

## Sprint 1

**Duration:** 19/2 – 23/2

**Team Members:** Rajib, Ashling, Darby, Eldhos, Matthew

Card #	User Story Card	Priority	Description	Sprint	Developers involved	Status
1	Deck Creation	Must have	As a human player, I want to have a deck of 20 cards, so that I can draw cards into my hand.	1	Rajib	Done
2	Initialise Hand	Should have	As a human player, I want to draw three cards from the deck into my hand at the beginning of the game, so that I can play them.	1	Rajib	Done
52	Initialise Game	Must have	As a player, I want the game to be displayed correctly in the browser window, so that I can interact with the game interface.	1	Rajib	Done
3	Draw Card	Must have	As a human player, I want to draw a card at the end of my turn, so that I can add cards to my hand.	1	Rajib, Ashling	Done
4	Remove Card	Should have	As a human player, after playing a card, I want the card removed from my hand, so that I know it's no longer playable.	1	Rajib, Ashling	In progress
25	Initialise Avatar	Must have	As a player, I want my avatar to be initialised with the full 20 health and 2 attack, so that I begin the game ready to engage in battles.	1	Matthew, Rajib	Done
26	Avatar Position	Must have	As a player, I want my avatar to start on the correct tile when I begin the game, so that I have a proper and strategic position at the start of each match.	1	Matthew, Rajib	Done
27	End Turn Mana Display	Should have	As a player, I want my mana to update and drain correctly after each turn, so that I have an accurate representation of available resources for strategic decision-making.	1	Darby	Done
30	End Turn Setup	Must have	As a human player, I want my turn to end when I press the end turn button, so that there is a smooth game progression.	1	Darby	Done
51	Beam Shock	Could have	As the AI player, I want to be able to use the Beam Shock spell card to control and incapacitate enemy units.	1	Darby	Done

7	Mana Rendering	Should have	As a human player, I want to see my current mana, so I know which cards I can play.	1	Darby	Done
5	Drain Mana	Should have	As a human player, I want my mana to be drained after playing a card, so I know how much mana I have left.	1	Eldhos	In progress

### Issues Encountered:

Many of the issues encountered during this sprint were related to Git and its functionality, which was new to many team members. In GitLab each team member set up their own personal forked version of the main repository and worked from that throughout the week. Issues surfaced surrounding pulling and pushing to these forked repositories, which prevented some team members from being able to upload their code. Additionally, the team struggled with JUnit testing, both from an understanding perspective and in implementing the test classes.

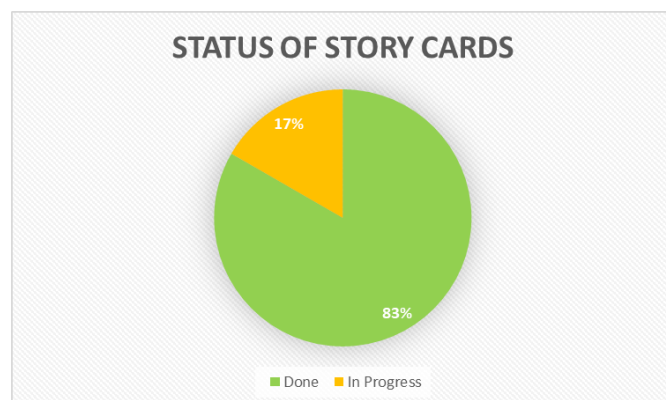
Rajib faced difficulties in implementing the Deck class due to the need to learn JSON parsing. This resulted in the functionality taking longer than expected to implement, but he ultimately managed to complete the task. Matthew also encountered challenges in implementing the necessary logic for his assigned story cards and reached out to Rajib for assistance, who ended up completing the needed logic. Ash had an illness this week, which took time away from the project. She found it challenging to read through and process a lot of information initially. To complete the story cards, she did paired programming with Rajib.

### Steps Taken to Resolve Issues:

As a work around to merge conflicts, Darby and Eldhos created a new forked repository with the updated code and were then able to push commits through. The plan for the next sprint is to get more familiar with git commands.

### Goal for Next Sprint:

- ☐ Prioritise story cards that are flowing into next sprint.
- ☐ Resolve technical challenges with Git and code implementation.
- ☐ Familiarize self with Junit testing.
- ☐ Implement logic for playing unit cards.



## Sprint 2

Duration: 23/2 – 26/2

Card #	User Story Card	Priority	Description	Sprint	Developers involved	Status
4	Remove Card	Should have	As a human player, after playing a card, I want the card removed from my hand, so that I know it's no longer playable.	2	Rajib	Done
20	Render Health	Should have	As a player, I want to see my avatars/unit's current health status and attack value so that I can decide when to attack	2	Rajib	Done
50	TrueStrike	Could have	As the AI player, I want to be able to use the True Strike spell card to eliminate threats posed by enemy units on the battlefield	2	Darby	Done
49	Sundrop Elixir	Could have	As the AI player, I want to be able to utilise the Sundrop Elixir spell card to optimise the health of my creatures, helping my units to last longer on the battlefield	2	Eldhos	Done
5	Drain Mana	Should have	As a human player, I want my mana to be drained after playing a card, so I know how much mana I have left.	2	Eldhos	Done
29	Win announcement	Would like to have	As a player, I want an announcement, so that I know who has won the game	2	Ashling	Done
35	Nightsorrow Assassin	Could have	As a human player, I want to play Nightsorrow Assassin, gaining the ability Opening Gambit, so that I can destroy enemy units in adjacent squares (that are below maximum health)	2	Matthew	Incomplete

### Issues Encountered:

Throughout this short sprint, challenges persisted with JUnit testing and Git. Ashling needed help from the team to push to Gitlab. Similarly, Darby and Eldhos managed to set up the necessary code for their story card completion, but faced challenges in effectively applying JUnit testing, ultimately relying on checking for compilation errors in the local host website.

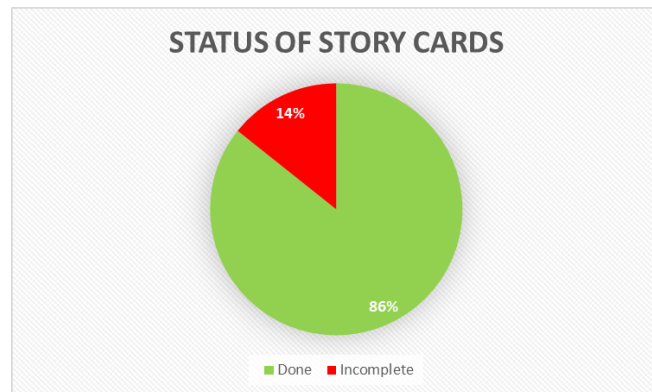
Rajib addressed an issue with the initialization of the deck, resolving rendering problems with unit cards. Tracking down the source of this bug proved challenging. Testing the implementation of story cards posed difficulties as multiple classes were now integrated. Matthew was unable to fully complete his assigned story card due to the time constraints of this sprint.

### Steps Taken to Resolve Issues:

Integrated testing had to be done to resolve the initialization bug. Relatively easier tasks were dealt out to deal with time constraints. Knowledge and expertise were shared to help each other overcome Gitlab, implementation, and testing issues.

### Goal for Next Sprint:

- ☐ Prioritise story cards that are flowing into next sprint.
- ☐ Focus on addressing all tile highlighting, unit movement, and attacking.



## Sprint 3

Duration: 26/2 – 1/3

Card #	User Story Card	Priority	Description	Sprint	Developers involved	Status
10	AI play unit card	Could have	As an AI player, when I use a unit card, I want to know which valid tile I should spawn it on, in order to gain an advantage over the opponent	3	Rajib	Done
14	Unit card tile highlight	Could have	As a human player, when I click on a creature card, I want the card to highlight valid tile targets so that I know where my unit can be placed.	3	Darby	Done
16	Unit movement tile highlight	Could have	As a human player, I want the game to highlight valid tiles to move to when I click on a unit, so that I know where I'm allowed to move.	3	Darby	Done
17	Unit click, no tile highlight	Would like to have	As a player, when I click on an opponent's unit or on a unit that is unable to move, I want no tiles to be highlighted, so that I can visually understand that these units cannot be selected for movement	3	Darby	Done
22	Movement forfeit after attack	Could have	As a player, I want to forfeit the ability to move for the rest of the turn when I choose to make an attack before moving, so that I can make strategic decisions	3	Darby	Done

			about whether to prioritise attacking or repositioning my units during my turn			
19	Attack in range	Must have	As a player, I want to be able to attack enemy units when I am in range, so that I can decrease their health.	3	Darby, Eldhos	Done
18	Unit movement	Must have	As a human player, I want my unit to move when I click on a chosen highlighted tile, so that I can get closer to my opponent.	3	Darby	Done
36	Bloodmoon Priestess	Could have	As a human player, I want to be able to play Bloodmoon Priestess to leverage the ability Deathwatch, to summon Wraithlings on randomly selected unoccupied adjacent tiles whenever a unit dies, so that I can strategically deploy units	3	Ashling	In progress
21	Conter attack	Could have	As a player, when one of my units has been attacked and still has remaining health, I want my unit to counter-attack, so that my units can retaliate against enemy attacks and eliminate/weaken opposing units	3	Darby	In progress
42	Summon Wraithlings	Could have	As a human player, I want to be able to place Wraithling tokens on the board, set to 1 attack and 1 health, so that I can make strategic use of the Deathwatch ability of other units	3	Darby	In progress
37	Shadowdancer	Could have	As a human player, I want to be able to play Shadowdancer so I get the ability Deathwatch to deal damage to enemy avatar and simultaneously heal myself when units die	3	Ashling	In progress
32	Gloom Chaser	Could have	As a human player, I want to use the Gloom Chaser card to summon Wraithlings through the ability Opening Gambit, so that I can strategically deploy units	3	Matthew	In progress
33	Rock Pulveriser	Could have	As a human player, I want to be able to play the Rock Pulveriser card, so I can utilise the ability Provoke to hinder the movement and targeting options of adjacent enemy units	3	Matthew	In progress
35	Nightsorrow assassin	Could have	As a human player, I want to play Nightsorrow Assassin, gaining the ability Opening Gambit, so that I can destroy enemy units in adjacent squares (that are below maximum health)	3	Matthew	In progress

### Issues Encountered:

Darby found the tile highlighting logic challenging to implement and took longer than expected. A new utility class named `TileHighlightController` was created to better organize the logic. Additionally, the setup of unit movement logic proved challenging due to a bug in player avatar movement. Upon clicking the human avatar for movement, the AI avatar ended up moving instead. While other unit movements were functioning correctly, the avatar movement presented a persistent issue throughout the week. A considerable amount of time was dedicated to debugging the avatar movement issue, with Darby focusing on refactoring the `TileClicked` class to shed light on potential code causing the problem. Darby reached out to Rajib for assistance in resolving the bug.

Rajib faced difficulties reusing Darby's existing unit movement code for the AI implementation, as it was centered around tile highlighting. This impacted the AI movement implantation and caused the story card to flow into the next sprint.

Eldhos struggled with the code required for the unit attacking and counter attacking. Efforts were made throughout the week to troubleshoot and work on the logic, but he ultimately reached out to Darby for assistance. Due to the intertwined nature of the attack and movement logic, Darby took over this story card completion.

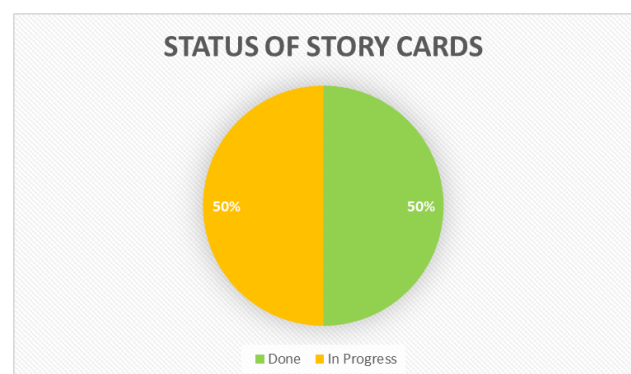
Ashling made progress on the code for Bloodmoon Priestess, however due to the intertwined logic of the card with other story cards, she was unable to compile the code and commit. Additional progress was made on story card 37, but she was unable to complete due to managing multiple coursework deadlines. Matthew made progress on his assigned story card, but due to Git and compilation issues, his cards will be flowing into the next sprint.

### Steps Taken to Resolve Issues:

Print statements were added into the `TileClicked` class to aid in debugging of the Avatar issue. Additionally, Darby plans to work on refactoring the `TileHighlightController` to make it more useful for AI implementation Rajib is working on. The plan is to create a new `TileLocator` utility class that can be used to identify tiles for movement and highlighting, serving as a component for both human and AI logic implementation.

### Goal for Next Sprint:

- ☐ Resolve Avatar bug.
- ☐ Prioritise story cards that are flowing into next sprint.
- ☐ Improve Git proficiency among teammates.
- ☐ Start implementing more Junit tests.
- ☐ Start writing up the Sprint Reports and Burndown charts.



## Sprint 4

Duration: 3/1 – 4/3

Card #	User Story Card	Priority	Description	Sprint	Developers involved	Status
8	AI Play Card	Should have	As an AI player, I want to know what valid card I should play so that I can gain an advantage on my opponent	4	Rajib	In progress
12	AI Attack	Should have	As an AI player, when there is a unit/s within attacking range, I want to know if I should attack and which unit to attack, so that I can make strategic decisions during my turn	4	Rajib	Done
13	AI End Turn	Must Have	As an AI player, if I have run out of valid moves or cards that I can use, I want to end my turn so that the next player can start their turn	4	Rajib	Done
15	Spell Tile Highlight	Could have	As a player, when I select the card in my hand to cast a spell, I want the valid unit targets to be highlighted, so that I can easily identify and choose the appropriate targets for the spell	4	Darby	Done
11	AI Spell Cast	Must Have	As an AI player, when I use a spell card, I want to know which valid tile to use it on, in order to gain an advantage over the opponent	4	Darby	Done
21	Conter attack	Could have	As a player, when one of my units has been attacked and still has remaining health, I want my unit to counter-attack, so that my units can retaliate against enemy attacks and eliminate/weaken opposing units	4	Darby	Done
54	Attack Animation	Could have	As a player, when my unit attacks an opposing unit, I want the attacking animation to play, so that I get visual feedback that my attack has been processed by the game on the correct unit	4	Darby	Done
40	Wraithling Swarm	Could have	As a human player, I want to be able to cast the spell Wraithling Swarm, to summon 3 Wraithlings in sequence, so that I am provided with a swarm of units for tactical advantages	4	Darby, Ashling	Done

41	Dark Terminus	Could have	As a human player, I want to use the spell Dark Terminus to destroy an enemy creature, whilst simultaneously summoning a Wraithling on the tile of the destroyed creature, so that I can control the battlefield and potentially gain an advantage in unit presence	4	Darby, Rajib	Done
42	Summon Wraithlings	Could have	As a human player, I want to be able to place Wraithling tokens on the board, set to 1 attack and 1 health, so that I can make strategic use of the Deathwatch ability of other units	3	Darby	Done
53	Unit Death	Must Have	As a player, when my unit dies, I want the death animation to play and for their character model to be removed from the board, so that I have a clear representation of game state	4	Darby	Done
39	Horn of the Forsaken	Could have	As a human player, when I have cast the spell Horn of the Forsaken and I hit an enemy unit, I want the game to summon a Wraithling on a randomly selected unoccupied adjacent tile, so that I can strategically deploy units	4	Darby	Done
31	Bad Omen	Could have	As a human player, I want to be able to use the Deathwatch ability of the Bad Omen card, so that I can strengthen my units during the game	4	Darby	Done
37	Shadowdancer	Should have	As a human player, I want to be able to play Shadowdancer so I get the ability Deathwatch to deal damage to enemy avatar and simultaneously heal myself when units die	4	Darby, Ashling	Done
38	Horn of the Forsaken Robustness	Would like to have	As a human player, when I cast the spell Horn of the Forsaken, I want the artifact to start with 3 robustness, so that the robustness decreases when I get hit rather than my avatar's health	4	Darby	Done
36	Bloodmoon Priestess	Could have	As a human player, I want to be able to play Bloodmoon Priestess to leverage the ability Deathwatch, to summon Wraithlings on randomly selected unoccupied adjacent tiles whenever a unit dies, so that I can strategically deploy units	4	Darby, Ashling	Done



34	Shadow Watcher	Could have	As a human player, I want to be able to use the Shadow Watcher card's Deathwatch ability to enhance its attack and health stats permanently whenever a unit dies, so that I can strategically strengthen the Shadow Watcher over the course of the game and gain a tactical advantage	4	Darby	Done
23	Move and Attack	Could have	As a player, if I move into attacking range of an enemy unit, I can also attack the unit within the same move, so that I can gain an advantage over my opponent.	4	Darby	Done
JUnit Testing	Board Class	Would like to have	Testing for the Board class with more methods to check if the board is initialised with all the tiles	4	Eldhos	Done
JUnit Testing	Deck Class	Would like to have	Testing for the Deck class which has an arrayList to check if the cardWrapper objects are placed inside the deck object	4	Eldhos	Done
Sprint Report	Burndown chart	Would like to have	A burndown chart that represents all the story cards from the first sprint and the progress that followed every week.	4	Ashling	Done
32	Gloom Chaser	Could have	As a human player, I want to use the Gloom Chaser card to summon Wraithlings through the ability Opening Gambit, so that I can strategically deploy units	4	Matthew	In progress
33	Rock Pulveriser	Could have	As a human player, I want to be able to play the Rock Pulveriser card, so I can utilise the ability Provoke to hinder the movement and targeting options of adjacent enemy units	4	Matthew	In progress
35	Nightsorrow assassin	Could have	As a human player, I want to play Nightsorrow Assassin, gaining the ability Opening Gambit, so that I can destroy enemy units in adjacent squares (that are below maximum health)	4	Matthew	In progress

### Issues Encountered:

The main issues encountered this sprint revolved around Darby and Rajib merging code collaboratively. Darby handling all the logic for the human player and Rajib managing all the logic for the AI player separately resulted in the creation of duplicate logic in multiple places. Additionally, bugs presented themselves throughout the week, which were difficult to resolve due to the increased complexity of the code. Additional time constraints impacted Rajib's spell card implementation.

Darby found spell and unit ability implementation to be challenging, as linking the ability logic to the units on the board and triggering that logic had not been fully thought out yet. A bug was found with the Dark Terminus spell card that caused trouble throughout the week. Additionally, Darby struggled with the logic to allow for a unit to move and attack within one click, ultimately reaching out to Rajib to assist with the code.

Eldhos ran into issues with JUnit Testing, encountering both runtime errors and compilation issues with the code. Mock implementation was required to resolve the errors that occurred during runtime as bugs were encountered which required the code to be modified repetitively.

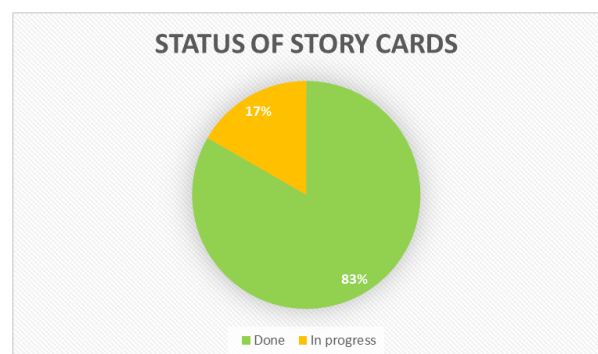
Ashling created a burn-down chart in Excel. Due to irregular sprint lengths, a template could not be used, and the calculations were more complex, so it took longer than expected. Communication issues resulted in Darby working on a story card that accomplished those in progress that had been assigned to Ashling in the previous sprint. Additionally, Ashling took on the task of correcting the existing logic for Wraithling Swarm. However, since Darby implemented the initial logic, she found it difficult to locate and interpret the written code. This caused the task to take longer than expected and remain unfinished. Matthew continues to face issues with git commits and uploading code to GitLab.

### Steps Taken to Resolve Issues:

Further refactoring of the code will be done next sprint along with additional testing and debugging to resolve existing issues encountered while testing. Documentation for Junit testing was researched about implementing testing practices. The team has outlined plans to work on further refining the code and adding class documentation to help with code clarity.

### Goal for Next Sprint:

- ☐ Refine spell card implementation.
- ☐ Finalize testing decisions.
- ☐ Finalise code documentation.
- ☐ Setup logic to move and attack within same turn.
- ☐ Prioritise story cards that are flowing into next sprint.



## Sprint 5

Duration: 4/3 – 8/3

Card #	User Story Card	Priority	Description	Sprint	Developers involved	Status
#8	AI Play Card	Should have	As an AI player, I want to know what valid card I should play so that I can gain an advantage on my opponent	5	Rajib	Done
#43	Swamp Entangler	Could have	As the AI player, I want to leverage the Swamp Entangler card's Provoke ability to control the movement and targeting options of enemy units, so that I have a tactical advantage in shaping the battlefield	5	Rajib	Done
#48	Ironcliffe Guardian	Could have	As the AI player, if I play Ironcliffe Guardian card, I want to leverage the Provoke ability, to control the movement and target selection of enemy units	5	Rajib	Done
#44	Silverguard Squire	Could have	As the AI player, I want to leverage the Silverguard Squire card's Opening Gambit ability to enhance the strength of adjacent allied units, so that I can strategically boosting their attack and health	5	Rajib	Done
#45	Silverguard Squire	Could have	As the AI player, if I play Saberspines Tiger card, I want to leverage the Rush ability, so that I can swiftly engage and eliminate a strategic target on the battlefield	5	Rajib	Done
#46	Silverguard Knight	Could have	As the AI player, if I play Silverguard Knight card, I want to leverage the Zeal ability, to gain a strategic advantage over the human player	5	Rajib	Done
#47	Young Flamewing	Could have	As the AI player, if I play Young Flamewing card, I want to leverage the Flying ability, to gain a strategic advantage over the human player	5	Rajib	Done
#9	AI Movement	Could have	As an AI player, I want to know what valid tile I should move my unit to, so that I can gain an advantage on my opponent	5	Rajib	Done
Unit Testing	Spell Card	Could have	Testing for the Spell card class which have special abilities which target tiles	5	Eldhos	Done

<b>Junit Testing</b>	<b>Unit Card</b>	<b>Could have</b>	Testing for the Unit card class	5	Eldhos	<b>Done</b>
<b>Sprint Reports</b>	<b>Table</b>	<b>Must have</b>	Tables summarising all 5 weeks of sprint with comments.	5	Eldhos, Ashling, Darby	<b>Done</b>
<b>#29</b>	<b>Win announcement</b>	<b>Would like to have</b>	As a player, I want an announcement, so that I know who has won the game	5	Ashling, Darby	<b>Done</b>
<b>#32</b>	<b>Gloom Chaser</b>	<b>Could have</b>	As a human player, I want to use the Gloom Chaser card to summon Wraithlings through the ability Opening Gambit, so that I can strategically deploy units	5	Matthew, Rajib, Darby	<b>Done</b>
<b>#33</b>	<b>Rock Pulveriser</b>	<b>Could have</b>	As a human player, I want to be able to play the Rock Pulveriser card, so I can utilise the ability Provoke to hinder the movement and targeting options of adjacent enemy units	5	Matthew, Rajib, Darby	<b>Done</b>
<b>#35</b>	<b>Nightsorrow assassin</b>	<b>Could have</b>	As a human player, I want to play Nightsorrow Assassin, gaining the ability Opening Gambit, so that I can destroy enemy units in adjacent squares (that are below maximum health)	5	Matthew, Rajib, Darby	<b>Done</b>
<b>Sprint Report</b>	<b>Burndown Chart</b>	<b>Would like to have</b>	Edit the Burndown chart to include the final sprint information	5	Ashling	<b>Done</b>
<b>Junit Testing</b>	<b>Avatar Class</b>	<b>Could have</b>	Testing for the Avatar class	5	Ashling	<b>Done</b>

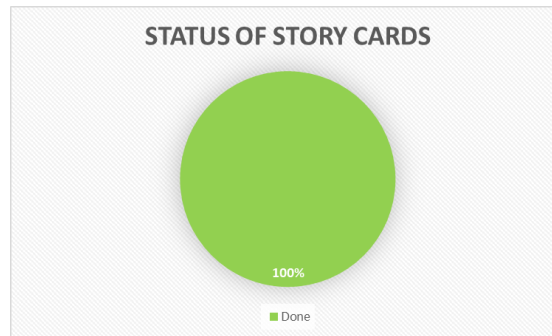
### Issues Encountered:

A major issue was encountered this week when incomplete code was pushed directly to the main repository, causing the game to break. A significant amount of time was invested to resolve the issue and reset the main repository to a previous state. Darby and Rajib then worked to re-add the code lost in the reset. Merge requests, which included Junit Testing from Eldhos had to be pushed again to offset the code lost.

Ashling's win announcement story card needed to be rewritten to integrate with the new game logic, on reflection that story card should have been done nearer the end stages of development. Additional time was spent working further on Wraithling Swarm, but she was unable to complete the code by the agreed-upon deadline, resulting in Darby pushing her revised class. Ashling also worked to add a Junit test for the Avatar, which took longer than expected after discovering an issue in the Avatar class.

### Steps Taken to Resolve Issues:

Rajib sat with Matthew and worked to help add pseudo code for the Opening Gambit abilities. The code was then updated to GitLab without issue, and Darby implemented the logic from there. Additionally, Darby and Ashling worked alongside each other to resolve compilation issues with the game announcement logic. After testing the logic, Ashling was able to push her commit through.



### Burndown Chart:

The Burndown Chart indicates the story points completed within each sprint (in orange), with the ideal completion rate (in blue) assuming that story points are equally distributed according to the sprint length. Some of the story cards were already provided or duplicates, which is why the story points do not reach zero.

