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Introduction

Welcome to the National Park Selection Game! 🌲

This program presents a list of National Parks to the user based on their specified criteria. The selected parks are organized into a tree data structure, which is presented to the user at the end of the game.

There are multiple "modes" for the user to choose from.

1. The user can generate a map of all US National Parks.
2. The user can play the "selection game" to find parks they should visit.

This program requires the following Python packages:

- requests
- json
- os
- textwrap
- treelib
- pandas
- plotly
- webbrowser
- colorama
- matplotlib

Data sources

National Parks API

Origin: https://www.nps.gov/subjects/developer/api-documentation.htm#/parks/getPark
Format(s): JSON
Data access: API (requires key); all data cached upon retrieval
Records: 471 available, 471 retrieved

Description of data

Field	Description	
URL	URL for park homepage	
fullName	Full name of national park	
latLong	Latitude and longitude points for park	
activities	ID	Unique identifier for activity
	name	Activity name
topics	ID	Unique identifier for topic

	name	Topic name
states	State(s) park resides in	

Visitation by state and park

Origin:
https://irma.nps.gov/Stats/SSRSReports/National%20Reports/Visitation%20By%20State%20and%20By%20Park%20(2017%20-%20Last%20Calendar%20Year)
Format(s): CSV
Data access: load file using pandas
Records: 413 available, 413 retrieved

Description of data

Field	Description
Park	Name of national park
RecreationVisitors2022	Number of visitors at park in 2022

Data Structure

README

Please reference the **Introduction section** to see what packages are required to run the program. When playing the park selection game, the user generates a list of parks that meet their specified criteria.

Upon game start, a tree data structure is initialized.

After the user responds to a prompt (i.e. question), a node is added to the tree structure. The resulting list of parks that meet the user's criteria is added as another node. This cycle repeats until the user answers all questions.

For example, the following tree is generated after the user indicates their criteria. Each question node is followed by a node containing the list of parks that meet the user's criteria.

```
Here is your park question tree:

Select State: KY
└── 1. Abraham Lincoln Birthplace National Historical Park
2. Big South Fork National River & Recreation Area
3. Camp Nelson National Monument
4. Cumberland Gap National Historical Park
5. Fort Donelson National Battlefield
6. Lewis & Clark National Historic Trail
7. Mammoth Cave National Park
8. Mill Springs Battlefield National Monument
9. Trail Of Tears National Historic Trail

    └── Selected Topics: ['Birthplace', 'Animals', 'Birds', 'World War I', 'Groundwater']
        └── 1. Abraham Lincoln Birthplace National Historical Park
2. Big South Fork National River & Recreation Area
3. Cumberland Gap National Historical Park
4. Lewis & Clark National Historic Trail
5. Mammoth Cave National Park

            └── Selected Activities: ['Tubing']
                └── 1. Big South Fork National River & Recreation Area
```

Interaction and Presentation Options

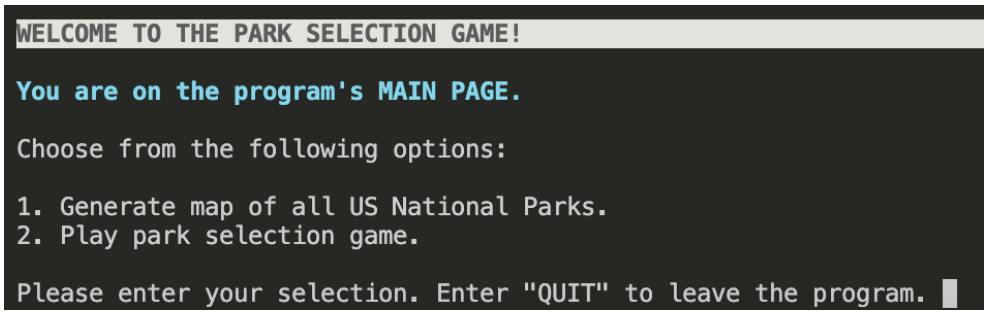
Main Page

On the program's main page, the user can either:

1. Generate a map of all U.S. National Parks
    a. The package **plotly.express** is used to generate the map of U.S. park locations.
2. Play the park selection game.

The user enters the value 1 or 2 to indicate their selection.

Here is what the main page looks like:



Park Selection Game

Upon starting the game, the user is asked to enter a state using its two-letter abbreviation.

- If the user enters a value that is not a state or is a state that has no national parks, their input will be considered invalid.
- They will be prompted to enter another value until their input is valid.

After entering a state, the program will display parks residing in the user's chosen state. The program will ask the user if they wish to continue. The user can indicate either "yes" or "no".

- If they do not wish to continue, a final list of parks will be presented to them.
- If they do continue, they will be presented with additional questions.

```
NOW STARTING THE PARK SELECTION GAME! ★ ★ ★

What state do you want to visit? Use 2 character state abbreviation. MI

Here are parks in the state MI.

1. Isle Royale National Park
2. Keweenaw National Historical Park
3. North Country National Scenic Trail
4. Pictured Rocks National Lakeshore
5. River Raisin National Battlefield Park
6. Sleeping Bear Dunes National Lakeshore

Would you like to continue with questions (YES/NO)? no
```

At the end of the game, the program shows the user their "park decision tree" and their final list of parks.

The park decision tree displays the user's selections, along with parks that meet the user's specified criteria. The final list contains parks that meet all criteria the user identified by answering questions presented to them.

The user can interact with the final list of parks. They can do the following:

1. Enter the park's corresponding number to pull up its website
2. Generate a map of the final list of parks
3. Generate a bar graph showing the number of visitors in 2022 for each park

The package **matplotlib** is used to generate the bar graph. The package **plotly.express** is used to generate the map of U.S. park locations.

```
Here is your park question tree:

Select State: mi
└── 1. Isle Royale National Park
2. Keweenaw National Historical Park
3. North Country National Scenic Trail
4. Pictured Rocks National Lakeshore
5. River Raisin National Battlefield Park
6. Sleeping Bear Dunes National Lakeshore


Here are your selected parks:

1. Isle Royale National Park
2. Keweenaw National Historical Park
3. North Country National Scenic Trail
4. Pictured Rocks National Lakeshore
5. River Raisin National Battlefield Park
6. Sleeping Bear Dunes National Lakeshore

• If you would like to learn more about a park, enter its number.
• If you would like to generate a map of the parks, enter "MAP".
• If you would like to create a bar graph showing number of visitors in 2022 by park, enter "BAR".
• Else, enter QUIT.
```

Demonstration

Here is the link to the demo video.