Antipodes
A virtual tunnel through the Earth

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Introduction

Every inch on the surface of Earth has unique coordinates defined by latitude and longitude. Antipodes maps use these coordinates as an input to determine the diametrically opposite location on the Earth. Its like getting into a tunnel which will start from the location you choose travel through the center of the Earth in a straight line and emerging out from the other end. The destination can either be an ocean or land.

The program concentrates on accepting a street address, a city or a state as an input and retrieves the respective coordinates of the starting point constituting the latitude and longitude. It then calculates the antipode latitude and longitude for the starting location and reverse tracks the city or region based on the antipode coordinates.

Their lies a high probability of the destination coordinates belonging to water bodies as almost 71% of the Earth's surface is water.

Requirements

The modules imported for this program are :
1. geopy : For getting the coordinates of the location provided as input and retrieving location on by providing the coordinates of antipode.
2. math : For getting the absolute value of the longitude
3. re : For applying regular expression to detect water body

Description

- The program starts with a description of what it does and asking the user for an input i.e. the starting point.
- It then finds the exact location of the input using an instance of Nominatim class in geopy.
- Based on the tracked location it returns the complete address and coordinates of the input location.
- Then the object is passed to retrieve the antipode coordinates
- Based on retrieved coordinates reverse function in geolocator fetches the location of antipode coordinates.
- If its a land, the name of the location is returned else a message is shown to state that you are in ocean.
- To quit the user must hit enter/return

Screenshots

```
Curiosity killed the cat.
But being curious can make you jump on a roller-coaster which will start from the very place you are at or the city o
f your choice or your address.
And you will know where exactly you will pop out if you dig a tunnel from starting point through the center of the Ea
rth.
Enter the address or city you want to start journey from : 1102 South Abel Street
South Abel Street, Milpitas, Santa Clara County, California, 95035, United States of America
37.4179439 -121.9056499
You survived Mantle and Core of Earth, surfacing out of land keeps you alive but water kills. Watch out!!!
Oops you tried to tunnel out of an ocean and are most probably dead by now. The reasons being
 1. Severe hypothermia
 2. Lack of air
 3. Water pressure collapsed your lungs
 The coordinates where you emerged are
(-37.4179439, 58.0943501)
```

Enter the address or city you want to start journey from : [   ]

```
Curiosity killed the cat.
But being curious can make you jump on a roller-coaster which will start from the very place you are at or the city o
f your choice or your address.
And you will know where exactly you will pop out if you dig a tunnel from starting point through the center of the Ea
rth.
Enter the address or city you want to start journey from : 1102 South Abel Street
South Abel Street, Milpitas, Santa Clara County, California, 95035, United States of America
37.4179439 -121.9056499
You survived Mantle and Core of Earth, surfacing out of land keeps you alive but water kills. Watch out!!!
Oops you tried to tunnel out of an ocean and are most probably dead by now. The reasons being
 1. Severe hypothermia
 2. Lack of air
 3. Water pressure collapsed your lungs
 The coordinates where you emerged are
(-37.4179439, 58.0943501)
Enter the address or city you want to start journey from : Sunnyvale
Sunnyvale, Santa Clara County, California, United States of America
37.3688301 -122.0363496
You survived Mantle and Core of Earth, surfacing out of land keeps you alive but water kills. Watch out!!!
Oops you tried to tunnel out of an ocean and are most probably dead by now. The reasons being
 1. Severe hypothermia
 2. Lack of air
 3. Water pressure collapsed your lungs
 The coordinates where you emerged are
(-37.3688301, 57.963650400000006)
Enter the address or city you want to start journey from : madrid
Madrid, Área metropolitana de Madrid y Corredor del Henares, Comunidad de Madrid, España
40.4167047 -3.7035825
You survived Mantle and Core of Earth, surfacing out of land keeps you alive but water kills. Watch out!!!
Whoa, you made it to the other side!!!
You are in Falls Road, Weber, Tararua District, Manawatu-Wanganui, New Zealand/Aotearoa
(-40.4167047, 176.2964175)
```

Enter the address or city you want to start journey from : [   ]

```
Curiosity killed the cat.
But being curious can make you jump on a roller-coaster which will start from the very place you are at or the city o
f your choice or your address.
And you will know where exactly you will pop out if you dig a tunnel from starting point through the center of the Ea
rth.
Enter the address or city you want to start journey from : paraguay
Paraguay
-23.3165935 -58.1693445
You survived Mantle and Core of Earth, surfacing out of land keeps you alive but water kills. Watch out!!!
Whoa, you made it to the other side!!!
You are in 長濱鄉, 臺東縣, 962, 臺灣
(23.3165935, 121.8306555)
```

Enter the address or city you want to start journey from : [   ]

Conclusion

The program takes the location as input and returns back the antipode location where user will emerge from if travelled though the center of the earth diametrically.