

HACK THAT STARTUP

VOL.2

ARMAGEDDON EDITION

Node.js & MongoDB

Individual challenge

Database for potentially
hazardous asteroids

INDIVIDUAL CHALLENGE

-HACK THAT STARTUP 2-

BACKGROUND

Lebron is a former NASA scientist who worked at the Jet Propulsion Laboratory of the California Institute of Technology updating NASA's database with new NEAs (Near Earth Asteroids). These are the asteroids that have their orbit located between the sun and Mars. Approximately 24,000 NEAs have been catalogued so far, and this is a small fraction of the actual number, as they are very difficult to detect due to their small size and dark surface color. Lebron now wants to create his own web page with all these potentially hazardous asteroid (PHA) NEAs and also allow amateur astronomers to register new NEAs they discover that could be PHA to minimize the possibility of an undetected PHA impacting the earth, but Lebron only has Frontend knowledge and not Backend, that's why Lebron needs your help.

The main characteristics NEAs will have in this DB will be:

- **full_name**: Full name of the asteroid.
- **a**: Semimajor axis of the orbit.
- **e**: Orbit eccentricity.
- **i**: Orbit inclination.
- **om**: longitude of the ascending node.
- **w**: perihelion argument.
- **ma**: Mean Anomaly.

TASK

A Rest API must be built to return basic information about these asteroids. The API will be a microservice connected to MongoDB and will be used to store new information and query already stored information.

1) ASTEROID MODEL(NEA) and User

2) findAll & addList

Implement the method (findAll) that allows to retrieve all the models of both User and Neas.

Add the addList method that allows to create models automatically by sending an array of data (for Users and Neas).

3) CRUD

Create a CRUD for User and NEAs models.

4) AUTH

Implement an authentication method (you can use passwords or do the authToken / session yourself).

You must be able to register and login with username and password.

5) TESTING

Automatic testing and testing with Postman / Insomnia

6) CSV to JSON

Implement a method that converts a csv to a json and incorporates the asteroid information from the csv 'OrbitalParameters_PHAs.csv' into your DB.

RESOURCES

File 'OrbitalParameters_PHAs.csv'. Contains the orbital parameters of 120 asteroids potentially dangerous to the human race.

CSV data:

full_name	a	e	i	om	w	ma
1566 Icarus (1949 MA)	1.078076432	0.827072914	22.81881892	87.98911327	31.40697081	8.16059889
1620 Geographos (1951 RA)	1.245655278	0.33545381	13.33739043	337.1856335	276.9638903	16.89243
1862 Apollo (1932 HA)	1.470372413	0.559950159	6.354774105	35.61719647	285.9919159	199.087018
1981 Midas (1973 EA)	1.7763363	0.650335103	39.83111805	356.8629785	267.8249087	35.9911584
2101 Adonis (1936 CA)	1.874240001	0.763956935	1.322075868	349.4986766	43.60366893	52.9687242
2102 Tantalus (1975 YA)	1.290093303	0.29927236	64.00479642	94.36039279	61.53675306	216.514041
2135 Aristaeus (1977 HA)	1.599790251	0.503134536	23.06648429	191.1342704	290.9712244	240.289838

Source: https://ssd.jpl.nasa.gov/sbdb_query.cgi

DELIVERY

Paste the link to your repository in the event registration (Hack That Startup V2) before 23:59 PM

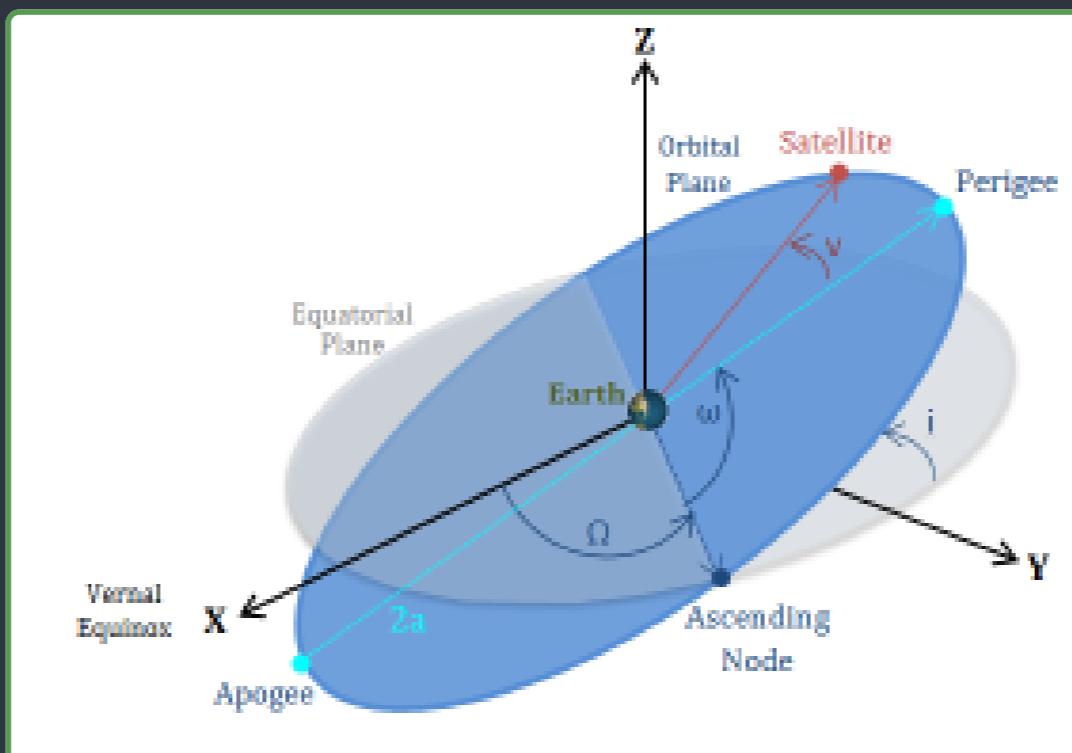
EVALUATION

- | | | |
|--|--|-------------------------------|
| - Implementation of different objectives | - Code quality (Syntax and complexity) | - Documentation |
| - Code coverage (Automatic + Post/Anima) | - Code quality | - Structuring and scalability |

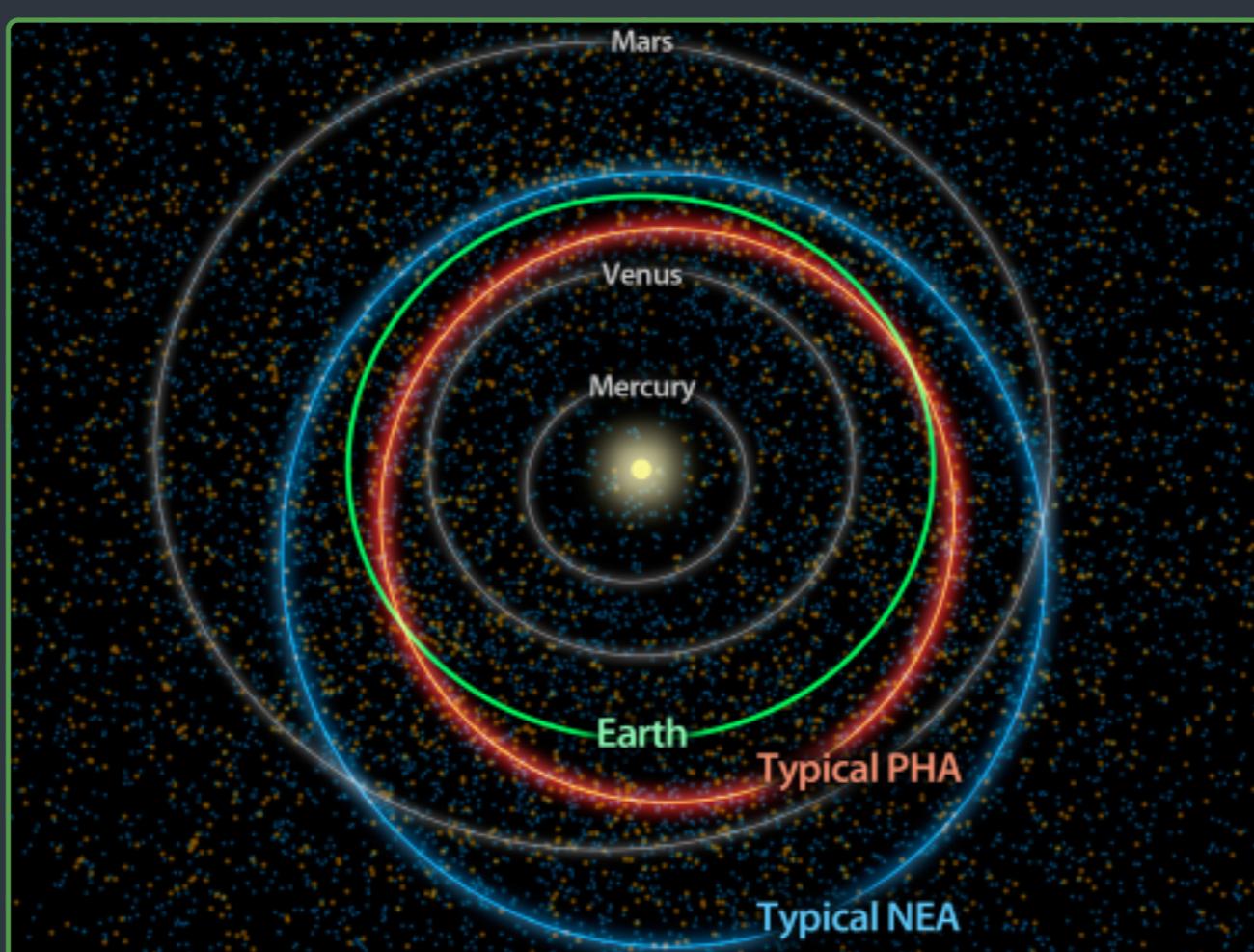
INDIVIDUAL CHALLENGE -HACK THAT STARTUP 2-

JUST FOR FUN

What are orbital parameters? : <https://www.youtube.com/watch?v=2gAYqtmNJx8>



All Known Asteroids in the Solar System:
https://www.youtube.com/watch?v=vfvo-Ujb_qk



How are near-Earth asteroids identified ?

The process of identifying PHAs and NEAs is based on comparing images of the same region of the sky taken several minutes apart. The vast majority of the objects recorded in the images are stars and galaxies that will appear in the same position in all of them. In contrast, PHAs and NEAs are nearby objects with high relative velocities and will appear in slightly different positions.



<https://near.cab.inta-csic.es/docs/?pagename=esp/Introduccion>