

Pokédex Project Report

Purpose of the Pokédex Program:

- The Pokédex is an electronic device that gives information about Pokémon. This specific Pokédex is programmed to inform the user about a Pokémon's name and their type based on their specific number between 1 and 151.

How it was programmed:

- Dictionary
 - This is where all the Pokémon data is stored. All 151 Pokémon have a specific key number assigned to them. This database includes every Pokémon's name and type.
- List
 - The list in this specific code lists out all of the Pokémon types: Normal, Fire, Water, Grass, Flying, Fighting, Poison, Electric, Ground, Rock, Psychic, Ice, Bug, Ghost, Steel, Dragon, Dark, and Fairy.
- Loops
 - Client Side:
 - The loop on the client side talks to the user asking them to type in a number, whether or not they want to continue looking for Pokémon, or if they want to end the connection.
 - Server Side:
 - The loop on the server side waits for the client to connect.
- Function
 - The function allowed for the client to be served by the server. The server receives a number typed in from the client and sends a Pokémon's information from the dictionary.
- Socket
 - The socket allows for the server and client to actually connect by being assigned to the same address.

Problem Statements:

- Problem: The client or user is unaware of the first generation of Pokémon (1-151).
- Solution: The Pokédex program feeds the client Pokémon knowledge.

Machine: 2019 MacBook Pro 13-inch

- Hardware
 - Processor: 2.4 GHz Quad-Core Intel Core i5
 - Graphics: Intel Iris Plus Graphics 655 1536 MB
 - Memory: 8 GB 2133 MHz LPDDR3

- Ports: Four Thunderbolt 3 ports
- Software
 - macOS: Sonoma Version 14.1.2
 - Python IDLE
 - Visual Studio Code

Server Code:

```
import socket

#Create the database for the 151 Pokémon
pokedex_database = {
  1:{"Name": "Bulbasaur", "Type": "Grass/Poison"},
  2:{"Name": "Ivysaur", "Type": "Grass/Poison"},
  3:{"Name": "Venusaur", "Type": "Grass/Poison"},
  4:{"Name": "Charmander", "Type": "Fire"},
  5:{"Name": "Charmeleon", "Type": "Fire"},
  6:{"Name": "Charizard", "Type": "Fire/Flying"},
  7:{"Name": "Squirtle", "Type": "Water"},
  8:{"Name": "Wartortle", "Type": "Water"},
  9:{"Name": "Blastoise", "Type": "Water"},
  10:{"Name": "Caterpie", "Type": "Bug"},
  11:{"Name": "Metapod", "Type": "Bug"},
  12:{"Name": "Butterfree", "Type": "Bug/Flying"},
  13:{"Name": "Weedle", "Type": "Bug/Poison"},
  14:{"Name": "Kakuna", "Type": "Bug/Poison"},
  15:{"Name": "Beedrill", "Type": "Bug/Poison"},
  16:{"Name": "Pidgey", "Type": "Normal/Flying"},
  17:{"Name": "Pidgeotto", "Type": "Normal/Flying"},
  18:{"Name": "Pidgeot", "Type": "Normal/Flying"},
  19:{"Name": "Rattata", "Type": "Normal"},
  20:{"Name": "Raticate", "Type": "Normal"},
  21:{"Name": "Spearow", "Type": "Normal/Flying"},
  22:{"Name": "Fearow", "Type": "Normal/Flying"},
  23:{"Name": "Ekans", "Type": "Poison"},
  24:{"Name": "Arbok", "Type": "Poison"},
  25:{"Name": "Pikachu", "Type": "Electric"},
  26:{"Name": "Raichu", "Type": "Electric"},
  27:{"Name": "Sandshrew", "Type": "Ground"},
  28:{"Name": "Sandslash", "Type": "Ground"},
  29:{"Name": "Nidoran (Female)", "Type": "Poison"},
  30:{"Name": "Nidorina", "Type": "Poison"},
  31:{"Name": "Nidoqueen", "Type": "Poison/Ground"},
  32:{"Name": "Nidoran (Male)", "Type": "Poison"},
  33:{"Name": "Nidorino", "Type": "Poison"},
  34:{"Name": "Nidoking", "Type": "Poison/Ground"},
  35:{"Name": "Clefairy", "Type": "Fairy"},
  36:{"Name": "Clefable", "Type": "Fairy"},
  37:{"Name": "Vulpix", "Type": "Fire"},
  38:{"Name": "Ninetails", "Type": "Fire"},
  39:{"Name": "Jigglypuff", "Type": "Normal/Fairy"},
  40:{"Name": "Wigglytuff", "Type": "Normal/Fairy"},
  41:{"Name": "Zubat", "Type": "Poison/Flying"},
  42:{"Name": "Golbat", "Type": "Poison/Flying"},
  43:{"Name": "Oddish", "Type": "Grass/Poison"},
  44:{"Name": "Gloom", "Type": "Grass/Poison"},
  45:{"Name": "Vileplume", "Type": "Grass/Poison"},
  46:{"Name": "Paras", "Type": "Bug/Grass"},
  47:{"Name": "Parasect", "Type": "Bug/Grass"},
  48:{"Name": "Venonat", "Type": "Bug/Poison"},
  49:{"Name": "Venomoth", "Type": "Bug/Poison"},
  50:{"Name": "Diglett", "Type": "Ground"},
  51:{"Name": "Dugtrio", "Type": "Ground"},
  52:{"Name": "Meowth", "Type": "Normal"},
  53:{"Name": "Persian", "Type": "Normal"},
  54:{"Name": "Psyduck", "Type": "Water"},
  55:{"Name": "Golduck", "Type": "Water"},
  56:{"Name": "Mankey", "Type": "Fighting"},
  57:{"Name": "Primeape", "Type": "Fighting"},
  58:{"Name": "Growlithe", "Type": "Fire"},
  59:{"Name": "Arcanine", "Type": "Fire"},
  60:{"Name": "Poliwhag", "Type": "Water"},
  61:{"Name": "Poliwhirl", "Type": "Water"},
  62:{"Name": "Poliwrath", "Type": "Water/Fighting"},
  63:{"Name": "Abra", "Type": "Psychic"},
  64:{"Name": "Kadabra", "Type": "Psychic"}
```

```
62:{"Name": "Poliwrath", "Type": "Water/Fighting"},
63:{"Name": "Abra", "Type": "Psychic"},
64:{"Name": "Kadabra", "Type": "Psychic"},
65:{"Name": "Alakazam", "Type": "Psychic"},
66:{"Name": "Machop", "Type": "Fighting"},
67:{"Name": "Machoke", "Type": "Fighting"},
68:{"Name": "Machop", "Type": "Fighting"},
69:{"Name": "Bellsprout", "Type": "Grass/Poison"},
70:{"Name": "Weepinbell", "Type": "Grass/Poison"},
71:{"Name": "Victreebel", "Type": "Grass/Poison"},
72:{"Name": "Tentacool", "Type": "Water/Poison"},
73:{"Name": "Tentacruel", "Type": "Water/Poison"},
74:{"Name": "Geodude", "Type": "Rock/Ground"},
75:{"Name": "Graveler", "Type": "Rock/Ground"},
76:{"Name": "Golem", "Type": "Rock/Ground"},
77:{"Name": "Ponyta", "Type": "Fire"},
78:{"Name": "Rapidash", "Type": "Fire"},
79:{"Name": "Slowpoke", "Type": "Water/Psychic"},
80:{"Name": "Slowbro", "Type": "Water/Psychic"},
81:{"Name": "Magnemite", "Type": "Electric/Steel"},
82:{"Name": "Magnetron", "Type": "Electric/Steel"},
83:{"Name": "Farfetch'd", "Type": "Normal/Flying"},
84:{"Name": "Dugtrio", "Type": "Normal/Flying"},
85:{"Name": "Dodrio", "Type": "Normal/Flying"},
86:{"Name": "Seel", "Type": "Water"},
87:{"Name": "Dewgong", "Type": "Water"},
88:{"Name": "Grimer", "Type": "Poison"},
89:{"Name": "Muk", "Type": "Poison"},
90:{"Name": "Shellder", "Type": "Water"},
91:{"Name": "Cloyster", "Type": "Water/Ice"},
92:{"Name": "Gastly", "Type": "Ghost/Poison"},
93:{"Name": "Haunter", "Type": "Ghost/Poison"},
94:{"Name": "Gengar", "Type": "Ghost/Poison"},
95:{"Name": "Onix", "Type": "Rock/Ground"},
96:{"Name": "Drowzee", "Type": "Psychic"},
97:{"Name": "Hypno", "Type": "Psychic"},
98:{"Name": "Krabby", "Type": "Water"},
99:{"Name": "Kingler", "Type": "Water"},
100:{"Name": "Voltorb", "Type": "Electric"},
101:{"Name": "Electrode", "Type": "Electric"},
102:{"Name": "Exeggcute", "Type": "Grass/Psychic"},
103:{"Name": "Exeggutor", "Type": "Grass/Psychic"},
104:{"Name": "Cubone", "Type": "Ground"},
105:{"Name": "Marowak", "Type": "Ground"},
106:{"Name": "Hitmonlee", "Type": "Fighting"},
107:{"Name": "Hitmonchan", "Type": "Fighting"},
108:{"Name": "Lickitung", "Type": "Normal"},
109:{"Name": "Koffing", "Type": "Poison"},
110:{"Name": "Weezing", "Type": "Poison"},
111:{"Name": "Rhyhorn", "Type": "Ground/Rock"},
112:{"Name": "Rhydon", "Type": "Ground/Rock"},
113:{"Name": "Chansey", "Type": "Normal"},
114:{"Name": "Tangela", "Type": "Grass"},
115:{"Name": "Kangaskhan", "Type": "Normal"},
116:{"Name": "Horsea", "Type": "Water"},
117:{"Name": "Seadra", "Type": "Water"},
118:{"Name": "Goldeen", "Type": "Water"},
119:{"Name": "Seaking", "Type": "Water"},
120:{"Name": "Staryu", "Type": "Water"},
121:{"Name": "Starmie", "Type": "Water"},
122:{"Name": "Mr. Mime", "Type": "Psychic/Fairy"},
123:{"Name": "Scyther", "Type": "Bug/Flying"},
124:{"Name": "Jynx", "Type": "Ice/Psychic"},
125:{"Name": "Electabuzz", "Type": "Electric"},
126:{"Name": "Magmar", "Type": "Fire"},
127:{"Name": "Pinsir", "Type": "Bug"},
128:{"Name": "Tauros", "Type": "Normal"},
129:{"Name": "Mauikaro", "Type": "Water"}
```

```

124:{"Name": "Jynx", "Type": "Ice/Psychic"},
125:{"Name": "Electabuzz", "Type": "Electric"},
126:{"Name": "Magmar", "Type": "Fire"},
127:{"Name": "Pinsir", "Type": "Bug"},
128:{"Name": "Tauros", "Type": "Normal"},
129:{"Name": "Magikarp", "Type": "Water"},
130:{"Name": "Gyrados", "Type": "Water/Flying"},
131:{"Name": "Lapras", "Type": "Water/Ice"},
132:{"Name": "Ditto", "Type": "Normal"},
133:{"Name": "Eevee", "Type": "Normal"},
134:{"Name": "Vaporeon", "Type": "Water"},
135:{"Name": "Jolteon", "Type": "Electric"},
136:{"Name": "Flareon", "Type": "Fire"},
137:{"Name": "Porygon", "Type": "Normal"},
138:{"Name": "Omanyte", "Type": "Rock/Water"},
139:{"Name": "Omastar", "Type": "Rock/Water"},
140:{"Name": "Kabuto", "Type": "Rock/Water"},
141:{"Name": "Kabutops", "Type": "Rock/Water"},
142:{"Name": "Aerodactyl", "Type": "Rock/Flying"},
143:{"Name": "Snorlax", "Type": "Normal"},
144:{"Name": "Articuno", "Type": "Ice/Flying"},
145:{"Name": "Zapdos", "Type": "Electric/Flying"},
146:{"Name": "Moltres", "Type": "Fire/Flying"},
147:{"Name": "Dratini", "Type": "Dragon"},
148:{"Name": "Dragonair", "Type": "Dragon"},
149:{"Name": "Dragonite", "Type": "Dragon/Flying"},
150:{"Name": "Mewtwo", "Type": "Psychic"},
151:{"Name": "Mew", "Type": "Psychic"},}

```

#List all the types of Pokémon

```
all_types = ["Normal", "Fire", "Water", "Grass", "Electric", "Ice", "Fighting", "Poison", "Ground", "Flying", "
```

#Create a function to communicate with the Client, Send a response based off of the Client's input

```

def serve_client(client_socket):
    while True:
        data = client_socket.recv(1024)
        if not data:
            break

        poke_num = int(data.decode())
        details = pokedex_database.get(poke_num)

        if details:
            response = f"Name: {details['Name']}\nType: {details['Type']}"
        else:
            response = "Pokemon not found in the Pokédex"

        client_socket.sendall(response.encode())

```

#Create the socket

```

HOST="localhost"
PORT=6780
ADDRESS=(HOST,PORT)
server=socket.socket()
server.bind(ADDRESS)
server.listen(3)
while True:
    print("Waiting for connection...")
    (client_socket,address)=server.accept()
    print("...connecting to", address)
    client_socket.send("Welcome to Your Personal Pokédex!".encode())

    #Close the connection or continue serving the Client
    try:
        serve_client(client_socket)
    finally:
        client_socket.close()

```

Client Code:

```
import socket

#Create the socket
HOST="localhost"
PORT=6780
ADDRESS=(HOST,PORT)
client=socket.socket()
client.connect(ADDRESS)
print(client.recv(1024).decode())

#Prompt the client to enter a Pokémon number (1-151)
while True:
    try:
        poke_num = int(input("To find a Pokémon in the Pokédex, Enter a Pokémon Number (1-151): "))
        if 1 <= poke_num <= 151:
            client.sendall(str(poke_num).encode())

            data = client.recv(1024)
            print("Pokémon Information:\n", data.decode())

            #Prompt the client to look for more Pokémon
            while True:
                find_poke = input("Do you want to know about other Pokémon? (yes/no)").lower()
                if find_poke in ["yes", "no"]:
                    break
                else:
                    print("Invalid input. Try again, please reply with a yes or no.")

            if find_poke != "yes":
                print("Okay, See you soon!")
                break

        else:
            print("Please enter a number between 1 and 151.")
    except ValueError:
        print("Invalid input. Please enter a number between 1-151.")

#Close the connection with the server
client.close()
```

Inputs & Outputs:

```
Python 3.11.7 (v3.11.7:fa7a6f2303, Dec 4 2023, 15:22:56) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: /Users/carlooblenna/Documents/CYSE 250/PokédexServer.py =====
Waiting for connection...
...connecting to ('127.0.0.1', 49466)
Waiting for connection...
|

Python 3.11.7 (v3.11.7:fa7a6f2303, Dec 4 2023, 15:22:56) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: /Users/carlooblenna/Documents/CYSE 250/PokédexClient.py =====
Welcome to Your Personal Pokédex!
To find a Pokémon in the Pokédex, Enter a Pokémon Number (1-151): 151
Pokémon Information:
  Name: Mew
  Type: Psychic
Do you want to know about other Pokémon? (yes/no)yes
To find a Pokémon in the Pokédex, Enter a Pokémon Number (1-151): 200
Please enter a number between 1 and 151.
To find a Pokémon in the Pokédex, Enter a Pokémon Number (1-151): 23
Pokémon Information:
  Name: Ekans
  Type: Poison
Do you want to know about other Pokémon? (yes/no)maybe
Invalid input. Try again, please reply with a yes or no.
Do you want to know about other Pokémon? (yes/no)no
Okay, See you soon!
>>>|
```