# Star Ship Refuel Calculator

# Introduction

This document is the Technical Specification for the Starship Refuel Calculator system.

## The problem:

Each model of starship has a given range, in Mega Light Years (MGLT), for a full load of fuel.

For an interstellar distance of X Mega Light Years, this system will return the number of fuelling stops required for all starships.

Please note: this program lists the specific ship, rather than the model type.

## Assumptions

Each ship will begin the journey fully loaded with fuel.

A ship may arrive at the destination without a full fuel load.

# Solution

The solution is composed of two assemblies:

A console application, **StarshipCalculator**, which is run by the user from a command line.

A helper application, **SharpTrooper**, which is a slightly modified version of the C# helper application available at <https://swapi.co/documentation#csharp>

## StarshipCalculator

This is composed of two classes, **Program** and **StarShip**.

The Program class is the core processing class for the application, while the **Starship** class represents the starships listed in the results.

The Program class has three methods:

**Main**: this responds to the user command and executes the overall process.

**GetStarships()** This returns a list of Starships, by accessing the **GetAllStarships()** method in the **SharpTrooper** assembly, which in turn interrogates the API at swapi.co

**GetResponse(): this builds the response to be displayed to the user.**

**GetFuelStops(fuelRange, distance):** this method calculates the number of stops required for a given distance and fuel range.

Once processing is finished the program displays a list of Starships, with the number of fuel stops required for the specified distance.

## Design Notes

The list of Starships could be accessed directly by the Main method from the API but the current approach is more loosely coupled, and allows for use of a different API if required.

The number of methods may seem excessive but this makes it easier to unit test individual pieces of logic.

## SharpTrooper

This is a helper application provided by swapi.co, it is well designed so it was decided ot use this rather than code the link to the API from scratch.

The **GetAllStarships()** method returns a list of Starships. The **Starship** class inherits from the **Vehicle** class. This class had to be modified to add the **MGLT** property, which is provided by the API. This property specifies the range of each vehcle in Mega Light Years.