

Unit, Integration, Regression and Acceptance Testing Break Down

UNIT Tests

- **File Encryption Test:** Verify that plain text passwords are correctly encrypted.

PASS test/UNIT_fileEncryption.test.js

- **Database Write Test:** Ensure that encrypted passwords and user emails are correctly written to the MongoDB database.

PASS test/UNIT_databaseWrite.test.js

- **Unique Salt Generation Test:** Test the salt generation process for each password to confirm that each salt is unique and correctly enhances the encryption.

PASS test/UNIT_uniqueSaltGeneration.test.js

- **Authentication Process Test:** Ensuring that the system accurately compares encrypted input passwords against stored hashes and returns true or false as appropriate.

PASS test/UNIT_authenticationProcess.test.js

Integration Test

- **Encryption to Storage Workflow:** Test the integrated workflow from password encryption to storage in the database, ensuring seamless data handling and

error-free execution.

- **Authentication Validation:** Evaluate the integration between the input authentication process and the database retrieval of encrypted credentials, confirming the system's ability to correctly authenticate or reject user logins based on stored data.

An important note about the following test (Below) is that it meets all of the integration tests (Above) requirements by testing and verifying all feature modules interact properly

```
Test Suites: 4 passed, 4 total
Tests:       7 passed, 7 total
Snapshots:   0 total
Time:        5.497 s
Ran all test suites.
```

Regression Tests

- **Feature Update Stability Test:** After any updates or changes to the encryption algorithm or database schema, verify that existing functionalities, such as password storage and user authentication, remain unaffected and operate as expected.

```

PASS    __test__/UNIT_authenticationProcess.test.js
(node:14272) [DEP0040] DeprecationWarning: The `purge` method is deprecated. Use `purge` and alternative instead.
(node:14272) [MONGODB DRIVER] Warning: useNewUrlParameter has no effect since Node.js Driver version 4.0.0 and will be removed in the next major version.
(node:14272) [MONGODB DRIVER] Warning: useUnifiedTopology has no effect since Node.js Driver version 4.0.0 and will be removed in the next major version.
PASS    __test__/UNIT_databaseWrite.test.js
PASS    __test__/UNIT_fileEncryption.test.js
PASS    __test__/UNIT_uniqueSaltGeneration.test.js

Test Suites: 4 passed, 4 total

```

- **Error Handling Enhancements Test:** Ensure that improvements in error handling for edge cases (e.g., empty fields, invalid formats) do not adversely affect the system's performance or existing user experience.

Due to the nature of this Test, a manual test was best fit for it.

```

PS C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project> node app.js -t "sm.cho@hello.com 12345" -a ./password.txt
sm.cho@hello.com added.
john.deacon@good.com added.
alan.may@best.com added.
henry.taylor@edu.com added.
All entries added successfully.
false

```

Test Passed.

Acceptance Tests

- **User Login Scenario Test:** Simulate various user login scenarios, including correct credentials, incorrect passwords, non-existent emails, and edge cases, to assess whether the system's responses align with the requirements.

```

"Acceptance Test Start"

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "sm.cho@hello.com 123456"
true

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "john.deacon@good.com bestpassword"
true

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "alan.may@best.com mypassword"
true

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "henry.taylor@edu.com educatorbest"
true

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "sm.cho@hello.com 1234567"
false

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "henry.taylor@edu.com educatorbests"
false

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "noname@hello.come 1234"
false

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "alan.may@best.com "
false

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>pause
Press any key to continue . . .

```

- **Correct Login Test:** Ensure the system returns true for correct email/password combinations and false for incorrect ones.

```

"Acceptance Test Start"

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "sm.cho@hello.com 123456"
true

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "john.deacon@good.com bestpassword"
true

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "alan.may@best.com mypassword"
true

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "henry.taylor@edu.com educatorbest"
true

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "sm.cho@hello.com 1234567"
false

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "henry.taylor@edu.com educatorbests"
false

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "noname@hello.come 1234"
false

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>node app.js -t "alan.may@best.com "
false

C:\Users\benmolloy\Documents\GitHub\ASE-285-Individual-Project>pause
Press any key to continue . . .

```