# Project Summary

*Given the fuel of a rocket with a set mass, the mass of the take-off body, the mass of the orbital assist body, and the mass of the landing body, will the mission from the take off-body, to an orbital assist around the orbital assist body, to landing on the landing body be successful?*

*This will be using a grid to represent space where the rocket takes up one cell and can move one cell at a time. There will be conditions that the rocket needs to meet to move to certain cells, and fuel will be used up when doing so. These conditions are split into three parts: takeoff, assist, and landing.*

*A diagram of a red and green square with arrows

Description automatically generated*

# Propositions

*List of the propositions used in the model, and their (English) interpretation.*

*FT – “Fuel total” - enough fuel for the mission*

*F – Currently has fuel remaining*

*M – Can move*

*L – Will move left*

*R – Will move right*

*U – Will move up*

*D – Will move down*

*PTL – Planet Top Left*

*PTR – Planet Top Right*

*PBL – Planet Bottom Left*

*B1, B2, B3, B4, B5, B6, B7, B8 – Binary positions for simple fuel calculation*

# Constraints

*List of constraint types used in the model and their (English) interpretation. You only need to provide one example for each constraint type: e.g., if you have constraints saying “cars have one colour assigned” in a car configuration setting, then you only need to show the constraints for a single car. Essentially, we want to see the pattern for all of the types of constraints, and not every constraint enumerated.*

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# Model Exploration

*List all the ways that you have explored your model – not only the final version, but intermediate versions as well. See (C3) in the project description for ideas.*

# Jape Proof Ideas

*List the ideas you have to build sequents & proofs that relate to your project.*

# Requested Feedback

*Provide 2-3 questions you’d like the TA’s and other students to comment on.*

# First-Order Extension

*Describe how you might extend your model to a predicate logic setting, including how both the propositions and constraints would be updated.* ***There is no need to implement this extension!***

Haven’t started this yet.

# Useful Notation

*Feel free to copy/paste the symbols here and remove this section before submitting.*