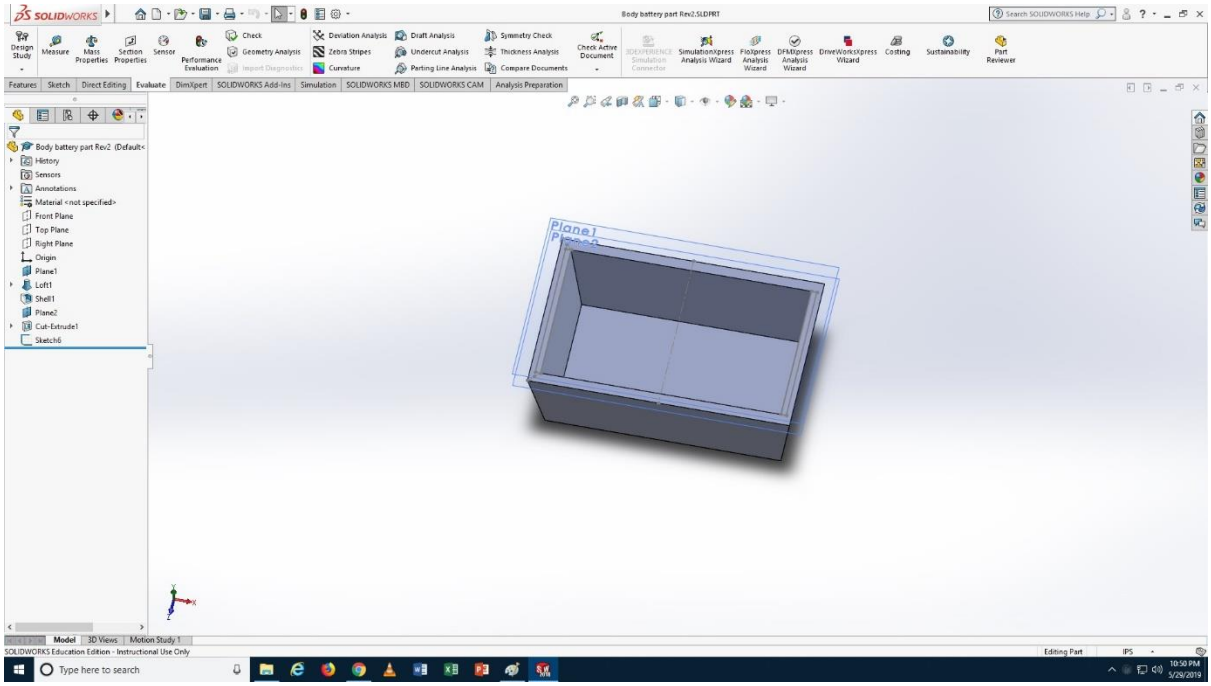

Image 2.1.2: Solar Cooler Base

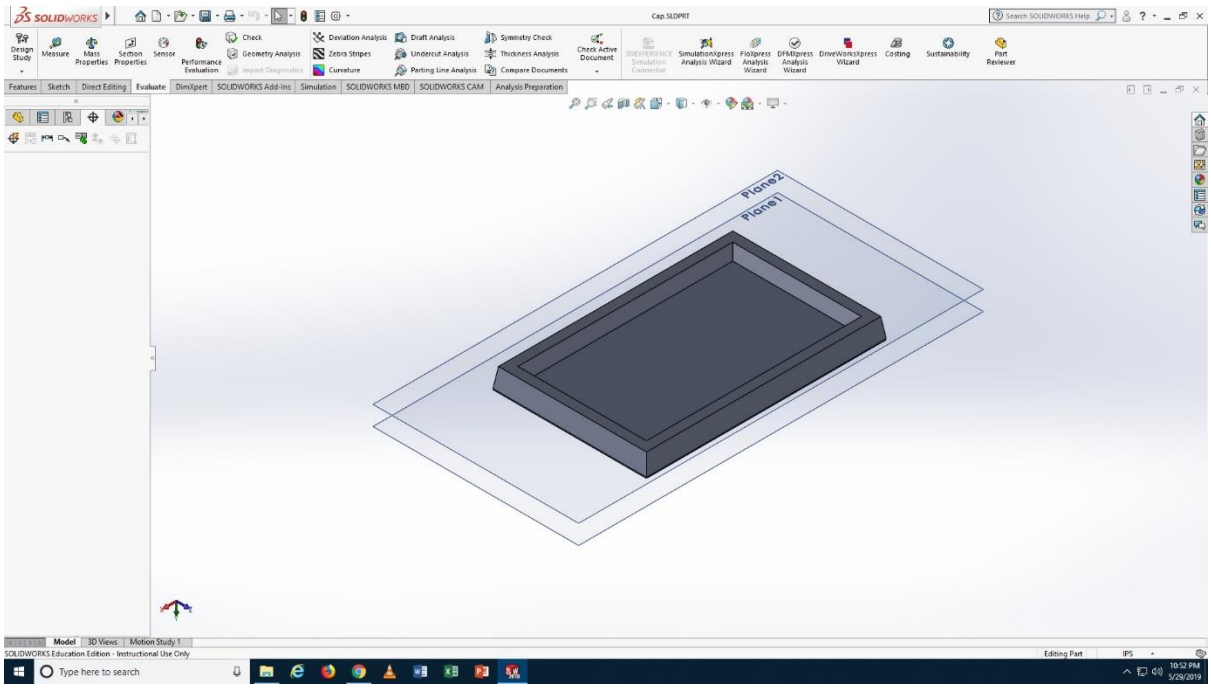

Image 2.1.3: Solar Cooler Lid

2.2 Design Improvement:

In this design, we improve over design and try to make it more perfect for the setup of electronics devices. In this, we make a separate part for the cooling section and separate part for electronic section. In the middle area, we are going to use as storage of food and beverages. Both sides left and the right side we are going to design a removable portion which can contain all the electronics assembly. The main cooling box area is Length = 13 Inches, Width = 12 inches, Height= 12 Inches. The two separate portion for electronics components

each box has a size of Top: Length= 05 Inches, Width= 16 Inches, Cavity Bottom: Length= 04 Inches, Width= 13 Inches, Total Height= 12 Inches.

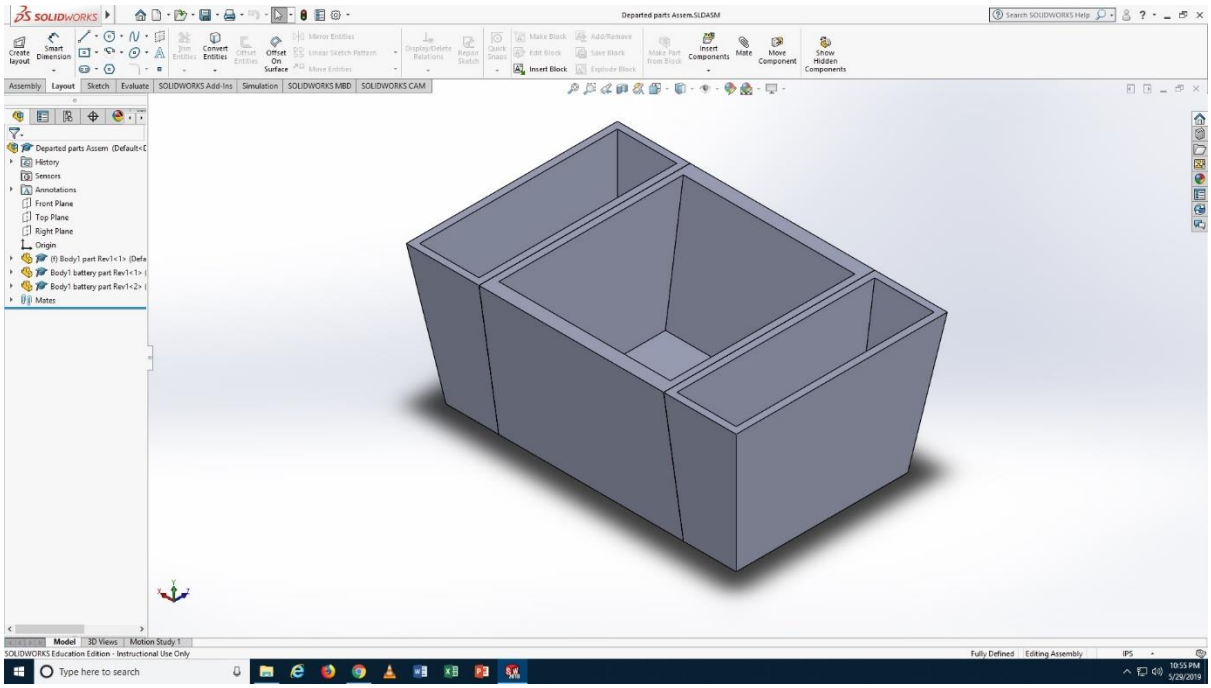

Image 2.2.1: Solar Cooler Improved Design

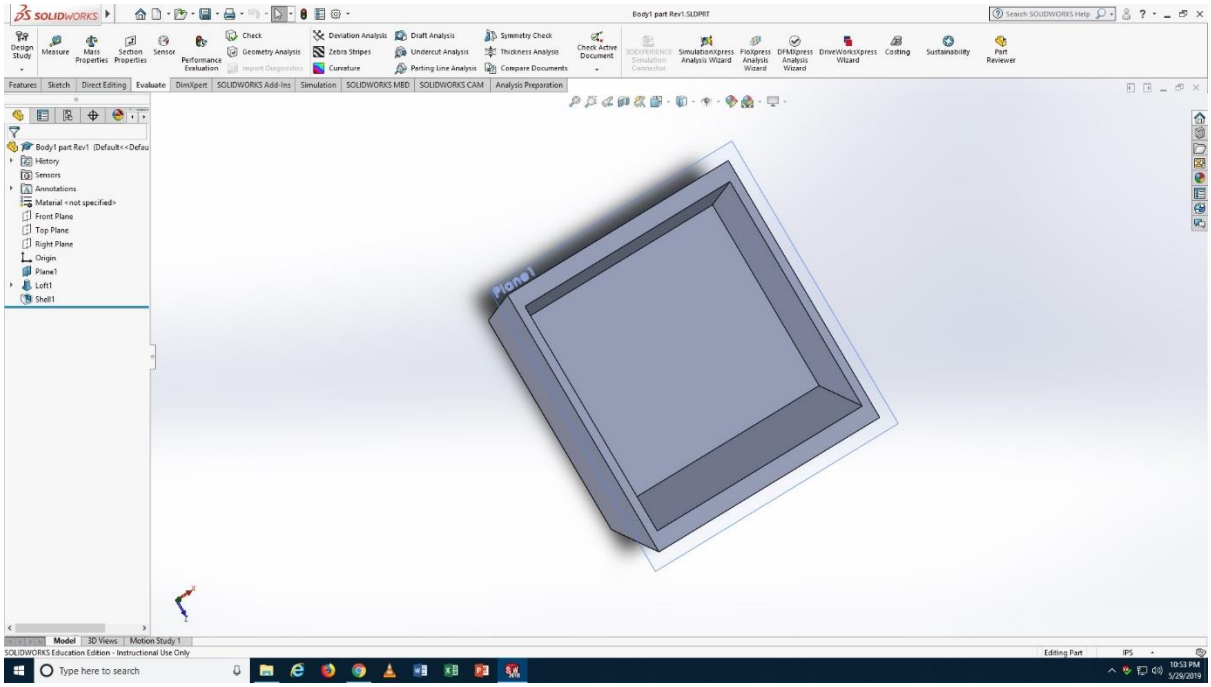

Image 2.2.2: Cooler Area

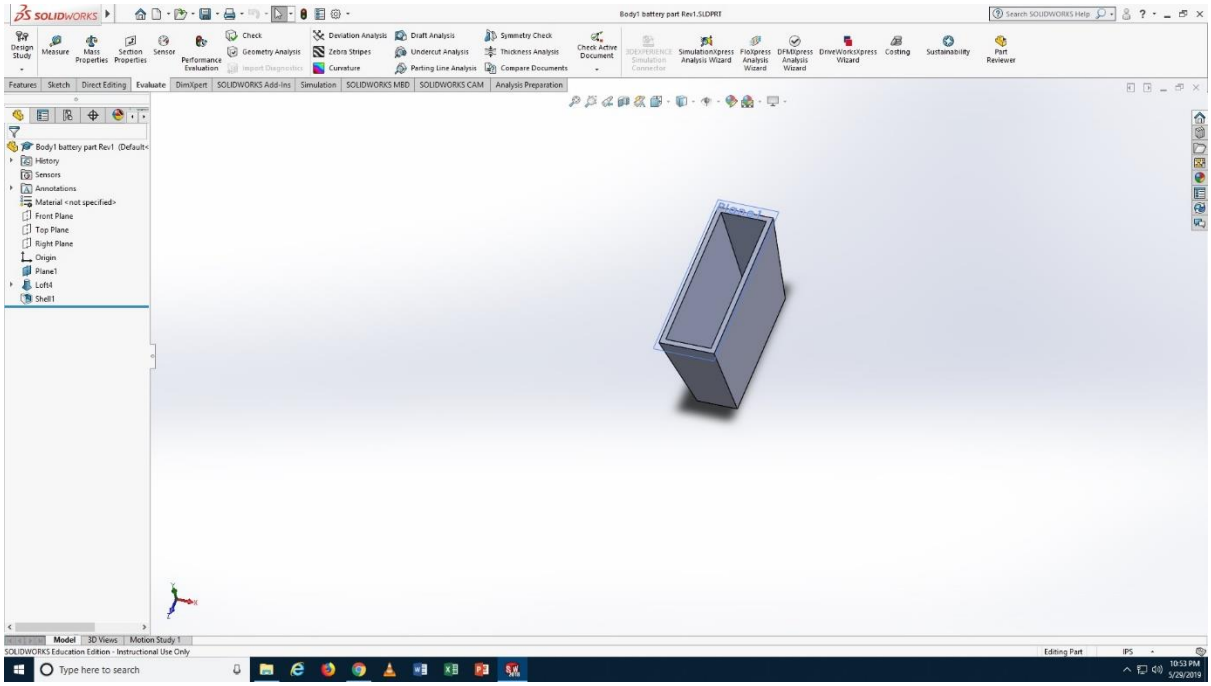

Image 2.2.3: Electronics Components Area

03) Conclusion:

In our project we are designing solar panel based cooler for that we designed a cooler box in the solid works. In our initial design we were trying to fit all the component in the one cooling box. But when it comes about the maintenance of the electronics components that time it becomes harder and complicated. As a solution of that problem we are developing a new design of cooler, in this we designed separate part for the cooling area as well as for the electronics components. Which solve our problem of maintenance, we mention about both design in this document and both designs are different. But the new design has more advantages and we are going to improve it and develop second design for our final project.