System and Unit Test Report

Product Name: IdleCraft
Team Name: IdleCraft: The Idle Crafting Game
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<u>Testing Approach</u>:
We used a combination of manual and automated testing. On the manual side, we created a detailed testing checklist to mimic user behavior and cover our acceptance criteria. On the automated side, we created unit tests to extend coverage to our backend Inventory and Item classes. Before merging new code into the master branch of our codebase, we ensured all manual and automated tests would pass (included in our definition of done).

<u>Manual Testing Checklist</u>:
1.) App launches without crashing.
    a.) Local save data loads.
    b.) Game starts on the gathering tab.
    c.) User cannot rotate app to landscape mode.
2.) User can switch between any two tabs.
    a.) Rapidly switching tabs does not cause data corruption or crashing.
    b.) Inventory is in sync across all tabs.
3.) The UI loads correctly on each tab.
    a.) All UI components are aligned.
    b.) All tabs are scrollable.
    c.) All images load.
4.) User can gather resources.
    a.) Gathering begins when user presses item image.
    b.) Progress bar increases according to gather rate.
    c.) Pressing the gather button while gathering is already in progress for an item has no effect.
    d.) Item count increases once gathering completes.
    e.) Once max item count is reached, item cannot be gathered.
    f.) Multiple items can be gathered simultaneously.
5.) User can craft resources.
    a.) User can increase and decrease the number of item to craft.
    b.) Crafting begins when user presses item image.
    c.) User cannot craft item if requirements are not met.
    d.) Progress bar increases according to crafting rate.
    e.) When crafting more than one of an item at a time, the progress bar will animate that many times and craft the item one at a time.

f.) Pressing the craft button while crafting is already in progress for an item has no effect.

g.) Item count for crafted item increases once crafting completes.

h.) Item count for required items decreases once crafting completes.

i.) Once max item count is reached, item cannot be crafted.

j.) Multiple items can be crafted simultaneously.

6.) User can purchase upgrades from the shop.

a.) User can increase and decrease the number of upgrades to purchase.

b.) Player funds decrease once upgrade is purchased.

c.) Upgrade count increases once upgrade is purchased.

d.) Increasing an item's max count is reflected in the gathering or crafting tab.

e.) Increasing an item's gathering or crafting rate is reflected in the amount of that item being gathered or crafted.

7.) User can buy or sell items from their inventory.

a.) User can increase and decrease the number of item to buy or sell.

b.) User cannot sell more of an item than they currently have.

c.) User cannot purchase more of an item than they can currently afford.

d.) Item count decreases when item is sold, increases when item is purchased.

e.) Player funds increase when item is sold, decrease when item is purchased.

User Stories + Given-When-Then Format:

- As a player, I want my game state to be saved so that I don't have to restart each time I close the app.
    - Given I have local save data, when IdleCraft launches, then the saved data values should automatically load.

- As a player, I want to be able to switch between different menus so that I can interact with different components of the game.
    - Given any scenario, when IdleCraft launches, then it should start on the gathering tab.
    - Given any scenario, when I press on a tab button, then I should switch to that tab's UI.

- As a player, I want the game fragments to behave as expected and never crash.
    - Given any scenario, when IdleCraft launches, then it should not crash.

- As a user, I want the game to run smoothly and perform optimally.
    - Given any scenario, when I rotate my device horizontally, then the app should not switch to landscape mode.

- As a player, I want each fragment to be updated simultaneously whenever any changes to the inventory occur so that I don't have to change tabs back and forth to see updates.
    - Given any scenario, when I switch to a new tab, then inventory values should stay in sync.

- As a player, I want to have fleshed out tabs with plenty of items and decent graphics.
    - Given any scenario, when I interact with the app, then UI components should be aligned and all assets should load.
    - Given any scenario, when I drag the screen up or down, then the app should scroll.

- As a player, I want to be able to manually gather items and place them in my inventory, so I can craft items.
    - Given that I do not have the max amount of a gatherable item in my inventory, when I press that item's image, then gathering should begin.
    - Given an item's gathering is in progress, when its progress bar is animating, then it should advance according to the item's gather rate.
    - Given an item's gathering is in progress, when I press that item's image, then nothing should happen.
    - Given any scenario, when item gathering finishes, then the item's count should increase by one.
    - Given some number of items have gathering in progress, when I press a different item's image, then its gathering should begin.

- As a player, I want to be able to manually craft items and place them in my inventory to sell at the shop for currency.
    - Given I am on the crafting tab, when I press the plus or minus buttons next to an item, then I can increase or decrease the number of that item to craft.
    - Given that I do not have the max amount of a craftable item in my inventory and crafting requirements are met, when I press that item's image, then crafting should begin.
    - Given an item's crafting is in progress, when its progress bar is animating, then it should advance according to the item's crafting rate.
    - Given I am crafting more than one of an item, when the crafting process begins, then the progress bar will animate that many times and craft the item one at a time.
    - Given an item's crafting is in progress, when I press that item's image, then nothing should happen.
    - Given any scenario, when item crafting finishes, then the item's count should increase and the required items' counts should decrease.
    - Given some number of items have crafting in progress, when I press a different item's image, then its crafting should begin.

- As a player, I want to buy upgrades for inventory space, gathering speeds, and crafting speeds on a shop tab, so I feel like I am making progress.
    - Given I am on the shop tab, when I press the plus or minus buttons next to an item, then I can increase or decrease the number of upgrade for that item to purchase.
    - Given I am on the shop tab, when I purchase an upgrade, then player funds should decrease and the upgrade count should increase.
    - Given I have upgraded an item's max count, when I switch to the gathering or crafting tab where that item is located, then the new max count should be displayed.
    - Given I have upgraded an item's rate, when I collect that item, then the amount being added to my inventory should be based on the new rate and the item should be repeatedly gathered or crafted automatically.

- As a player, I want to buy and sell items so I can spend and collect currency.
    - Given I am on the inventory tab, when I press the plus or minus buttons next to an item, then I can increase or decrease the number of that item to buy or sell.
    - Given I do not have an item to sell, when I press the sell button, then nothing should happen.
    - Given I cannot afford to purchase an item, when I press the buy button, then nothing should happen.
    - Given I have enough of an item to sell, when I press the sell button, then its count should decrease and player funds should increase.
    - Given I have enough currency to purchase an item, when I press the buy button, then its count should increase and player funds should decrease.

Unit Testing:
https://docs.google.com/spreadsheets/d/1Rb3ywyaEvEFG1ZXh3sXIyLi92mN1r1H7m8-HR64Sl E8/edit?usp=sharing