

Enigma

Problem Statement

RULES

- 1) For each task, make a file with name "Answer_Task_TaskNum" (example: Answer_Task_1) which will contain the answers to their respective tasks. In the files give the output in format as mentioned in the tasks.
- 2) For task 3, make separate files like (Answer_Task_3_1 for task 3.1)
- 3) Zip all the text files along with their codes and submit it on Dare2Compete.
- 4) Scoring: Task 0, 1, 2 and 4 are of 100 points each. Each subtask of Task-3 is of 100 points.
- 5) In case of same scores, teams will be differentiated on the basis of last time of submission (uploading of zip file).
- 6) Usage of internet is allowed. But you have to stay in the PC lab during the hackathon.
- 7) Duration is 5 hours. All the best.
- 8) Note: All tasks must be solved using the given dataset.

DATA

- *The data is given in CSV format.
- *Abbreviations used for headers and for more details on the database: see the dastcom5_README.txt
- *Note: The data used is big (~215 MB) so it may take some time for your code to run/ load data.

TASKS

Task-0

Print the names of all objects whose Ascension is ≤ 2.99999 and ≥ 2.99999 in sorted order in the following format: "Object" ObjectNumber : Name

Example:

Object 1 : ABC

Object 2 : DEF

Object 3 : EAB

Task-1

Print the object which has :

- 1)Maximum Perihelion
- 2)Minimum Perihelion
- 3)Maximum Aphelion
- 4)Minimum Aphelion

in the format--> Name : Value

Example:

Minimum Aphelion--> ABC : 123

Note: Only consider the objects for which the Perihelion and Aphelion are positive.

Task-2

Plot the orbits of the following objects:

- 1)Ceres
- 2)1998 SE77
- 3)Zachdolch
- 4)2015 BS415

Save them in format 2_Num. Example: 2_1

Task-3

3.1 Print radius and velocity vector of the following objects with respect to our galactic center.

Objects:

- 1)Alexanderlin
- 2)Dyckovsky
- 3)1998 SP62
- 4)Jeanneladewig

Format:

"NameOfObject_Radius" : [rx, ry, rz] : [Units used = tuv]

"NameOfObject_Velocity" : [vx, vy, vz] : [Units used = pqr]

where vx is x coordinate of velocity. Similarly for y and z. pqr are the units of velocity. tuv are units of units of distance.

Print for each object in separate line.

3.2 Print radius and velocity vector of the objects in Task-3.1 with respect to our Sun. Format is the same as in Task-3.1.

Task-4

List the nearest 5 objects from earth 5 year from now (29/03/2019) from the dataset given.

They should be sorted in Ascending Order of their distance from earth.

Print in file in the following format: "Object" ObjectNumber : Name

Example:

Object 1 : ABC

Object 2 : DEF

Object 3 : EAB

END