

AI ASSISTED CODING

LABTEST-04

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BATCH:04

SET-02:

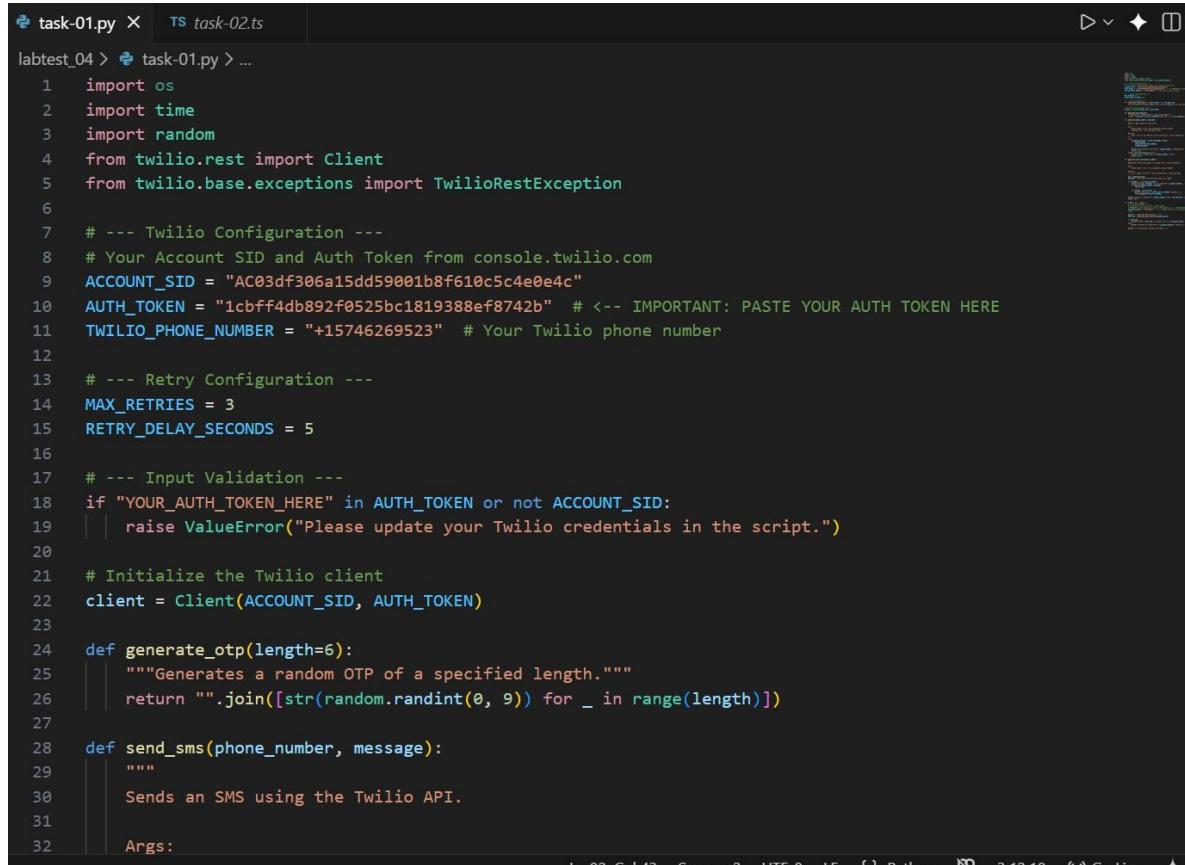
Q1. (API Integration)

- a) Integrate with SMS gateway API for OTP delivery.
- b) Implement retry when SMS fails

PROMPT:

Generate the python script which Integrates the system with an SMS gateway API to send OTP codes. If an SMS delivery fails, implement an automatic retry mechanism with a limited number of attempts.

CODE:



```
task-01.py  ts task-02.ts
labtest_04 > task-01.py > ...
1  import os
2  import time
3  import random
4  from twilio.rest import Client
5  from twilio.base.exceptions import TwilioRestException
6
7  # --- Twilio Configuration ---
8  # Your Account SID and Auth Token from console.twilio.com
9  ACCOUNT_SID = "AC03df306a15dd59001b8f610c5c4e0e4c"
10 AUTH_TOKEN = "1cbff4db892f0525bc1819388ef8742b" # <-- IMPORTANT: PASTE YOUR AUTH TOKEN HERE
11 TWILIO_PHONE_NUMBER = "+15746269523" # Your Twilio phone number
12
13 # --- Retry Configuration ---
14 MAX_RETRIES = 3
15 RETRY_DELAY_SECONDS = 5
16
17 # --- Input Validation ---
18 if "YOUR_AUTH_TOKEN_HERE" in AUTH_TOKEN or not ACCOUNT_SID:
19     raise ValueError("Please update your Twilio credentials in the script.")
20
21 # Initialize the Twilio client
22 client = Client(ACCOUNT_SID, AUTH_TOKEN)
23
24 def generate_otp(length=6):
25     """Generates a random OTP of a specified length."""
26     return ''.join([str(random.randint(0, 9)) for _ in range(length)])
27
28 def send_sms(phone_number, message):
29     """
30         Sends an SMS using the Twilio API.
31
32     Args:
```

```

28     def send_sms(phone_number, message):
29         """
30             phone_number (str): The recipient's phone number.
31             message (str): The message to send.
32
33             Returns:
34                 bool: True if the SMS was sent successfully, False otherwise.
35             """
36
37         try:
38             message_instance = client.messages.create(
39                 body=message,
40                 from_=TWILIO_PHONE_NUMBER,
41                 to=phone_number
42             )
43             print(f"Successfully sent SMS to {phone_number}. Message SID: {message_instance.sid}")
44             return True
45         except TwilioRestException as e:
46             print(f"Error sending SMS to {phone_number}: {e}")
47             return False
48
49
50     def send_otp_with_retry(phone_number):
51         """
52             Generates an OTP and sends it via SMS with a retry mechanism.
53
54             Args:
55                 phone_number (str): The recipient's phone number.
56
57             Returns:
58                 str or None: The OTP if sent successfully, otherwise None.
59             """
60
61         otp = generate_otp()
62         message = f"Your One-Time Password (OTP) is: {otp}"
63
64
65     def send_otp_with_retry(phone_number):
66         message = f"Your One-Time Password (OTP) is: {otp}"
67
68         for attempt in range(MAX_ATTEMPTS):
69             print(f"Attempt {attempt + 1} to send OTP to {phone_number}...")
70             if send_sms(phone_number, message):
71                 return otp
72
73             if attempt < MAX_ATTEMPTS - 1:
74                 print(f"Retrying in {RETRY_DELAY_SECONDS} seconds...")
75                 time.sleep(RETRY_DELAY_SECONDS)
76
77         print(f"Failed to send OTP to {phone_number} after {MAX_ATTEMPTS} attempts.")
78         return None
79
80
81     if __name__ == "__main__":
82         # --- Example Usage ---
83         # Replace with the recipient's phone number.
84         # IMPORTANT: The number must be in E.164 format (e.g., +15551234567)
85         recipient_phone = "+919440893671" # <--- CHANGE THIS to your 10-digit mobile number with country code!
86
87         print("--- Starting OTP Delivery ---")
88         sent_otp = send_otp_with_retry(recipient_phone)
89
90         if sent_otp:
91             print(f"\nOTP ({sent_otp}) has been sent to {recipient_phone}. Please verify.")
92         else:
93             print(f"\nCould not send OTP to {recipient_phone}. Please try again later.")
94
95         print("--- OTP Delivery Process Finished ---")

```

OUTPUT:

The screenshot shows a terminal window in Visual Studio Code. The terminal tab is selected at the top. The output pane displays the following command-line session:

```
PS C:\Users\ramch\OneDrive\Desktop\ai> & C:/Users/ramch/AppData/Local/Programs/Python/Python312/python.exe
PS C:\Users\ramch\OneDrive\Desktop\ai> & C:/Users/ramch/AppData/Local/Programs/Python/Python312/python.exe
Traceback (most recent call last):
  File "c:/Users/ramch/OneDrive/Desktop/ai/labtest_04/task-01.py", line 20, in <module>
    raise EnvironmentError(
EnvironmentError: Twilio credentials not found. Please set the TWILIO_ACCOUNT_SID and TWILIO_AUTH_TOKEN environment variables.
PS C:\Users\ramch\OneDrive\Desktop\ai> ^C
● PS C:\Users\ramch\OneDrive\Desktop\ai> & C:/Users/ramch/AppData/Local/Programs/Python/Python312/python.exe
xe c:/Users/ramch/OneDrive/Desktop/ai/labtest_04/task-01.py
--- Starting OTP Delivery ---
Attempt 1 to send OTP to +919440893671...
Successfully sent SMS to +919440893671. Message SID: SM5e82e7ffcc0019ffcc6e683f3ef73fe5
OTP (126239) has been sent to +919440893671. Please verify.
--- OTP Delivery Process Finished ---
○ PS C:\Users\ramch\OneDrive\Desktop\ai>
```

At the bottom of the terminal window, status indicators show: Ln 4, Col 31, Spaces: 2, UTF-8, LF, { } Python, 3.12.10, (Go Live), and a few icons.

OBSERVATION:

The system needs a reliable way to send OTPs using an SMS gateway.
If the SMS doesn't go through, it should automatically try sending it again.
There should be a limit to how many times the system retries.
The process must ensure users receive their OTP without delays.
Clear feedback should be provided when the SMS is sent or if it ultimately fails.

Q2. (Code Translation)

- Convert a Java class into TypeScript.
- Add type definitions to improve safety.

PROMPT:

Convert this Java class into TypeScript and add clear type definitions to make the code safer.

CODE:

```
task-01.py    ts task-02.ts X
labtest_04 > TS task-02.ts > Person > constructor
  5   class Person {
 33     /**
 34      * Gets the person's full name.
 35      * @returns A string representing the full name.
 36    */
 37    public getDetails(): string {
 38      return `Name: ${this.getFullName()}, Age: ${this.age}`;
 39    }
 40    /**
 41      * Increments the person's age by one.
 42      */
 43    public haveBirthday(): void {
 44      this.age++;
 45    }
 46  } // --- Example Usage ---
 47
 48 // Create a new instance of the Person class
 49 const john = new Person("John", "Doe", 30);
 50
 51 // Log details to the console
 52 console.log(john.getDetails()); // Output: Name: John Doe, Age: 30
 53
 54 // Increment the person's age
 55 john.haveBirthday();
 56
 57 // Log details again to see the change
 58 console.log(john.getDetails()); // Output: Name: John Doe, Age: 31
 59
 60 // The following would cause a TypeScript error if you tried to compile it,
 61 // demonstrating the benefit of type safety:
 62 // const jane = new Person("Jane", "Doe", "twenty-five"); // Error: Argument of type 'string' is not assignable to parameter of type 'number'.
task-02.ts > Person > constructor
 1 /**
 2  * Represents a person with a first name, last name, and age.
 3  */
 4
 5 class Person {
 6   private firstName: string;
 7   private lastName: string;
 8   private age: number;
 9
 10  /**
 11   * Constructs a new Person instance.
 12   * @param firstName The person's first name.
 13   * @param lastName The person's last name.
 14   * @param age The person's age.
 15   */
 16  constructor(firstName: string, lastName: string, age: number) {
 17    this.firstName = firstName;
 18    this.lastName = lastName;
 19    this.age = age;
 20  }
 21
 22  /**
 23   * Gets the person's full name.
 24   * @returns A string representing the full name.
 25   */
 26  public getFullName(): string {
 27    return `${this.firstName} ${this.lastName}`;
 28  }
 29
 30  /**
 31   * Gets a detailed string representation of the person.
 32   * @returns A string with the person's name and age.
 33  }
```

OUTPUT:

```
PS C:\Users\ramch\OneDrive\Desktop\ai>

PS C:\Users\ramch\OneDrive\Desktop\ai>

PS C:\Users\ramch\OneDrive\Desktop\ai> PS C:\Users\ramch\OneDrive\Desktop\ai> npx ts-node labtest_04\task-02.ts
Name: John Doe, Age: 30
Name: John Doe, Age: 31
PS C:\Users\ramch\OneDrive\Desktop\ai> []
```

OBSERVATION:

The task is to change an existing Java class into TypeScript code.
While converting, the code should include proper type definitions.
Adding types will make the code safer and reduce errors.
The structure and logic from the Java version should be kept clear in TypeScript.
Overall, the goal is to improve readability, safety, and maintainability.