Coliseum – Testing Document   
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**White Box Tests**

Login and Registration

* Test: Attempt to login without any text in either input field.  
  Expected Behavior: Error message should display to notify user that the username/password combination is invalid. User should be able to attempt to login again.
* Test: Attempt to login without a password.  
  Expected Behavior: Error message should display to notify user that the username/password combination is invalid. User should be able to attempt to login again.
* Test: Attempt to login without a username.  
  Expected Behavior: Error message should display to notify user that the username/password combination is invalid. User should be able to attempt to login again.
* Test: Attempt to login with the wrong password.  
  Expected Behavior: Error message should display to notify user that the username/password combination is invalid. User should be able to attempt to login again.
* Test: Attempt to login with a nonexistent username.  
  Expected Behavior: Error message should display to notify user that the username/password combination is invalid. User should be able to attempt to login again.
* Test: Attempt to login with a nonexistent password *and* nonexistent username.  
  Expected Behavior: Error message should display to notify user that the username/password combination is invalid. User should be able to attempt to login again.
* Test: Attempt to login with a valid username and password.  
  Expected Behavior: User should be logged in successfully and game should be playable by logged-in user.
* Test: Attempt to register without any text in either input field.  
  Expected Behavior: Error message should display to notify user that a username and password are required. User should be able to attempt to register again.
* Test: Attempt to register with a username over 16 characters.  
  Expected Behavior: Error message should display to notify user that usernames can only be up to 16 characters long. User should be able to attempt to register again.
* Test: Attempt to register without any text in the username input field.  
  Expected Behavior: Error message should display to notify user that a username is required. User should be able to attempt to register again.
* Test: Attempt to register without any text in the password input field.  
  Expected Behavior: Error message should display to notify user that a password is required. User should be able to attempt to register again.
* Test: Attempt to register with an existing username.  
  Expected Behavior: Error message should display to notify user that the supplied username is already taken. User should be able to attempt to register again.
* Test: Attempt to register with a unique username and a password.  
  Expected Behavior: User should be successfully registered. User should be redirected to the Login screen.

Gameplay

* Test: Press the right arrow key button.  
  Expected Behavior: The PC should move to the right.
* Test: Press the left arrow key button .  
  Expected Behavior: The PC should move to the left.
* Test: Press both left and right arrow key buttons.  
  Expected Behavior: The PC should not move.
* Test: Press the up button while on the ground.  
  Expected Behavior: The PC should jump and should land on the ground afterwards.
* Test: Press the up button while in the air.  
  Expected Behavior: Nothing should happen. The PC should continue their original jump.
* Test: Attempt to walk off screen to the left and right.  
  Expected Behavior: The PC should collide with an invisible wall and be unable to walk off screen.

Post-Gameplay

* Test: kill the player.  
  Expected Behavior: The PC should play its death animation and the screen should fade to the GAME OVER screen. The GAME OVER screen should fade back to the start screen.
* Test: kill the BOSS.  
  Expected Behavior: The BOSS should play its death animation and the screen should fade to the VICTORY screen. The VICTORY screen should show the player’s score and the list of highscores and then fade back to the start screen.

**Black Box Tests**

Login and Registration

* Test: Attempt to register with control characters in the username (e.g. \t, \n).  
  Expected Behavior: The game should not interpret these characters and instead register the user with those characters as plaintext (e.g. “Dave\nMiller”). The database should not have any problems storing this username.
* Test: Attempt to register with control characters in the password (e.g. \t, \n).  
  Expected Behavior: The game should not interpret these characters and instead register the user with those characters as plaintext (e.g. “Dave\tPW”). The database should not have any problems storing this password.
* Test: Attempt to register with foreign characters in the username.  
  Expected Behavior: An error message should be displayed if any non-UTF8 character is used. Otherwise, user should be successfully registered.
* Test: Attempt to register with foreign characters in the password.  
  Expected Behavior: An error message should be displayed if any non-UTF8 character is used. Otherwise, user should be successfully registered.

Gameplay

* Test: Check that hitboxes and animations line up properly.  
  Expected Behavior: Hitboxes and animations should line up in an intuitive manner for smooth gameplay experience.

Post-Gameplay

* Test: Reach the end of the level.  
  Expected Behavior: game over screen should be displayed.

**Stress Tests**

Login and Registration

* Test: Attempt to register multiple users at the same time.  
  Expected Behavior: All new users should be registered successfully.
* Test: Attempt to register 100 users.  
  Expected Behavior: All new users should be registered successfully.
* Test: Attempt to Login multiple users at the same time.  
  Expected Behavior: All users should be logged in successfully.
* Test: Attempt to Login 100 users at the same time.  
  Expected Behavior: All new users should be logged in successfully.
* Test: Attempt to Login a user while registering a user.  
  Expected Behavior: The new user should be registered successfully and the logged in user should be logged in successfully.
* Test: Attempt to Login or register rapidly (e.g. mashing the Login button).  
  Expected Behavior: Only one request should be served per second.

Gameplay

* Test: Leave the game running for an hour.  
  Expected Behavior: Game should still run without problems
* Test: Run the game alongside other applications (web browser, etc.)  
  Expected Behavior: Game should still run smoothly.

Post-Gameplay

* N/A

**Unit Tests** (broadly categorized for organization – specific tests mostly covered in White / Black Box sections)

Login and Registration

* Test: Login Validation Tests – All white box tests on invalid login inputs.  
  Expected Behavior: As specified in the white box tests.
* Test: Registration Validation Tests – All white box tests on invalid registration inputs.  
  Expected Behavior: As specified in the white box tests.
* Test: Data Flow Tests – All white box and black box tests on inserting and retrieving data.  
  Expected Behavior: As specified in the white and black box tests.

Gameplay

* Test: Movement Functionality Tests – All white box tests on PC movement.  
  Expected behavior: As specified in white box tests.