



### EX7 2025 - Python

**YOU ARE NOT ALLOWED TO USE CLASSES AT ALL!!!!!!!!!!!!!!**

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**For the ones who already know python - this is the most dangerous ex for you, don't fall for things you are not allowed to do.**

### General instructions

The T.A responsible for this exercise is **Eliyahu Houri**.

- You must fork the repository ex7 from the [course's git](#).
- Change ex7.py according to instructions.
- After completing all the requirements, submit it to the [submit system](#) under **ex7** til **03\02\25 at 23:59:59**.
- Your submission should be a zip file containing:

- ~~.git folder (after fork and clone, as you did since ex0).~~
- **ex7.py**
- **hoenn\_pokedex.csv**
- README.md (optional)
- Late submissions will be fined accordingly:
  - One day - 10 points. (the maximum grade is 90)
  - Two days - 20 points.
  - Three days - 30 points.
  - **You can't submit this or any other exercise more than 3 days late.**
- Please post any questions about the exercise **publicly** in the course forum.
- Requests for an extension (for justified reasons only) should be sent to the email: [CSI.BIU2024@gmail.com](mailto:CSI.BIU2024@gmail.com) **with:**
  - ❖ Full Name.
  - ❖ Your Submit system username.
  - ❖ ID.

The input and output design instructions must be read carefully, exactly according to the attached examples.

There are executable programs (windows and Linux) in the forum, you can run them on your computer and it may help you understand better.

The automation grading system checks that your output is the same as the expected output and therefore your output must be **exactly the same** as the examples.

As so, there is a Coding Style file in the forum - read it and work accordingly.

Testing your code on the server is highly recommended to ensure there are no warnings or errors.

An exercise that will have warning(s) or error(s) will get a fine that will reach 100 points.

You are reminded that thinking together is a blessing, working together is cheating.

An exercise that the system will catch as a “copy” will result in **0** - for everyone involved, and additional actions will take place.

In the development of your code, you can use any work environment.

The main thing is that you know how to take the code files from this environment, check them on the university servers, and submit them using the submission system.

Please note that you submit only the files containing your code, and not unnecessary files created by the work environment.

Also, **DO NOT** submit files/folders with names containing Hebrew characters.

Please note that it is not possible to copy a file with a path containing Hebrew characters to the university's servers.

There is no “active” compilation in python and therefore no compile command.

To run the program:

```
python3 ex7.py
```

---

### How to start?

If you don't already have Python on your computer, you can download it here:

<https://www.python.org/>

after you did it, you may want to download pycharm, but vscode is good as well.

That's it, start to work!

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### Instructions specific to this exercise

1. Please notice you need to submit **only** two files, ~~beside the git dir:~~ ex7.py and hoenn\_pokedex.csv.
2. There will be no coding style check in this assignment.
3. There will be a check of input-output, and **a check that you didn't use any library other than `csv`** that was already given in the git file.
4. You are given ex7.py with:
  - a. a function to read the csv file and store it inside a list of pokemons, while each pokemon is a dictionary.
  - b. the functions signatures I used - **you can change anything you want, just don't use any library.**

5. There is an optional part at the end - you are encouraged to look at it **only after you finish the exercise and submit it**, cuz it's not a part of the check and it will cause errors in the grades check if you submit it.
6. You have a csv file with the pokemons data. It's different pokemons this time, but it's the same concept.
7. The data structure is a little different from ex6, but it's easier. It will help you finish quickly and learn for the upcoming test. see the new structure below.
8. In python, you don't need to worry about the memory, so this part will also be easier.

---

### Data structure Visualization of the exercise



There will be multiple owners, each owner is a node in a BST tree, based on their names.

Each owner will have a Pokedex, and each Pokedex is a list, the list will be sorted by default by the insertion order of the pokemons.

The main purpose of this exercise is to help you understand the syntax of python, so try to do it alone.

For thus who does not familiar with the pokemon franchise:

Pokemons are monsters that you can “catch” in Pokeballs.

Every pokemon you meet, you are indexing in the pokedex (the pokedex is like a recorder for the pokemons you encounter).

That’s all the context you need to know IMO.

In the exercise - we will always open a pokedex with a starter pokemon (Torchic, Mudkip or Treecko), and then we can enter more pokemons to the pokedex later on.

If you wanna see how each pokemon looks, here you go:

<https://www.pokemon.com/us/pokedex> (if you wanna see this pokemons exercise, look at 252 (Treecko)).

---

### **Part zero - Main menu**

This part is already implemented for you.

In this part, you will need to read the data from the csv file and store it in a variable named HOENN\_DATA.

For your learning, try to understand what each row in the “def

`read_hoenn_csv(filename):`” does.

---

### **Part one - Main Menu**

Just print the Main menu:

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon

5. Print All

6. Exit

Your choice:

---

### **Part two - Create a Pokedex**

When the user chooses 1 - you will let him enter its name and choose a starter:

=== Main Menu ===

1. New Pokedex

2. Existing Pokedex

3. Delete a Pokedex

4. Display owners by number of Pokemon

5. Print All

6. Exit

Your choice: 1

Owner name: Eliyahu

Choose your starter Pokemon:

1) Treecko

2) Torchic

3) Mudkip

Your choice: 2

New Pokedex created for Eliyahu with starter Torchic.

=== Main Menu ===

....

Please notice, the owners are in BST with their names as "the key".

We are not allowing duplicates, and this time, we are considering CAPS and normal letters the same:

Your choice: 1

Owner name: eliyahu

Owner 'eliyahu' already exists. No new Pokedex created.

please notice the output, even though the pokedex we have is “Eliyahu” and not “eliyahu”.

---

### **Part three - Enter an Existing Pokedex**

In this part, you need to “enter” an existing pokedex, but this time - it will be by name.

What does it mean? see yourself:

...

6. Exit

Your choice: 2

Owner name: Eliya

Owner 'Eliya' not found.

=== Main Menu ===

1. New Pokedex

2. Existing Pokedex

3. Delete a Pokedex

4. Display owners by number of Pokemon

5. Print All

6. Exit

Your choice: 2

Owner name: Eliyahu

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex

3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice:



After we enter an existing pokedex, we will have the above options, and I will explain each one here briefly.

You can see a full example at the end of the file as usual.

### **Add Pokemon**

As it sounds, please notice there is a different range this time (figure out the range yourselves), and this time the pokemons are stored in a simple list, the first pokemon will be the first, the second - the second, and so on.

#### Example:

-- Eliyahu's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 6

Pokemon Blaziken (ID 6) added to Eliyahu's Pokedex.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 6

Pokemon already in the list. No changes made.

-- Eliyahu's Pokedex Menu --

...

## **Display Pokedex**

In this part, try to do each display logic in one row.

You will get the same points if you don't do it in one row, but it's good for you to know.

We will have an inner menu again, but it's quite simple while you get the hang of it.

In each display, we will print the desired pokemons in the order the user entered them to the pokedex.

and if there aren't any pokemons to display after the user choice - we will print: "There are no Pokemons in this Pokedex that match the criteria."

In each part, it doesn't matter if the user entered the input in CAPS letters, or normal letters, or even a mix.

Please notice, even if the user entered no existing type, or whatever, the print will be the same.

The inner menu is:

...

5. Back to Main

Your choice: 2

-- Display Filter Menu --

1. Only a certain Type

2. Only Evolvable

3. Only Attack above \_\_

4. Only HP above \_\_

5. Only names starting with letter(s)

6. All of them!

7. Back

Your choice:

Each option is self explainable, but yet, I will explain each one:

**Option One** - the user will enter a type (not a list, a text), and we will display all the pokemons in the pokedex with this type. (in their indexes order)

**Option Two** - just print the evolvable pokemons in the pokedex.

**Option Three** - the user will enter a number, and we will print all the pokemon with their attack strictly above this number.

**Option Four** - the user will enter a number, and we will print all the pokemon with their HP strictly above this number.

**Option Five** - the user will enter a letter(s) and we will print all the pokemons that start with this letter(s).

**Option Six** - just print the whole pokedex.

Example:

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 1

Which Type? (e.g. GRASS, WATER): fire

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 6, Name: Blaziken, Type: Fire, HP: 80, Attack: 120, Can Evolve: FALSE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 1

Which Type? (e.g. GRASS, WATER): **Fire**

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 6, Name: Blaziken, Type: Fire, HP: 80, Attack: 120, Can Evolve: FALSE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_
4. Only HP above \_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: **1**

Which Type? (e.g. GRASS, WATER): **I will write whatever I want**

There are no Pokemons in this Pokedex that match the criteria.

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_
4. Only HP above \_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: **1**

Which Type? (e.g. GRASS, WATER): **water**

There are no Pokemons in this Pokedex that match the criteria.

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable

3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 2

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 45, Name: Makuhita, Type: Fighting, HP: 72, Attack: 60, Can Evolve: TRUE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 3

Enter Attack threshold: 65

ID: 6, Name: Blaziken, Type: Fire, HP: 80, Attack: 120, Can Evolve: FALSE

ID: 13, Name: Linoone, Type: Normal, HP: 78, Attack: 70, Can Evolve: FALSE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 4

Enter HP threshold: 78

ID: 6, Name: Blaziken, Type: Fire, HP: 80, Attack: 120, Can Evolve: FALSE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 5

Starting letter(s): mak

ID: 45, Name: Makuhita, Type: Fighting, HP: 72, Attack: 60, Can Evolve: TRUE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 5

Starting letter(s): t

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_

4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 6

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 6, Name: Blaziken, Type: Fire, HP: 80, Attack: 120, Can Evolve: FALSE

ID: 50, Name: Delcatty, Type: Normal, HP: 70, Attack: 65, Can Evolve: FALSE

ID: 45, Name: Makuhita, Type: Fighting, HP: 72, Attack: 60, Can Evolve: TRUE

ID: 13, Name: Linoone, Type: Normal, HP: 78, Attack: 70, Can Evolve: FALSE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 7

Back to Pokedex Menu.

-- Eliyahu's Pokedex Menu --

....

### **Release Pokemon**

As it sounds, but this time, by name - not by ID.

And remember, it's a list, not a tree.

Example:

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 3

Enter Pokemon Name to release: toRchic

Releasing Torchic from Eliyahu.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 3

Enter Pokemon Name to release: what

No Pokemon named 'what' in Eliyahu's Pokedex.

## **Evolve Pokemon**

As it sounds, but this time, by name - not by ID.

And remember, it's a list, not a tree.

Plus, we are still not allowing duplicates, so if we evolve a pokemon and its evolution is already there - we will release this pokemon after a corresponding message.

If the pokemon evolution was not in the pokedex in the pokedex, we will remove the previous pokemon and enter its evolution at the end of the list (normal insertion).

for the example, consider this pokedex:

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 2, Name: Grovyle, Type: Grass, HP: 50, Attack: 65, Can Evolve: TRUE

ID: 7, Name: Mudkip, Type: Water, HP: 50, Attack: 70, Can Evolve: TRUE

ID: 10, Name: Poochyena, Type: Dark, HP: 35, Attack: 55, Can Evolve: TRUE

ID: 13, Name: Linoone, Type: Normal, HP: 78, Attack: 70, Can Evolve: FALSE

ID: 17, Name: Cascoon, Type: Bug, HP: 50, Attack: 35, Can Evolve: TRUE



ID: 8, Name: Marshtomp, Type: Water, HP: 70, Attack: 85, Can Evolve: TRUE

ID: 100, Name: Castform, Type: Normal, HP: 70, Attack: 70, Can Evolve: FALSE

### Example:

-- Eliyahu's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 4

Enter Pokemon Name to evolve: mudkip

Pokemon evolved from Mudkip (ID 7) to Marshtomp (ID 8).

Marshtomp was already present; releasing it immediately.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 4

Enter Pokemon Name to evolve: grovyle

Pokemon evolved from Grovyle (ID 2) to Sceptile (ID 3).

---

### **Part four - Delete a Pokedex**

As it sounds, please notice you are removing the owner from a BST, so the rules are as you already know:

a leaf? just remove.

a parent to one child only? replace it with the child.

none of the above? replace with the following and then remove.

Btw, the user will enter a name to remove.

If he entered a name that we don't have, we will display a corresponding message.

Please remember, the python environment is handling the memory cleaning.

It's so free when you don't need to free ah? 😊

### Example

you will see a full example at the end, for now:

```
=== Main Menu ===
```

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 3

Enter owner to delete: eliyahu

Deleting eliyahu's entire Pokedex...

Pokedex deleted.

```
=== Main Menu ===
```

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 3

Enter owner to delete: f

Owner 'f' not found.

```
=== Main Menu ===
```

....

(yet again, we registered as Eliyahu, but prompt "eliyahu").

---

### **Part five - Display owners by number of Pokemon**

In this part, you will need to just print the owners, in ascending order, based on the number of pokemons each one has.

a tie? alphabetically will decide it.

What if we have no owners?

we will display: "No owners at all."

Two notes:

1. The order is by alphabetical order as if all the names are written in lowercase.
2. If there are no pokemons for some owner, we will print for him the following line:

There are no Pokemons in this Pokedex that match the criteria.

See the exe if you have further questions.

Example:

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 4

=== The Owners we have, sorted by number of Pokemons ===

Owner: Eliyahu the second (has 1 Pokemon)

Owner: Ofeq (has 1 Pokemon)

Owner: Eliyahu (has 2 Pokemon)

---

### **Part six - Printing Owners**

Yet again, we have 4 options for printing, I'll just show a small example right now, you can see below a full example.

Please notice, we will print all the owners, and their pokemons.

Small Example:

....

5. Print All

6. Exit

Your choice: 5

1) BFS

2) Pre-Order

3) In-Order

4) Post-Order

Your choice: 1

Owner: Eliyahu the second

ID: 7, Name: Mudkip, Type: Water, HP: 50, Attack: 70, Can Evolve: TRUE

Owner: Eliyahu

ID: 7, Name: Mudkip, Type: Water, HP: 50, Attack: 70, Can Evolve: TRUE

ID: 10, Name: Poochyena, Type: Dark, HP: 35, Attack: 55, Can Evolve: TRUE

Owner: Ofeq

ID: 7, Name: Mudkip, Type: Water, HP: 50, Attack: 70, Can Evolve: TRUE

Owner: r

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

=== Main Menu ===

....

---

**Part Seven - AN OPTIONAL PART, DO IT ONLY AFTER YOU DONE**

Please, you must **not** submit your code with this part, it will cause all your outputs to be wrong, so submit your work, and only after, have fun here.

## **GUI**

a GUI is a Generic User Interface, which helps us to “draw” on the screen in a new window.

you can use it to create small games, and for displaying pokedexes :)

Open the cmd and write:

### **pip install pillow**

add this after, in the top of your ex7.py:

```
from pokedex_gui import show_Pokedex_GUI
```

add another option in the pokedex menu:

```
elif choice == 5:  
    show_Pokedex_GUI(node["pokedex"])
```

The pokedex\_gui.py and the folder you already cloned from the git, will do the rest.

Run the code and have fun! 😊

If the GUI doesn't work for you, you can see the reason in the forum and take the code your friend provided there.

---

## **Full Example:**

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 1

Owner name: Eliyahu

Choose your starter Pokemon:

1) Treecko

2) Torchic

3) Mudkip

Your choice: 3

New Pokedex created for Eliyahu with starter Mudkip.

=== Main Menu ===

1. New Pokedex

2. Existing Pokedex

3. Delete a Pokedex

4. Display owners by number of Pokemon

5. Print All

6. Exit

Your choice: 1

Owner name: Noa

Choose your starter Pokemon:

1) Treecko

2) Torchic

3) Mudkip

Your choice: 2

New Pokedex created for Noa with starter Torchic.

=== Main Menu ===

1. New Pokedex

2. Existing Pokedex

3. Delete a Pokedex

4. Display owners by number of Pokemon

5. Print All

6. Exit

Your choice: 1

Owner name: Itai

Choose your starter Pokemon:

- 1) Treecko
- 2) Torchic
- 3) Mudkip

Your choice: 1

New Pokedex created for Itai with starter Treecko.

=== Main Menu ===

- 1. New Pokedex
- 2. Existing Pokedex
- 3. Delete a Pokedex
- 4. Display owners by number of Pokemon
- 5. Print All
- 6. Exit

Your choice: 1

Owner name: Shalom

Choose your starter Pokemon:

- 1) Treecko
- 2) Torchic
- 3) Mudkip

Your choice: 2

New Pokedex created for Shalom with starter Torchic.

=== Main Menu ===

- 1. New Pokedex
- 2. Existing Pokedex
- 3. Delete a Pokedex
- 4. Display owners by number of Pokemon
- 5. Print All
- 6. Exit

Your choice: 1

Owner name: Einat

Choose your starter Pokemon:

1) Treecko

2) Torchic

3) Mudkip

Your choice: 3

New Pokedex created for Einat with starter Mudkip.

=== Main Menu ===

1. New Pokedex

2. Existing Pokedex

3. Delete a Pokedex

4. Display owners by number of Pokemon

5. Print All

6. Exit

Your choice: 2

Owner name: eliyahu

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex

3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 101

Pokemon Kecleon (ID 101) added to Eliyahu's Pokedex.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex



3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 130

Pokemon Latios (ID 130) added to Eliyahu's Pokedex.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex

3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 4

Pokemon Torchic (ID 4) added to Eliyahu's Pokedex.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex

3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 4

Pokemon already in the list. No changes made.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex

3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice: 2

-- Display Filter Menu --

1. Only a certain Type

2. Only Evolvable

3. Only Attack above \_\_\_\_

4. Only HP above \_\_\_\_

5. Only names starting with letter(s)

6. All of them!

7. Back

Your choice: 6

ID: 7, Name: Mudkip, Type: Water, HP: 50, Attack: 70, Can Evolve: TRUE

ID: 101, Name: Kecleon, Type: Normal, HP: 60, Attack: 90, Can Evolve: FALSE

ID: 130, Name: Latios, Type: Dragon, HP: 80, Attack: 90, Can Evolve: FALSE

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

-- Display Filter Menu --

1. Only a certain Type

2. Only Evolvable

3. Only Attack above \_\_\_\_

4. Only HP above \_\_\_\_

5. Only names starting with letter(s)

6. All of them!

7. Back

Your choice: 4

Enter HP threshold: 90

There are no Pokemons in this Pokedex that match the criteria.

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 3

Enter Attack threshold: 89

ID: 101, Name: Kecleon, Type: Normal, HP: 60, Attack: 90, Can Evolve: FALSE

ID: 130, Name: Latios, Type: Dragon, HP: 80, Attack: 90, Can Evolve: FALSE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!
7. Back

Your choice: 2

ID: 7, Name: Mudkip, Type: Water, HP: 50, Attack: 70, Can Evolve: TRUE

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

-- Display Filter Menu --

1. Only a certain Type
2. Only Evolvable
3. Only Attack above \_\_\_\_
4. Only HP above \_\_\_\_
5. Only names starting with letter(s)
6. All of them!

7. Back

Your choice: 7

Back to Pokedex Menu.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex

3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice: 4

Enter Pokemon Name to evolve: 4

No Pokemon named '4' in Eliyahu's Pokedex.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex

3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice: 3

Enter Pokemon Name to release: mudkip

Releasing Mudkip from Eliyahu.

-- Eliyahu's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex

3. Release Pokemon

4. Evolve Pokemon

5. Back to Main

Your choice: 4

Enter Pokemon Name to evolve: torchic

Pokemon evolved from Torchic (ID 4) to Combusken (ID 5).

-- Eliyahu's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 5

Back to Main Menu.

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 2

Owner name: Itai

-- Itai's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 77

Pokemon Trapinch (ID 77) added to Itai's Pokedex.

-- Itai's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 66

Pokemon Swalot (ID 66) added to Itai's Pokedex.

-- Itai's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 55

Pokemon Aggron (ID 55) added to Itai's Pokedex.

-- Itai's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 5

Back to Main Menu.

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 2

Owner name: Noa

-- Noa's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 11

Pokemon Mightyena (ID 11) added to Noa's Pokedex.

-- Noa's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 22

Pokemon Seedot (ID 22) added to Noa's Pokedex.

-- Noa's Pokedex Menu --

1. Add Pokemon

2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 1

Enter Pokemon ID to add: 33

Pokemon Masquerain (ID 33) added to Noa's Pokedex.

-- Noa's Pokedex Menu --

1. Add Pokemon
2. Display Pokedex
3. Release Pokemon
4. Evolve Pokemon
5. Back to Main

Your choice: 5

Back to Main Menu.

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 4

=== The Owners we have, sorted by number of Pokemons ===

Owner: Einat (has 1 Pokemon)

Owner: Shalom (has 1 Pokemon)

Owner: Eliyahu (has 3 Pokemon)

Owner: Itai (has 4 Pokemon)

Owner: Noa (has 4 Pokemon)



=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 3

Enter owner to delete: eiNAt

Deleting eiNAt's entire Pokedex...

Pokedex deleted.

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 4

=== The Owners we have, sorted by number of Pokemons ===

Owner: Shalom (has 1 Pokemon)

Owner: Eliyahu (has 3 Pokemon)

Owner: Itai (has 4 Pokemon)

Owner: Noa (has 4 Pokemon)

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex

4. Display owners by number of Pokemon

5. Print All

6. Exit

Your choice: 5

1) BFS

2) Pre-Order

3) In-Order

4) Post-Order

Your choice: 1

Owner: Eliyahu

ID: 101, Name: Kecleon, Type: Normal, HP: 60, Attack: 90, Can Evolve: FALSE

ID: 130, Name: Latios, Type: Dragon, HP: 80, Attack: 90, Can Evolve: FALSE

ID: 5, Name: Combusken, Type: Fire, HP: 60, Attack: 85, Can Evolve: TRUE

Owner: Noa

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 11, Name: Mightyena, Type: Dark, HP: 70, Attack: 90, Can Evolve: FALSE

ID: 22, Name: Seedot, Type: Grass, HP: 40, Attack: 40, Can Evolve: TRUE

ID: 33, Name: Masquerain, Type: Bug, HP: 70, Attack: 60, Can Evolve: FALSE

Owner: Itai

ID: 1, Name: Treecko, Type: Grass, HP: 40, Attack: 45, Can Evolve: TRUE

ID: 77, Name: Trapinch, Type: Ground, HP: 45, Attack: 100, Can Evolve: TRUE

ID: 66, Name: Swalot, Type: Poison, HP: 100, Attack: 73, Can Evolve: FALSE

ID: 55, Name: Aggron, Type: Steel, HP: 70, Attack: 110, Can Evolve: FALSE

Owner: Shalom

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 1

Owner name: Abba

Choose your starter Pokemon:

- 1) Treecko
- 2) Torchic
- 3) Mudkip

Your choice: 2

New Pokedex created for Abba with starter Torchic.

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 5

- 1) BFS
- 2) Pre-Order
- 3) In-Order
- 4) Post-Order

Your choice: 1

Owner: Eliyahu

ID: 101, Name: Kecleon, Type: Normal, HP: 60, Attack: 90, Can Evolve: FALSE

ID: 130, Name: Latios, Type: Dragon, HP: 80, Attack: 90, Can Evolve: FALSE

ID: 5, Name: Combusken, Type: Fire, HP: 60, Attack: 85, Can Evolve: TRUE

Owner: Abba

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

Owner: Noa

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 11, Name: Mightyena, Type: Dark, HP: 70, Attack: 90, Can Evolve: FALSE

ID: 22, Name: Seedot, Type: Grass, HP: 40, Attack: 40, Can Evolve: TRUE

ID: 33, Name: Masquerain, Type: Bug, HP: 70, Attack: 60, Can Evolve: FALSE

Owner: Itai

ID: 1, Name: Treecko, Type: Grass, HP: 40, Attack: 45, Can Evolve: TRUE

ID: 77, Name: Trapinch, Type: Ground, HP: 45, Attack: 100, Can Evolve: TRUE

ID: 66, Name: Swalot, Type: Poison, HP: 100, Attack: 73, Can Evolve: FALSE

ID: 55, Name: Aggron, Type: Steel, HP: 70, Attack: 110, Can Evolve: FALSE

Owner: Shalom

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

=== Main Menu ===

1. New Pokedex
  2. Existing Pokedex
  3. Delete a Pokedex
  4. Display owners by number of Pokemon
  5. Print All
  6. Exit
- Your choice: 5
- 1) BFS
  - 2) Pre-Order

3) In-Order

4) Post-Order

Your choice: 2

Owner: Eliyahu

ID: 101, Name: Kecleon, Type: Normal, HP: 60, Attack: 90, Can Evolve: FALSE

ID: 130, Name: Latios, Type: Dragon, HP: 80, Attack: 90, Can Evolve: FALSE

ID: 5, Name: Combusken, Type: Fire, HP: 60, Attack: 85, Can Evolve: TRUE

Owner: Abba

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

Owner: Noa

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 11, Name: Mightyena, Type: Dark, HP: 70, Attack: 90, Can Evolve: FALSE

ID: 22, Name: Seedot, Type: Grass, HP: 40, Attack: 40, Can Evolve: TRUE

ID: 33, Name: Masquerain, Type: Bug, HP: 70, Attack: 60, Can Evolve: FALSE

Owner: Itai

ID: 1, Name: Treecko, Type: Grass, HP: 40, Attack: 45, Can Evolve: TRUE

ID: 77, Name: Trapinch, Type: Ground, HP: 45, Attack: 100, Can Evolve: TRUE

ID: 66, Name: Swalot, Type: Poison, HP: 100, Attack: 73, Can Evolve: FALSE

ID: 55, Name: Aggron, Type: Steel, HP: 70, Attack: 110, Can Evolve: FALSE

Owner: Shalom

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

=== Main Menu ===

1. New Pokedex

2. Existing Pokedex

3. Delete a Pokedex

4. Display owners by number of Pokemon

5. Print All

6. Exit

Your choice: 5

1) BFS

2) Pre-Order

3) In-Order

4) Post-Order

Your choice: 3

Owner: Abba

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

Owner: Eliyahu

ID: 101, Name: Kecleon, Type: Normal, HP: 60, Attack: 90, Can Evolve: FALSE

ID: 130, Name: Latios, Type: Dragon, HP: 80, Attack: 90, Can Evolve: FALSE

ID: 5, Name: Combusken, Type: Fire, HP: 60, Attack: 85, Can Evolve: TRUE

Owner: Itai

ID: 1, Name: Treecko, Type: Grass, HP: 40, Attack: 45, Can Evolve: TRUE

ID: 77, Name: Trapinch, Type: Ground, HP: 45, Attack: 100, Can Evolve: TRUE

ID: 66, Name: Swalot, Type: Poison, HP: 100, Attack: 73, Can Evolve: FALSE

ID: 55, Name: Aggron, Type: Steel, HP: 70, Attack: 110, Can Evolve: FALSE

Owner: Noa

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 11, Name: Mightyena, Type: Dark, HP: 70, Attack: 90, Can Evolve: FALSE

ID: 22, Name: Seedot, Type: Grass, HP: 40, Attack: 40, Can Evolve: TRUE

ID: 33, Name: Masquerain, Type: Bug, HP: 70, Attack: 60, Can Evolve: FALSE

Owner: Shalom

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 5

- 1) BFS
- 2) Pre-Order
- 3) In-Order
- 4) Post-Order

Your choice: 4

Owner: Abba

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

Owner: Itai

ID: 1, Name: Treecko, Type: Grass, HP: 40, Attack: 45, Can Evolve: TRUE

ID: 77, Name: Trapinch, Type: Ground, HP: 45, Attack: 100, Can Evolve: TRUE

ID: 66, Name: Swalot, Type: Poison, HP: 100, Attack: 73, Can Evolve: FALSE

ID: 55, Name: Aggron, Type: Steel, HP: 70, Attack: 110, Can Evolve: FALSE

Owner: Shalom

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

Owner: Noa

ID: 4, Name: Torchic, Type: Fire, HP: 45, Attack: 60, Can Evolve: TRUE

ID: 11, Name: Mightyena, Type: Dark, HP: 70, Attack: 90, Can Evolve: FALSE

ID: 22, Name: Seedot, Type: Grass, HP: 40, Attack: 40, Can Evolve: TRUE

ID: 33, Name: Masquerain, Type: Bug, HP: 70, Attack: 60, Can Evolve: FALSE

Owner: Eliyahu

ID: 101, Name: Kecleon, Type: Normal, HP: 60, Attack: 90, Can Evolve: FALSE

ID: 130, Name: Latios, Type: Dragon, HP: 80, Attack: 90, Can Evolve: FALSE

ID: 5, Name: Combusken, Type: Fire, HP: 60, Attack: 85, Can Evolve: TRUE

=== Main Menu ===

1. New Pokedex
2. Existing Pokedex
3. Delete a Pokedex
4. Display owners by number of Pokemon
5. Print All
6. Exit

Your choice: 6

Goodbye!