

Ink

Weaver

Create the perfect story.

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Team Members and Roles

Pierce Darragh	Core Concept Design, Writing
Aaron Hsu	Interface Design, Ideation
Charles Khong	Data Design, User Experience Research
Rajul Ramchandani	Graphic Design, Storyboarding

Problem and Solution Overview

Writing is one of the oldest professions in the world, but unfortunately the tools of the trade have remained outdated. While certain aspects of technology have improved the writer's productivity (such as moving from pen and ink to the computer), it remains especially difficult for a writer to plan all of their characters' interactions and movements throughout the story arc.

Our challenge was to design a solution around the writer that can provide various tools to help them reach their vision for the book. The combination of statistical data along with a robust environment, which integrates that data, will help the user be more informed of their choices and write more effectively. Our proposed solution tracks every character in the story and their appearances, background information, references in the text, and interactions with other characters. Also, our solution analyzes the author's writing to assess the conveyed mood of any given selection of text. With this tool, an author can reevaluate their word choice to better convey their desired mood.

Contextual Inquiry Target, Stakeholders, and Participants

James — Space Encyclopedia (Master/Apprentice Model)

We began our inquiry with James with the intent of exploring our original proposal — a space-focused encyclopedia with support for keeping track of upcoming astronomical phenomena and space exploration missions. James is an amateur astronomer and a student in the physics department here at the University of Utah, so we thought he would be able to provide good initial insight into exploring the problem we had chosen.

Unfortunately, James was quickly able to show us many tools which already existed that more or less satisfied the problem we had originally formulated. We tried iterating through a couple other problem concepts with him, but ultimately we decided we should redirect our efforts. However, conducting the contextual inquiry with James was very helpful and informative, since it allowed us the opportunity to become familiar with the interview/inquiry process.

Aishwarya (“Ash”) — Fiction Writer (Interview Model)

After our unsuccessful interview with James, our team decided to shift focus to a new problem area: organizational methods for authors. We interviewed Aishwarya, a published author, about how she organizes her ideas and thoughts for creative writing. The interview was conducted at Ash’s house in her writing regular environment. To begin the interview, we inquired about her current methods for organizing characters, plot movements, and other concepts for her stories.

She mentioned an application called Scrivener — a system for helping authors keep their thoughts organized, which is not free. However, Aishwarya told us that she didn’t like the features offered by Scrivener (and she especially did not want to pay for it), so she instead uses Google Docs and Google Sheets. In these documents, she keeps track of her characters and their backgrounds, outside inspiration for her current work, a checklist of remaining work, and other plot-related details. She described the process of organizing her ideas as being similar to using various index cards. Later in the interview, Aishwarya mentioned that one of the things that Google Docs does not keep track of is the word counts for esoteric words — she would like to reduce the chance of reusing unusual words in her writings.

Overall, the interview was very informative. Ash demonstrated her current practices and mentioned examples of existing alternatives, but she admitted that there was a lot of space for a new tool to help authors organize themselves.

Alex — Fiction Writer (Master/Apprentice Model)

Alex is a budding writer that is currently a senior at the University of Utah. Alex has been passionate about writing ever since she started literature classes in middle school. Although she doesn’t consider herself a professional author, she has written several fiction stories and short novels as personal projects.

For our contextual inquiry, we asked Alex to begin planning a brand new. We started by observing the various tools Alex naturally chose and observed how she used them. We noticed that Alex kept her initial brainstorming centered on three sheets of paper. She would organize her ideas into columns and these papers were later kept in her binder for safe-keeping. In this initial stage, Alex would share her thoughts with a friend and take notes in her journal so that she could remember her ideas. Alex would not erase any initial writing or thoughts that she didn’t like, and bad thoughts were marked so that she could revisit them later.

After this step, Alex started to draw out diagrams that represented her characters and their interactions. She then continued to write characteristics for every character. When we asked Alex about what her difficulties were with the current process, she explained her difficulty in keeping track of the different characteristics and relationships. In addition, as the number of characters increased, the pencil-and-paper method rapidly fell apart. She referred back to what she had written about them and compared to her initial plans. Additionally, Alex feels that she is unable to improve her writing because of her inability to organize her thoughts.

At the conclusion of our contextual inquiry, Alex mentioned that a new way to keep track of characters and other story elements would be extremely beneficial to her.

Contextual Inquiry Results and Themes

A common theme amongst our participants is a writer's frustration to organize thoughts and create a good story. This frustration is caused from the writer's need to reflect over his or her past thoughts. The writer's inability to effectively organize the vast information makes it difficult for a writer to reflect over pre-writing thoughts. Both participants used their respective methods to keep track of common story elements such as character interactions, character backgrounds, plot movements, story locations, and other story elements. While the participants had various problems with their current methods, they each ended up suggesting similar ideas for a better solution.

These ideas all point towards design-related problems: the current methods observed are very disorganized. This is a clear problem that needs to be addressed by a user-focused design solution that automates some of the previously-mentioned processes. Because authors need to keep track of various story elements, this suggests that a task for aiding them in this process is important. An easy storage that would allow a writer to easily reflect over that storage. As this task became more apparent we noticed that users leaned toward analog solutions such as writing in a notebook or scribbling on multiple pages. Alternative solutions of organizing pre-writing thoughts were mentioned by current writers as clunky, hard to use, and too expensive. Users attempting to accomplish this task were seen using binders and notebooks to organize their story thoughts. Writers who decided to modify information had a problem of keeping their notes in a organized manner. The nonlinear structure of a notebook creates a problem where the writer has to flip through many pages before finding relevant information.

Users trying to accomplish the task of writing a story, shared similar thoughts about what needed to be tracked. These thoughts included characters' backgrounds and stories. For a good story to resonate with readers, the writers we interviewed agreed that consistency throughout the novel is among the most important aspects.

Answers to Task Analysis Questions

Who is going to use the design?

The design primarily targets authors, both professional and amateur. The design would act as a tool for helping them better organize their ideas.

What tasks do they now perform?

From what we found in our contextual inquiries, writers do not have a definitive method for organizing their story ideas. The creative process of one of our interviewees included using Google's collaborative applications to track various aspects of her writing. The other person that we interviewed for this project — an amateur writer — preferred using paper to organize her creative writing. The tasks they perform to accomplish writing a novel include the following:

1. Organize and reflect over his or her own thoughts
2. Draft the structure of his or her novel
3. Track the environment and character details of his or her story
4. Display a detailed layout of his or her story
5. Provide a publish-ready text format for a personal book

What tasks are desired?

- Organize characters and their traits
- Have one place to organize locations and environment elements
- Make relations between characters, locations, and other elements in the fictional world
- Have repositories for Ideas, such as inspirations, incorporations, quotes/phrases, etc
- Make both real-world (e.g. publication) and fictional (in-universe) timelines
- Tracking word frequency statistics and writing speed

How are the tasks learned?

The design that we ultimately choose should make the individual tasks intuitive. The encompassing design may require a tutorial to demonstrate the usage of the tasks in combination with one another. The more desired a task is, the more intuitive the design for it must be.

Where are the tasks performed?

The tasks will be performed at wherever the writer prefers for writing. Perhaps this will be in their writing environment or in a public place; naturally, the tasks will likely be performed on their laptops or computers.

What is the relationship between the person and data?

The person will be responsible for any data they input into the application. This means that they are the owners of anything that they produce using the application.

What other tools does the person have?

- Pencil and paper, whiteboard and markers, pen
- Google Documents and Word

How do people communicate with each other?

Perhaps writers can communicate with each other in virtual writing groups. These groups will allow writers to share ideas and peer critique each other. The feedback given for writing novels was usually done in the form of pencil and paper. We found that it was harder to give feedback without printing out the novel pages.

How often are the tasks performed?

Brainstorming is performed around one or two times before starting a novel. This may include the organization of characters, locations as well as other elements in the world. The ideation process is a more continuous process that continues to be used throughout the life of the book. The writer can come up with new ideas or refer back to old ones very frequently. As for the statistics, without any automated solution, this task is seldom executed. If this task were to be performed, it would mainly be done in the editing phase at the end of the pipeline.

What are the time constraints on the tasks?

Constraints are set by the timeline set by the user. These tasks will only be loosely timed, but there needs to be a reminder system that drives the user to work on.

What happens when things go wrong?

When things go wrong, a user should be able to go to their idea repositories and revise their thoughts. The revision and editing process will be simple, yet flexible. This allows the user to avoid rewriting everything. If the project is a collaborative effort, a notification would be sent to other collaborators.

Proposed Design Sketches — “3x4”

1. Track Word Count and Repetitive Phrasing (Easy Task)

Antonia is an up-and-coming young author who likes to do most of her creative writing during dedicated “quiet times”. She follows many famous authors’ blogs to learn about how to improve her creative process. Recently she learned that many published authors try to consistently write at a rate of 500 words per hour, and they also do their best not to repeat unusual words near each other. Currently Antonia writes in Microsoft Word, which keeps track of total word count, but doesn’t provide a current velocity. Microsoft Word also does not automatically track reuses of words, which Antonia thinks makes it hard for her to accomplish her goals of becoming a famous published author.

2. Write Ideas for Future Possibilities (Easy Task)

Sonia is a passionate writer who has recently finished a book and is starting to plan her next one. During this phase she starts drafting out the book as well as keeps a diary with all her ideas. This idea diary contains ideas for phrases to use, possible plot lines and even inspirational quotes to inspire the style of writing. As she gets further along with the book, she goes back to her ideas diary to think about how she can incorporate all the important ideas. She misses a few ideas or cannot incorporate all of them into her chosen storyline. Sonia wishes she had a way to somehow link her ideas to different parts of her book so she could try to incorporate them all.

3. Organize Characters and Their Traits (Easy/Medium Task)

George recently began writing a new story. He is a creative writer who struggles with organizing the motivations and backgrounds of characters in his stories. During his writing process, George sometimes forgets his characters' motives and tendencies, so he has to refer to his notes to remember them. Unfortunately, this can be a tedious process because all of George's character notes are written on index cards, so keeping track of the various qualities of all his characters is very messy.

4. Visualize Character Frequency (Medium Task)

Luke is a very visual author who likes to create charts and graphs in Google Sheets to help him "see" how the story is structured. Especially useful for him is the ability to visualize how often a character is referenced throughout the story, and where within the story the character shows up. As it is, most modern technologies that writers use (Google Docs, Microsoft Word, typewriter, pen and paper, etc.) are incapable of easily showing this information in a single, easy-to-read chart.

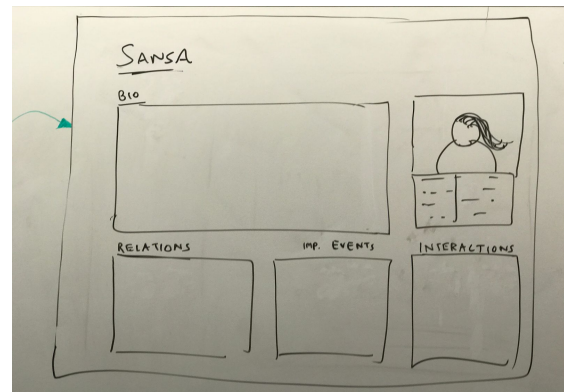
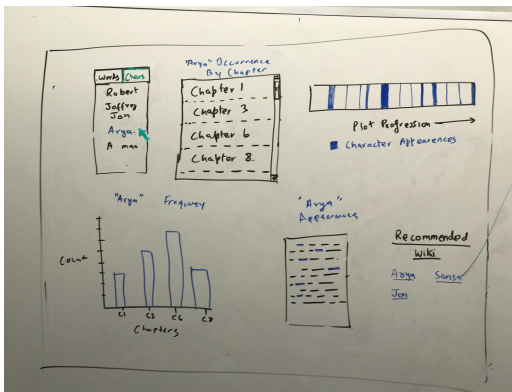
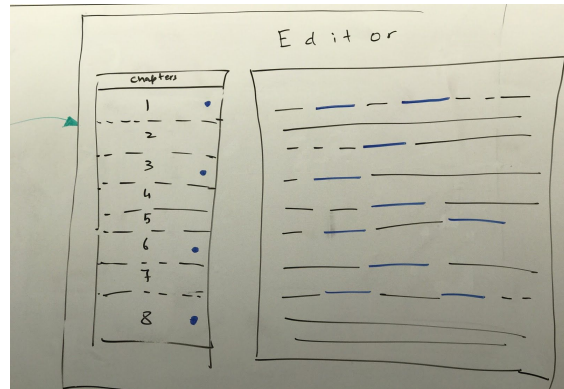
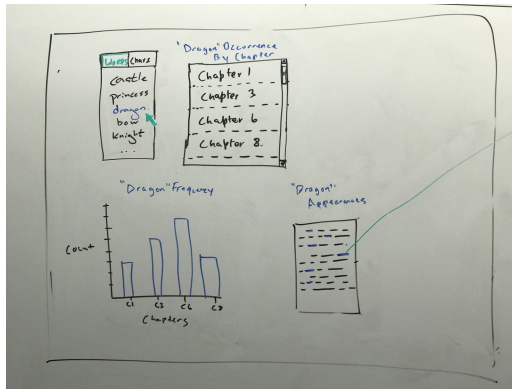
5. Extract Mood From Text of Chapter (Hard Task)

Francis is currently in the process of writing a fictional novel. Having just finished writing a chapter, he reads it to analyze the mood that is being conveyed. Initially, his plan for the chapter was to create an atmosphere with a somber mood. However, after reading over his writing, he is unable to identify an overall mood for the chapter. Francis wishes to verify that a reader would have a sense of dread after reading the chapter, but is unable to do so without reaching out to a large number of people to read over the chapter. This would extend the amount of time required for writing the novel if he were to repeat this process for every chapter in his book.

6. Keep Track of Previous Versions While Making Revisions (Medium/Hard)

Jill is not very organized while she writes her stories. Many of her pages are loose and out of order, and she tends to write notes in the margins of whichever piece of paper happens to be at the top of the stack. Especially frustrating for Jill is how difficult it is to keep track of different versions of her story. Currently she just rewrites over the top of her text in a different color of pen, but this makes it very hard for her to know which changes go to which version. Ideally, Jill would use a system where different versions of the story can be easily tracked and saved as "snapshots".

Design 1

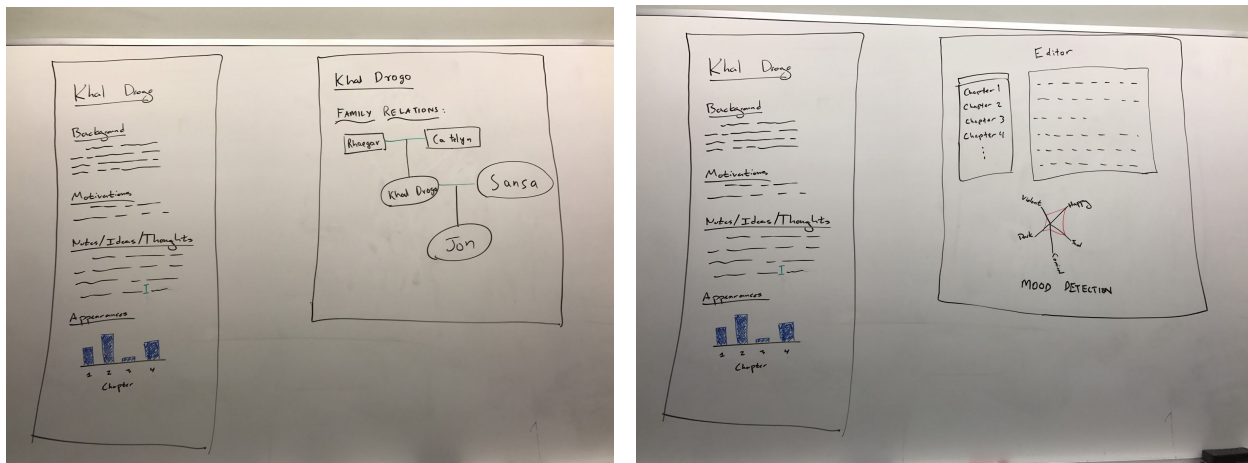


This design has a screen that displays various word and character statistics. Specifically, the screens on the left show the count, appearance, and occurrence statistics for any given word. If the word chosen is a character's name, it will also provide a visualization of the character's appearances throughout the story. There will be a separate screen for the text editor, which will highlight usages of the word selected in the statistics page. On the editor page, the user will be able to perform revisions to their writing. From the character statistics page, a user can navigate to a screen that displays more information about a character's background, relations, important events, interactions, etc.

The above design incorporates tasks 1, 3, 4, and 6 from the previous section:

- Task 1 is accomplished by accessing the “Word Analytics” page (from the home page, perhaps) and choosing or searching for a word from the available list. (Searches will allow the user to pull up information on any word in the story, but frequently-used or very rare words will have their own pre-populated list.) This page provides information about the word’s usage throughout the story.
- Tasks 3 and 4 can be done by selecting a character and viewing their analytics page (accessible from the same area as the word analytics for the previous task). This provides similar information as “Word Analytics” (because we can run the same queries using the character’s name as a word), but also shows additional information like character dominance throughout the story (e.g. highlighting sections of the story where this specific character is the most commonly mentioned character).
- Lastly, the user can complete Task 6 by utilizing the main “Editor” window. The Editor provides the ability to rewrite sections while preserving the original content to allow for version tracking in an easy-to-read format.

Design 2



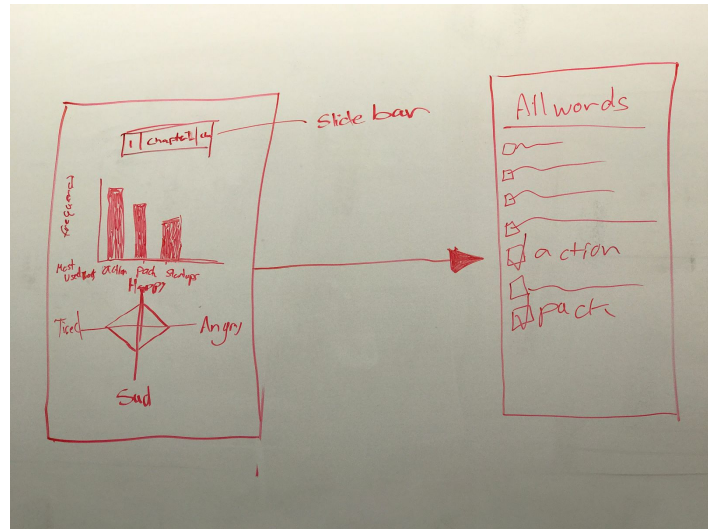
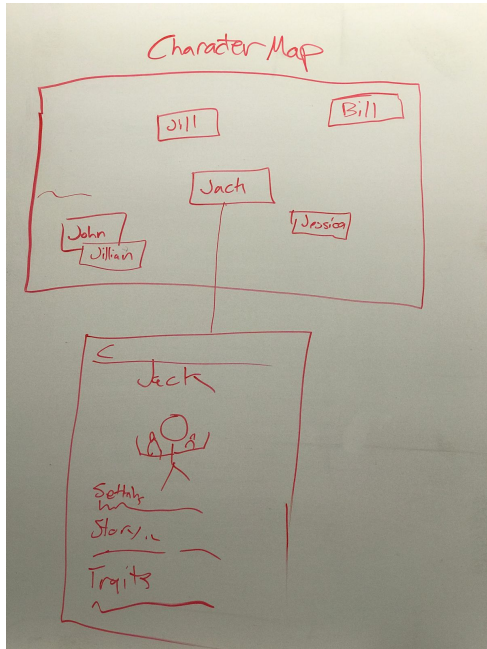
The first design(top-left) is for a wiki-like page with all character information. This helps the user understand and keep track of the background, motivation, and possible ideas/thoughts for the specific character. This page also will show stats of how often the character appears in every chapter. Upon scrolling down further, user will see a family relation tree that relates the current character to other characters in the plot. These nodes will be linked to their respective wiki pages.

The second design (top right) is the editor that also shows mood statistics. The user can select which chapter to look at in the chapter view panel on the left and read their written work in the other panel. Below, in the mood detection section, a graph representing the various tones in the chapter is also given.

This design incorporates tasks 2, 3, 4, and 5 from the previous section:

- Task 2 is achieved by navigating to a 'wiki' page, where there will be various subsections to keep track of information for any given character or story element. One of these subsections will allow the user to write down potential ideas for a specific story element to use later on in their writing.
- Task 3 will also be accomplished in the same wiki-like page. Subsections will be available to note the background and motivation of a character.
- Task 4 is similarly addressed on the same page. One of the subsections will chart the number of appearances by the character in each chapter.
- Task 5 will be on the editor screen, which is separate from the wiki screens. On the editor screen, there will be a list of chapters with content and clicking on one will bring up the corresponding text box and mood radar chart.

Design 3



The third design is made to emphasize the writer's need to ponder on their work. A mobile version allows a writer to brainstorm and think of ideas in places that would be normally hard for the writer to analyze his own writing. This design gives the writer an ability to see an abstracted view of the overall state of his or her story. The character map allows the writer to better ponder how the characters in the story interact. The setting is laid out more visually in a way that each chapter can be evaluated individually. This allows the author to ponder deeper on certain parts of the story rather trying to picture the whole story at once.

This design incorporates tasks 1, 3, 4, and 5 from the previous section:

- Task 1: A clear graph illustrates the usage of certain words. Due to the limitations of the size of a mobile screen the user would click on a graph and be directed to an all words screen. This screen is ordered from top to bottom.
- Task 3: A character map screen is used to show interactions of the character and where the character visits throughout the chapter. The user can click on a character name added to the map to go to a screen where the traits and description of the said character can be stored and modified.
- Task 4: The timeline of the character map can be changed. A scrollable timeline may be added to the top of character map to show the frequency of the character usage to the user. Characters will also be counted for the amount of times they are reference per chapter in the character details section. This can be found by the user by clicking the character's name on the character map.
- Task 5: The mood of the author's text is analyzed and stored in a graph. Each chapter's mood can be analyzed the the mood chart by the user. The chapter can be changed by the user by scrolling the finger left and right on the data analytics title.

Written Scenarios — “1x2”

Why this design and these tasks? What makes this design better?

We have chosen to combine and improve upon two of the designs from the previous assignment: the first and second designs (“Design A” and “Design B”, respectively).

Design A places a heavy emphasis on assisting a writer in their ideation process. The ability to store and later revisit a character’s history, motivations, and relationships in an organized manner will benefit the user by saving them time. This will also increase the consistency and quality of the author’s writing. In our contextual inquiry with a published author, we analyzed the user’s brainstorming process. We found that he specifically had the most trouble trying to gather his thoughts during a writing session when he was recalling previously-imagined information. The ability to easily access this information was important to him and other users that we conducted contextual inquiries with. For these reasons, we have chosen for one of our tasks the ability to use an information repository where the author can record ideas to recall later.

The second task, from Design B, helps authors better convey mood in their writing. Establishing mood and atmosphere in writing can be difficult. Our design will analyze the current chapter to determine the overall mood of the text, and then present the information to the author. This will allow the author to evaluate whether or not the mood that they are creating is being conveyed correctly to the reader. Additionally, this provides the writer an opportunity to revise their choice of words and achieve the specific mood that they desire for the chapter.

Why are these tasks more compelling than the others?

We specifically chose these two tasks because we noticed that all of our contextual inquiry subjects had similar problems: they were frequently trying to recall previous thoughts while writing. Additionally, these two tasks are much easier to measure and visualize than the other tasks we had considered. The mood-detecting task is very realistic and could be useful to the writer, but without implementing a “minimal viable product” for that task it will be hard to design for. The mood-detecting task is also more compelling than our character-counting task because not all writers we interviewed reported wanting the ability to track character reference frequency. We also agreed that it is much easier to measure the amount of time saved by organizing the user’s thoughts than simply measuring the character count.

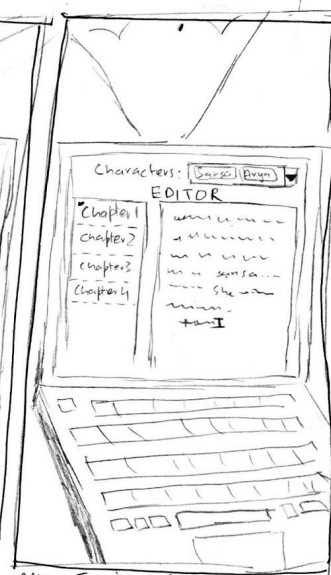
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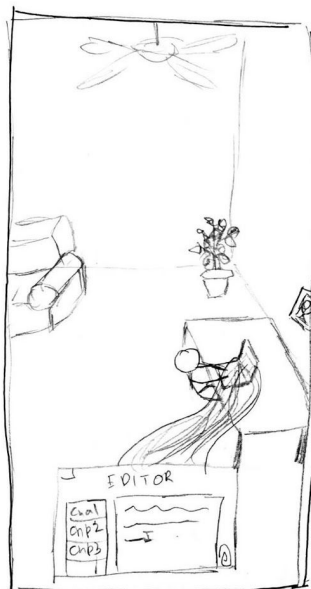
While writing her novel in the mountains, Jamie forgets details of one of the characters, Sansa. She clicks on Sansa's name.



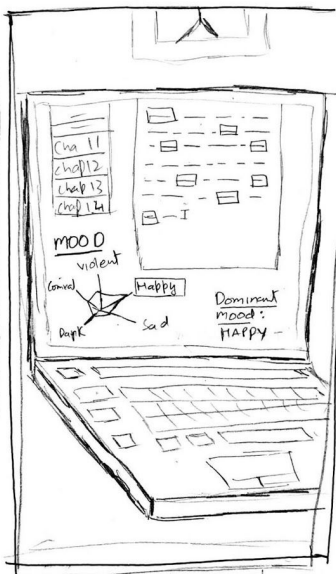
From, sansa's wiki page she finds her old notes. She reads the details she wanted.



After Jamie finds what she needed, she incorporates it into the chapter



James is writing his novel in his living room.



While writing a violent chapter, he looks at the mood detector and sees that it is too happy



James changes the happy sections and now has a dominantly violent toned chapter.