

D.U.N.E.

Group 11

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6. Functional Test Cases

1. Pre-Game tests

a. Configuring the game

Description: The user shall be able to configure settings for video resolution, sound effects volume, music volume and in-game name. The settings are automatically saved when change is detected.

Reference in RD: 6.1.10.1 Setting video options, 6.1.10.2 Setting audio volume

Initial system state: System is loaded and is in the Options menu

Expected outcome: Settings are saved.

Procedure:

1. Set Video resolution to 1024x768.
2. Set Sound effects volume to 70%
3. Set Music volume to 70%
4. Leave menu
5. Return to menu and verify that changes are saved

b. Starting a pre-made map

Description: Initializing a pre-made map within the game environment

Reference in RD: 6.1.1.1 Starting a pre-made map, 6.1.5.1.Faction selection

Initial system state: System is loaded and is in the system menu

Expected outcome: The game loads a specified map to a playable state.

Procedure:

1. Click on “Singleplayer” button
2. Chose the Atreides faction from the drop-down menu
3. Enter “Paul” in the screen name input field
4. Use the “Next” button to find the “Desert Basin” map
5. Click “Launch Game” button
6. Verify that game has started

c. Starting a randomly generated map

Description: Initializing a random map within the game environment

Reference in RD: 6.1.1.2 Starting a randomly generated map, 6.1.5.1.Faction selection

Initial system state: System is loaded and is in the system menu

Expected outcome: The game loads a randomly generated map to a playable state.

Procedure:

1. Click on “Singleplayer” button
2. Chose the Atreides faction from the drop-down menu
3. Enter “Paul” in the screen name input field
4. Use the “Next” button to find the “Random” map
5. Click “Launch Game” button
6. Verify that game has started

d. Starting a Multiplayer game – Host

Description: Starting a Multiplayer game as a host with one remote player.

Reference in RD: 6.1.9.1 Starting a Multiplayer game, 6.1.5.1.Faction selection

Initial system state: System is loaded and is in the system menu. A client system is performing the test “Starting a Multiplayer – Client” at the same time.

Expected outcome: The game loads a specified map with only one multiplayer client.

Procedure:

1. Click on “Multiplayer” button
2. Click on “Host game”
3. Enter the screen name “Server” in the text field
4. Chose the “Atreides” faction from the drop-down menu
5. Use the “Next” button to find the “Desert Basin” map
6. Wait for client to be ready – the “Start game” button will be grayed out until then
7. Press “Start game”
8. Verify that game has started and clients are connected

e. Starting a Multiplayer game – Client

Description: Starting a Multiplayer game as a client connecting to a host

Reference in RD: 6.1.9.1 Starting a Multiplayer game, 6.1.5.1.Faction selection

Initial system state: System is loaded and is in the system menu. A host system is performing the test “Starting a Multiplayer – Host” at the same time.

Expected outcome: The game loads a specified map connected to a host.

Procedure:

1. Click on “Multiplayer” button
2. Select the game listed as “Server’s game”
3. Click on “Join game”
4. Enter the screen name “Client” in the text field
5. Chose the “Harkonnen” faction from the drop-down menu
6. Press “Ready”
7. Verify that game starts

f. Load a saved game

Description: Resumes a previously saved game within the game environment

Reference in RD: 6.1.1.3 Load

Initial system state: System is loaded and is in the system menu with test save game available.

Expected outcome: The game loads a saved game file to a playable state.

Procedure:

1. Click on “Load Game” button
2. Chose the “Paul’s Basin” from the saved game list
3. Click Load button
4. Verify that game has started with all the parameters from the previous game

2. In-game tests

a. Pause the game

Description: Pauses the game session

Reference in RD: 6.1.1.5 Pause

Initial system state: System is loaded and is running a single player game

Expected outcome: The game is paused and displays the pause menu.

Procedure:

1. Press ESC
2. Verify that game has paused

b. Saving the game

Description: Saves the game to a file on the hard drive

Reference in RD: 6.1.1.4 Save game state

Initial system state: System is running a single player game

Expected outcome: The game saves the current game to be loaded later.

Procedure:

1. Access the pause menu
2. Click Save Game button
3. Enter "Paul's Basin" in the save game name input field
4. Click "Save" button
5. Perform test 1.f to verify saved game

c. Produce a building

Description: Produces and place a building on the game map

Reference in RD: 6.1.2.1 Building construction

Initial system state: The system is running a game

Expected outcome: A building is constructed and placed on the world map.

Procedure:

1. Click on "Barracks" icon on the right side-panel
2. Wait until the game announces that the building is completed
3. Click on the "Barracks" icon, which should now have changed to display that it is ready.
4. Click on a 2x2 free stone field near the construction yard on the map
5. Verify that building is placed on map

d. Produce a unit

Description: Produces a unit to the game map

Reference in RD: 6.1.2.2 Unit construction

Initial system state: The game is running and a infantry production structure has been placed on the map, the player has more than 300 credits.

Expected outcome: A unit is produced and placed near a production facility on the game map.

Procedure:

1. Click on the "Light infantry" icon on the right side-panel
2. Wait for the game to announce that the unit is complete
3. Verify that unit comes out of primary construction facility

e. Designating primary construction facility

Description: Specifies the building where produced units are placed near.

Reference in RD: 6.1.2.3 Primary production facilities

Initial system state: The game is running and more than one basic infantry production facility of the same type has been produced and placed on the map.

Expected outcome: The game places newly produced units at the most recently specified building.

Procedure:

1. Click on the infantry production building.
2. Right-click on the selected infantry production building
3. Click on the “Light infantry” icon on the right side-panel
4. Wait for the game to announce that the unit is completed
5. Verify that unit comes out of primary construction facility

f. Shortcut, production

Description: Produce a unit without using the GUI.

Reference in RD: 6.1.2.5 Production shortcuts

Initial system state: The game is running and the player has access to an infantry facility.

Expected outcome: The game produces an infantry unit without direct interaction with the GUI.

Procedure:

1. Press I
2. Press L
3. Verify that a “Light Infantry” is being produced.

g. Multiplayer chat

Description: Chatting with all other multiplayer players

Reference in RD: 6.1.9.3 Multiplayer chat

Initial system state: Two systems are connected with a multiplayer session and the game is in progress.

Expected outcome: The chat message appears in the user feedback area on all connected player.

Procedure:

1. Press “Return” on the keyboard to initiate chat writing mode.
2. Enter the text “Hello world”
3. Press “Return” on the keyboard to send the message
4. Verify text received on other game connected computer

3. In-game Research tests

a. Research, procedure

Description: Describing the procedure for engaging research.

Reference in RD: 6.1.4.1 Research, 6.1.4.3 Upgrading Research

Initial system state: The game is running, the player's in-game base meets the sufficient requirements for committing research.

Expected outcome: Research of "Armor Piercing Weapons" is engaged.

Procedure:

1. Click on the "Research" button on the right side-panel
2. Click on "Armor Piercing Weapons" in the "Available Research" list.
3. Click the "Start Research" bar, which will turn into a progress bar.

b. Credits, unlocking new research

Description: Do research to access new research.

Reference in RD: 6.1.4.1 Research, 6.1.4.2 Unlocking Research, 6.1.4.3 Upgrading Research

Initial system state: The game is running, the player's in-game base meets the sufficient requirements for committing research. The player is currently viewing the research menu.

Expected outcome: Research of "Advanced Armor Piercing Weapons" is engaged.

Procedure:

1. Click on "Armor Piercing Weapons" in the "Available Research" list
2. Click the "Start Research" bar
3. When this research is done, it is added to the list of completed research. "Advanced Armor Piercing Weapons" is now added to the list of available research.
4. Click on "Advanced Armor Piercing Weapons" in the "Available Research" list
5. Click on the "Start Research" bar

c. Research, unlocking new building construction alternatives

Description: Researching new technology to advance the construction alternatives in the base.

Reference in RD: 6.1.4.1 Research, 6.1.4.2 Unlocking Research

Initial system state: The game is running, the player's in-game base meets the sufficient requirements for committing research. The player is currently viewing the research menu

Expected outcome: Construction of a land vehicle factory becomes available in the main graphical user interface.

Procedure:

1. Click on "Terrain Vehicle Design" in the "Available Research" list
2. Click the "Start Research" bar, which will turn into a progress bar.
3. Leave the Research menu and await research completion
4. Verify that research has been completed

d. Research, unlocking new unit construction alternatives

Description: Researching new technology to advance the construction alternatives in the base.

Reference in RD: 6.1.4.1 Research, 6.1.4.2 Unlocking Research

Initial system state: The game is running, the player's in-game base meets the sufficient requirements for committing research. The player is currently viewing the research menu

Expected outcome: Construction of Heavy Infantry becomes available in the main graphical user interface.

Procedure:

1. Click on "Exo-skeleton" in the "Available Research" list
2. Click the "Start Research" bar, which will turn into a progress bar.
3. Leave the Research menu and await research completion
4. Verify that research has been added to the completed research list

4. In-game Unit design tests

a. Opening the design menu

Description: Display the in-game unit design menu.

Reference in RD: 6.1.6.1 Design dialogue access

Initial system state: The system is running a game, and the player is able to interface with the main GUI.

Expected outcome: The design menu is displayed.

Procedure:

1. Click on "Unit Design" button
2. Verify that unit design window opens

b. Designing a custom unit

Description: Describes the procedure for designing a new unit.

Reference in RD: 6.1.6.2 Designing units, 6.1.6.3 Design budget

Initial system state: The system is running a game, and the player is currently viewing the design menu.

Expected outcome: A land unit design is specified and saved.

Procedure:

1. Click on "Buggy" chassis in the Chassis window, review it's specifications and cost in the information window
2. Click on "Combustion engine mk.I" in the Engine window, review it's specifications and cost in the information window
3. Click on "Light machinegun mk.I" in the Weapon window, review it's specifications and cost in the information window
4. Click on "No extra armor" in the Armor window, review it's specifications and cost in the information window
5. Review the total unit information displayed in the Unit Slot Window window
6. The parts' cost is summarized in the Unit Cost field.
7. Enter the name "Light Buggy" for the design in the text input field.
8. Click "Save" button.
9. Click "Back" button to return to game.
10. Verify design by building it in the in-game build pane

c. Factional differences

Description: Verifying that there are differences between a sample of factions in the game.

Reference in RD: 6.1.1.1 Starting a premade map, 6.1.1.5 Pause, 6.1.2.1. Building construction, 6.1.2.2. Unit construction, 6.1.2.4. Unit types, 6.1.5.1 Faction selection, 6.1.5.2 Faction differences, 6.1.11.1 Quit the game

Initial system state: The system is running and is currently in the main menu state.

Expected outcome: Visible confirmation that the Atreides faction has access to research alternatives that the Harkonnen faction does not.

Procedure:

1. Click on the “Single Player” button
2. Chose the Atreides faction
3. Enter “Paul” as the screen name
4. Click the “Launch Game” button
5. When the game has loaded, click on the “Barracks” icon on the right side-bar
6. Click on a free 2x2 rock square on the map near the base and wait for the construction to complete
7. Verify that construction of Light Infantry is available
8. Press ESC to access the pause menu
9. Click “Quit” button
10. Start the game
11. When the game has loaded, click on “Singleplayer” button
12. Chose the Harkonnen faction
13. Enter “Feid” as screen name
14. Click “Launch Game” button
15. When the game has loaded, click on the “Barracks” icon on the right side-bar
16. Click on a free 2x2 rock square on the map near the base and wait for the construction to complete
17. Verify that construction of Light Infantry is not available, but that Heavy Infantry is.

d. Multiplayer designs

Description: During multiplayer custom unit designs are correctly shared.

Reference in RD: 6.1.6.4 Multiplayer designs

Initial system state: Two systems are connected with a multiplayer session and the game is in progress. Each player has only one premade custom unit design.

Expected outcome: The custom designs are merged into one database, however only the creator of each can **construct** the custom unit.

Procedure:

1. Both players create one custom unit
2. Both players send their custom unit to the other players base
3. Both players verify they cannot create any other custom unit designs than theirs.

5. In-game unit handling tests

a. Selecting a single unit or building

Description: Marks a unit or building for I/O device listening

Reference in RD: 6.1.7.1 Selecting a single unit or building

Initial system state: The system is running a game

Expected outcome: The selected unit or building is highlighted with a health bar.

Procedure:

1. Click on a unit or building with the left mouse button
2. Verify that a ring has been presented around the unit

b. Selecting a group of units

Description: Marks several units for I/O device listening

Reference in RD: 6.1.7.2 Selecting a group of units

Initial system state: The system is running a game

Expected outcome: The selected units are highlighted with a health bar.

Procedure:

1. Hold down left mouse button next to a group of units
2. Drag the mouse so that the rectangle drawn by the game encompasses the units
3. Let go of left mouse button.
4. Verify that rings have been presented around the units

c. Controlling a unit with mouse in combat

Description: Having a unit selected, when clicking upon an enemy unit an attack command shall be issued.

Reference in RD: 6.1.7.3 Controlling units with mouse

Initial system state: The system is running a game and one unit is selected

Expected outcome: The selected unit moves to attack enemy unit.

Procedure:

1. Right click on an enemy unit.
2. Verify that the friendly unit attacks the enemy

d. Controlling a unit with mouse in non-combat

Description: Having a unit selected, when clicking on an empty non blocked terrain tile the move command shall be issued

Reference in RD: 6.1.7.3 Controlling units with mouse

Initial system state: The system is running a game and one unit is selected

Expected outcome: The selected unit moves to the assigned coordinates.

Procedure:

1. Right click on an empty non blocked terrain tile.
2. Verify that unit moves

e. Using keyboard to issue defend command

Description: Having a unit selected, when pressing d the defend command shall be issued.

Reference in RD: 6.1.7.4 Controlling units by keyboard

Initial system state: The system is running a game and one unit is selected

Expected outcome: Unit fires upon any enemy unit that comes into range but does not pursue.

Procedure:

1. Press d button
2. Verify that unit stands still when enemy comes within range

f. Using keyboard to issue attack command

Description: Having a unit selected, when pressing a the attack command shall be issued.

Reference in RD: 6.1.7.4 Controlling units by keyboard

Initial system state: The system is running a game and one unit is selected

Expected outcome: Unit attacks unit even though it is friendly

Procedure:

1. Press a button
2. Left click upon a unit (not self)
3. Verify that friendly unit attacks target

g. Using keyboard to issue move command

Description: Having a unit selected, when pressing M the move command shall be issued.

Reference in RD: 6.1.7.4 Controlling units by keyboard

Initial system state: The system is running a game and one unit is selected

Expected outcome: Unit moves to a given location

Procedure:

1. Press m button
2. Left click on ground
3. Verify that unit moves

h. Using keyboard to issue stop command

Description: Having a unit selected, when pressing S the stop command shall be issued, stopping all move and attack orders.

Reference in RD: 6.1.7.4 Controlling units by keyboard

Initial system state: The system is running a game and one unit is selected

Expected outcome: Unit stops all actions

Procedure:

1. Move unit
2. Press S button when unit is moving
3. Verify that unit stops

i. Controlling units in combat

Description: When an enemy unit comes within sight range of a unit, this unit will automatically attack. Player can move the unit away from enemy unit to interrupt the fight.

Reference in RD: 6.1.8.1 Controlling units in combat

Initial system state: The system is running a game.

Expected outcome: When an enemy unit approaches the friendly unit shall attack the enemy. When player gives friendly unit a move command it shall cease firing.

Procedure:

1. Place friendly unit close to enemy.
2. Wait for enemy unit to come into range
3. When fight starts move friendly unit away
4. Verify that unit moves away

j. Building and using defensive buildings

Description: Use the build command to create a defensive building on a valid map square. When an enemy unit comes in range of the defensive building it shall attack the enemy.

Reference in RD: 6.1.8.2 Defensive buildings entering combat, 6.1.2.1 Building construction

Initial system state: The system is running a game and enough currency is available to create a defensive building and enough space is available on the map.

Expected outcome: When enemy is in range the building fires upon it.

Procedure:

1. Choose a defensive building from the build menu to build
2. Place it on a valid square on the map
3. Wait for an enemy unit to come into range
4. Verify that building fires upon enemy

k. Firing upon indestructible computer controlled neutral units

Description: Sand Tornados are computer controlled units that are indestructible. These move around the map in a random pattern causing havoc for any players.

Reference in RD: 6.1.8.4 Indestructible computer controlled neutral units

Initial system state: The system is running a game and one unit is selected

Expected outcome: Unit fires upon the tornado but does not do any damage

Procedure:

1. Select unit
2. Issue fire command upon Sand Tornado
3. Verify that Sand Tornado is not damaged by selecting it and viewing its health bar

1. Gathering Resources

Description: Specific locations on the map will contain resources that a special unit can gather. When these resources have been collected and returned to the base the resources will be converted to currency. This currency can then be used to perform research and buy buildings and units.

Reference in RD: 6.1.3.1 Currency, 6.1.3.2 Harvestable resources, 6.1.7.3

Controlling units with mouse

Initial system state: System is running a game.

Expected outcome: Resources are collected and converted into currency.

Procedure:

1. Select a resource harvester unit.
2. Right click upon a resource filled tile on the map
3. Wait for the unit to complete the gathering process and return to base
4. Observe increase in the Resource Tracker in top right corner of game screen.

m. Computer controlled opponent

Description: During single player games a computer controlled player should be available

Reference in RD: 6.1.8.3 Computer controlled opponent

Initial system state: User is in the Singleplayer game menu and custom map called "Test AI" is selected

Expected outcome: The game starts with a computer controlled opponent

Procedure:

1. Select "Test AI" map
2. Select the faction "Atreides"
3. Press the "Launch game" button
4. Verify that buildings controlled by the other player are producing

6. End of game tests

a. Victory by mass conquer

Description: When only one player owns units and buildings he/she is declared winner of the game.

Reference in RD: 6.1.11.3 Victorious game by mass conquer, 6.1.8.3 Computer controlled opponent

Initial system state: System is running a game on a special map with 2 units called "Test AI"

Expected outcome: Victory message is displayed and game is ended.

Procedure:

1. Select friendly unit
2. Right click on enemy unit
3. Wait for enemy unit to be destroyed
4. Wait for victory message to be destroyed.

b. Victorious game by disconnection

Description: Upon disconnection of the last client in a multiplayer game the host wins by default

Reference in RD: 6.1.11.2 Victorious game by disconnection

Initial system state: Two systems are connected with a multiplayer session and the game is in progress.

Expected outcome: The game ends and the host is declared victorious

Procedure:

1. Client player disconnect the network cable
2. Verify that proper end of game message is displayed

c. Lost game by disconnection

Description: Upon disconnection from the host in a multiplayer game the client loses by default

Reference in RD: 6.1.11.4 Lost game by disconnection

Initial system state: Two systems are connected with a multiplayer session and the game is in progress.

Expected outcome: The client loses the game. Game ends for client.

Procedure:

1. Client player disconnect the network cable
2. Verify that proper end of game message is displayed