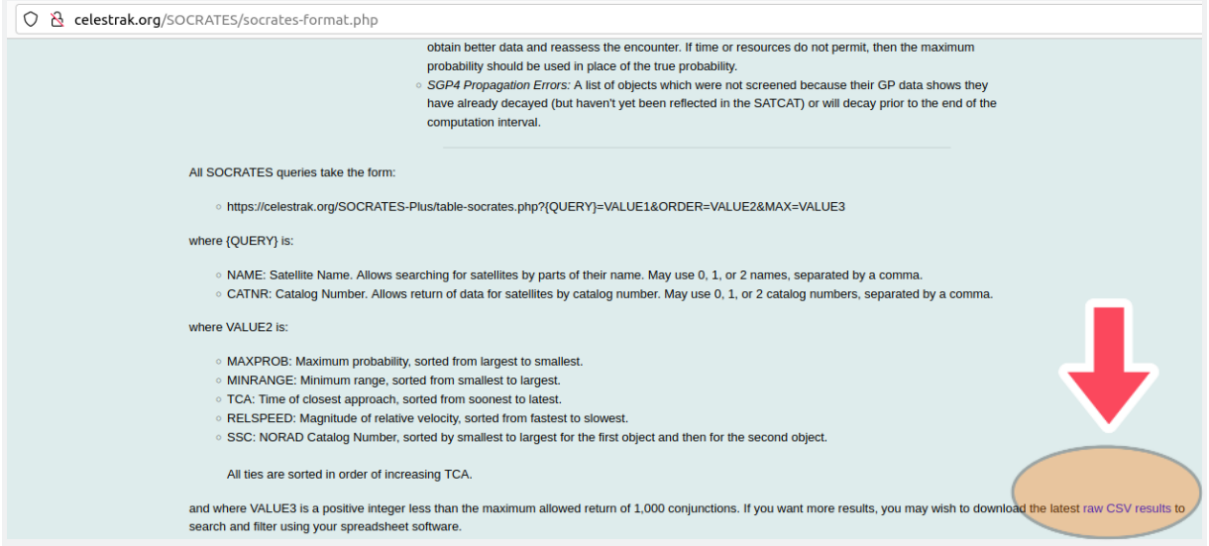
Assignment - Data Analyst

Conjunctions in space occur when two or more Resident Space Objects (RSOs) in the Earth's orbit pass dangerously close to one another, resulting in possible collision scenarios. With the rapid increase in the number of RSOs in recent times, the number of predicted conjunctions has significantly increased. The interpretation and visualisation of around 250,000 conjunctions per day is a challenging data analytics problem. A sample data set of predicted conjunctions of active satellites in space can be downloaded from CelesTrak (a not-for-profit organisation) using the following link:

http://celestrak.org/SOCRATES/socrates-format.php



The details of the RSOs predicted to be in conjunction can be viewed from the following link:

http://celestrak.org/satcat/search.php

Question 1

A) Derive high level analytics from the whole data set for a single day. In other words, derive general analytics of the whole set of conjunction scenarios (for e.g. number of conjunctions among active satellites). The analytics should be intuitive and represented in an easily understandable format.

B) Represent the conjunctions data of a single satellite or a satellite constellation. The analytics should be intuitive, represented in an easily understandable format and should enable decision making from a satellite operator's point of view.

Question 2

Use the whole dataset that spans about five days. Derive analytics and visualise the data/analytics accounting for the evolution from the first day (for e.g. the number of conjunctions of the RSO having NORAD ID 12345 over 7 days of analysis)

Notes

- List assumptions made, if any.
- You can use any open source or proprietary tools for data visualisation.
- Representation of results or data in a proof of concept of user dashboard form will be an added advantage.
- Upload the answer as a PDF document with a strict four page limit OR a GitHub repository OR a zip file with a README file containing detailed instructions.