Moonbase – 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 25 characters.  
  Expected Behavior: Error message should display to notify user that usernames can only be up to 25 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.
* Test: Attempt to jump while outside the space station.  
  Expected Behavior: The PC should jump higher than normal due to reduced gravity.
* Test: Walk into flag on space station.

Expected behavior: The PC should be teleported to the corresponding teleportation location and should not be able to re-enter the teleporter.

* Test: Fall off the bottom of the level after reaching a checkpoint.  
  Expected Behavior: The PC should be immediately teleported back to the last checkpoint that they interacted with.
* Test: Walk near NPC.  
  Expected Behavior: A dialogue box should be displayed above the NPC.
* Test: Walk into the space station.  
  Expected Behavior: The player should be brought to a game over screen.

Post-Gameplay

* Test: Complete the game and return to the main menu.  
  Expected Behavior: After reaching the game over screen, the user should be able to return to the main menu by selecting the return to menu button.

**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.