Report

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<https://github.com/akshay-pathak/matlab>

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1. **Table Fan**

This was the basic task for us to understand the building blocks of a Simscape multibody project such as Rigid Transform, various joints, etc.

A standing support with a swinging rotor was built which has 3 blades and which moved anticlockwise.

Basic concepts were cleared about the building of each system in Simscape multibody as well as the interface was learnt.

<https://github.com/akshay-pathak/matlab/blob/master/tablefan.slx>

1. **Plane and Sphere**

This was given as to introduce the contact forces library of SM.

Two planes with different inclined angles were made so that a sphere could bounce between them.

Concept of interaction of forces was introduced here with the simple example of plane and sphere. A variety of surfaces can be made with the help of these spheres by making proper contact forces of proper sizes.

<https://github.com/akshay-pathak/matlab/blob/master/plane_sphere_inclined.slx>

1. **Office chair**

With the office chair model, the complexity of the basic blocks of SM was increased.

A sitting part with back support with a single cylindrical leg which has 4 claws and wheels was built.

As the complexity increased the number of tries required to get hold of the model

increased as well. The concept of 3D visualization has to be applied very carefully so

that every part ends up in the right place and in the right orientation.

<https://github.com/akshay-pathak/matlab/blob/master/officechair.slx>

1. **Final Task (Shagai Throwing model)**

This Final task was supposed to be completed in one week from the day assigned.

Breaking down the task, the launching area, ground zero and the landing area were

already specified and made according to the map given.

First these areas were made, then came the ramp and the piston with its start and

end faces. This new concept of application of forces directly to the model parts was

introduced and used here.

The Shagai was added to the model and placed on the ramp and then simulated.

The results were perfected with proper amount of force and incline angles.

One observation was the joint used for the Shagai was a cartesian joint to give it DoF

in all 3 translational directions because the use of any rotational DoF containing joint

led to an infinite compile time for the model even though the step size was increased

and the type of solver was changed.

<https://github.com/akshay-pathak/matlab/tree/master/Final_Task>