Python - Capstone Project

Project Title: OTP Verification System

Problem Statement:

You are tasked with developing an OTP (One-Time Password) verification system in Python. The system should generate a 6-digit OTP and send it to the user's email address for verification. Upon receiving the OTP, the user should enter it into the system for validation. If the entered OTP matches the generated OTP, access should be granted; otherwise, access should be denied.

```
import random
import time

def generate_otp():
    """Generate a 6-digit random OTP."""
    return str(random.randint(100000, 999999))

def send_otp(email):
    """Simulate sending OTP to user email."""
    otp = generate_otp()
    print(f"\n OTP sent to {email} (simulated).")
    print(f"(For testing, your OTP is: {otp})")  # remove in
production
    return otp

def verify_otp(generated_otp):
    """Prompt user to enter OTP and verify it."""
    attempts = 3
    while attempts > 0:
        entered_otp = input("\nEnter the 6-digit OTP: ").strip()
        if entered_otp == generated_otp:
            print("\n OTP Verified Successfully! Access Granted.")
            return True
        else:
            attempts -= 1
            print(f" Incorrect OTP. {attempts} attempt(s) left.")
    print("\n Access Denied. Too many incorrect attempts.")
    return False

# -------- Main Program --------
email = input("Enter your email address: ").strip()
if email:
    otp = send_otp(email)
    time.sleep(1)
    verify_otp(otp)
```

```
else:
    print("⚠ Please enter a valid email address.")

Enter your email address: muragaiahsowmya@gmail.com

 OTP sent to muragaiahsowmya@gmail.com (simulated).
(For testing, your OTP is: 505111)

Enter the 6-digit OTP: 505111

 OTP Verified Successfully! Access Granted.

import random
import time

def generate_otp():
    """Generate a 6-digit random OTP."""
    return str(random.randint(100000, 999999))

def send_otp(email):
    """Simulate sending OTP to user's email."""
    otp = generate_otp()
    print(f"\n OTP sent to {email} (simulated).")
    print(f"(For testing, your OTP is: {otp})")  # remove this line in
production
    return otp, time.time()  # Return OTP and timestamp

def verify_otp(generated_otp, otp_time, expiry=30):
    """Verify user-entered OTP with expiry time."""
    attempts = 3
    while attempts > 0:
        entered_otp = input("\nEnter the 6-digit OTP: ").strip()

        # Check time expiry
        if time.time() - otp_time > expiry:
            print("\n OTP expired! A new OTP will be sent.")
            return "expired"

        # Check correctness
        if entered_otp == generated_otp:
            print("\n OTP Verified Successfully! Access Granted.")
            return "success"
        else:
            attempts -= 1
            print(f" Incorrect OTP. {attempts} attempt(s) left.")

    print("\n Access Denied. Too many incorrect attempts.")
    return "failed"

# ---------------- Main Program ----------------
def otp_system():
```

```
    email = input("Enter your email address: ").strip()
    if not email:
        print("⚠ Please enter a valid email address.")
        return

    while True:
        # Step 1: Send OTP
        otp, otp_time = send_otp(email)

        # Step 2: Verify OTP
        result = verify_otp(otp, otp_time)

        # Step 3: Handle different cases
        if result == "success":
            break
        elif result in ("expired", "failed"):
            choice = input("\nDo you want to regenerate a new OTP?
(yes/no): ").strip().lower()
            if choice != "yes":
                print("\n Exiting system. Goodbye!")
                break
            else:
                print("\n Generating a new OTP...")
                time.sleep(1)

# Run the program
otp_system()
```

```
Enter your email address: muragaiahsowmya@gmail.com

 OTP sent to muragaiahsowmya@gmail.com (simulated).
(For testing, your OTP is: 649880)

Enter the 6-digit OTP: 649881
 Incorrect OTP. 2 attempt(s) left.

Enter the 6-digit OTP: 649881

 OTP expired! A new OTP will be sent.

Do you want to regenerate a new OTP? (yes/no): yes

 Generating a new OTP...

 OTP sent to muragaiahsowmya@gmail.com (simulated).
(For testing, your OTP is: 430392)

Enter the 6-digit OTP: 430392

 OTP Verified Successfully! Access Granted.
```