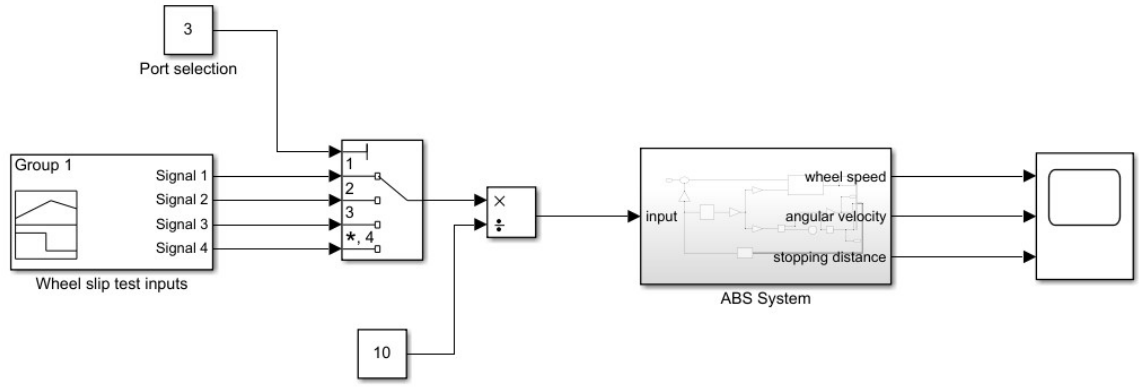
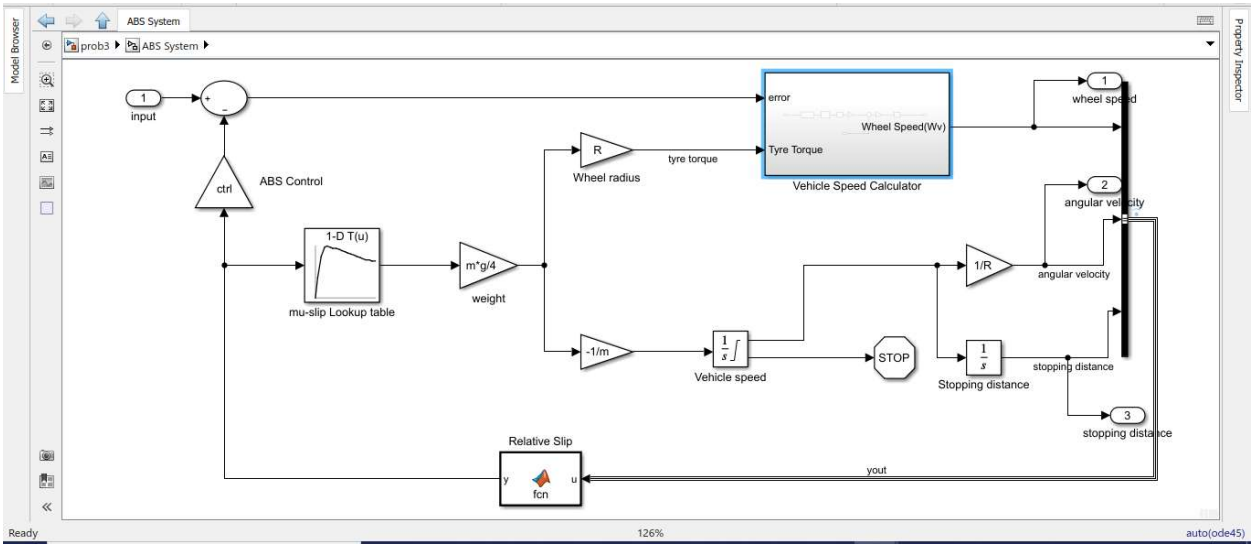
ANTI-LOCK BRAKING SYSTEM

1. Anti-Lock Braking System

An anti-lock braking system (ABS) is a safety anti-skid braking system used on aircraft and on land vehicles, such as cars, motorcycles, trucks, and buses. ABS operates by preventing the wheels from locking up during braking, thereby maintaining tractive contact with the road surface and allowing the driver to maintain more control over the vehicle.

2. Simulink Model

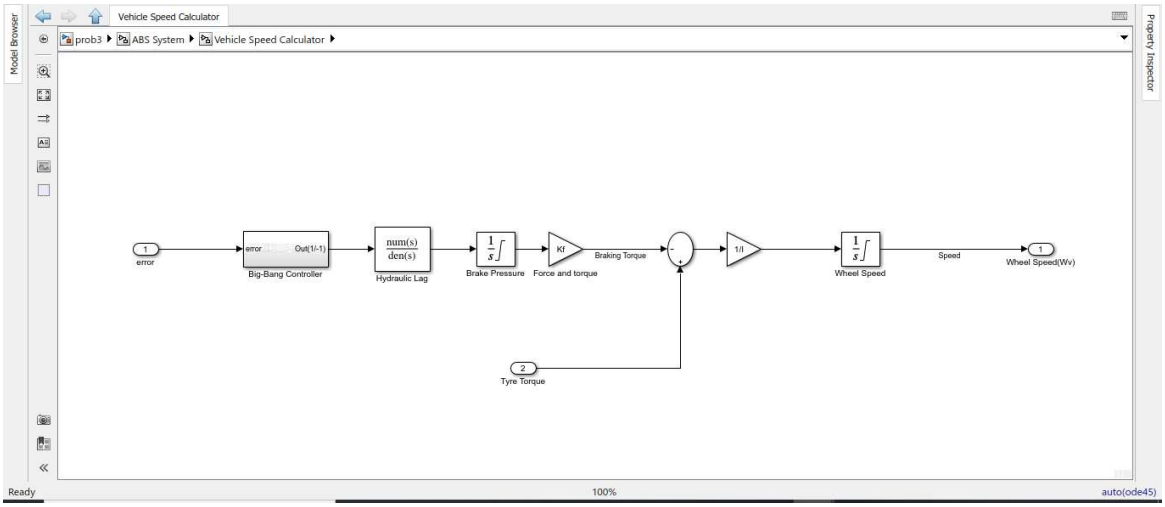




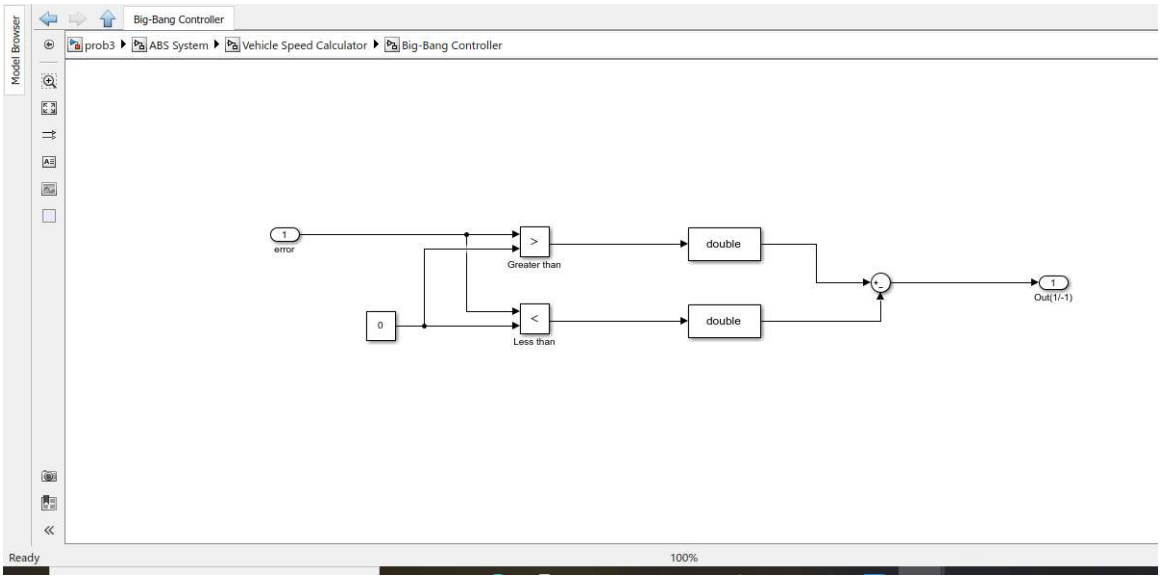
ABS Model

1. **Sub-systems**

- **Vehicle Speed Calculator**

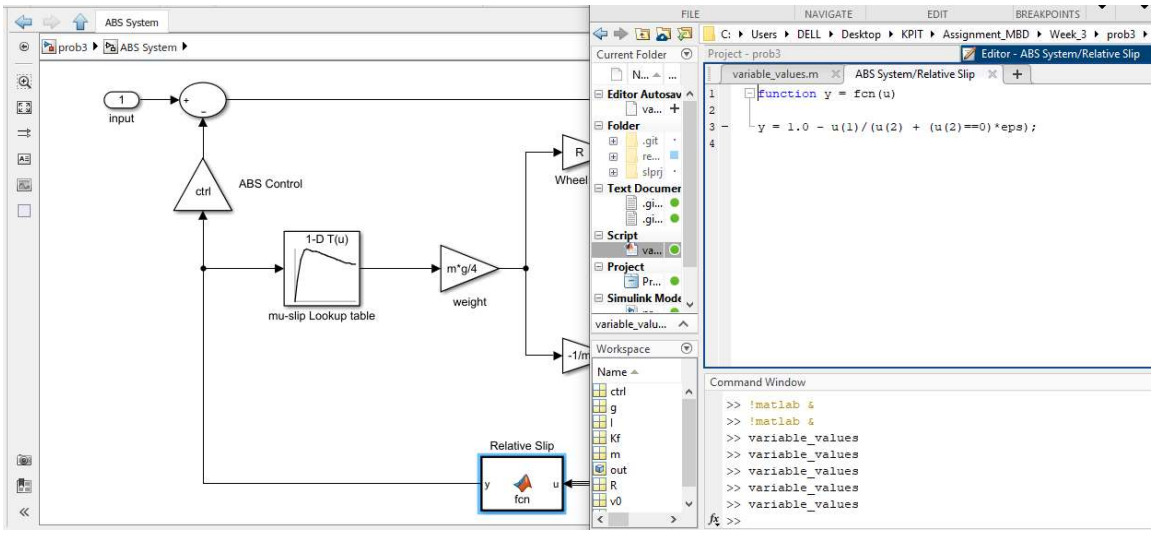


- **Big-Bang Controller**

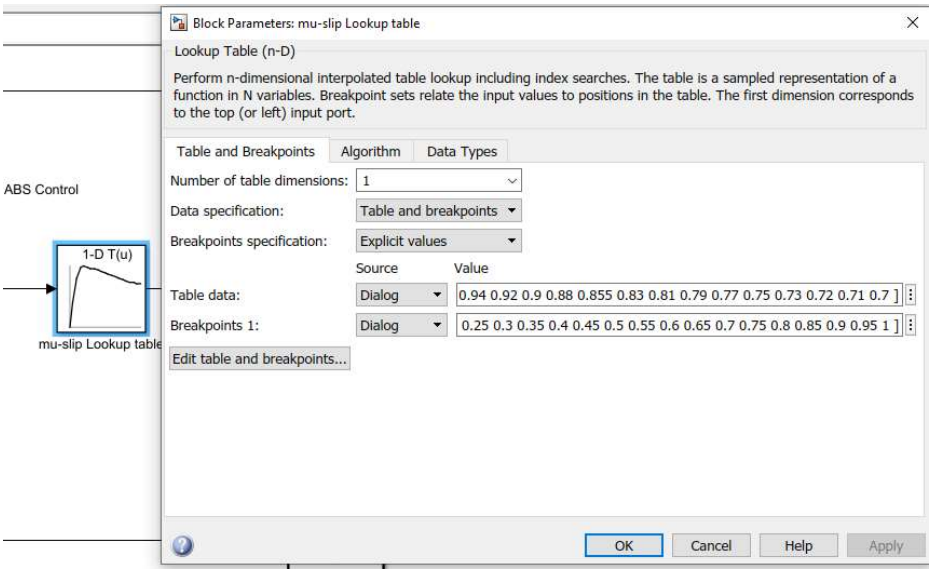


3. Different Skills used in the project

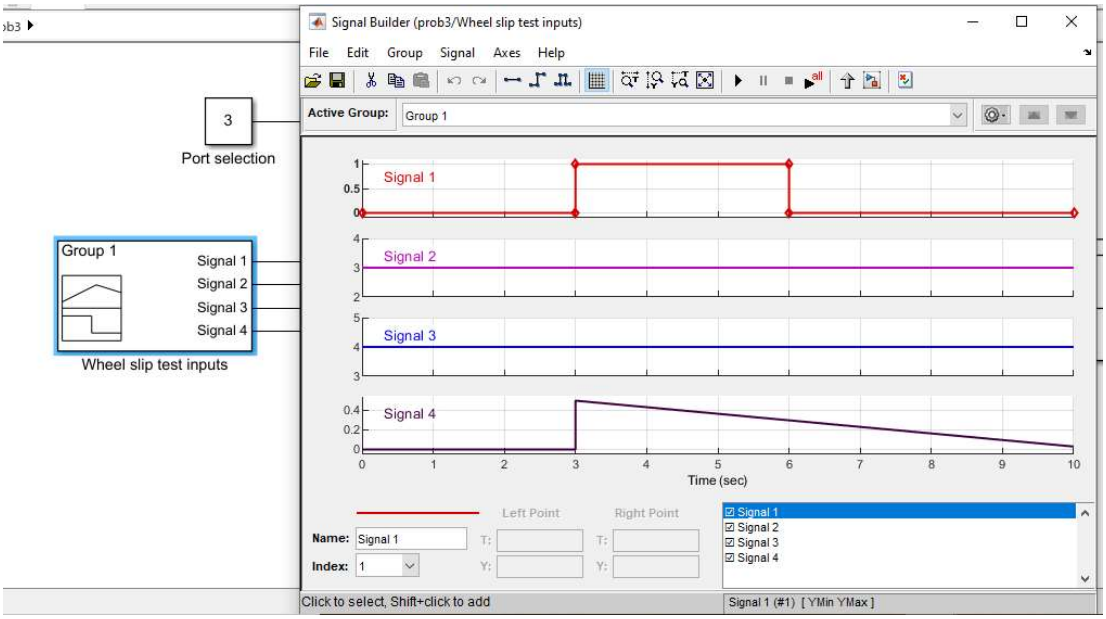
- **MATLAB Function block:** Use of MATLAB Function in the model helps to define custom functionality in Simulink models by using the MATLAB language. In the model developed, MATLAB function block is used to calculate Relative Slip.



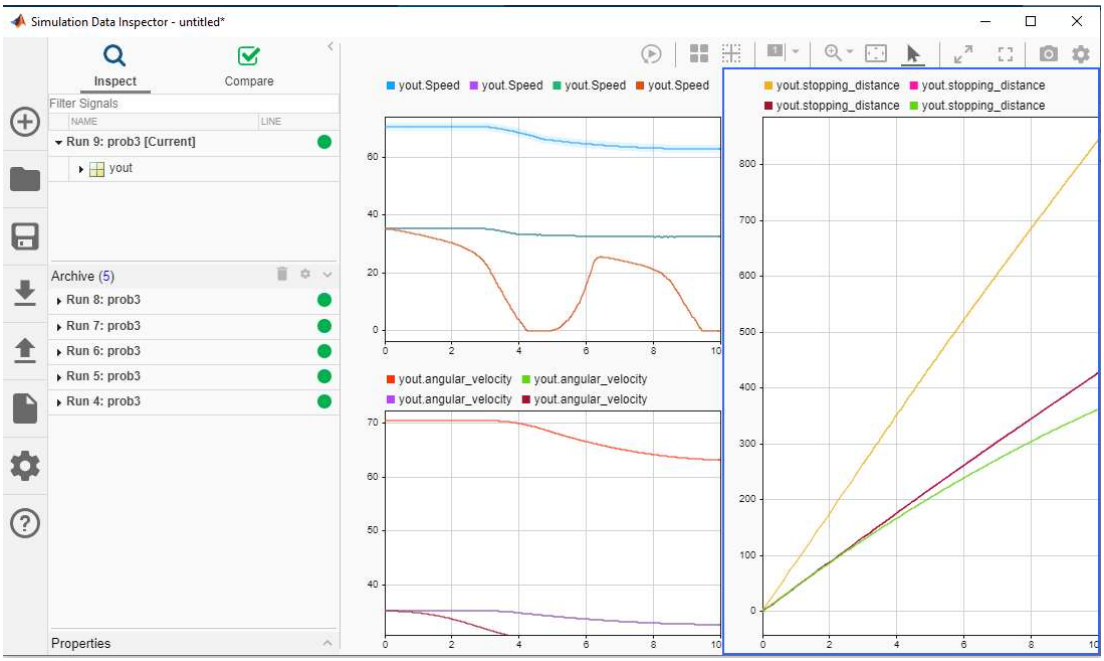
- **Look-up Table:** A lookup table block uses an array of data to map input values to output values, approximating a mathematical function. Given input values, Simulink performs a "lookup" operation to retrieve the corresponding output values from the table.



- **Signal Builder:** Multiple test signals were generated inside the Signal Builder of different amplitude and size.



- **Solver selection:** ode45 solver is selected, because the simulation time taken was good and there were no initial disturbances.
- **Data Inspector:** It is used in the model to save the curves of various logged signals for every time any changes are made in the model.



REFERENCES

1. https://www.mathworks.com/help/simulink/slref/modeling-an-anti-lock-braking-system.html