**Electrification / Landing Decision Simulation for Vikram Lander (C-language)**

**1)Research**

This project implements a simplified decision-logic simulator of the Vikram lunar lander’s landing sequence in C. The program evaluates a set of critical parameters (altitude, vertical velocity, tilt, fuel) and decides whether a safe landing is possible.

**Parameters** :-

**Altitude (m)** — current height above lunar surface.

**Vertical velocity (m/s)** — downward speed (positive = descending).

**Horizontal velocity (m/s)** — lateral speed across surface

**Tilt/Attitude (degrees)** — angle between lander vertical axis and surface normal.

**Fuel remaining (%) or kg** — propulsion margin to perform corrective burns.

| Parameter | Condition |
| --- | --- |
| Altitude (m) | <=5 |
| Vertical velocity (m/s) | <=2 |
| Horizontal velocity (m/s) | <=0.5 |
| Tilt/Attitude (degrees) | <12 |
| Fuel remaining (%) | >=5 |

**References** :-

1. ISRO — Chandrayaan-3 [Chandrayaan-3 Details](https://www.isro.gov.in/ISRO_EN/Chandrayaan3_Details.html)
2. Times of India <https://timesofindia.indiatimes.com/india/chandrayaan-3-pragyan-to-roll-out-soon/articleshow/102988746.cms>
3. <https://space.skyrocket.de/doc_sdat/chandrayaan-3.htm>

**2)Analyze**

Using concepts of C such as if else statements , variables and certain datatypes and taking input from user based on above mentioned parameters

**3)Ideate**

When the program starts the user needs to provide data of certain parameters if the condition is met then only the program will respond for a soft landing or else it would abort the mission.The conditions are linked together.For a soft landing all conditions must meet. Even if a single condition does not meet, the mission will be aborted.