Test Plan

Overall Test Plan

We plan to implement a multi-layered testing strategy focusing on both data integrity and game mechanics. We will utilize unit tests to verify the Obscurity engines accuracy. Integration tests will be used to ensure proper communication between the frontend game interface and the Azure database, including response times and error handling for database queries. We also will test the API endpoints for correct athlete data retrieval and validation of user answers. For end-to-end testing, we will simulate complete game sessions to verify the user flow from question presentation through answer submission and score updating.

**Database Tests**:

1. **Test ID**: DB-001
   * Purpose: Validate athlete database connection
   * Description: Test connection to Azure DB and basic query functionality
   * Inputs: Database connection string
   * Expected Output: Successful connection and query response within 200ms
   * Case Type: Normal
   * Test Type: Blackbox
   * Performance: Performance
   * Level: Integration
2. **Test ID**: DB-002
   * Purpose: Verify data consistency
   * Description: Test athlete data format consistency
   * Inputs: Random sample of 1000 athlete records
   * Expected Output: All required fields present and properly formatted
   * Case Type: Normal
   * Test Type: Whitebox
   * Performance: Functional
   * Level: Unit
3. **Test ID**: DB-003
   * Purpose: Test score persistence
   * Description: Verify user scores are properly saved
   * Inputs: Score from game (to be determined)
   * Expected Output: Score correctly stored in database
   * Case Type: Normal
   * Test Type: Blackbox
   * Performance: Functional
   * Level: Integration

**Obscurity Engine Tests**:

4. **Test ID**: OE-001

* Purpose: Verify basic scoring calculation
* Description: Test point calculation for a very obscure athlete
* Inputs: Athlete with high obscurity score (TBD)
* Expected Output: Game score (TBD)
* Case Type: Normal
* Test Type: Whitebox
* Performance: Functional
* Level: Unit

1. **Test ID**: OE-002
   * Purpose: Validate athlete search functionality
   * Description: Test partial name matching in search
   * Inputs: "Jord" as search term
   * Expected Output: List including "Michael Jordan", "Jordan Henderson", etc.
   * Case Type: Normal
   * Test Type: Blackbox
   * Performance: Functional
   * Level: Integration
2. **Test ID**: OE-003
   * Purpose: Verify answer validation
   * Description: Test exact match answer validation
   * Inputs: User answer "LeBron James" vs correct answer "LeBron James"
   * Expected Output: True (match)
   * Case Type: Normal
   * Test Type: Blackbox
   * Performance: Functional
   * Level: Unit

**UI Tests**:

7. **Test ID**: UI-001

* Purpose: Test responsive design
* Description: Verify UI adaptation across screen sizes
* Inputs: Various viewport dimensions
* Expected Output: Properly rendered UI elements
* Case Type: Normal
* Test Type: Blackbox
* Performance: Functional
* Level: Integration

1. **Test ID**: UI-002
   * Purpose: Verify game session completion
   * Description: Test full game flow from start to finish
   * Inputs: Complete game session with 10 questions
   * Expected Output: Correct final score calculation and session closure
   * Case Type: Normal
   * Test Type: Blackbox
   * Performance: Functional
   * Level: Integration
2. **Test ID**: UI-003
   * Purpose: Verify question timer
   * Description: Test question time limit functionality
   * Inputs: No answer provided within 30 seconds
   * Expected Output: Question auto-submitted, no points awarded
   * Case Type: Abnormal
   * Test Type: Blackbox
   * Performance: Functional
   * Level: Unit
3. **Test ID:** ERR-001
   * Purpose: Test invalid queries
   * Description: Attempt to query anything that is not an existing athlete
   * Inputs: Any string that is not athletes name.
   * Expected Output: Appropriate error response.
   * Case Type: Abnormal
   * Test Type: Blackbox
   * Performance: Unit
   * Level: Functional

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| Test Case ID | Normal/Ab. | Black/Whitebox | Funct/Perform | Unit/Integr. |
| DB-001 | Normal | Black | Performance | Integration |
| DB-002 | Normal | White | Functional | Unit |
| DB-003 | Normal | Black | Functional | Integration |
| OE-001 | Normal | White | Functional | Unit |
| OE-002 | Normal | Black | Functional | Integration |
| OE-003 | Normal | Black | Functional | Unit |
| UI-001 | Normal | Black | Functional | Integration |
| UI-002 | Normal | Black | Functional | Integration |
| UI-003 | Abnormal | Black | Functional | Unit |
| ERR-001 | Abnormal | Black | Functional | Unit |