INTEGRATION TESTING

This code is designed to facilitate integration testing in a Node.js environment.

It consists of a module (**retrieve.js**) containing two main functions:

retrievePassword and **reversePassword.**

MongoDB Connection Setup:
The code initializes a connection to a local MongoDB instance running on port **27017**. It utilizes the **MongoClient** class from the **mongodb** package to manage the connection.

retrievePassword Function:

1. This asynchronous function is responsible for retrieving a user's password from the MongoDB database based on the provided **username**.
2. Upon invocation, it establishes a connection to the MongoDB instance and selects the appropriate database and collection.
3. It constructs a query to find the user document based on the provided **username**.
4. If the user is found in the database, it logs the password to the console, reverses the password using the **reversePassword** function, logs the reversed password, and returns the reversed password.
5. If the user is not found, it logs a message indicating that the user was not found and returns **null**.
6. Finally, it ensures that the MongoDB connection is closed, regardless of the outcome.

reversePassword Function:
This simple function takes a string (**password**) as input and reverses it by splitting the characters, reversing the order, and joining them back together.

Exporting Functions:
Both **retrievePassword** and **reversePassword** functions are exported to be used in other modules.

This module (**retrieve.js**) is utilized in integration testing scenarios, particularly with Mocha, to verify the functionality of retrieving passwords from a MongoDB database. By

calling **retrievePassword** with different usernames and asserting the returned passwords, one can ensure that the password retrieval mechanism behaves as expected.

Test.js file:

Mocha Test Suite:

- The **describe** function is used to group tests together. In this case, it creates a test suite named "Integration Testing" to contain all integration tests.

Stubbing the findOne Function:

- Before each test, a stub function named **findOneStub** is defined. This function mimics the behavior of MongoDB's **findOne** function. It returns a predefined user object if the username matches 'username', and **null** otherwise. This stub function is passed to **retrievePassword** during testing to simulate interactions with the database without actually querying it.

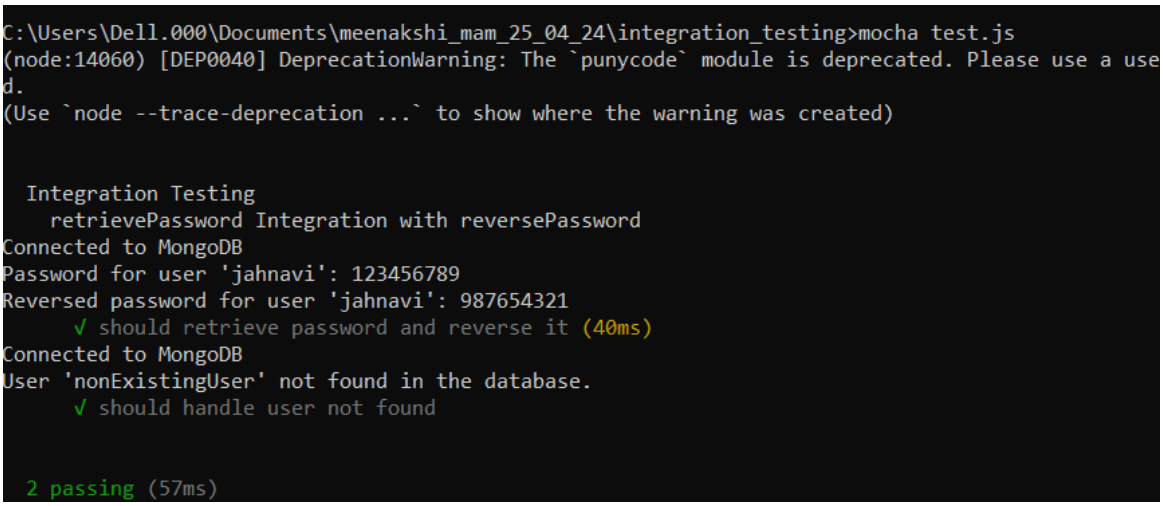
Test Cases:

- The first test case, labeled "should retrieve password and reverse it", verifies that when **retrievePassword** is called with the username 'username', it correctly retrieves the password from the stubbed database function (**findOneStub**), reverses it using the **reversePassword** function, and returns the reversed password. The **assert.strictEqual** function ensures that the result matches the expected reversed password.
- The second test case, labeled "should handle user not found", checks the behavior of **retrievePassword** when the user is not found in the database. It ensures that the function returns **null** in this case.

Running the Tests:

- These tests are designed to be executed using the Mocha testing framework.

Run the following command to execute the mocha testcases: mocha test.js



Integration Testing Explanation:

These tests are considered integration tests because they verify the interaction between multiple components of the system - in this case, the **retrievePassword** function and the **reversePassword** function, as well as the simulated database interaction through the stubbed **findOneStub** function. By testing these components together, we ensure that they work correctly when integrated into the larger system.