GDG-2CC PROJECT

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ABSTRACT

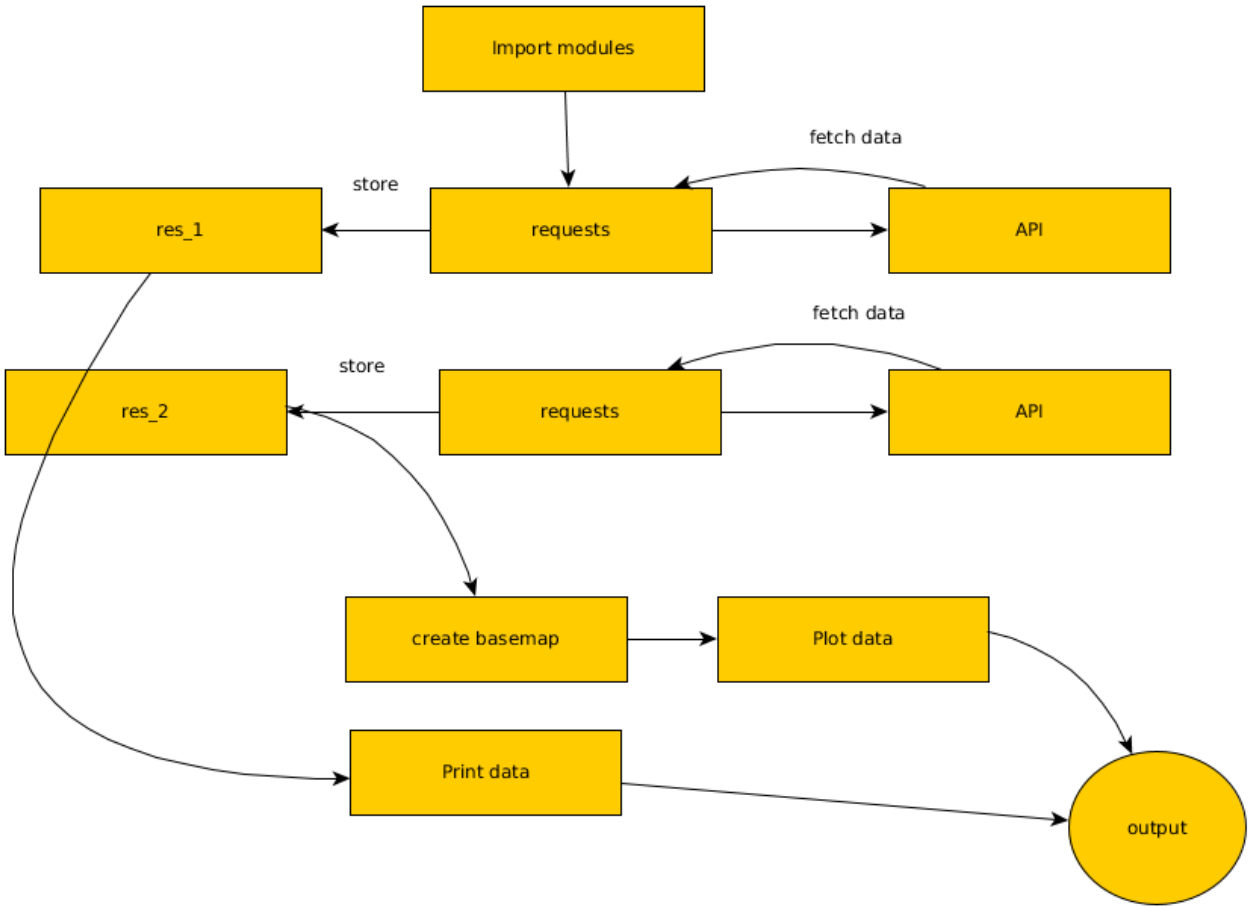
The project aims plot the real time position the International Space Station over a 2D Map of the Earth and also give the user information about the astronauts currently on board the ISS.

INTRODUCTION

The project is an ISS position tracker which plots the position of the ISS on a basemap of the Earth when run.

METHODOLOGY

- Basic Concept
  Data regarding the astronauts and the position of the ISS is fetched using the requests library and stored in the form of a dictionary. This positioning data is then fetched from the dictionary and plotted on a basemap generated using the cartopy library. Plotting is done using the matplotlib.pyplot module.
- Block Diagram



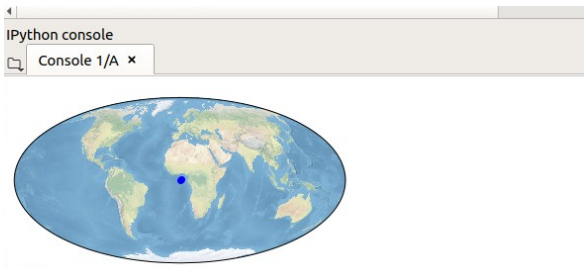
Code Implemented

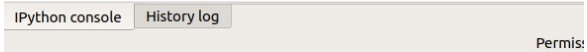
```
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Sun Mar 17 17:42:19 2019

@author: aryaman
```

```
"""
#import modules
import requests
import cartopy.crs as ccrs
import matplotlib.pyplot as plt
import matplotlib.animation as animation

#fetch data of astronauts
res_1 = requests.get('http://api.open-notify.org/astros.json')
data_ISS = dict(res_1.json())
people = []

for i in data_ISS['people']:
    people.append(i['name'])


#fetch data of ISS Position
res_2 = requests.get('http://api.open-notify.org/iss-now.json')
data_ISS_pos = dict(res_2.json())

iss_pos_lat = data_ISS_pos['iss_position']['latitude']
iss_pos_long = data_ISS_pos['iss_position']['longitude']

#Plot
fig = plt.figure()
ax = plt.axes(projection=ccrs.Mollweide())
ax.stock_img()

ax.plot([iss_pos_lat, iss_pos_long],color='blue', linewidth=2, marker='o',transform=ccrs.Geodetic())

plt.show()

#Print names of astronauts
print("The ISS Heroes are:-")
for i in people:
        print(i)
```

- API’s Used
  - http://api.open-notify.org/astros.json (Names of Astronauts)
  - http://api.open-notify.org/iss-now.json (Position of the ISS)

Result of the execution





Difficulties during execution

- Had trouble plotting it on the same basemap real time. Could plot the position one at a time but not in real time.