4D World

Test Document

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Introduction:

The 4D World is a game about interacting with a fourth spacial dimension in various ways to get through the game world. In order to make sure the game is running properly and to avoid game breaking glitches and bugs we will have to perform a series of tests on the various mechanics and interactions of the world. This includes everything from basic game mechanics to our more complex extra dimensional mechanics.

The Basics: As a game there are several basic mechanics; including physics, interactions with objects, movement and any scripted scenes such as partial AI character control. These will need to be tested to make sure they work properly in our game.

Physics:
- Objects will need to be tested for collision mechanics specific to the object to make sure there is no odd clipping or the character getting stuck on terrain.
- If the character can jump on it, the object should support them.
- Walk the world, going up and down any slopes checking for that there are no invisible boxes a player can stand on allowing access to later game areas.
- Any objects that can be interacted with by being picked up, dropped and/or thrown should be tested to make sure gravity effects them properly.
    - If weight is decided to be an issue, this will include how far the items go when interacted with in such a way.
    - Items dropped should not make the player incapable of moving.
- If any object is carried, it should not impede interaction with any other physics systems or particular interactions with other objects.
- Make sure the player does not walk off the end of the world.
    - A backup scenario should be in place that will re-spawn the player or kill them if such a bug is missed.

Movement:
- The character should be able to move in four directions and jump unless an object is in the way. We will need to make sure that at no point the player suddenly loses these basic controls.
- Jumping should not make the player get stuck on any physics object like a ceiling or tree branch.
- If there are scripted moments in which something happens that the player is not supposed to move or has an AI controlled movement they should get movement back after the script.
    - During any such script we should attempt moving and see if that causes issues.
    - Try carrying objects or moving items into the script to test for bugs.
    - Before moving test jumping into the event to test for bugs.
- If going into another area involves a door or loading screen, jumping into the door and interacting with it before landing should not disable any movement or kill the player upon finishing the load.
- If an area is meant to either not be accessed or accessed later we will need to test to make sure basic movement will not grant access.
    - Combine walking and jumping up to make sure the combination cant find a path past the 'impassible wall' set up for the boundary of the level/section of the game.

Object Interaction: Each object that can be interacted with will need to be tested
- Objects that can be picked up should either be shown being carried or disappear from the screen and appear in the inventory.
    - This should be tested with 'full inventory' if any or items being carried. Either the item should do nothing an a message appear on screen or the item should switch with what is carried.
    - If the latter, the object should not be placed in a way that interferes with movement.
- Moveable objects should be able to be pushed out of the way if the player bumps into them. They should not cause any clipping or impede movement more than slowing the player.
- Special interaction items such as doors should perform their actions. This should be tested while carrying items, while still walking towards them as it the action is happening, or with using special mechanics.
    - Example: walking towards a door, activating it without stopping, and making sure that during the door opening the player doesn't get stuck in the door and the door opens properly.

Scripted Scenes and partial AI control: If any scenes such as these are in play for the game, we will need to make sure that before, during and after the scene the game control returns to normal. We should test this by activating special mechanics, carrying items, jumping, or attempting to do any form of movement before and during these scenes to make sure that after the game functions normally.

Special Mechanics: Our game will have at least one extra dimension to it and as such will have it's own special workings. These will need to be tested to make sure they work with physics, and will work properly under various circumstances. These will include the phase shifts, extra dimensional object appearances, and the physics of working with them.

Extra-dimensional Objects:
- These objects should be visible in the basic dimension but not interacted with without using the phase shift mechanic.
    - The object should either not be solid or affected by physics in the standard dimension. Test walking into it and moving it with character. Make sure basic gravity isn't affecting it.
- The object should be visible in the standard dimension in relative position to area in standard dimension.
    - Moving the object in it's phase shift should move the visual we use to represent it respectively in the standard phase.
- We will need to test each object for the physics we use for 4th dimensional objects in their respective phase in similar ways to the standard 3rd dimensional objects.
- Extra-dimensional Objects should not be able to be placed in an area where they become inaccessible due to interaction with 3rd dimension.
    - Example: An object should not be able to go through a mountain and suddenly no longer accessible due to player interaction in 4th dimension or 3rd dimension.

Phase Shift: The phase shift mechanic should be able to change how the player interact with other objects.
- Shifting to the proper phase of an extra-dimensional object should cause the player to be able to interact with that object.
    - Shifting out without having set object with your possession should remove interactions with it. Test shifting while holding it, while by it, and do quick succession shifts (if possible).
- Extra-dimensional objects should be transparent upon shifting out of phase. It should be either impossible to shift to the right phase while standing in that objects location or should have a

predefined fail safe happen.

> We will need to test shifting while standing in the location of an other dimension object
> - ♠ This should have predefined script: Message to screen, move object, kill player character, etc.
>
> We will need to check multiple phases and see shifting while jumping or other actions to make sure character clipping or impeding movement doesn't happen.

- Phase shift will need to be tested around interactive objects, with moveable/carried objects, during scripted events to test for any unforeseen bugs.
- Phase shift should be tested during special forms of movement (jumping and falling) for any possible bugs.
- Phase shift should be tested during basic movement around physics based objects to make sure any changed interactions take place or doesn't cause a bug.
- Phase shift should be attempted to be spammed to see if this causes any bugs.

Extra Dimension Physics: There will be a form of physics with the extra dimension(s) of this game. These will need to be tested properly to make sure the objects function correctly in game.

- Objects interacted with in the fourth dimension should follow the proper physics of that phase
  > Testing picking up, throwing, pushing, colliding into, using, or gravity on each object in that phase.
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  > Such objects should interact with other objects of that phase. Test throwing or moving them into one another.
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  > Test moving in-phase items with out-of-phase items.
  >
  > Test putting an in-phase item in the same location as an out-of-phase item and phase shifting
- If an object can be taken between phases, it should be able to properly interact with objects in the other phases. Perform the same tests as above on such an object.
- Test to make sure that abusing phase-shift and extra-dimensional physics do not allow players to access areas early or got out of world.
  > Example: If gravity stops working in fourth dimension outside of that phase, make sure quick switching phase shift will not allowing 'flight' to restricted area.
- If there are objects that shift phases, test to make sure random shifts do not cause but with appearing where the player stands.
- Test collision with basic terrain objects and areas in other phases to insure they function properly and the player does not fall out of world or get trapped.