PYTHON BASIC PROJECTS WITH SOLUTIONS

1. Password Generator

Steps:

1. **Import required libraries**: `random` and `string`.
2. **Define password length**.
3. **Create a character pool** (uppercase, lowercase, digits, symbols).
4. **Randomly select characters** from the pool.
5. **Generate and display the password**.

Code:

```
python
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import random
import string

def generate_password(length=12):
    characters = string.ascii_letters + string.digits +
string.punctuation
    password = ''.join(random.choice(characters) for _ in
range(length))
    return password

print("Generated Password:", generate_password(12))
```

2. To-Do List (CLI)

Steps:

1. **Create a list to store tasks**.
2. **Provide options**: Add, View, Remove, Exit.
3. **Loop until the user exits**.

Code:

```
python
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tasks = []
```

```
while True:
    print("\n1. Add Task\n2. View Tasks\n3. Remove Task\n4. Exit")
    choice = input("Enter choice: ")

    if choice == "1":
        task = input("Enter task: ")
        tasks.append(task)
        print("Task added!")

    elif choice == "2":
        print("\nTo-Do List:")
        for idx, task in enumerate(tasks, 1):
            print(f"{idx}. {task}")

    elif choice == "3":
        task_num = int(input("Enter task number to remove: "))
        if 0 < task_num <= len(tasks):
            tasks.pop(task_num - 1)
            print("Task removed!")

    elif choice == "4":
        break

    else:
        print("Invalid choice. Try again.")
```

3. Weather App (API-based)

Steps:

1. **Sign up for OpenWeatherMap API** and get an API key.
2. **Use `requests` to fetch weather data**.
3. **Display temperature, weather condition, and city name**.

Code:

```
python
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import requests

API_KEY = "your_api_key"  # Get from https://openweathermap.org/api
city = input("Enter city name: ")
```

```
url =
f"http://api.openweathermap.org/data/2.5/weather?q={city}&appid={API
_KEY}&units=metric"
response = requests.get(url).json()

if response["cod"] == 200:
    print(f"City: {response['name']}")
    print(f"Temperature: {response['main']['temp']}°C")
    print(f"Weather: {response['weather'][0]['description']}")
else:
    print("City not found!")
```

4. Number Guessing Game

Steps:

1. **Generate a random number** between 1-100.
2. **Ask the user to guess**.
3. **Give hints** if the guess is too high/low.
4. **Continue until guessed correctly**.

Code:

```
python
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import random

number = random.randint(1, 100)

while True:
    guess = int(input("Guess the number (1-100): "))
    if guess < number:
        print("Too low! Try again.")
    elif guess > number:
        print("Too high! Try again.")
    else:
        print("Congratulations! You guessed it right.")
        break
```

5. QR Code Generator

Steps:

1. **Install `qrcode` library** (`pip install qrcode`).
2. **Take user input (text/link) to convert**.
3. **Generate and save the QR code**.

Code:

```
python
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import qrcode

data = input("Enter text or URL: ")
qr = qrcode.make(data)
qr.save("qrcode.png")

print("QR Code generated and saved as 'qrcode.png'!")
```