# Testing

## Test Plan

Password System

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| --- | --- | --- | --- | --- | --- |
| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 1 | User name left blank and done clicked. | Blank or with a space - erroneous | Message box displays informing user to enter user name. | As expected | 1a |
|  | Password left blank and done clicked. | Blank or with a space - erroneous | Message box displays informing user to enter password. | As expected | 1b |
|  | Incorrect password entered for username. | Password123 =/= admin - erroneous | Message box displays informing user that either the password is incorrect or you are logging into the wrong account. | As expected | 1c |
|  | User name and password entered correctly. | *Username – admin*  *Password - admin*  Is registered user - typical | The login menu becomes hidden from the user and they are redirected to the menu screen. | As expected | 1d |

Account Creation

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 2 | Entering correct user name and password after they have been set up. | Create New Account Form  *Username – registertest*  *Password – testing*  *Confirm Password – testing*  Login Form  *Username – registertest*  *Password – testing*  Typical data | After user has filled out information within create new account form and clicked create, they are redirected to login menu where new account details are entered and login menu should hide and user should be shown the menu screen. | As expected | 2a |
|  | All fields left blank and button clicked. | All fields Blank or with a space - erroneous | Message box displays informing user to enter a username between 5 and 40 characters. | As expected | 2b |
|  | Password and Confirm Password left blank and button clicked. | Username – test2  Typical  Password and Confirm Password blank  Erroneous | Message box displays informing user to enter password between 3 and 25 characters. | As expected | 2c |
|  | Password and Confirm Password do not match and button clicked. | Password - niceworld  Confirm Password - password  data typical but do not match | Message box displays informing user that passwords do not match. | As expected | 2d |
|  | Username entered already exists in database | Username – admin  Password – admin  Confirm Password – admin  Typical data | Message box informs user that the username has already been taken. | As expected | 2e |
|  | Database has reached maximum accounts | Username – bobsam  Password – password  Confirm Password – password  Typical data | Although all information is correct and valid a message box will appear | As expected | 2f |
|  | User name and password entered correctly  And confirm password matches password and button clicked. | Username – teste  Password – guest  Confirm Password – guest  Typical | Message box to say saved new account and then create new account form is hidden, login form is shown and database is updated with new record of user. | As expected | 2g |

Creation of New Game

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 3 | All fields left blank and button clicked. | All fields blank or with a space - erroneous | Validation should not allow fields to be empty, the first validation should be to require input of a faction choice. | As expected | 3a |
|  | Faction input, rest of fields left blank and button clicked. | Faction – Dwarves  Typical Data | Message box should appear telling user to choose a map before they can continue. | As expected | 3b |
|  | Faction and map input but filename field left blank and button clicked. | Faction – Dwarves  Map – Jungle  Typical Data | Player is instructed through a message box that they cannot leave the filename field blank. | As expected | 3c |
|  | All fields have data entered and button clicked. | Faction – Dwarves  Map – Jungle  Filename – ‘First Save’  Typical Data | A message box should appear to state that the game has been created and subsequently it should tell the player the rules of the game if they are not an expert, who they are, who they are against (chosen randomly) and then generate the map. | As expected | 3d |

Loading of Existing Game

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 4 | Attempt to load an empty save. | Erroneous | Message box tells user that an empty save cannot be loaded. | As expected | 4a |
|  | Load an existing game. | Typical | The player is reinstated the rules if they are not an expert and then the map is loaded to resume gameplay. | As expected | 4b |

Deletion of Existing Save

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 5 | Attempt to delete an empty save. |  | A message box should appear stating that you cannot delete an empty save. | As expected | 5a |
|  | Delete an existing game click. Yes clicked on confirmation. |  | A message box should appear to confirm whether they would like to delete their save, then it should state that the save has been deleted. | As expected | 5b |
|  | Delete an existing game clicked. No clicked on confirmation. |  | A message box should appear to confirm whether they would like to delete their save, then it should just cancel as no has been clicked. | As Expected | 5c |

Database Creation

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 6 | First run of program, no database. |  | Program should detect that there is no existing database and should recreate a blank database for it to use. | As expected | 6a |
|  | Database already exists. |  | Program should detect existing database to use instead of creating a new database. | As expected | 6b |

Automatic Save at End of Turn

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 7 | End turn clicked |  | Message box should be displayed to tell user that the game has been saved as well as what the new turn is. | As expected | 7a |

Terrain Generation (Both Preset and Random)

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 8 | Island map selected | Map – Island | Map should be the right size (3 by 1) as well as be of the right type of tile (in this case Island) | As expected | 8a |
|  | Desert map selected | Map – Desert | Map should be the right size (3 by 3) as well as be of the right type of tile (in this case Desert) | As expected | 8b |
|  | Jungle map selected | Map – Jungle | Map should be the right size (5 by 4) as well as be of the right type of tile (in this case Jungle) | As expected | 8c |
|  | Tundra map selected | Map – Tundra | Map should be the right size (6 by 3) as well as be of the right type of tile (in this case Tundra) | As expected | 8d |
|  | Chaos map selected | Map – Chaos | Map should be the right size (7 by 4) as well as be made up of random tiles. | As expected | 8e |

Placement of Factions and avoidance of Collision

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 9 | Chaos map chose which requires 6 factions to be placed randomly and not to overwrite each other. | Map – Desert  Factions - All | All faction locations are chosen randomly and do not overwrite each other therefore there should be 6 factions visible on the map. | As expected | 9a |

Compilation of Playing Factions List Randomly

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 10 | Desert map chose which requires 3 factions. | Map - Desert | System should choose 2 random factions to play in this game as well as the player controlled faction. This should be shown through a message box of which the player is playing as well as who they are against. Map should be consistent with what the message boxes state. | As expected | 10a |

Settlement Advancement

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 11 | Current gold is less than the required gold to upgrade and upgrade button clicked. | Gold=9  RequiredGold=10 | A message box should appear telling the user that they cannot upgrade without the required gold. | As expected | 11a |
|  | Current gold is equal or greater than the required gold to upgrade and upgrade button clicked. | Gold=10  Requiredgold=10 | A message box should appear saying that the settlement has now been upgraded, the current and next settlement labels are updated as well as the new required gold for the next settlement. | As expected | 11b |

Tile Selection

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 12 | Tile selected and player is not owner of tile. | Tile (2, 2) | Within the ‘Tile Information’ group box, a SQL query should change all labels according to the stated tile. | As expected | 12a |
|  | Tile selected and player is owner of tile. | Tile (3, 1) | Within the ‘Tile Information’ group box, a SQL query should change all labels according to the stated tile. Additionally, because the player is the owner of the tile group box ‘Settlement’ and group box ‘Create a Squad’ should be shown. | As expected | 12b |

Game Progression (Through Turns)

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 13 | When ‘End Turn’ is pressed, database is updated with new information. |  | Fields such as food gold and happiness should change according to their per turn value. Number of turns should increase by 1. | As expected | 13a |

Prevention of Human Error with Automatic SaveID

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 14 | No save files exist |  | System should choose to save in save file 1. | As expected | 14a |
|  | Save file present in 1 |  | System should choose to save in save file 2. | As expected | 14b |
|  | Save file present in 2 |  | System should choose to save in save file 3. | As expected | 14c |
|  | Save file present in 3 |  | System should choose to save in save file 1. | As expected | 14d |
|  | Save file present in 1 and 2 |  | System should choose to save in save file 3. | As expected | 14e |
|  | Save file present in 1 and 3 |  | System should choose to save in save file 2. | As expected | 14f |
|  | Save file present in 2 and 3 |  | System should choose to save in save file 1. | As expected | 14g |
|  | Save file present in 1,2 and 3 |  | A message box should appear telling user that they have reached the maximum number of saves and that they are required to delete a save before they can create a new game. | As expected | 14h |

Sound Effects

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 15 | Sound plays. |  | When a settlement is upgraded a music file should be played through the TMediaPlayer. | As expected | 15a |

Print Tile Information

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 16 | User selected tile information is printed. | Tile (1, 1) | Tile information should be sent to the printer after the print tile information button has been pressed. A message box should appear to clarify this. | As expected | 16a |

Account Deletion

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| Test | Description of test | Test Data and reason | Expected outcome | Actual Outcome | Screenshot |
| 17 | ‘Delete Account’ pressed when user has no save files. ‘Yes’ has been pressed to confirm. |  | After the user has confirmed,  Account should be deleted from the database then a message box should be shown to state that the account has now been deleted. | As expected | 17a |
|  | ‘Delete Account’ pressed when user has single/multiple save files. ‘Yes’ has been pressed to confirm. |  | After the user has confirmed,  a message box should appear instructing the user that all save files must be deleted before an account can be deleted. | As expected | 17b |
|  | ‘Delete Account’ pressed and then ‘No’ pressed. |  | The system should abort and just stay on the menu waiting for user input. | As expected | 17c |

Navigational Test / Full Run of Program

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| Test | Name of Form | Brief Description / Purpose of Form | Screenshot |
| 18 | Login | Allows for games to be saved and tracked to an account. | 18a |
|  | Create New Account | Allows user to login to the system if they do not already have an account. | 18b |
|  | Menu | Provides user with several options to choose what they would like to do. | 18c |
|  | Create New Game | Allows user to create a new game to play based on what they have selected. | 18d |
|  | Load Game | Allows user to load previous games so they can turn off the computer and still have their games saved. | 18e |
|  | Current Game | Displays the active game to the user and allows for user input. | 18f |

## Screenshots – Test Runs

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| **Screenshot 1a - User name left blank** |
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| Screenshot 1b – Password left blank |
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| Screenshot 1c – Incorrect password for specified user |
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| Screenshot 1d – Correct username and password |
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| Screenshot 2a – entering username and password after setup |
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| Screenshot 2b |
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| Screenshot 2c |
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| Screenshot 2d |
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| Screenshot 2e |
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| Screenshot 2f |
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| Screenshot 2g |
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| Screenshot 3a |
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| Screenshot 3b |
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| Screenshot 3c |
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| Screenshot 3d |
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| Screenshot 4a |
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| Screenshot 4b |
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| Screenshot 5a |
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| Screenshot 5b |
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| Screenshot 5c |
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| Screenshot 6a |
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| Screenshot 6b |
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| Screenshot 7a |
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| Screenshot 8a |
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| Screenshot 8b |
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| Screenshot 8c |
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| Screenshot 8d |
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| Screenshot 8e |
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| Screenshot 9a |
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| Screenshot 10a |
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| Screenshot 11a |
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| Screenshot 11b |
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| Screenshot 12a |
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| Screenshot 12b |
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| Screenshot 13a |
| Before ‘End Turn’ pressed:   **After ‘End Turn’ Pressed:** |
| Screenshot 14a – h (in chronological order) |
| A B    C    D    E    F    G    H |
| Screenshot 15a |
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| Screenshot 16a |
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| Screenshot 17a |
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| Screenshot 17b |
|  |
| Screenshot 17c |
|  |
| Screenshot 18 a – g (in chronological order) |
| A   B    C    D    E    F |