CAPSTONE PROJECT

PYTHON

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BOTNET
HACKER
MALWARE
KEYLOGGER
SPYWARE

OTP VERIFICATION SYSTEM

“A Shield Against Cyber Crime"

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Project Overview

Designed to combat unauthorized access, the OTP ensures a secure login process, adding an additional layer of protection.

The project integrates email communication, OTP generation, and user input validation to ensure reliable and fast authentication.

With user-friendly prompts and error handling, this OTP system is designed to be both secure and easy to use.

OTP Generation

```python
def generate_otp():
    otp = f"{random.randint(100000, 999999)}"
    return otp
```

Sending OTP

```python
def send_otp(email, otp):
    print(f" \n OTP has been sent to {email}.")

    if DEBUG:
        print(f" \n DEBUG: The OTP is {otp}")
```

User Input

```
def get_user_otp():

    return input(" \n Please enter the OTP you received: ")
```

Validation

```
def verify_otp(generated_otp, user_otp):

    return generated_otp == user_otp
```

Main Program

```python
def main():

    print(" \n\n Welcome to the OTP Verification System! \n ")

    email = input(" \n Enter your email address: ")              # Step 1

    otp = generate_otp()                                        # Step 2

    send_otp(email, otp)                                        # Step 3

    for attempt in range(3):                                    # Step 4
        print(f" \n Attempt {attempt + 1} of 3: \n ")

        user_otp = get_user_otp()

        if verify_otp(otp, user_otp):
            print(" \n Access granted! OTP verified successfully. \n ")

            return

        remaining_attempts = 2 - attempt
        if remaining_attempts > 0:
            print(f" \n Incorrect OTP. You have {remaining_attempts} attempt(s) left. \n ")

        else:
            print(" \n No attempts left. Access denied. \n ")
```

Output

```
 Welcome to the OTP Verification System!


 Enter your email address: testuser@example.com
 OTP has been sent to testuser@example.com.
DEBUG: The OTP is 854696

 Attempt 1 of 3:

Please enter the OTP you received: 854696

 Access granted! OTP verified successfully.
```

Challenge		Solution
Users may enter an incorrect OTP multiple times		Implemented a retry mechanism with a limited number of attempts
Users need to be clearly informed of errors		Provided user-friendly messages such as "Access granted!" or "Incorrect OTP"
The OTP must be exactly 6 digits long		If the OTP is not 6 digits, prompt the user to re-enter it correctly.

Conclusion

A reliable 6-digit OTP system to ensure only authorized access.

Clear instructions, retries, and error handling for smooth user experience.

Easy to integrate into various platforms to strengthen security.

Adds an extra layer of protection against unauthorized access.

"Let's Secure the Web Together!"

THANK YOU!