**TEEGALA KRISHNA REDDY ENGINEERING COLLEGE**

**(UGC-Autonomous)**

**Approved by AICTE, Affiliated to JNTUH , Accredited by NBA & NAAC 'A' Grade**

**A REAL TIME PROJECT ON**

# INTERACTIVE WEIGHT CALCULATOR AND PLANET EXPLORER USING PYTHON


**UNDER THE GUIDANCE OF**

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# ABSTRACT

This project aims to develop an interactive weight calculator and planet explorer using Python. The interactive weight calculator allows users to input their weight on Earth and calculates their weight on other planets based on the gravitational pull of each planet. The planet explorer component provides information about various planets, including their diameter, distance from the sun, number of moons, etc. Users can interactively explore these details to learn more about different celestial bodies in our solar system. The project leverages Python's versatility and user-friendly interfaces to create an engaging and educational experience for users interested in space exploration and physics concepts.The Interactive Weight Calculator employs fundamental Python keywords and libraries to compute weight variations based on gravitational differences between Earth and other planets. Users input their Earth weight, and the tool dynamically calculates their weight on planets such as Mars, Jupiter, and the Moon, among others. The calculations are made possible through the use of predefined gravitational constants, ensuring accuracy and relevance.

**Keywords: Python, weight calculator, planet explorer, gravitational constants, planetary data, interactive tool, educational application.**

# INTRODUCTION

This Python project combines an interactive weight calculator and a planet explorer, offering an engaging experience for space enthusiasts and learners. The Interactive Weight Calculator allows users to input their Earth weight and dynamically computes their weight on other planets, leveraging predefined gravitational constants. Meanwhile, the Planet Explorer component provides details about celestial bodies—diameter, distance from the sun, and moon count—enabling interactive exploration of Mars, Jupiter, the Moon, and more.

# TECHNICAL DECSRIPTION

## SOFTWARE REQUIREMENTS

- Python 3.6 or higher.
- Python tkinter, pillow, requests modules.
- Operating System : Compatible with windows, Linux and macOS.
- Python development environment.
- Any compatible IDE

By ensuring the above software requirements, we can successfully implement the Interactive Weight Calculator and Planet Explorer  using Python.

# LIBRARIES

**tkinter** : is used for creating graphical user interfaces (GUIs). It provides a set of tools and widgets (GUI components) that allow Python programs to create windows, dialogs, buttons, menus, and many other GUI elements.

**pillow** : Python Imaging Library, forked as Pillow is used for working with images in Python. It provides a wide range of functionalities for image processing tasks..

**requests** : is used for making HTTP requests to web servers. It simplifies the process of sending requests and handling responses, making it easier to interact with web services and APIs.

# PROCEDURE

**1.Importing Modules:**
The code starts by importing necessary modules (tkinter, ttk, Pillow, requests, BytesIO) which are used for creating the GUI.

**2.Defining Planet Information:**
A dictionary named planet_info is defined, which contains detailed information about various celestial bodies (planets, the Sun, and the Moon). This information includes gravity, descriptions, atmospheric composition, image URLs, and additional interesting facts.

**3.Defining the Weight Calculation Function:**
Retrieve the user's weight from the input field.
Calculate the weight on the selected planet based on its gravity.
Fetch and display an image of the selected planet using the requests module and Pillow for image processing.

**4.Creating the Main Window:**
A main window (root) is created using tkinter.

**5.Creating Output Frame and Labels:**
An output frame (output_frame) is created to hold the result label and image label.
The result label displays the calculated weight and planet information.
The image label displays the image of the selected planet.

**6.Running the Application:**
The mainloop method of the main window (root) is called to start the event loop and display the GUI.

# RESULTS

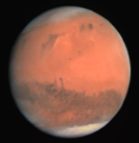

Weights on Different Planets
Enter Your Weight (kg):
Select a Planet:
Mercury
Calculate

Your Weight: 17.04 kg

Mars is known as the Red Planet due to its reddish appearance. It has the largest volcano and canyon in the solar system.

Atmosphere: Thin atmosphere composed mostly of carbon dioxide, nitrogen, and argon.

Diameter: 6,779 km
Orbital Period: 687 Earth days
Temperature: -87 to -5°C
Interesting Fact: Mars has seasons similar to Earth, due to its axial tilt.



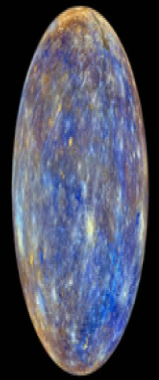
Enter Your Weight (kg): 45 Select a Planet: Mars Calculate

Your Weight: 16.99 kg

Mercury is the smallest planet in our solar system and closest to the Sun. It has a thin atmosphere and is heavily cratered.

Atmosphere: Thin atmosphere composed mostly of oxygen, sodium, hydrogen, helium, and potassium.

Diameter: 4,880 km
Orbital Period: 88 Earth days
Temperature: -173 to 427°C
Interesting Fact: Mercury has the most eccentric orbit of all the planets.



Enter Your Weight (kg): 45 Select a Planet: Mercury Calculate

# CONCLUSION

The Planet Explorer project beckons you to embark on a celestial journey through our solar system. From the fiery volcanoes of Mars to the majestic rings of Saturn, each planet reveals its captivating tale.

# THANK YOU

# ANY QUESTIONS ?