

ID	Objective	Preconditions	Steps to Execute	Expected Result
MANUAL_TEST_0	<p>Test that the game opens and closes. Test that the instructions screen works.</p> <p>Requirements tested: FR_INTERACTIVE_ELEMENTS NFR_INTERACTIVE_ELEMENTS FR_USER_INTERFACE</p>	None.	<p>Navigate to the directory containing the game's jar file and execute the jar file. Then click the button that says 'Instructions'. Then click the button that says 'Back'. Then click the button that says 'Quit'.</p>	<p>The game launches onto the start menu. After the 'Instructions' button has been pressed, the instructions screen should appear and instructions should be displayed. After the 'Back' button has been pressed, the start menu should show as it did before clicking 'Instructions'. Once the 'Quit' button has been pressed, the game closes.</p>
MANUAL_TEST_1	<p>Test that the leaderboard is visible.</p> <p>Requirements tested: FR_LEADERBOARD FR_USER_INTERFACE FR_INTERACTIVE_ELEMENTS NFR_INTERACTIVE_ELEMENTS</p>	The game is open on the Start Menu.	<p>Click the button that says 'Leaderboard'. Then click the button that says 'Return to Menu'.</p>	<p>After clicking the 'Leaderboard' button, the Leaderboard Menu appears, showing the name and score of top 5 results. After the 'Return to Menu' button is pressed, the Start Menu is shown again.</p>
MANUAL_TEST_2	<p>Test that the map is shown correctly and the navigation using the mouse works as expected.</p> <p>Requirements tested: FR_MAP FR_ISOMETRIC_CAMERA FR_CAMERA_CONTROL</p>	The game is open on the Start Menu.	<p>Click the button that says 'New Game'. Then click and drag the mouse to move around the map. Then turn the scroll wheel in both directions to zoom in and out.</p>	<p>After clicking the 'New Game' button, the game map is shown. The map should be isometric with the perspective being from the sky looking across at the 'pseudo-3D' world. When the mouse is clicked and dragged, the map should move around following the cursor. When the scroll wheel is turned, the map should increase or decrease in size, depending on the direction, to appear as though it is zooming out.</p>
MANUAL_TEST_3	<p>Test that the game contains the correct amount of placeable buildings.</p> <p>Requirements tested: FR_BUILDING_VARIETY</p>	The game is open on the map screen and the timer has not run out.	<p>Click on each of the 5 tabs on the building menu at the bottom of the screen.</p>	<p>After clicking the 'Teaching' tab at least one building appears in the menu. After clicking the 'Accommodation' tab, at least one building appears in the menu. After clicking the 'Recreation and Trees' tab, at least 2 buildings appear in the menu. After clicking the 'Catering' tab, at least 1 building appears in the menu.</p>
MANUAL_TEST_4	<p>Test that the user can select and place buildings from the menu.</p> <p>Requirements tested: FR_BUILDING_SELECT FR_BUILDING_MANAGER</p>	The game is open on the map screen and the timer has not run out.	<p>Click on one of the 5 buildings shown in the building menu and then click again on an empty part of the map to place the building. Repeat this with a different building on the same tab, and then a building in the same</p>	<p>After clicking the first building, the building, the building should be greyed out in the menu and a semi-transparent copy of the same building should follow the mouse cursor. After clicking to place the building in the world, the building should stop following the mouse cursor and stay in place in the world. The building's icon in the building menu should no longer be grayed out. The same should happen for the other 2</p>

			position but on a different tab.	buildings that are selected and placed.
MANUAL_TEST_5	<p>Test that the timer starts at 5 minutes, counts down at the correct speed, and stops counting when the game is paused.</p> <p>Requirements tested: FR_GAME_PAUSE FR_GAME_PAUSE_EFFECT FR_TIMER_COUNTDOWN WN FR_TIMER_START FR_GAME_END</p>	The game is open on the start screen.	<p>Click the 'New Game' button. Click on the play icon at the top of the screen. Wait for approximately 3 seconds, then click on the pause icon at the top of the screen. Repeat the above, then start a stopwatch and click on the play icon for a third time, and wait for the timer to reach 0. Pause the stopwatch.</p>	<p>After clicking the 'New Game' button, the timer at the top of the screen should display '5:00'. After clicking the play button, the play button should be replaced with a pause button and the timer should start counting down at a rate of 1 second per second. After clicking the pause button, the pause button should be replaced with a play button and the timer should stop counting down. At the end of the test, the stopwatch should read approximately 4 minutes and 54 seconds and a Game Over menu should be displayed on the screen.</p>
MANUAL_TEST_6	<p>Test that the building counter displays the correct counts for the number of buildings that have been placed and that the student satisfaction is displayed to the user as a percentage.</p> <p>Requirements tested: FR_BUILDING_COUNTER FR_SATISFACTION_COUNTER</p>	The game is open on the map screen, the timer has not run out and no buildings have been placed.	Select the 'Teaching' tab and place 2 buildings in the world. Repeat for the 'Accommodation', 'Catering' and 'Recreation and Trees' tabs.	<p>At the start of the test, all the building counters in the top left of the screen display '0' and the 'Satisfaction' field in the top right of the screen should display '0.00%'. After each building is placed, the corresponding counter increments by 1.</p>
MANUAL_TEST_7	<p>Verify that at least 3 different events occur throughout the game.</p> <p>Requirements tested: FR_EVENT_FREQUENCY FR_NAME_INPUT FR_INTERACTIVE_ELEMENTS NFR_INTERACTIVE_ELEMENTS</p>	The game is open on the start screen.	<p>Click the 'New Game' button then the play button and let the timer count down to 0. Then enter a name into the text box at the bottom of the screen and click the button that says 'Save Score and go Home'.</p>	<p>After clicking the 'New Game' button, the 'Event' field at the top of the screen should display 'None'. After clicking the play button, the 'Event' field should display at least 3 other messages (one for each event that occurs) before the timer reaches 0. The game should allow the user to type into the text box as expected and when the 'Save Score and go Home' button is pressed, the game should return to the start screen immediately.</p>
MANUAL_TEST_8	<p>Test that achievements trigger notifications to be shown.</p> <p>Requirements tested: FR_ACHIEVEMENT_EARN FR_ACHIEVEMENT_CRITERIA FR_ACHIEVEMENT_NOTIFICATION</p>	The game is open on the start screen.	<p>Click the 'New Game' button then place 100 buildings of any type in the world (keep placing buildings until the counter reaches 100).</p>	<p>After 100 buildings have been placed, a notification should appear on the right-hand-side of the screen acknowledging that the 'Building Hoarder' achievement has been achieved.</p>

MANUAL _TEST_ 9	<p>Test that the game runs on the minimum hardware requirement at around 60 FPS with 1% lows above 50 FPS.</p> <p>Requirements tested: NFR_MINIMUM_HARDWARE FR_INTERACTIVE_ELEMENTS NFR_INTERACTIVE_ELEMENTS</p>	<p>The game is open on a machine with 2 CPU cores and 2GB of RAM, on the start screen and the CapFrameX software is running.</p>	<p>Click the 'New Game' button then place the maximum number of buildings (250), zoom in and out using the scroll wheel and pan around the map by clicking and dragging the mouse. Then stop CapFrameX and generate the results.</p>	<p>The average frame-rate should exceed 58. The lowest 1% of frame times should also be above 50.</p>
MANUAL _TEST_ 10	<p>Test that the mute button works.</p> <p>Requirements tested: NFR_INTERACTIVE_ELEMENTS FR_USER_INTERFACE</p>	<p>The game is open on the map screen. And the music is not muted.</p>	<p>Click the volume icon. Click it again.</p>	<p>Before clicking the volume icon, it should appear with some sound wave lines next to it. After clicking the volume icon the first time the music should stop and the volume icon should lose the sound wave imagery. After clicking it the second time, the music should return and the icon should return to its original state.</p>