ELEMENTRIUM

Sprint 2 Planning Document

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Sprint Overview

During this sprint, we hope to successfully link the components of the application we have made in the previous sprint to create a functional build that can fulfil the expected user stories. Much of the written scripts require modification, debugging, and renovation for a clean and concise structure for better coordination between the separate parts. Meanwhile, the establish database requires expansion, and the information from which must have an implementation to parse it for our programs to read and display to the users.

Scrum Master: Jonathan Grider

Meeting Plan: Tuesdays/Thursdays @ 3:00pm

Risks and Challenges:

Although much of the separate implementations were established in the previous sprint, we had difficulties connecting the components to establish functionality within the limited time constraint. This may have potentially set back our progress in this project. Another challenge is that upon linking these separate components, many user tests must be performed to verify the functionality of the implementation. It is crucial for us to successfully implement our user stories in order for our algorithms to properly interact with our database and extract the correct data in this and future sprints.

Current Sprint Detail

User Story #1

As a user, I would like to be able to refer to a journal for facts and trivia on an atom of interest.

#	Description	Estimated Time	Owner
1	Create UI panel to display atom information	2 Hrs	Vinson
2	Create mock program to show how to interact with the database	2 Hr	Jonathan
3	Create an algorithm to obtain information about the atom from the database	10 Hrs	Kate
4	Debug and test algorithm using unit tests	5 Hrs	Kate
5	Connect algorithm to UI that displays information about the atom	5 Hrs (Each)	Vinson, Kate

Acceptance Criteria:
- Given that the UI for the glossary is implemented correctly, when the user attempts to view information that is too big for the screen to hold, they should be able to scroll down the page for access.
- Given the glossary is implemented correctly, when the user refers to the glossary to view the elements in the Elements tab, the elements will be shown to the user as sorted by atomic number.
- Given that the connection between the Glossary and the UI panel is correctly implemented, when a user taps on an existing atom in the Glossary, a UI panel will pop up
- Given that the algorithm for reading information is correctly implemented, when a user opens an information popup, the popup panel will display the information regarding the atom.

User Story #2

As a user, I would like to be able to open a list that shows all of the possible compounds that are made up of at least one of the structures that is within my workspace.

#	Description	Estimated Time	Owner
1	Create a scrolling list that will auto generate its contents at runtime	2 Hrs	Vinson
2	Create an algorithm to read compound data from the database	5 Hrs	Jonathan
3	Create an algorithm to parse compound product and reactant data	6 Hrs	Jonathan

| 4 | Debug and test the read & parsing algorithms with unit tests | 6 Hrs | Jonathan |
| 5 | Connect parsing algorithm to scrolling list | 5 Hrs (Each) | Vinson, Jonathan |

Acceptance Criteria:
- Given that the scrolling list UI is correctly implemented, when the user accesses it, the scroll list correctly responds to the user's interaction with it.
- Given that the reading algorithm functions properly, when the user accesses the scroll list, the application will be able to interact with the database by accessing the data.
- Given that the parsing algorithm functions properly, when the user accesses the scroll list, the application will be able to parse the data read from the database to output to the display that the user can visualize.
- Given that the scrolling list auto-generation algorithm is correctly written, when the user opens it, the algorithm will populate the list with information read from the database and the correct number of entries.

User Story #3

As a user, I would like to be able to refer to a journal for facts and trivia on a compound of interest.

#	Description	Estimated Time	Owner
1	Create UI panel to display compound information	2 Hrs	Vinson
2	Create an algorithm to obtain information about the compound from the database	10 Hrs	Kate
3	Debug and test algorithm using unit tests	5 Hrs	Kate
4	Connect algorithm to UI that displays information about the molecule	5 Hrs (Each)	Kate, Vinson

Acceptance Criteria:
- Given that the UI for the glossary is implemented correctly, when the user attempts to view information that is too big for the screen to hold, they should be able to scroll down the page for access.
- Given the glossary is implemented correctly, when the user refers to the glossary to view the Molecules tab, the compounds and molecules will be shown to the user in alphabetical order.
- Given that the connection between the Glossary and the UI panel is correctly implemented, when a user taps on an existing molecule in the Glossary, a UI panel will pop up.
- Given that the algorithm for reading information is correctly implemented, when a user opens an information popup, the popup panel will display the information regarding the molecule.

User Story #4

As a user, I would like to be able to have different background color options available for me to chose from in the settings menu.

#	Description	Estimated Time	Owner
1	Find best colors for background	1 Hr	Brendan
2	Implement buttons and color changing of background	2 Hrs	Brendan
3	Implement new background	1 Hr	Brendan

Acceptance Criteria:
- Given that the settings are implemented properly, when the user taps on the color buttons, the cosmic ranch will change to reflect the selected color.
- Given that saving the selected color is implemented properly, when the user reopens the application, the cosmic ranch will be the same color as the last selection.
- Given that the color is changed immediately, when the user clicks between colors, the color will change on the screen.

User Story #5

As a user, I would like to be able to turn any music that plays on and off in the settings menu.

#	Description	Estimated Time	Owner
1	Develop ambient soundtrack	2 Hrs	Vinson
2	Build UI switch to toggle music	2 Hrs	Vinson
3	Create unit tests to assess functionality of the toggle switch on the background ambient soundtrack	2 Hrs	Vinson

Acceptance Criteria:
- Given that the soundtrack is correctly imported, when the user access the music, the user will be able to hear the music.
- Given that the UI switch is correctly implemented, when the user interacts with the switch, the switch will respond by turning on or off.
- Given that the connection algorithm is correctly implemented, when the user interacts with the switch, the background soundtrack will be toggled on and off.

User Story #6

As a user, I would like to be able to turn sound effects on and off in the settings menu.

#	Description	Estimated Time	Owner
1	Develop sounds	2 Hrs	Vinson
2	Build UI switch to toggle music	2 Hrs	Vinson
3	Create unit tests to assess functionality of the toggle switch on the background ambient soundtrack	2 Hrs	Vinson

Acceptance Criteria:
- Given that the sound effects are correctly imported, when the user access the music, the user will be able to hear the sound effects.
- Given that the UI switch is correctly implemented, when the user interacts with the switch, the switch will respond by turning on or off.
- Given that the connection algorithm is correctly implemented, when the user interacts with the switch, the background sound effects will be toggled on and off.

User Story #7

As a user, I would like to be able to level up to unlock new atoms and compounds to create.

#	Description	Estimated Time	Owner
1	Set up experience and player system	2 Hrs	Brendan
2	Set up player progression path for Sprint 2 demo	6 Hrs	Brendan
3	Program in experience on initial task completion vs. repeat task completion	2 Hrs	Brendan
4	Program experience bar and Stats Bar to show correct experience and level	4 Hrs	Brendan
5	Create unit tests to ensure proper functionality of the UI and ensure proper leveling	3 Hrs	Brendan
6	Make it so that when the user levels up, there will be a notification of the new atoms that the user can fuse into	3 Hrs	Brendan

Acceptance Criteria:
- Given that the leveling is implemented correctly, when the user performs an action that grants player experience points, the application will accurately perform the calculation to increase the player's level statistics.
- Given that the leveling is implemented correctly, when the user levels up, the user will be given access to more elements and functions, depending on their which level they reached.

- Given that the leveling is implemented correctly, when the user wants to progress to the next level, they should be able to with minimal repetitive tasks.
- Given that the leveling is implemented correctly, when the user wants more experience, they should not have issues finding ways to gain more.

User Story #8

As a user, I would like for there to be a chemical formula listed at the top of the user interface that will help guide me in selecting the chemical structures needed for the reaction or bonding I am in the process of completing.

#	Description	Estimated Time	Owner
1	Create UI to display a chemical formula of choice and buttons to confirm or cancel an action	2 Hrs	Vinson
2	Connect parsing algorithm with UI algorithm	5 Hrs (Each)	Vinson, Brendan

Acceptance Criteria:
- Given that the UI is created properly, when the user accesses the display, the display will bring up into view.
- Given that the connection between the UI algorithms are established properly, when the user performs a desired action, the display will bring up into view on click.
- Given that the parsing algorithm is written correctly, when the user opens the selection display, the application will access the correct information from the database
- Given that the connection between the parsing algorithm and the UI is established properly, when the user opens the selection display, the correct text and images are loaded into view

Sprint 1 - Incomplete User Stories, Tasks, & Acceptance Criteria

User Story #2

As a user, I would like to be able to perform Fusion on two atoms to create a new element.

#	Description	Estimated Time	Owner
4	Create Algorithm to perform Fusion	4 Hrs	Jonathan
10	Create unit tests to ensure proper functionality of algorithm	4 Hrs	Jonathan

Acceptance Criteria:
- Given that the selection algorithm is optimally written, when the user selects two atoms for Fusion, the two atoms will fuse into a new one.
- Given that the Fusion algorithm works correctly, when the user fuses the two atoms, the game will yield the atom with the sum of the two reactants' atomic numbers.

- Given that Fusion is implemented correctly, when the user finishes performing Fusion, the data should be updated in the database's data file.

User Story #3

As a user, I would like to be able to perform Group on two or more atoms to create a single-element molecule.

#	Description	Estimated Time	Owner
2	Create Algorithm to perform Group	4 Hrs	Jonathan
3	Create unit tests to ensure proper functionality of algorithm	4 Hrs	Jonathan

Acceptance Criteria:
- Given that the Action Bar is properly set up, when the user taps on the Group button, the application should perform Group.
- Given that the selection algorithm is optimally written, when the user selects two atoms to Group, the two atoms will group into a new single-element molecule.
- Given that the Group algorithm works correctly, when the user groups the two atoms, the game will yield the correct molecule.

User Story #4

As a user, I would like to be able to perform a Reaction on two or more Triums to create a compound.

#	Description	Estimated Time	Owner
2	Create Algorithm to perform Reaction	7 Hrs	Brendan
3	Create unit tests to ensure proper functionality of algorithm	4 Hrs	Brendan

Acceptance Criteria:
- Given that the Action Bar is properly set up, when the user taps on the Reaction button, the application should perform Reaction.
- Given that the Reaction algorithm is properly set up, when the user performs Reaction, the application will provide a guideline to formulating the compound of choice.
- Given that the selection algorithm is optimally written, when the user selects two or more Triums of choice to perform Reaction, the reaction will yield a new compound.
- Given that the Reaction algorithm is correctly implemented, when the user attempts to formulate the compound of choice with the wrong reactants, the action will not be carried out.
- Given that Reaction is implemented correctly, when the user finishes performing Reaction, the data should be updated in the database's data file.

Remaining Backlog

Functional

1. **User**
    1.1. Introduction
        1.1.1. As a user, I would like a tutorial for most features of the game
        1.1.2. As a user, I would like to be able to zoom in and out of my workspace to see larger and smaller areas
        1.1.3. As a user, I would like to be able to level up to unlock new atoms and compounds to create
    1.2. Individual Atoms
        1.2.1. ~~As a user, I would like to be able to collect atoms representing the naturally occurring elements~~
        1.2.2. ~~As a user, I would like to have my collection of atoms visualized inside of my workspace~~
        1.2.3. ~~As a user, I would like to fuse elements to create another element with the combined amount of protons.~~
        1.2.4. As a user, I would like to be able to select an atom from the workspace to look at its stats and information
        1.2.5. ~~As a user, I would like to be able to refer to a journal for facts and trivia on an atom of interest~~
        1.2.6. As a user, I would like to be able to increase my atoms' level stats
        1.2.7. ~~As a user, I would like to be able to refer to a glossary for all of the possible atoms discoverable in the application, and the ones discovered thus far~~
        1.2.8. As a user, I would like to be able to discard an atom into a wastebin after receiving a notification to make sure I am certain of my decision
    1.3. Compounds
        1.3.1. ~~As a user, I would like to be able to perform chemical reactions on chemical structures within my workspace to formulate new ones~~

        1.3.2. ~~As a user, I would like to be able to perform 'Group' on two or more atoms to create a single-element molecule.~~
        1.3.3. ~~As a user, I would like to be able to open a list that shows all of the possible compounds that are made up of at least one of the structures that is within my workspace~~
        1.3.4. ~~As a user, I would like for there to be a chemical formula listed at the top of the user interface that will help guide me in selecting the chemical structures needed for the reaction or bonding I am in the process of completing~~
        1.3.5. ~~As a user, I would like to have my collection of chemical compounds visualized inside of my workspace~~

1.3.6.   As a user, I would like to be able to select a compound from the workspace to look at its stats and information

~~1.3.7.   As a user, I would like to be able to refer to a journal for facts and trivia on a compound of interest~~

1.3.8.   As a user, I would like to be able to increase my compounds' level stats

~~1.3.9.   As a user, I would like to be able to refer to a glossary for all of the possible compounds discoverable in the application, and the ones discovered thus far~~

1.3.10.   As a user, I would like to be able to view a visual representation of the compounds I have unlocked

1.3.11.   As a user, I would like to be able to discard a compound into a wastebin after receiving a notification to make sure I am certain of my decision

1.4.   Settings

~~1.4.1.   As a user, I would like to be able to have different background color options available for me to chose from in the settings menu~~

~~1.4.2.   As a user, I would like to be able to turn sound effects on and off in the settings menu~~

~~1.4.3.   As a user, I would like to be able to turn any music that plays on and off in the settings menu~~

1.4.4.   As a user, I would like to be able to turn off and on the faces that appear on the chemical structures

1.5.   Education

1.5.1.   As a user, I would like to be quizzed to see if I am retaining the information taught to me on the app

1.5.2.   As a user, I would like for facts that I unlock to be narrated and accompanied with a picture if applicable (if time allows)

1.6.   Social

1.6.1.   As a user, I would like to share newly discovered elements, molecules and compounds with others (if time allows)

Non-Functional

1. Must be able to play this game on Android products
2. Must be able to play this game on Apple products (if time allows)
3. Must have an interface that is intuitive and easily navigable
4. Must have a database that is easy to maintain and extend for new content
5. Must not be too complicated that detracts from gameplay experience