Project Name: secureCalc
Project Manager: Zahra Shefa
Sponsor: DAE
Project Duration: 3 weeks
Completion Date: June 5, 2025
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I. Executive Summary

The secureCalc project aimed to develop a secure, user-friendly web application for performing various arithmetic operations. The application ensures authenticated access and provides functionalities such as multiplication tables, summation, percentage calculations, averages, remainders, and min/max evaluations. The project was completed within the stipulated 3-week timeline, meeting all defined objectives.
II. Project Objectives

Develop a secure web-based calculator application.

Implement user authentication and session management.

Provide functionalities for:

Multiplication tables

Summation of numbers

Percentage calculations

Average computations

Remainder operations

Minimum and maximum value determinations

Ensure a responsive and intuitive user interface.
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III. Deliverables

Backend Development:

Flask-based application with defined routes for each arithmetic function.

Integration of session management and user authentication.

Implementation of utility functions for caching and logging.

Frontend Development:

Responsive HTML templates:

base.html

home.html

register.html

result.html

Bootstrap integration for styling and responsiveness.

Testing:

Unit tests for all arithmetic functions.

Integration tests for route handling and session management.

Documentation:

Comprehensive docstrings for all classes and methods.

User guide detailing application usage.
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IV. Project Timeline

Week 1:

Project setup and environment configuration.

Development of user authentication and session management.

Week 2:

Implementation of arithmetic functionalities.

Development of HTML templates and frontend integration.

Week 3:

Testing and debugging.

Final deployment and documentation.
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V. Challenges and Resolutions

Challenge: Ensuring accurate handling of various numeric inputs (integers, floats, strings).

Resolution: Implemented input validation and error handling mechanisms across all functions.

Challenge: Maintaining session security and preventing unauthorized access.

Resolution: Integrated Flask's session management with secure configurations and implemented login-required decorators.

VI. Lessons Learned

Early integration of frontend and backend components facilitates smoother development.

Comprehensive testing is crucial for ensuring application reliability.

Clear documentation aids in future maintenance and scalability.

VII. Conclusion

The secureCalc project was successfully completed within the allocated 3-week timeframe, delivering a secure and functional web application for arithmetic operations. The collaborative efforts of the development team, under the

guidance of Project Manager Zahra Shefa and sponsorship from DAE, were instrumental in achieving the project goals.