ack your progress on the go!   Install App

< Back

CALCULATING GRAVITY   Assigned

In Class 131, We Found The Relationship Between The Mass, Radius, And Gravity Of Exoplanets. Now We Have Data Of Stars Such As Mass, Radius, And Distance From Earth. In This Project, We Want To Calculate The Gravity Of The Star Using A Gravitational Formula, Which You Have Also Used In The Class.

Goal of the Project:

In Class 131, we found the relationship between the mass, radius, and gravity of exoplanets. Now we have data of stars such as mass, radius, and distance from earth. In this project, we want to calculate the gravity of the star using a gravitational formula, which you have also used in the class.

Story:

Our Sun is dying! The world is in an emergency as we are about to lose our star. All groups of scientists around the world have gathered together and created a technology to shift our Earth into another solar system, but which one exactly? Which star out there is safe and welcoming to our Earth? You have been assigned the task to research about stars so that we can choose the best one for us!

** This is a continuation of the project we did for Classes 127, 128, 129, and 130. Please complete those projects before attempting this project. **

Calculation of 'g' using the formula:

$$g = G\frac{M}{r^2}$$

(G= 6.67 x 10^{-11} N m^2 kg^{-2})

© John Moylan 2016

Getting Started:

1. Open Google Colab and import the **final_data.csv** that is created in project C130.

Specific Tasks to complete the Project:

Step 1

1. Import the cleaned csv file **(final_data.csv)** from the last project.

2. Convert it into DataFrame.

3. Print the DataFrame.

4. List all the columns of the DataFrame.

Start Your Project

▶ Read all the instructions carefully to understand the project

▦ Click on "Start Project" to go to the project playground and start your project

Start Project

Submit Your Project

Learn how to submit your project ▶

[Paste your project URL]

Submit Project

Class Summary

This project is based on your last class

View Class Summary

Ask a doubt to your team
HELP

Step 2

1. Remove extra/ unwanted column.

2. Use the **dtypes** attribute to check the type of data present in all the columns.

3. Use the **lambda()** function to replace special characters with float.

Step 3

1. The data of **mass** and **radius** is in **solar units**, we need to convert this to **SI units**.

2. Convert mass into kilograms by multiplying with **1.989e+30.**

3. Convert radius into meters by multiplying with **6.957e+8.**

Step 4

1. Calculate the gravity.
   • Make an **empty list.**
   • Write a function to calculate the gravity using above expression.
   • Append the gravity values inside the empty list.

2. Now, add the gravity column in the DataFrame.

Step 5

1. Save the DataFrame in CSV format. Name it as **'star_with_gravity.csv'.**

2. Download the CSV file.

Submitting the Project:

1. **SAVE** all the changes made to the project.
2. Click on **"Run"** once to check if it is working.
3. Rename the project to **Project 131**.
4. Click **Share**.

💬 Comment   👥 Share

5. Click **Change** and choose the **'anyone with the link'** option.
6. Copy the link and submit it in the **Student Dashboard Projects** panel against the correct class number.

HELP

Hints:

1. In **step 3**, use the **to_list()** method to convert the column into the list for unit conversion.
2. In **step 5**, before saving the file use the **dtypes** attribute to check the data types of all the columns.

HELP