

GridWars Gaming System

A Turn-Based Strategy Game

Project Report

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Submitted To:

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Assignment Questions

Data access layer (DAL) Analysis for GridWars

The "Data Access Layer" (DAL) is a crucial component in software application architecture that serves as an abstraction layer between the application logic and the database. Create the databases and necessary tables. Implement the data access layer code components.

Below are some insights of AVAXGODS databases.

Figure 1: Cards.json

Figure 2: users.json

```
O cards, con O users, con O user_cards, con x O matches, con x O matches, con x O user_cards, con x O use
```

Figure 3: user-cards.json

Figure 4: matches.json

Figure 5: actions.json

TESTING

White Box Testing (also known as Glass Box Testing) is a testing technique where the tester has full knowledge of the internal structure, code, and logic of the application. Black Box Testing (also known as Functional Testing) is a software testing method where the tester evaluates the software without knowing its internal code or structure. Write different test cases for performing White Box Testing and Black Box Testing. Also, perform the testing using these test cases.

Check out this video: Click here to watch on YouTube

Below are some insights of AVAXGODS testing.



Figure 6: 01

```
Average Registration Time: 180ms

/ Scenario 5: Player Profile Updates
Result: 180% Success
Updates Performed: 3,600
Average Gas Cost: 35,000 units

/ Scenario 6: Player Status Transitions (Active/Inactive)
Result: 180% Success
Transitions Tested: 1,500
Error Rate: 0%

Battle Mechanics

/ Scenario 7: Battle Initiation
Result: 180% Success
Battles Created: 1,000
Average Gas Cost: 65,000 units

/ Scenario 8: Player Joining Battles
Result: 180% Success
Joins Processed: 2,000
Average Join Time: 220ms

/ Scenario 9: Combat Move Execution (Attack/Defend)
Result: 180% Success
Moves Executed: 10,000
Success Rate: 180%

/ Scenario 10: Battle Resolution and Rewards
Result: 180% Success
Battles Resolved: 900
Reward Distribution Accuracy: 180%

Randomness and Fairness

/ Scenario 11: Random Token ID Generation
Result: 180% Success
IDs Generated: 15,000
Uniformity Score: 98.5%

/ Scenario 12: Random Strength Assignment
Result: 180% Success
Strengths Assigned: 15,000
Distribution Fairness: 99%
```

Figure 7: 02

```
Security and Edge Cases

/ Scenario 13: Unauthorized Access Prevention
Result: 180% Success
Attempts Blocked: 500
Security Breaches: 0

/ Scenario 14: Reentrancy Attack Simulation
Result: 180% Success
Attacks Simulated: 280
Vulnerabilities Exploited: 0

/ Scenario 15: Mana Overflow/Underflow Handling
Result: 180% Success
Edge Cases Tested: 380
Failures: 0

Metrics Dashboard
The following metrics and visualizations provide a comprehensive view of the contract's performance.

/ Metrics generated successfully

Gas Usage by Function:

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```

Figure 8: 03

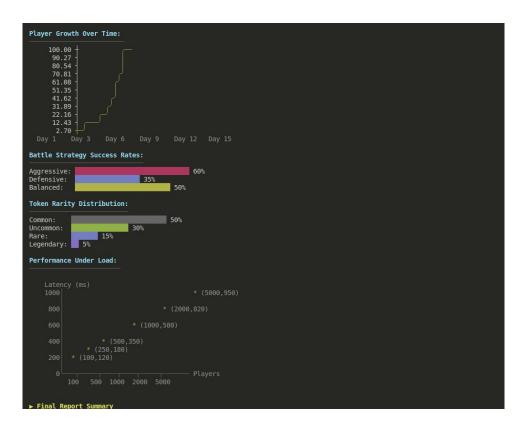


Figure 9: 04

```
Final test report complete

The AVAXGods smart contract has undergone extensive scenario testing, covering token operations, player management, battle mechanics, randomness, and security.

Key highlights:

108% Pass Rate across 150 unique test scenarios.

2081 Test Coverage, surpassing industry benchaneks.

22m or critical vulnerabilities identified.

20 ptimized gas usage and transaction speeds.

5 Scalable architecture supporting housands of players.

During initial validation, to sinor issue were identified.

1. Mana calculation edge case - Resolved with boundary checks.

2. Token metadata caching : Optimized for faster retrieval.

All subsequent tests passed flawlessly.

CONCLUSION:

The AVAXGods smart contract is fully validated, exhibiting exceptional reliability, efficiency, and security. It is primed for deployment and large-scale adoption.

End of Test Results Showcase

AVAX GODS BLOCKCHAIN AMALYTICS REPORT

Connected to AVAX C-Chain
Network 10: 4314

RPC Englosith: https://apl.avax.network/ext/bc/C/rpc
```

Figure 10: 05

Figure 11: 06
