

Final Fantasy
Week 9 Progress Report
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(Katherine Le worked on Game Development in lieu of contributing to this Report)

An Introduction and Executive Summary

As we pen this introductory paragraph, the semester is roughly three-quarters complete, which means that the deadline for Final Fantasy's submission as a final product inches ever closer. Due to the approaching deadline this is an important time to stop and take stock of what we have accomplished over the past nine weeks as well as outline a road map for how the team will complete the game in the time allotted. While we have made great strides toward the completion of the game, there is still a lot of work that needs to be done. Something which we had not fully appreciated at the outset of this project is how much work we would have to put in to simply providing the framework for the game to operate in. While this work has been integral to ensuring the game runs smoothly and executes its vision, the sheer volume of work we have had to put in to these systems has resulted in low morale on the development team at points as we have been unable to see or appreciate the fruits of our labour.

Still, as we look out at what we must accomplish over the next three weeks, we think all this hard work upfront will result in a smoother end to the course than what other teams might experience. We have done well to ensure that our software systems are flexible and can easily handle both the addition and polishing of content. Furthermore, our approach to function-first development means that a lot of the major work we will have in the last couple of weeks will involve working with the more cosmetic elements of the game. This is not to underplay the importance that aesthetics has on how a game is perceived but, is reflective of the fact that as the deadline draws near we won't be worried about including or excluding game features and instead continue to use and expand our testing-driven approach to develop the most appealing presentation for our game possible.

The structure of this report will be straight forward. It will begin with a look at our design idea and how it has evolved over the past 9 weeks. This section will highlight some of the areas we are most proud of implementing as well as look at some areas in which we've had to scale back our vision in the interest of completing the project in a timely manner. After this, there will be discussion on what types of play testing we have done. This section will outline the unconventional approach to testing that we've taken so far as well as plans for expanding our testing regimen in the coming weeks. The report will then conclude with a discussion of what areas of the game we still need to work on coupled with a road map of how we intend to get the work done in a timely manner.

On The Design, Its Novelty & Evolution

An Overview

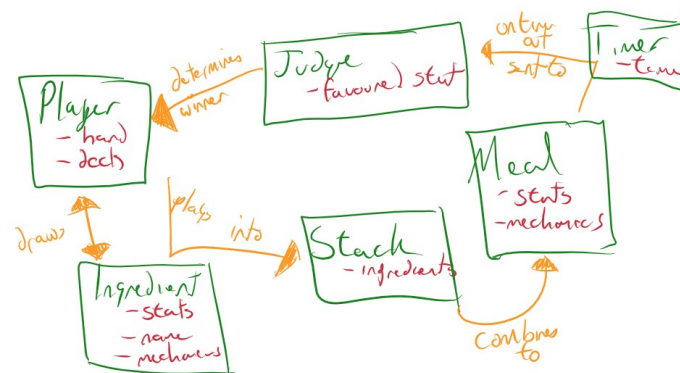
At the most abstract level, game-play in Final Fantasy is rather simple. Players compete against either another player or an AI to create the most delicious meal they can

using the ingredients they are able to draw from their deck. Whomever is able to create a meal that is able to curry the favour of at least two of the three judges in a round is proclaimed the winner and will be able to bask in their glory for all eternity (or for the next couple minutes, when the endorphins wear off). Complicating matters even further is the clock. Players not only have to figure out a winning combination of ingredients but, they have to do so in 3 minutes as when time runs out the submission window closes... and as any student knows, the deadline is what really turns up the heat.

This restriction on how much time a player has to assemble a winning combination is one of the first things that we feel makes our game stand out from other types of cooking games. While games in the Cooking Mama series have had timers to present some level of challenge, the type of game-play in Cooking mama consists of following simple instructions to create a meal. In Final Fantasy, players are asked to do a more creative type of thinking as they have to figure out what sorts of meals will appeal to the judges and assemble a combination of ingredients that will allow them to produce such a meal.

This timed element to what is, in essence, a crafting system is the first of several elements in our game which are novel. The remaining novel mechanics and ideas will be discussed below as we dive deeper into the various systems present in our game.

Detailed Description



A High Level Representation of the Final Fantasy Game Play Cycle.

In order to impart upon the reader a more detailed understanding of how the game works, we will walk through the main cycle of gameplay that the player will experience. As seen in the picture above, a flow of gameplay that a player will experience in a given round can be broken up into several discrete stages.



Above is an example of our "Yak Milk" Card.

The Card

The atomic element of Final Fantasy is the card. There are two main types of cards in Final Fantasy, the first is the ingredient and the second is the meal.

Every ingredient in the game has the following three elements. The first is an array of stats which represent the flavour profile of the ingredient. For example, a tomato will be high in sweetness and umami while a chile pepper will be high in spiciness. These stats govern what their contribution to any meal made with them will be (more on that process when we discuss the stack and meal creation). In addition to its stats, some cards will carry special mechanics that alter how the player treats the card. Presently we have only been able to think of three mechanics that have been compelling enough to include in the final product. Two mechanics, Al Dente and Burn activate when a card is added to the stack and create a secondary timer and reward/punish the player for failure to complete a meal using that ingredient in the time allotted. The last mechanic, Overpowering Flavour, serves as one of the few ways a player can directly affect the meal of the other player. This mechanic will cause the judges to undervalue certain stats of the opposing meal!

Finally, an ingredient has a non-unique tag that is used by the meal-creation engine. This tag will be shared by all ingredients in the same class (say all tomatoes). This allows us to create more powerful versions of basic ingredients that have higher stats, better mechanics with out having to create new a new meal combination to account for this.

The second type of card, the meal, will be discussed later on but, for now it is sufficient to say that meals are simply the result of combining a bunch of ingredients.

One big change in our design between the initial proposal and now is that, for the time being, we have eliminated tool and condiment cards. We felt that we couldn't develop these cards in such a way that they would be compelling enough to the player. Should time permit, we will explore adding them into the game but, this is not something which we are

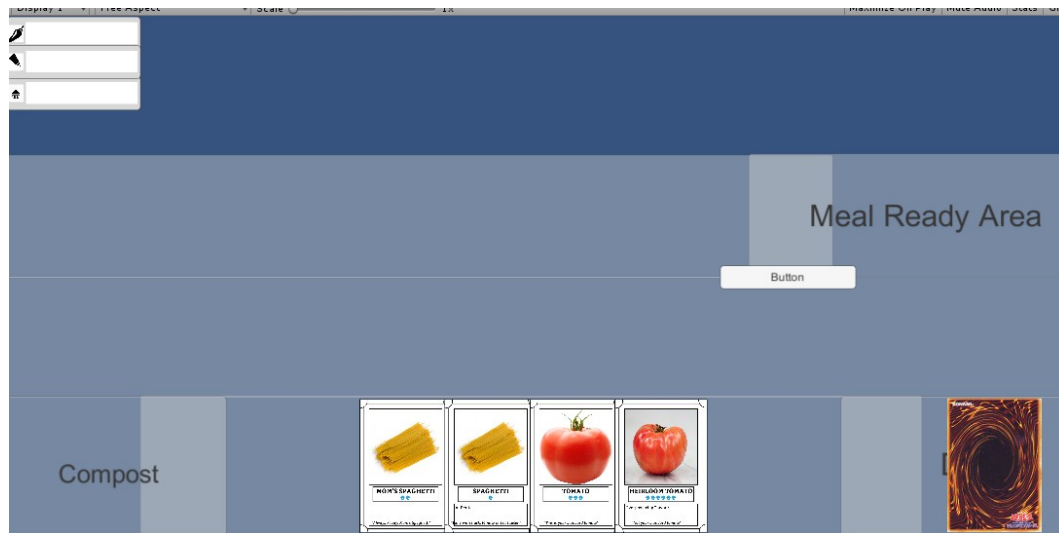
including as part of the core design. Later on, when we discuss results from testing, we will touch upon some of the reasons we have eliminated condiment cards for the time being.

The Deck

Understanding the deck is a fairly straight forward endeavour. It consists of all the cards the player has yet to use. Presently, the only way to draw from the deck is either at the beginning of the game or when the player has fewer than two cards in their hand. The player can draw until they have five cards in their hand.

We are presently exploring adding a “Wild Card” that will allow the player to search through their deck for a specific card as well as inclusion of tool cards that will change when the player is able to draw from their deck. These additions, though, are not part of the core design and given our current rate of work, it seems unlikely that either of these elements will be in a build that we submit at the end of the semester.

The Hand



A Look at Four Cards in the Player's Hand.

Again, the hand is fairly straight forward. Under our present set of rules, the player can never have more than five cards in their hand and as mentioned previously, they are unable to draw new cards into their hand until they have two or fewer cards in their hand.

This design decision was made because it would prevent the player from simply hoarding ingredients. Thus, they have to decide quickly whether or not they think the card will be useful to them. If it is, they can add it to one of the two “Ingredient Stacks” or put it in one of the few “Mise en Place” slots which allow the player to stow a couple cards away for safe keeping.



*A Look at the Final Fantasy Game Board. All zones, barring the deck have been labeled
Note: This screenshot came from a build as of the day we've submitted the paper. It represents the first idea of a proposed redesign.*

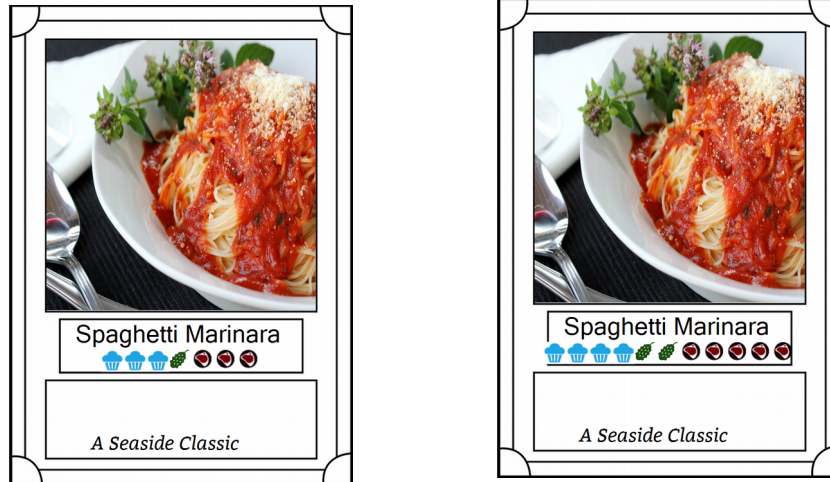
The Game Board

The game-board is divided into four main areas. As mentioned previously, the first of these four zones is the mise-en-place. In addition to mise en place, we have a zone for storage of meal that the player does not want to submit to the judges as well as a slot for the meal that the player *does* want to submit.

The Cook Zone

The fourth and final zone of the game-board is the stack. This is where players assemble ingredients into a meal. When two or more ingredients have been added to the stack, a button will appear asking if the player would like to “cook” the ingredients they have assembled. When the player feels that they have assembled a good set of ingredients, they can click this button and the game will leap in to action preparing a customized card based on the cards it was given. The generated card will then be sent to the submission area, or, if that is full it will be sent to the “meal storage” zone.

The ability of our game to handle any combination of cards is perhaps the most novel feature of our game and the one that we are most excited about. The game will use the ingredient tags to search to see if the combination matches any known pattern. Should there be a match, the process is fairly straight forward. The stats and mechanics of each ingredient will be combined. Any additional stats or mechanics bestowed by the meal will then be appended on. Finally, a custom image will be assembled reflecting the unique stat and mechanic load out of the generated card.



Two Spaghetti Marinara Cards. The one on the left is made using lower quality ingredients and thus is weaker compared to the other spaghetti marinara. Note: Font is not representative of what will be on the final card!

Should there not be a match, though, the cards will be combined (as usual), but then a host of stat reductions will be applied to the card. Crucially, though, there is a small chance that any meal created will receive an overpowering flavour mechanic and/or some stat buffs. The thinking being that perhaps the player happened divined upon a completely new dish that will leave the judges floored.

Again, a custom picture will be generated, using mystery art in lieu of a “food porn” shot of the final meal.

Rules and Winning

Once time runs out, the meal that the player has in his submission box will be submitted to the judges where it will go up against either a card submitted by an AI. As we’ve mentioned multiple times now, whomever is able to produce a meal that is capable of wooing at least two of the three judges will be proclaimed the winner of the match.

Of the three judges, two will telegraph (through dialogue) what things they are and are not looking for in a meal. This will inform the player of the stats they should focus on when making the meal. The third judge, will have a random palette and remain mostly silent with regards to their preferences.

Behind the scenes, a players score will be computed as a weighted sum of each of their stats and any “Overpowering Flavour” modifiers applied by the opponent. The weights for each judge are determined by the flavours they like and are in the range of .25-2.0. Higher weights indicating the judge has more of a preference for any given flavour.

In addition to having one judge which will have a randomly generated palette from game to game, the other two judges in a game will switch from round to round. The judges will be revealed to the player before the game begins but after a player chooses their deck. We believe that this allows Final Fantasy to avoid some of the pitfalls that are often associated with competitive card-games. Chief among these is the tendency for there to be cards and methods of play that are unquestionably stronger in the meta. This would

circumvent our desire to engage creative thought and exploration based play and, ultimately, would limit the replayability factor of the game.

Controls

The control schema for Final Fantasy is simple. Players click on the deck to draw cards in to their hand. Cards are then dragged and dropped from the players hand into play or the discard pile. To combine cards in the “Cook Zone” a button will appear near the stack. The player can click this and upon doing so the cards will disappear from the stack and the meal card will appear in its proper place.

Aside from this, the only thing worth mentioning about the controls is that some of the more repetitive actions (drawing cards when the player gets down to 2 or less) may be automated. We will await more thorough testing to see if this change is warranted and even if it is found to be a welcome change, it is not something we’d consider a core mechanic.

Media Use

Presently the only media assets in the game are cards, card art pictures and a couple pictures which we use for menus. Cards are automatically generated from database entries that include a card’s name, stats, description as well as where the card’s art can be found on disk. This database in turn is updated from an excel file which allows for new cards and changes to existing cards to be rapidly deployed into a build of the game.

Changing Scope

Throughout the course of the game’s development we’ve had to make many difficult decisions which have prioritised the completion of the game over giving the game a broader scope. Some of these decisions have included focusing on a tight single experience in lieu of making a multiplayer game (networked or otherwise). We felt that the benefits of multiplayer just did not outweigh the extraordinary undertaking it would be to implement a multiplayer mode. Another big decision has been to delay the inclusion of tool and condiment cards until we could be sure that our core game is solid.

Closing Remarks

In this section we have alluded many times to the idea of a certain subset of features being core features. In the interest of erasing ambiguity, we consider the game play cycle discussed above to be the core game. Our goal for week 12 is to be able to deliver an experience where all phases of this “cycle” will be implemented and polished with respect to both functionality and presentation. More about our plans to implement both this “core” design as well as any reach goals will be explained in more detail in the section of this report that lays out a road map.

On Play Testing

The nature of our development process has meant that at no point in our game’s development cycle have we had what would be a working beta build of the game. It’s only

within the past 24 hours (as of our writing this) that enough of the games systems have been completed such that round of the game could be played from start to finish. While this has prevented us from testing certain things such as our judging algorithms and time based elements of the game, we have been keen to not let this hurdle prevent us from doing play testing using the elements we have completed. Much of this testing has fallen in the following two categories: “Hand Testing”; where we examine whether or not players are able to intuit the types of combinations the game expects from certain “hands” of cards; and testing of players reactions to our current GUI layout.

Before I launch into a more thorough analysis of our testing regimen, I’d like to begin with a brief discussion about who we’ve conducted play tests on.

It is the opinion of the development team that Final Fantasy is aimed at a more casual audience. This audience mostly consists of those who would not consider themselves “core” gamers. The rapid nature of our game means that it would have appeal with someone who would be interested in the kind of game which they can pick up, play a round or two and put back down. Using the terminology of the course, we believe that the primary target of this game would be someone whose player type is that of a craftsman. In addition to this, we think that our target player would be someone who is intrigued by the culinary premise but is not necessarily a hobbyist chef themselves.

We have found 4 people among our collective group of friends who were both willing to test the game and broadly fit the bill of who we feel this game would appeal to. In the coming days and weeks, as we are able to create a proper testing build, we hope to expand this pool of testers so that we can receive even more feedback on the quality of the game.

As mentioned previously we have subjected this group of people to two different types of tests “Hand Testing” and GUI layout testing. Our results with each type of tests will be discussed in turn below.

Hand Testing:

“Hand testing” is the term we have given to a series of tests where we have sought to gain insight into whether or not players, all of whom have had only limited experience cooking Italian, would be able to figure out different meal combinations based off a set of 4-7 cards we would present them with. In these tests we’d observe not just whether the player would be able to figure out the combination we had intended, but also the length of time it took them to work through the problem.

This data has given us valuable insight into not only the types of meals we should work to include in the game but most importantly it has led us to rethink how we create both new meals but new ingredients as well. Before, we had taken an approach of more or less reverse engineering a meal into its various ingredients. If we were including, say, spaghetti marinara, we would consult a couple recipes and have the meal come from a list of ingredients that we found in common between the recipes. A couple of problems with this method is that we would often ignore other valid combinations of subsets of those ingredients... and most importantly we failed to take into account different variations on a dish. In our earlier testing, players would express frustration that something like Basil was

considered integral to a Marinara or that one could not add shrimp to Fettucine Alfredo and have it still be valid.

As a result, we have begun to think of meals in a way that is not dissimilar to how degree plans work here at Queen's.

- ~~Card~~
- Fettucine Alfredo**
- Butter
- Cream
- Fettucine
- Pamesan
- Parsley
- ONE OF
 - Chicken
 - Mushroom

Example of how we now plan meals. Those in Italics at highest level of indentation are optional. Note: The order ingredients are presented in is of no consequence.

As the above picture shows, each meal is now planned as having a set of core ingredients. There will then be a couple ingredients from which the player can pick one of a few different ingredients (often with proteins) and finally there will be a bunch of optional things that can be added on. Moving to this paradigm has largely been responsible for us considering eliminating condiment cards.

Since switching paradigms, player performance on this type of testing has improved somewhat but most importantly the frustration we had been seeing before has mostly disappeared as the perception is that the game is a bit more fair... and better representative of what cooking actually is.

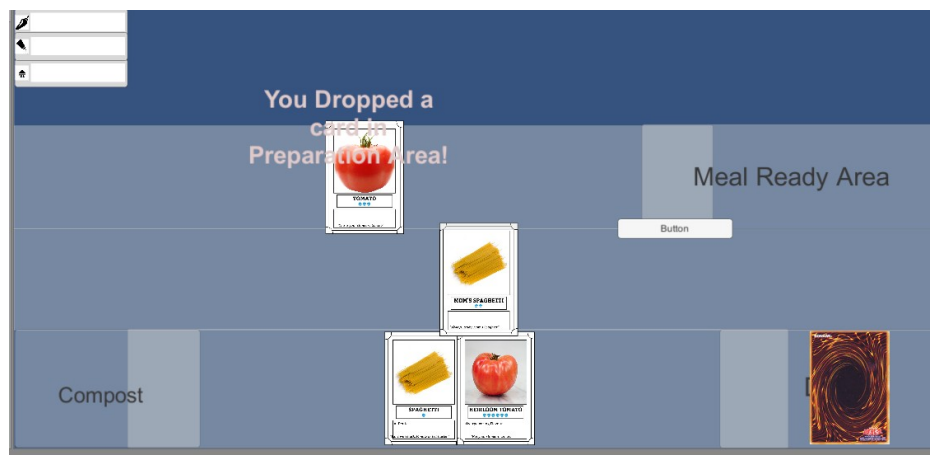
In addition to rethinking how we plan out meals, we have been able to gain insights as to the types of Italian cooking the average player may be more familiar with. On the whole, when players were asked if they could combine sets of cards that would make a pasta dish they performed much better than when they were expected to divine the ingredient list for something like Chicken Scarpeliello which almost all of our (admittedly small) testing group hadn't known existed. The first of our two main takeaways from this is that we should focus primarily on developing simpler more well known meals that most players will have heard of. The second is that as we develop deck lists for the pre-built decks included in the game we should take care to ensure that at least one of the decks is approachable to someone who is unfamiliar with the ins and outs of Italian cooking. Based upon our results so far, it looks like one deck will focus more on pastas and other staples of what can be called Italian-American cooking while the other will be geared toward creating dishes more reflective of cuisine from the mother country. An added benefit of this division is that deck selection will function as sort of a difficulty setting for the game!

While our card-list is getting closer to a final version, the ease of adding new meals and variations to the game coupled with the valuable feedback this testing has provided

means that we will look to use this process as a litmus test for whether or not we should include a meal.

GUI Layout Testing

The other part of the game where we have conducted testing has been the layout of our GUI. While the final look and feel still is still being worked on, we have been able to gather results concerning how a someone would go about interacting with the field of play. In this series of tests, we gave players series of simple tasks that one would frequently do when playing the game. For example, we would ask a player to draw cards from the deck or combine a couple of cards to make a simple meal. Even these simple tests have revealed major issues with the layout of our game-board.



GUI Layout Used During Testing. Now under redevelopment

Most test subjects experienced difficulty figuring out what each zone of the game-mat was for. In addition, players found it difficult to know which ingredients were stacked together and which ones were not. Obviously, this is a major structural problem with how we have presented the game and recently we have been working on addressing these issues.

At the time I write this, we are still in the process of figuring out a design which averts the types of problems that test subjects have had with the game but still provides for our desired functionality. Fortunately, most of the work will be in figuring out a good layout. The actual process of readjusting the layout will involve dragging a couple things around in Unity.

Another planned change to come out of this testing process is that we will be sure to include clear labeling of the zones on any final “skin” of the game-mat as this will provide newer players reminders about what each section of the mat is for.

Future Plans

While we have been able to accomplish a lot of valuable testing using what has been an incomplete game, the pending completion of all core systems this week will allow us to expand our testing apparatus as well as allow us to devote more of our attention to testing the game. Features the completed build will allow us to test include the stat and mechanics

balance of our cards as well as the relative strength of our pre-built decks. In addition to this, we will be able to test some of the time based elements that we have been unable to work with so far such as the amount of time on the various clocks in the game.

It is likely that this next round of testing will be more analogous to more conventional game testing. We'll have participants play rounds of our game, and pay close attention to what their reactions are coupled with how well they are able to execute game tasks in the time allotted. In addition to informing the precise calibration of our clocks, we will look to, development time permitting, include some small quality of life features (like auto draw) to make play feel more smooth to the player.

In addition to testing some of the more mechanics based elements of our game, we will begin conducting AB testing on different elements of presentation such as music, sound effects and visual styles. Given the time constraints that we have, it is likely that this will be small scale testing on perhaps just one or two people but, we feel that it will allow us to put forth a final product that is ever so slightly more refined.

On The Next Three Weeks

Given the weight of what we have undertaken, it's impressive what we have accomplished in the last nine weeks. This said, there is still work to be done on our game's features as well as polishing up various elements of the game. Feature work can be broken into two categories, the first consists of parts of the game we are already working on and the second are a couple areas we have yet to begin formal work with.

Things Being Worked On

We are in the last stages of getting our judge scripts up and running. While the underlying architecture behind the judges is complete, we still have to integrate them with the rest of the game. Our estimated completion date for this is 14 March.

Aside from working on the judges, we also have been working on C# Image Processing. While we have an excellent python script for automatically generating images for cards, we have had to write a similar script in C# for the dynamically generated meal cards. The script is mostly done and the results can be seen above (in the first section of this report) but we need to make a couple tweaks so that it uses the correct font family as well as saves produced images to a temporary directory. The estimated completion for this part of the game is 13 March (read: after this paper is submitted).

One problem play-testers have pointed out (and that we've noticed on our own) is that the "flavour text" and mechanic descriptions on each card is too small to read. As a result we have been working on a system where the card the player is hovering over is magnified and displayed in an area on the left side of the screen. This placement is not final but the system to handle it is complete barring some issues getting it to work on a MacOS based machine.

Funny as it may seem, we are still have not completed work on our discard system. This delay has resulted from us waffling on whether or not players would be able to search through their discard pile. We've ultimately decided against it and we are now in the final stages of bug testing this feature.

Last, but not least, there is the issue of card creation. Over the course of the past two weeks, we have been scouring Italian cookbooks to find good meals to include. We have a goal of at least 3 new combinations (not counting variants) a day. It is expected that with testing this list will be trimmed into what is included in the final game. For the most part, we have decided on a set of ingredients and the only work we are doing now is finding new ways to combine said ingredients.

Things We Have Yet To Start

The biggest thing which we have not yet started is the beautification of the GUI Elements. While great care has been taken in order to ensure a functionally sound experience, this function-first approach has meant that we're just getting to the point where we have the liberty to focus on the presentation based elements of the game. We intend to beautify different scenes as well as pause menu to make UI more dynamic, responsive and user-friendly. We would also like to add the splash screen as well as logo to our game. There is no good estimation for the completion of this task and work touching up on this will likely run until the final few days of the development cycle.

Aside from GUI beautification, we would also have to begin work on the pre-built decks we want to include in our game. This process is expected to begin late week 9 and continue right through the final days of development.

Roadmap To Completion

With the writing of this paper, we have only three weeks until the deadline for this game. Furthermore, we acknowledge the amount of work we have in our other classes is only going to rise as the term nears completion. As a result, we are going to be very conservative with respect to what we can get done. The road map for the next few weeks is outlined below. Each week we will have two sets of goals to meet. The first is what we consider to be the bare minimum to get the game done in time and fully implement our core design. The second set of goals are stretch goals. Small things that would make the game better but do not need to be included in a final product

End Week 9:

By the end of Week 9 we hope to have a game which *can* be played from beginning to end. This will be an experience which the player can go from the main menu to a game and be able to play. In the game, the player will submit their card and have it evaluated by judges and a winner proclaimed. Much of what we need to have this done is already being worked on. This includes:

- Judges
- "AI" system
- C# Image Processing:
- Card Creation
- Graveyard
- Mechanics Timers

Beyond this, the only other component we feel necessary to complete by the end of this week is to have a system for handling the start and tear-down of a game. We've already identified Andrew as being the person to work on this and he is looking into the requirements of implementing this. While much of this work is already in various stages of completion, we still

recognise that it is a massive undertaking. As such, we will not outline any stretch goals beyond adding to our list of cards.

End Week 10:

By the end of Week 10 our goal is to have a UI that looks presentable to the general public. This will mostly be creative work and not involve writing much in terms of new software. We expect any UI redesign to incorporate an area to display a larger version of the card someone is hovering over so that it is easier to read. The end of Week 10 will also represent the “decision point” on whether or not we decide to include tool and condiment cards. As we’ve mentioned, we have the infrastructure to support them but adding them any later than the end of week 10 will not provide for an adequate testing period. Aside from these two areas, we continue play testing and work on fixing what ever bugs arise as the result of our integration of the various parts we’ve worked on during week nine.

End Week 11:

Week Eleven sees no feature milestones. At this point we will add music and integrate some artwork that a friend of ours had volunteered to draw for us. At this point we will begin AB testing on some of the elements of our games presentation. We will also finalise the list of ingredients and meals in the game as the result of player feedback. Any changes to the cards from this point out will be purely to strike the right balance.

Last Stretch:

It is tough to envision what will need work in the final stretch of the game’s development cycle. At this point I imagine it will be continued tweaks to deck lists, card stats and the strength of the “AI”.