CHAPTER V
CLOSING

5.1 Conclusions

Based on the testing results of the E-OBE application, the conclusions of this research are as follows:

1. The code structure is reasonably well-developed, as evidenced by the results of the White-Box Testing using the basis path technique, where the majority of controllers possess a Cyclomatic Complexity value ranging from 1 to 5. These results demonstrate that the program flow falls under the category of simple procedures, is well-structured, carries a low risk of vulnerability, and facilitates code maintenance.
2. The API functionality requires improvement, as indicated by the automated Black-Box Testing results using EvoMaster, which identified a total of 27 faults out of 49 test executions (HTTP Calls). The faults were predominantly characterized by discrepancies between the API responses and the documentation schema (22 findings), followed by server errors / HTTP 500 (4 findings), and an authentication issue (1 finding).
3. The divergence in findings between the White-Box Testing and Black-Box Testing reveals a gap between the internal logic and the handling of external inputs. When EvoMaster supplied unexpected inputs to the login function, the system encountered a server error due to its failure in validating the "Undefined array key email" input. This indicates that while the code logic is valid, the E-OBE application lacks robust input validation mechanisms.

5.2 Recommendations for Improvement

Based on the conclusions drawn in the preceding subchapter, the following are several recommendations for the improvement of the E-OBE application:

1. The development team must promptly address the server error bugs to prevent the application from crashing during operation.
2. Adjustments and updates to the API documentation are requisite to ensure that the system's output aligns with the established schema, thereby mitigating difficulties for the front-end team during the integration process