

Game Name: Pattern

Team Name: U.S.E.D

aka Upside-down Strawberry
Explosioning Dragon



Team Members:

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1. Design History

1.1 Version 1.0

Document Creation, Sections 1-9

1.2 Version 2.0

Added sections 10-11

Added Class results

Expanded from 11 pages to 60

2. Vision Statement

2.1 Game Logline

A light puzzle game based on the physics and principles of crochet, *Pattern* aims to guide the player through a specific craft in order to educate the player about crochet and to foster creativity.

2.2 Gameplay Synopsis

Crocheting is an art with a unique set of properties that sets it apart from other crafts. Working with any string-like substance (yarn, cord, strips of leather or cloth, wire, rope, etc), a crocheter links loops together into a stitch. These stitches are combined in countless ways in order to create a vast assortment of pieces, far beyond what most imagine when they think of crochet (hats, scarves, and blankets).

The game is split into two major modes to explore the two fundamentals to creativity: learning a craft and being creative with the tools learned from that craft. The player will learn the craft by making motions on an Xbox controller. The dual analog sticks are perfect for simulating yarn and hook control. The player will make motions directly mapped onto yarn and hand motions done during crochet.

The combined feel of making the motions and seeing the realistic yarn manipulations on screen will give the player a complete feel for crochet. The player will then be able to use these motions and crochet knowledge in free mode, as well as outside the game with a real hook and yarn. Even if the controller is an abstraction of the overall crochet experience, the player will gain crocheting knowledge and will know how to handle and approach the dexterity required to crochet.

Free mode will allow the player to experiment with the stitches they have learned in the game and other crochet knowledge they may have already had. Free mode can be interpreted as a kind of level designer where the player had complete creative control. The player can turn off the stitch motions using the Xbox controller, and they can then use a point-and-click design if they desire. As the player stitches, the system will keep track of what the player is doing and create a diagram. If not possible, at the very least, the player's action will be kept track of, so that a real crocheter can recreate the pattern.

The player will have access to all unlocked stitches (as short-hand) and materials in free mode. The technical approach to handling stitches allows the player to make up their own stitches if they so desire, experimenting with different permutations of yarning over and hook actions. Players knowledgeable with crochet should be free to make whatever they have patterns of in real life, although some restrictions will be kept on the game for this version. All 3D-like actions or shapes will be warned against and forbidden from actually happening graphically.

The game as a whole should provide a cohesive crocheting experience. From start to finish, the player can go from absolutely no knowledge of crochet, to being empowered to design and make their own designs in the real world. Crochet provides a unique opportunity to explore physical crafts in a digital space, taking advantage of the

easy procedurality of computers to help spread knowledge of, make, and understand an ancient art.

2.3 Important Notes

- You will not need to know crochet to play this game

3. Audience, Platform, Marketing

3.1 Target Audience

- Crocheters
 - Casual Gameplay under a familiar theme
 - Procedural pattern design
- Non-Crocheters

3.2 Platform

- Computer using a wired XBox 360 controller
 - Use the control sticks to simulate stitch movement
 - Computer gives easy access to text files and printing of patterns, as well as the community website
 - A keyboard + mouse set-up on the computer can supplement a lack of Xbox controllers
- Built in XNA 3.1
 - Familiar coding platform for most team members
 - Lots of online help for the platform
 - Support for analog controllers

3.3 Sales Expectations

- No sales
- Open-source, free software for crafters
- Contracts for some art and music require the game to be non-commercial

5. Gameplay

4.1 Overview

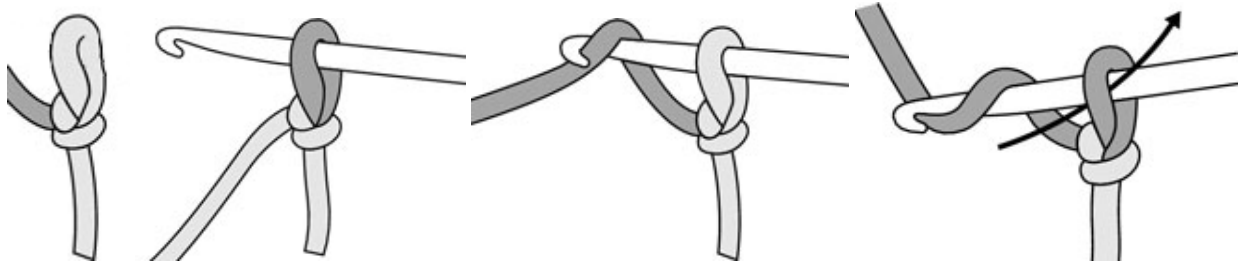
The game will have two primary modes: a story mode and a free mode. The story mode will guide the player through learning the game and crochet. There will be explicit goals and single solutions to each level to ensure the player is learning all the tools and crochet physics that the game has to offer. The free mode will then make use of all the tools learned in an unstructured space. Outside of the story, free mode is more like a level editor. The player will have full creative control to design a pattern that can be printed out and shared. The printed pattern will be understandable and craftable

by crocheters. The printed pattern can be attempted by the player or given to a more experienced crocheter for creation.

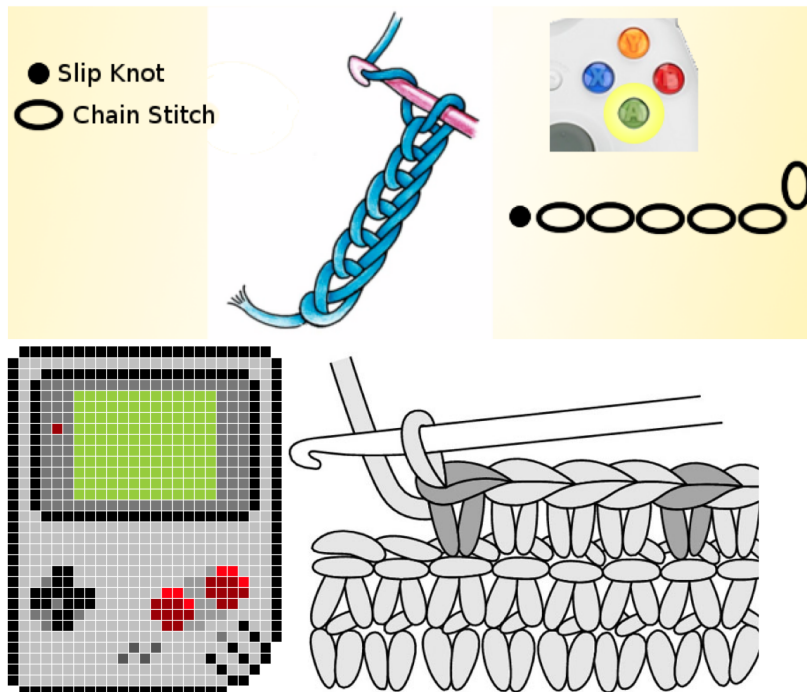
4.2 Gameplay Description

4.2.1: Story Mode

The story mode assumes complete ignorance of crochet and its concepts. The player will begin with the simplest concept, the chain stitch, and in the process learn the basic fundamentals of all crochet: putting the hook in loops, wrapping yarn over the hook, and pulling the hook out of loops (as seen in the pictures below).



The player will gradually be introduced to new stitching concepts and physical crocheting challenges, packing in as much knowledge as possible without overwhelming the player. We used physical prototypes and storyboards to help us design how to introduce and educate the player for this section of the game (Section 11). The player will be given the opportunity to learn a skill, practice it, and then use it without explicit hand-holding. We will slowly take away training wheels, first the controller diagrams and then stitch-by-stitch charts, replacing the charts with grid abstractions.



In the particular example above, the player will have learned how to color change, make turning chains, and single crochet by the time they make it to the second frame: everything the player needs to know to make a crochet block of the Gameboy system. In that second frame, the control instructions and chart seen in the first frame are absent. This example level comparison shows how the player will be expected to learn skills and use them on the fly. The knowledge learned in these slightly puzzling tutorials will equip the player for the next mode.

The levels section will describe our plans for levels in story mode and the layout of skill advancement (4.5). The accompanying flowchart will describe how the player will move through the difficulty levels and individual pieces (4.6).

4.2.2: Free Mode

In order to make use of free mode, the player will have first gone through story mode, removing the need to describe what's being made. The player has also seen a variety of objects made using crochet and will have hopefully been inspired in some way (as the target audience are people already inclined to learn the craft or be creative).

The layout and use of free mode will be very similar to the storyboards presented and designed for story mode. However, the player will be able to choose to opt out of the stitch motions, instead painting stitches on in a point-and-click design process. This option will allow the player to quickly and easily design a final product if they do not want to allow the stitch motions and music sweep them away to a place of calmness. A set of stitches will be added to the standard list of materials, addons, and other options when crocheting to maximize creativity and stitch painting.

The biggest strength of free mode is that a pattern for explicit instructions of how to make the piece will be created alongside the player's stitching. The player can save, print, and load patterns they've made and those found in the story mode. These patterns can be used by the player to practice real crocheting, or printed out to be given to a more experienced crocheter. Either way, the player can have made for them a physical object of what they make in the game!

4.3 Controls

Camera: The view will be 2D and thus there won't be a camera in the traditional sense of a 3D game. However, the player will be able to control the field of view by zooming in/out and panning around the workspace.

Stitching: Controls will be gradually unlocked as the player learns how and when to use them, avoiding early confusion and keeping discoverability steady throughout the game.

Object: In place of camera controls, the player will have to control the object. The player will be able to rotate the object on its face to allow stitching in the round or on the sides of pieces, as well as flip the piece over to work in back-and-forth rows.

4.3.1 Computational Prototype

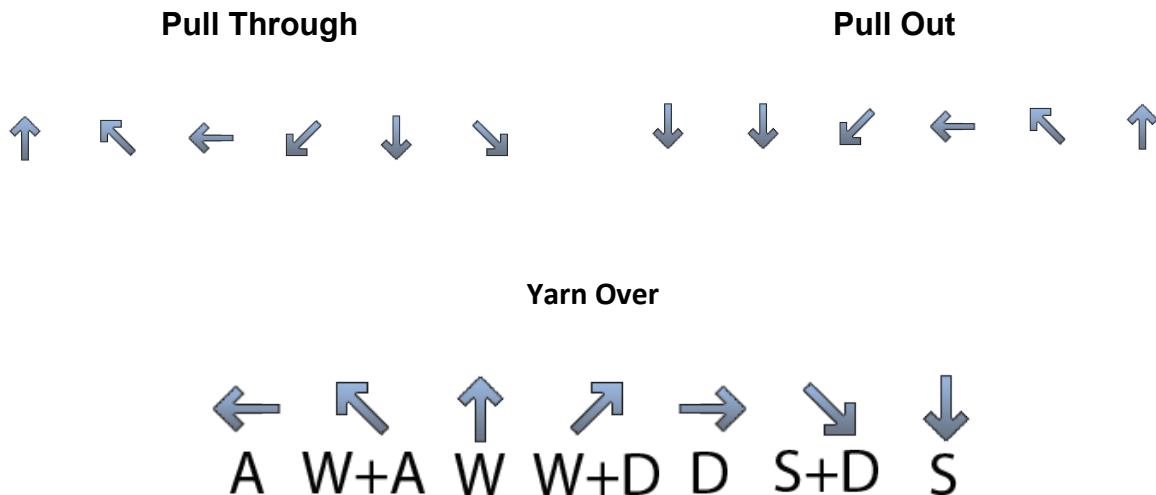
Our computational prototype was meant to address the question of our controls. Here are our testing hypothesis, experimentation, and results:

Primary Question:

What is the best possible control scheme? That is, which is the most accessible, intuitive and comfortable? The conflicting question to these is: Which control scheme has the most parallels to the real actions of crocheting? And most importantly, which is the most fun!?

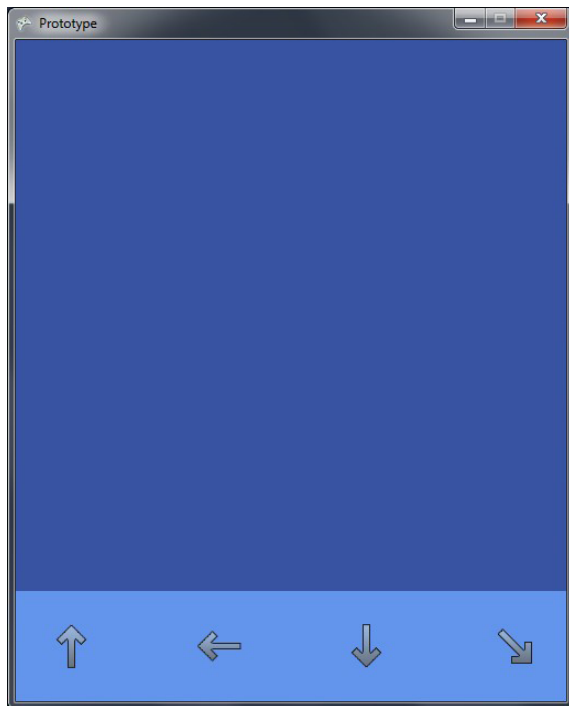
Initial Details

Our computational prototype is designed as a simple picture puzzle. There is a 5x5 grid from which the player begins at the top right square of the screen. Similar to a traditional fighting game, the player must enter a series of directional movements to trigger an event. Initially there were three possible “combos” that player needed to successfully execute:

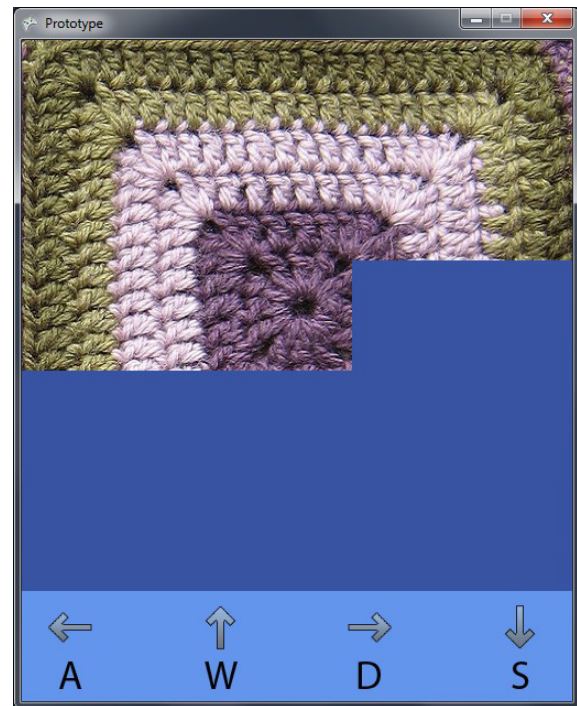


The pull through and pull over maneuvers were performed with the arrow keys (representing the left hand) and the yarn over was performed with the ADWS keys (representing the right hand). When a combination sequence begins, there is a one second window in which the player must press the next correct key in the combination between each step in the sequence. If an incorrect key is pressed or they do not press the right key quickly enough, they will have to reattempt the input. When the player successfully enters a combination sequence, the grid square will change to reveal a piece of a crochet square and the player will move on to the next square in the grid.

This mechanic is meant to somewhat simulate the act of crocheting a square. When the player completes the last square, revealing the entire picture, the play has ended.



The prototype on startup



The prototype halfway completed

Goals

- Examining the difficulty of the control scheme and combination system.
- Discovering how comfortable the controls are (i.e. do they lend themselves to a relaxing play session)
- Gauging how the controls contribute to simulating the experience of crocheting.

Initial Results/Observations

- The playtesters found the play objective to be simple to understand.
- The combinations were mapped out clearly on the screen, however almost every tester needed several tries to successfully complete a combination.
- For some, I needed to demonstrate the proper motion for doing so. Thus, this control scheme was not really accessible enough and was a cause for frustration.
- However, once a playtester was able to complete a button combination once or twice, it was much easier to repeat the precise steps successfully.
- Playtesters commented that the keyboard control scheme was not as forgiving and responsive as it should be and that analog control would be a much more appropriate.

- Also, a playtester commented that the combination system was a step in the right direction and with more balanced/precise controls could potentially create an accurate feel and immersion for simulated crocheting.

Revised Details

The basic setup of the revised prototype is the same as the original. There is still a five by five grid which fills in as the player inputs combos.

After the first prototype, several changes were made in response to the comments. The difficulties of the combos in the first prototype varied depending on the type of keyboard used. While fairly easy on a standard keyboard, most of them were nearly impossible on a laptop keyboard. The combos were therefore simplified, as well as adding one new combo. In addition, playtesters were told to attempt the same combos using the Xbox 360 controller. The left analog stick replaced the WASD keys while the right analog stick replaced the arrow keys.



This is a simplified version of the Pull Through combo in the first prototype. In order to make the control easier for the keyboard, most of the diagonal directions were removed from the combo. However, even with the single diagonal that was left in the combo, this was one of the more difficult combos for playtesters to complete with the keyboard. This combo was likewise simple on the Xbox controller, however, the diagonal at the end made playtesters want to go through all of the diagonals in the combo, not just the last one.



This is a simplified version of the Pull Out combo in the first prototype. All of the diagonal directions were removed from the combo. With all of the diagonals removed, this combo was fairly easy for people to complete on the keyboard. On the Xbox controller however, the repeated direction at the beginning and the lack of diagonals made this an awkward, though not truly difficult, combo.



This is a simplified version of the Yarn Over combo from the first prototype. The diagonal directions were removed completely from the combo. With no diagonals, the combo was very simple to complete on the keyboard. On the Xbox controller the combo was likewise simple, but again the playtesters wanted to go through all of the directions including the diagonals when finishing this combo.



This combo was added to the revised prototype in order to test more than one combo with the left input. On the keyboard this was slightly more complicated in that it “jumped” across the S key as part of the combo. Despite this, playtesters didn't have many problems with it on the keyboard. On the Xbox controller this combo was simple, but playtesters tended to add a down-left and up-right diagonal directional press after the first and third directions respectively.

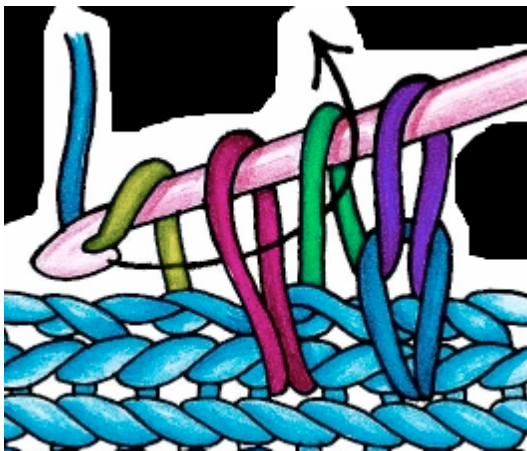
Final Results/Observations

- After having the controls explained, playtesters had few problems completing the combos. It is likely that we will keep this level of difficulty for the combos in the final game. These are motions that will be repeated many times over the course of the game therefore, they should be kept fairly simple.
- However, the combination with the diagonal arrow still gave playtesters a problem on the keyboard. Even the single diagonal that was left in the combos was enough to vastly increase the difficulties in completing a combo. In fact, only having a single diagonal in all of the combos may have caused more difficulties than simply removing all of the diagonals. Since there is only one, players aren't expecting it, and it takes them longer to grasp what they need to do.
- Depending on the control scheme used, playtesters tended to want to have different combos.
 - On the keyboard, playtesters were more comfortable using the four main directions. With the Xbox controller though, playtesters were more likely to want to use sweeping motions that went through every direction.
- In terms of immersion, playtesters felt that using the Xbox controller felt more like actually crocheting than using the keyboard. This likely has to do with the

fact that using the analog sticks has the playtester moving their fingers in motions that can imitate actual crocheting motions. The keyboard alternatively, has minimal movement of the fingers, and the movement there is has very little relation to actual crocheting.

Putting it all Together

Once the player has learned the three basic steps of making a simple stitch, they can then use these same three actions in combination to create a various amount of more complex stitches. With these more changeling stitches the player will need to keep track of multiple loops and when to yarn over and which loops to pull through.



Here we can see a tricky maneuver with many loops being held on the hook. The purple loop is being pulled from within an open loop and is yarned over into a closed loop. The player must then use the right hand controls to guide the hook through the green loop.



Here is an advanced stitch using several pull throughs, repeatedly building off of open loops.

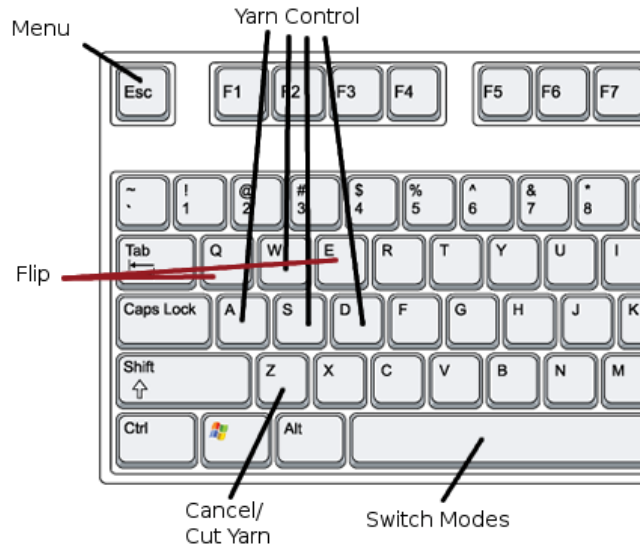
Controls

While the specifics may change slightly, there are several controls that we will need to have. These consist of:

- Yarn Control
- Hook Control

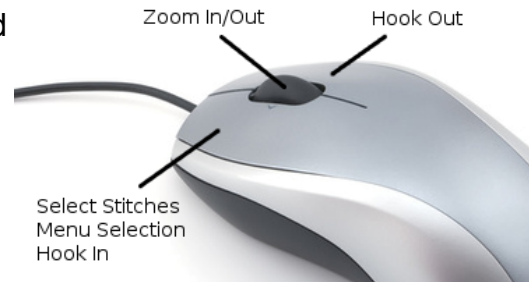
- Mode Change
- Stitch Selection
- Zoom In/Zoom Out
- Flip Pattern
- Scrolling
- Cut Yarn

There are three control schemes we are considering: keyboard, keyboard +mouse, and Xbox 360 controller.



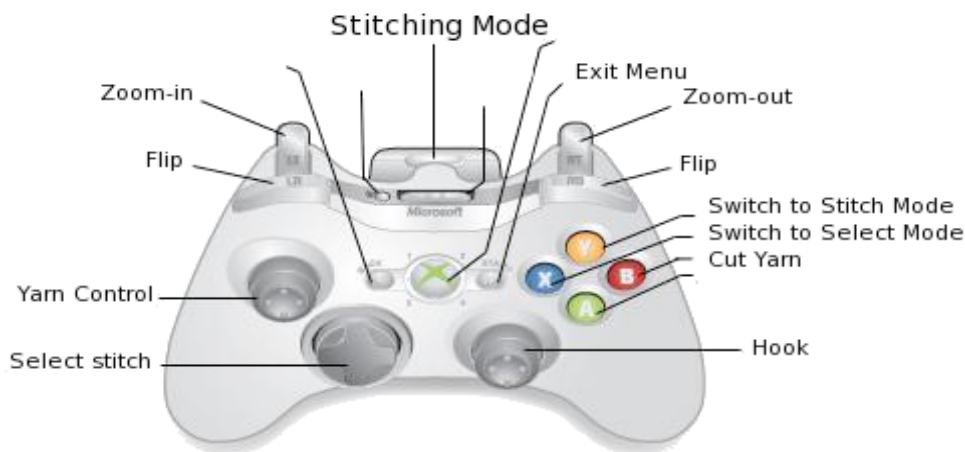
- Yarn Control is the control for the representation of the yarn that appears on the screen. In real crochet the yarn is generally held and manipulated by the crocheter's off-hand. The yarn will be controlled by the

- Keyboard: W A S D
- Xbox controller: left analog stick



- Hook Control is the control for the representation of the crochet hook on the screen. This is typically controlled by a crocheter's dominant hand.
 - Keyboard: left arrow, right arrow, and clicking on the mouse
 - Xbox controller: right analog stick
- Mode Change switches between the two game modes. During the game there are two modes, Stitching Mode and Selection Mode. Stitching mode is where most of the actual work is done in terms of following the patterns and completing the stitches. Selection Mode lets you choose supplementary options such as the yarn type and color, add-ons, and accessories.
 - Keyboard: space bar
 - Xbox controller: X(select) and Y(stitch)
- Stitch Selection is only available in Stitching Mode. In real crochet a stitch can be started or ended in any previous stitch. This control allows the player to do the same thing.
 - Keyboard: I J K L
 - Mouse: left clicking
 - Xbox controller: D-pad.
- Zoom in and zoom out are fairly self explanatory. They allow the camera to be zoomed in and out. This can only be done in Stitching Mode.
 - Keyboard: 1 and 4

- Mouse: scroll wheel
- Xbox controller: left and right triggers.
- Flip Pattern will flip the current pattern that is being worked on. In crochet the stitches go backwards and forwards down the rows. The flip button will allow the player to do this will keeping the same screen orientation.
 - Keyboard: Q and E
 - Xbox controller: A
- Scrolling will only be used in Selection Mode. This will allow the player to scroll through the different options available in Selection Mode.
 - Mouse: simple be selected with the mouse.
 - Keyboard: left-hand shift and alt keys.
 - Xbox controller: right and left triggers.
- Cut Yarn is another control that needs very little explanation. Sometimes one needs to cut their current piece of yarn and begin with a new piece of yarn somewhere else. Cut will only be an action in Stitching Mode.
 - Keyboard: Z
 - Xbox controller: B
- The Menu control opens up the games menu.
 - Keyboard: escape key. On the
 - Xbox controller: start



4.3.1 Interfaces

- Extremely simple HUD
- Clean view of the 2D Space
- Simple Menus
- Experimented in the Storyboards (Section 10)

4.3.2 Rules and Objects

- Stitches
 - Slip Knot
 - Begins (almost) all projects
 - May include “magic ring” starting technique later
 - Small sphere representation
 - Special control case
 - Chain Stitch (ch)
 - Hollow oval
 - Foundational row for other stitches
 - Also used as turning stitch
 - Chained off of the slip knot and at end of rows
 - Yarn over + Pull Out
 - Single Crochet (sc)
 - Small cross
 - Foundational crochet stitch
 - Put in stitch + Yarn Over + Pull Out 1 + Yarn Over + Pull Out 2
 - Slip Stitch (slst)
 - A chain stitch used through another stitch
 - Short Arc
 - Put in stitch + Yarn Over + Pull Out 2
 - Half Double Crochet (hdc)
 - Less common stitch
 - Height between Single and Double Crochet
 - Tall T
 - Yarn Over + Put in stitch + Yarn Over + Pull Out + Yarn Over + Pull out 3
 - Double Crochet (dc)
 - Another extremely common stitch
 - Tall cross with one additional cross bar through the center
 - Yarn Over + Put in stitch + Yarn Over + Pull Out + Yarn Over + Pull out 2 + Yarn Over + Pull out 2
 - Treble Crochet (tbc)
 - Very tall stitch
 - Begins a long series of common stitch height expansion
 - Predictable pattern of taller stitches
 - Tall cross with two parallel additional cross bars through the center

- Yarn Over 2 + Put in stitch + Yarn Over + Pull Out + Yarn Over + Pull out 2 + Yarn Over + Pull out 2 + Yarn Over + Pull out 2
 - Other stitches may require short-hand definition
 - Players may need to define their own stitches in free mode
 - Stitch definitions are fighting move-like short hands/short cuts of a series of acts (Yarn Over, Put In, and Pull Out) as seen in the stitches above.
 - Players can always undo stitches by pulling on the yarn when the hook is not in the piece (that is, Pull Out the hook all the way and tug on the right stick until you've sufficiently undone what you want)
- Materials/Addons
 - Yarn
 - 6 core relative thicknesses (a scaling of size)
 - Layers of fuzziness and novelty additions
 - Rainbow of colors
 - Wish List (In varying order of importance)
 - Mixing different yarn strands together
 - Different yarn materials (hemp, wire, plastic, leather)
 - Beads
 - Eyes (such as googly)
 - Felt
 - Other Yarn additions (ex: hanging on as hair)
 - Felting
 - Tassels
 - Pompoms
 - Crocheting into other materials (like cloth)
 - Springs, nails, bobby pins, hair pins, washers (metal)
 - Sequins
 - Buttons
 - Ribbon

4.3.3 Scoring/Winning Conditions

4.3.3.1 Story:

Each Level has an accompanying pattern that the player must follow. There will always be enough instructions to encourage a single making of the item. The game will detect through our loop algorithms if the player is following the pattern correctly. Depending on the level and results from further playtesting, we may allow the player slight deviations from the pattern (such as using 2

turning chains instead of 3). But, ultimately, keeping to the pattern itself is the sacrifice this mode has made to the gods of creativity. The player cannot complete the level without completing the pattern.

The player cannot FAIL. In crochet, all mistakes can be recovered through the use of pulling on the yarn when the hook is not in the loop (known as undoing). The UI (through further playtesting) will signal the player's deviation from a pattern, either when they do it (on easier levels) or at the end (harder levels with the stitch-hiding). The player will not be able to complete the levels until they undo their mistake, correct their motions, and successfully replace their accident.

4.3.3.2 Free:

The player will be in a level design-type mode, so there is not even a set of levels or demands the player must meet. Thus, even more so than the Story mode, the player cannot lose or fail. However, we did play with motivation in our physical prototype and found that it's easier to motivate people to be creative/productive with some goal to work toward (Section 11). In order to promote the use of our tool, besides being able to print out what the player has made, there will be a set of points and achievements to earn for exploring the possibilities of crochet.

Because of our granular loop-based approach, it will be easy to define a set of loops/player actions for unique stitches that are not standard or introduced in story mode. It will be easy to add crocheting challenges in free mode that the player can, completely optionally, work toward. Among these achievements will be things like "Make 100 Single Crochet Stitches," "Discover the Double Treble Crochet," and other things. However, the more complicated achievements that require shape recognition or any extra coding are considered wish list items.

4.4 Mini-Modes and Other Features

Within the bigger modes, there are mini-modes or phases that change the control scheme. Similar to mounting a vehicle in an FPS game, there will be a different set of controls for each of these modes.

4.4.1: Stitching Mode

This is activated by the Y button and allows the player to make stitches and work toward their final piece. See the Storyboard (Section 11) to see the stitching mode in action

4.4.2: Selection Mode

This is activated by the X button and allows the player to change color, yarn material, add extras, and all other non-stitch piece control. See the Storyboard (Section 11) to see the selection mode in action

4.5 Levels

Tutorial

The player will learn the most fundamental controls to all crochet, controls that will be included in all further levels. The player must complete both levels before moving on to other difficulties. After experiencing the tutorial help, the square and circle will become non-tutorial help levels for the player to experiment with if they so choose.

Square

- Basic Controls (PI, YO, PO)
- Chain Stitch
- Single Crochet
- Turning Over
- Finishing Off
- Undo

Circle

- Slip Knot
- Slip Stitch
- D-Pad Stitch Selection
- Increase
- Stitching in the Round

Beginner

The player will build off of and practice the basic controls while learning one or two additional skills. The player will need to complete three levels before moving on. While completing at least three levels, the player will be well-practiced in color change and double crochet.

Basic Leaf

Giver: Mother Nature

Plot: The colorful fall leaves are missing! Who can have fall without leaves? Of course, millions and billions of leaves are missing, but the power of OMYGA can reproduce many objects from one piece.

Skills:

Decrease
Border

Granny Square

Giver: Granny

Plot: All of Granny's blankets and crochet goodies have gone missing, but her crippling arthritis has left her unable to replace her family's heirlooms. With just a single square, the player can replace all of Granny's missing work using multiplicative magic.

Skills:

Double Crochet
Working in Between Stitches
Color Change

Simple Flower

Giver: Mother Nature

Plot: It's as if the world has been stripped of all its natural color and beauty! Besides leaves, Mother Nature also needs help restoring flowers, both in and out of the current season. She'll start with a simple flower for now, though.

Skills:

Double Crochet
Color Change

Star

Giver: Plumber

Plot: This heavily mustached man seems determined to find magical stars in every corner of the world, and he's determined to extract some from you. The only way you can make him stop bothering you is by fulfilling his annoying star-based fantasies.

Skills:

Double Crochet
Color Change

Filet Heart Block

Giver: Little Girl

Plot: This little girl's doll appears to have lost its smile and stopped loving her owner. The doll needs a new heart, stat! With a new heart, new affection and bonds will grow between the girl and her doll that will last a lifetime.

Skills:

Double Crochet
Border

Intermediate

The player will continue to build off of skills learned and learn another skill or two. This level of difficulty, however, begins to explore the more creative uses of crochet. The player will have to make three pieces before moving on. Working three pieces will ensure the player can work with basic stitch abstraction and associating symbols with sets of actions without step-by-step help.

Gameboy

Giver: Young Boy

Plot: The last gift he received from his father before losing both of his parents was an original Gameboy. It barely worked and its batter life was crap, but the sentimental value is more important than functionality.

Skills:

Active Color Changes

No Explicit Pattern

Ghost Filet Block

Giver: Old Man Widow

Plot: His late wife, married fifty years, used to keep watch over him and keep him company. However, her presence has been lost, and he'd like you to restore her. He's not sure how much longer he can last without her.

Skills:

No Explicit Pattern

Medium Flower

Giver: Mother Nature

Plot: The simple flower was cute and quaint, but not nearly enough to restore beauty to the world. Mother Nature thinks that you're ready for a more complicated flower challenge

Skills:

Treble Crochet

Half Double Crochet

Coin

Giver: Plumber

Plot: The poor mustached man isn't making enough money with his star fetish and has fallen into poverty. He needs a little help to get out of the gutter.

Skills:

Active Color Changes (in the round)

No Explicit Pattern

Bonus Slip Stitch Decoration at the end

Crayon

Giver: Young Boy

Plot: The electronic Gameboy was nice and all, but he wants to be creative! And he can't be creative with his Gameboy without risking breaking it =(. He needs to bring color to his own little world, so please replace his set of crayons!

Skills:

Decrease

Slip Stitch Decoration

Challenging

The player will use all the knowledge they have accumulated so far to make bigger and more challenging pieces, inspiring them for free mode. Some levels introduce something new only seen in that piece, meant to be advanced or unorthodox for standard crocheters and used in free mode. Other levels add more information into each grid-based pattern square, requiring more thought to successfully complete the piece. Each level will also unlock extra content meant to expose the player to even more crochet ideas and opportunities.

Kitten

Giver: Little Girl

Plot: The girl remembers playing with her cat and doll together at tea parties, but her cat that she had thought wandered away has not returned. Can you bring her pet back? Having only one friend is very lonely.

Skills:

Detailed unorthodox stitching

Embroidery

Cake (It's a lie!)

Giver: Granny

Plot: What grandma doesn't spoil her kids with lots of sweet goodies? But that delicious chocolate cake she made is gone! Whether it was eaten or disappeared, she doesn't know, but she could sure use another piece!

Skills:

Diagonal Box stitch

Lose instructions as level progresses

Mother

Giver: Young Boy

Plot: In seeing your magical powers, the little boy builds up the confidence to ask you for the ultimate act of power: bringing back his mother! Supposedly she was swept away with other missing objects, and although the little boy has no idea why the culprit would want his mother, he thinks you can save him from being an orphan.

Skills:

Single Crochet Block Design
Big, Complex
Requires Addons

Whirlpool

Giver: Poseidon

Plot: Mother Nature has been very vocal in how awesome your work has been restoring the flowers on land. However, the sea is missing a fair amount of objects too! Poseidon has been having difficulty restoring the balance of the ocean ecosystem and needs your help to shake things up with a whirlpool maelstrom!

Skills:

Spiral Stitching
Working in back loop only

Hard Flower

Giver: Mother Nature

Plot: So impressed by how far you've come and how much work you've done, Mother Nature has one last job to restore beauty to the world. The most challenging flower yet! Of course, there are a huge number of flowers, but this is the last that Mother Nature will specifically pester you. She does have responsibilities to the world too, and you can't do her job for her!

Skills:

Half Treble Crochet
Off-center round stitching
Unorthodox Stitch Off-shoots

Bonus

The bonus additions are fairly low down on the wish list, but they are a possibility. Options include additional stitches, squares, flowers, leaves, and crochet samples in general.

Here is a brainstorm of ideas that could be considered for bonus items, along with pictures/pattern reference links:

Double treble:

http://www.anniesattic.com/crochet/content.html?content_id=6&type_id=S

Triple treble:

http://www.anniesattic.com/crochet/content.html?content_id=20&type_id=S

1 way to decrease:

http://www.anniesattic.com/crochet/content.html?content_id=16&type_id=S

Increase:

http://www.anniesattic.com/crochet/content.html?content_id=602&type_id=S

Joining pieces together (whip stitch)

Front/Back loop only (as opposed to both)

Long stitches (going into a row/rows below to make the stitch)

Front/Back post (example here

<http://www.lionbrand.com/faq/359.html?www=1&language=En>)

Working in a gap (example:

<http://www.lionbrand.com/faq/362.html?www=1&language=En>)

Popcorn: <http://cache.lionbrand.com/faq/479.html?www=1&language=>

Basic Shell: <http://cache.lionbrand.com/faq/480.html?language=>

Another Shell: <http://www.lionbrand.com/faq/366.html?www=1&language=En>

V-stitch: <http://cache.lionbrand.com/faq/478.html?language=>

Thistle: <http://cache.lionbrand.com/faq/477.html?language=>

Crochet Cable: <http://www.lionbrand.com/faq/351.html?www=1&language=En>

Fans: <http://www.lionbrand.com/faq/353.html?www=1&language=En>

Example Chevron: <http://www.lionbrand.com/faq/360.html?www=1&language=En>

Sharper Chevron: <http://www.lionbrand.com/faq/373.html?www=1&language=En>

Afghan Stitch:

http://www.anniesattic.com/crochet/content.html?content_id=72&type_id=S

Back cross stitch:

http://www.anniesattic.com/crochet/content.html?content_id=5&type_id=S

Front cross stitch:

http://www.anniesattic.com/crochet/content.html?content_id=4&type_id=S

Example lace: <http://www.beadsky.com/brugge.php>

Basketweave stitch (alternates back and front post dc groups)

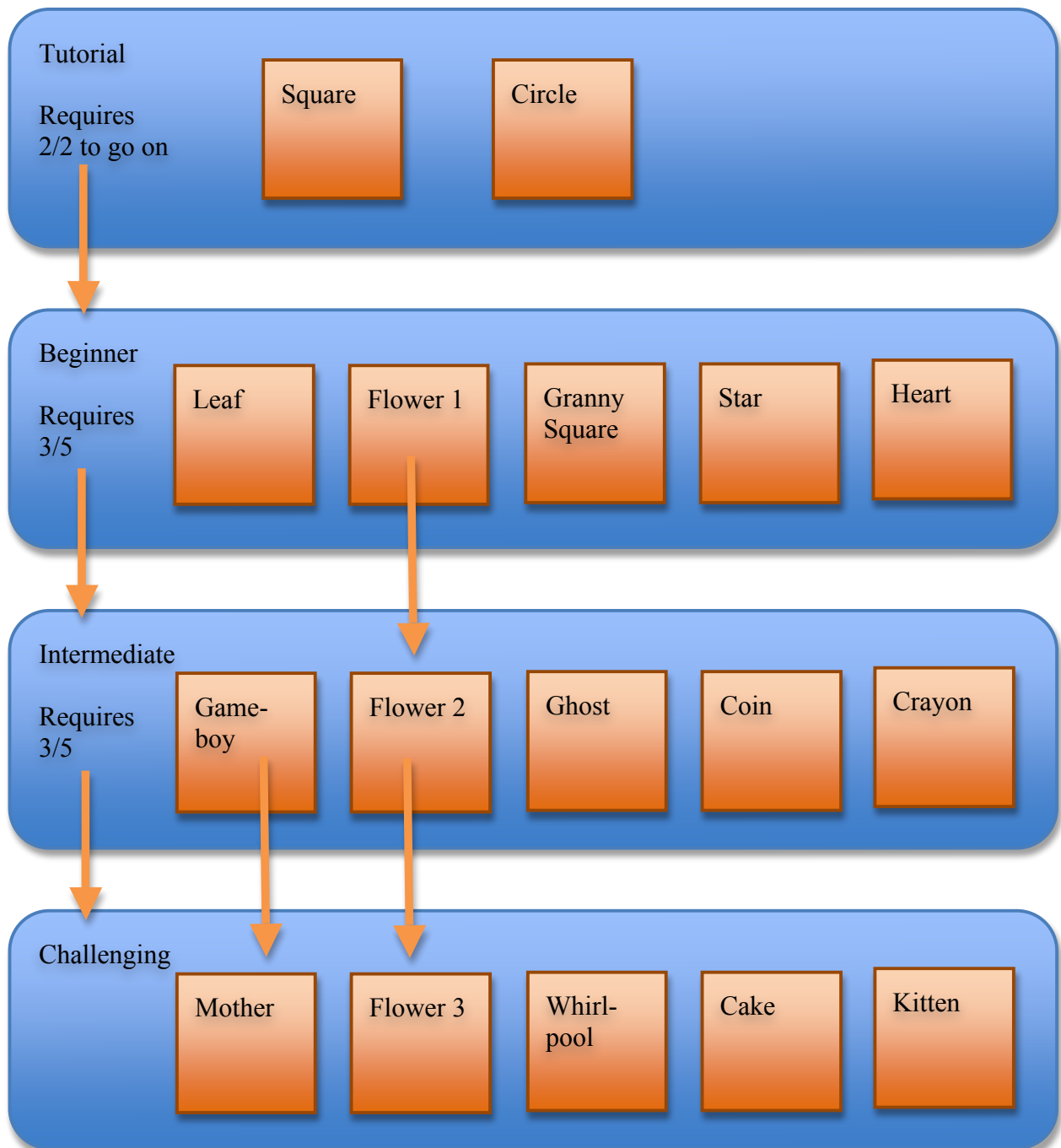
Picot stitch:

http://www.anniesattic.com/crochet/content.html?content_id=11&type_id=S

Roll/Bullion stitch: <http://crochet.about.com/od/learnmorestitches/a/bullion.htm>

Hairpin Lace: <http://www.bellaonline.com/articles/art5429.asp>

4.6 Flowchart



5. Game Characters

- The player will have the choice between a male and a female avatar. They will play the Omnipotent Magical Yarn Guru of Awesome aka OMYGA.
- The Player will then select which of two pets OMYGA will have. Either a dragon or a hamster. This will act as the helper during the crochet portion of the game.

- The next/last major NPC will be the Beautiful Benevolent Queen(BBQ). She will introduce you to the game and the major level changes.
- There will also be an assortment of “shoppers” coming to request work from the OMYGA (See the level design for what they ask for and why in Section 5.5):
 - Mother Nature
 - Granny
 - Plumber
 - Little Girl
 - Young Boy
 - Old Man Widow
 - Poseidon



Girl OMYGA



Boy OMYGA



BBQ



Pet hamster



Pet dragon

6. Story/Game World

- The game starts with OMYGA and the chosen pet standing around the shop. The BBQ comes in.
 - Pet: OMYGA it's the Beautiful Benevolent Queen! I can't believe she has come to visit us!
 - OMYGA: What brings you to my humble shop my queen?
 - BBQ: Hello. Are you THE OMYGA?
 - OMYGA: That would be I. Why do you ask?
 - BBQ: You may have noticed or heard of the disappearing stars and missing people that have happened recently.
 - OMYGA: Yes but the stars have returned.
 - BBQ: That would be because of my husband and son. The solution to the star problem has left some of my citizens in a predicament. I have been approached by many with requests and I have come to seek out your assistance to find a solution. First, however, I must ask you to demonstrate your skill. Use this yarn to make a square and a circle.
- Enter the first tutorial sections. After the tutorials are over the queen takes the pieces.
 - BBQ: These are perfect.
- She casts them up and they vanish in a flash of light. The square becomes a field and the circle becomes a lake.
 - BBQ: You truly are OMYGA. Now, I will send in some of my subjects. Take their requests and help me bring happiness back to my kingdom. Here is more yarn to help you.
 - OMYGA: Yes my queen.
- The queen gives the yarn to OMYGA and then leaves.
 - pet: We better do a good job. The queen is counting on us.
 - OMYGA: I know *insert name of pet here*.

- The queen brings in the first wave of subjects.
 - BBQ: Here is the first set of subjects. Their requests are simple and humble. Take care of them. I'll be back soon.
- The queen leaves and the shop and the player can now chose which task to take on.

7. Media List

7.1 Interface Assets

Basic menus will navigate the different modes and game states, simple listings of what options are had. Initial designs for the interface can be seen in the storyboard section (Section 10). The interface will follow most standard conventions of art design programs such as ArtRage and GIMP in organizing and presenting design information.

Julie, Kat, and April have all had experience designing art at some point, sometimes specifically for the interface. April also has a number of friends who are accessible for more official interface research and help (Ricky Grant and Justin Lazaro).

7.2 Environments

Julie has many pictures she plans to filter in Photoshop for smooth, non-distracting, beautiful background images. If we have time to allow some UI customization for the player, we can allow them to pick the background they like, especially for Free Mode. In Story Mode, the most appropriate background to the object or “shopper” character will be selected.

7.3 Characters

We plan to do a majority of our character art assets over winter break before winter quarter, split between our three in-team artists (Julie and Kat primarily, with possible help from April). See the CMPS 170 Sequence section (Section 9) for details on who will be doing what.

7.4 Animation

Our artists have experience doing sprite art and animation. Those images made for characters in Section 7.3 will be simple enough to be easily and simply animated.

7.5 Music and Sound Effects

- Robert Bruce: Professional pianist and musician willing to lend his music to our game. April is in a working communication with Robert to acquire at least 30 minutes worth of original music, possibly more.
 - Website: www.robertbrucemusic.com
 - Tracks (so far agreed upon)

- “Alpha Waves”
 - “The Tenderness of Eden”
 - “All of My Tomorrows”
 - “A Little Bit of Neptune”
 - “Eclipse”
 - “Open Window Blues”
- We are looking forward to having fun recording additional sound effects and voices
 - Fun recording session with the team for various voices
 - Playing with Audacity to create voice variation

8. Technical Spec

8.1 Technical Analysis

We are approaching an odd programming and technical challenge with this game, having to simulate yarn, interwoven yarn, and crochet patterns in a procedural way. We have kept to 2D to minimize our programming challenge and accepted the loss of freedom that 2D requires.

8.1.1 New Technology

- Internal model representation as a crochet pattern
- Yarn Physics
- Loop-Stitch Physics (Yarn Interaction)

8.1.2 Major Development Tasks

- Graphical Representation:

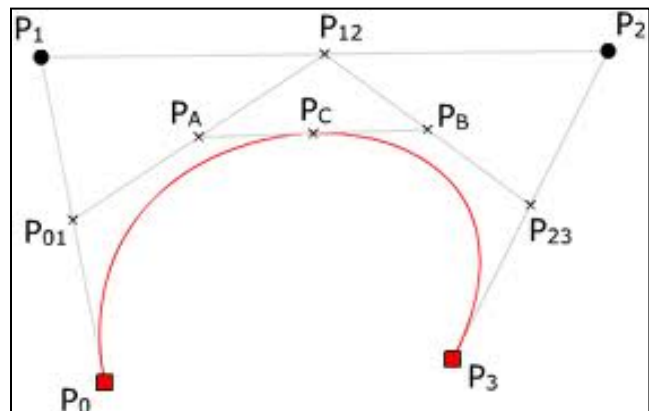
Dilemma

The main graphical component of the game is the representation and animation of the yarn. The yarn should be bendable and respond to tugs and pulls at any of its points. Also, the yarn must be able to be wrapped around the hook, so we must attempt to make the yarn have accurate physics (or create the illusion) within a 3D space.

Proposal

Bezier Curves

Our plan is to write a Bezier curve function that takes in control points determined by the player's controller

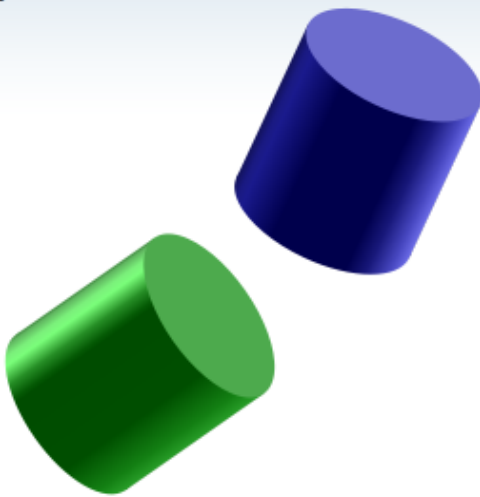


movements. When the player grabs and moves a section of the yarn, the control points will be altered to adjust the curve from that point to simulate real yarn physics.

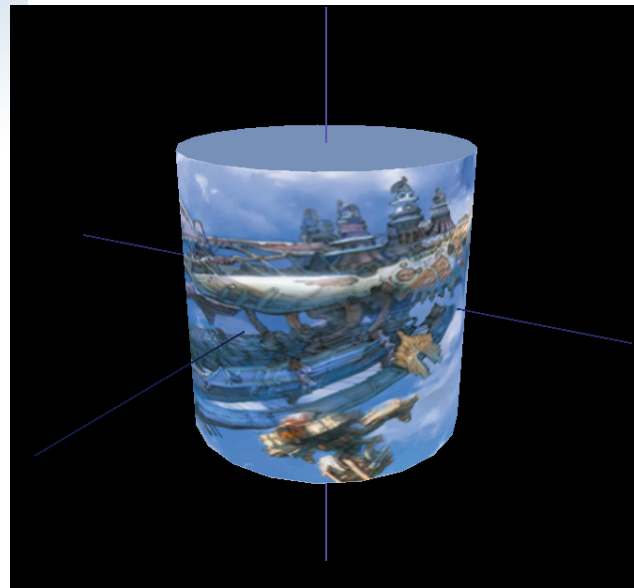
Cylindrical Shells

To visually represent the yarn's curve, we plan to write a simple code to create 3D cylinders. The cylinders will be very small so that they do not appear jagged and fit together smoothly. They will be drawn along the curve so that the cylinders are centered along the points of the curve that pass through them. This will allow the cylindrical shell of the curve to contort accurately with its changing form.

Cylinder Test



Yarn string will be made of several small cylinders joined at ends



The cylinders will be textures wrapped with 2D sprites to allow detail like thread fibers

Texture Mapping

Wrapped around these cylinders will be sprite maps of different yarn colors and styles. These will help to enhance the visual design and adhere to the colorful 2D style of the game's other graphical elements.

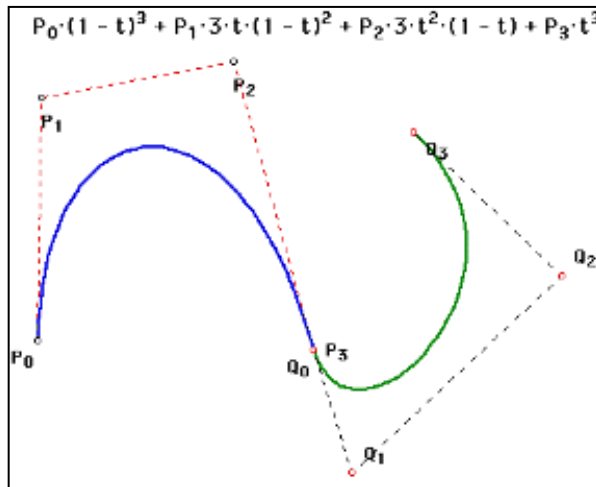
Alternate Ideas

2D Line Segments

If working with 3D objects becomes too cumbersome or doesn't blend well with the aesthetic design, then a secondary solution is to use small line segments to represent the curve rather than cylinders. The line segments could be drawn crudely with pixel points or preferably with small yarn sprite images.

B-Spines

A more advanced curve drawing algorithm may be required to draw certain stitches and yarn contortions. If we cannot find a simpler solution we may turn to a B-spline algorithm which can represent high degree curves more accurately and efficiently than the Bezier approach. This is actually accomplished by drawing a full curve as several bezier curve segments and making sure they have parametric continuity at the joints.



A B-Spline curves made from the joining of two cubic Bezier curves

- Model-to-Pattern Representation

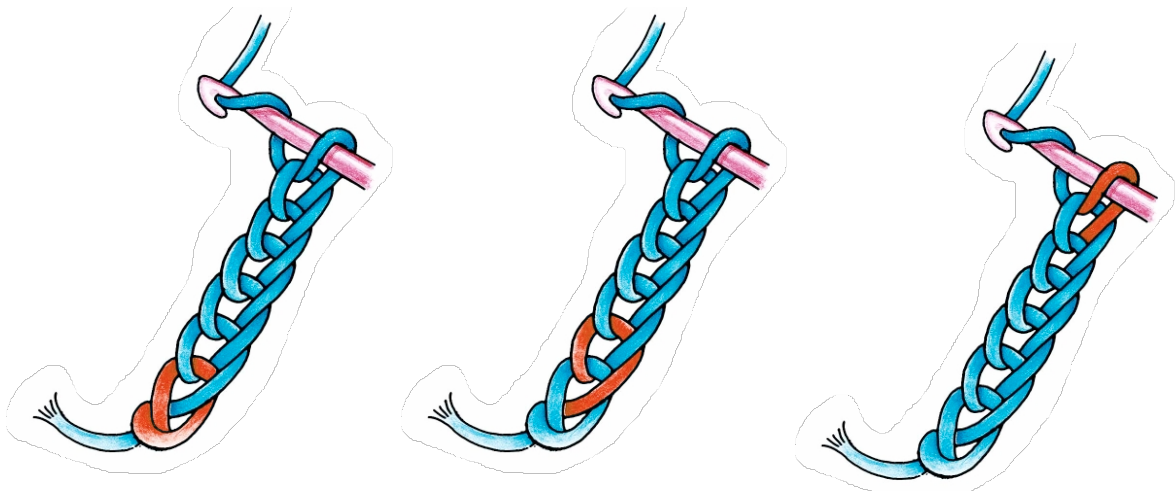
Dilemma

For Story and Free mode, the player will be making a lot of actions that the system will have to be able to recognize. Specifically, because all stitches are made of different permutations of hook and yarn movement, the player should be allowed to make stitches outside the main ones normally used by making up new permutations. The system must be able to not only recognize these new actions, but also be able to draw them and give them to the player as a text file to make later (in Free mode).

Proposal

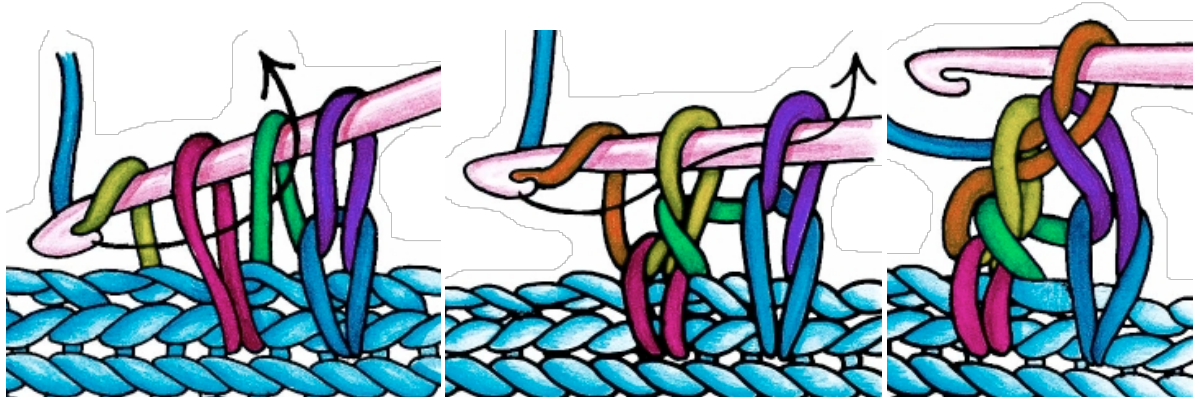
Loops

We have devised a loop-based system that cuts the yarn up into individual segments. Since all of crochet is made up of interwoven loops, loops are a logical way to represent crochet in a digital system like this. Loops are basically string segments: they have a lead-in and a lead-out, linked together sequentially. However, loops have the unique property of having space for string to go through and be woven in to the loop. A loop has the natural property of being interconnected, allowing for representation of larger items. A single loop is made by the Yarn Over process and interwoven using the Pull Through process.



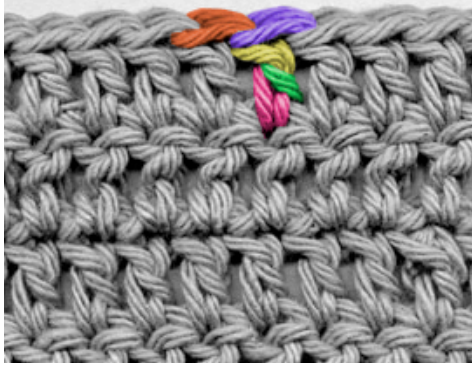
Stitches

Stitches are a specific set of loops. You can see the outline of these stitches in the control section (4.3.2). For example, a chain stitch is a yarn over and pull over, the very basic use of a loop. A slip stitch attaches a chain to another object, requiring the loops of a chain stitches to go around the other object. The interweaving of loops demands a way to detect spaces between loops, and we are still working on a design decision on how to do this. Stitches are often represented as a single symbol in crochet charts.



Piece

The loop parts of a stitch that attach to other stitches allow for the interweaving and combining of stitches into a final piece. The final piece is the goal of the individual stages in Story Mode. However, they are always represented as stitches, so this level of abstraction isn't necessarily required.



Code Representation

This process will be accomplished by tracking the player's movements (number of yarn over, loops passed through, etc.) between times when only one loop is on the hook. This time will be known as a rest state. Between each rest state data will be written to a portion of a linked list. Each node in the linked list will thus represent a stitch. To allow for error correction, when a stitch is pulled out the node in the link list will be deleted. When the directions are to be printed each stitch will have its instructions printed. If time permits, we will cross check the stitch info against a set of standard stitches (such as chain stitch, single crochet, or double crochet) to allow for quick reference.

Alternative

Player Actions

Player actions can be used instead of a segmentation of the yarn to represent stitches. Patterns for new or unfamiliar stitches are played out using specific player actions in authentic crochet patterns, so this is a logical alternative for representing and printing patterns. However, it is harder to recognize gaps between loops using this method.

- Future Goals:
 - Stitching AI
 - Recognizing stitching modes and inferring where next stitches should go to make the processes smoother and easier

8.1.5 Estimated Resources Required

- XNA 3.1
- Visual Studio 2008
- Microphone

8.2 Development Platform and Tools

- XNA 3.1 for the PC using analog/XBOX controller
 - Most familiar for group members
 - Keeping opportunities open for XBOX port
 - Easy access to computer for target audience
 - Easier to print from editor

8.3 Delivery

- Internet PC application
- Open source
- Web space and community support for patterns

8.4 Collision Detection

- 2D collision
- An alternative idea for detecting spaces between loops

8.5 Interface

- Menus to select modes
- Other menus to select materials, similar to an art editing program's tool sets
- Technical design and specs being explored in storyboards (Section 11)

8.6 Controls

- Standard D-pad/analog menu selection
- In-Game
 - Start button opens an exit menu
 - Analog sticks are main stitching controls
 - Right analog will control the needle
 - Left analog will control the yarn control
 - Right buttons
 - X goes into selecting mode
 - Y goes into stitching mode
 - A is confirm in selecting mode and flip in stitching mode
 - B is cancel in selecting mode and cut in stitching mode
 - D-pad is used to scroll through the selecting mode menu and selecting stitches in stitching mode
 - Triggers are used for scrolling through the wheel in selecting mode and zooming in and out in stitching mode

8.8 Camera

- Zoom in/out reasonably on an object
- Pan over 2D view
- Focuses/zoom on active stitch
- Stays static as piece rotates/turns over on player actions

8.10 System Parameters

- Player profiles
- Saved puzzle progress state
- Save/load patterns
- Export patterns for outside-game use

9. CMPS 170 Specifics

9.1 Team and Tasks

April Grow

Team Lead and crocheting enthusiast. Will primarily have to translate all crocheting-like goals clearly and specifically for the rest of the team. Will focus on pattern-model translation, as that demands the most accurate crocheting knowledge.

Katarina Yang

Art Lead and programmer. Will be creating sprites to animate in the game.

Julie Rej

Artist and Physics programmer. Will primarily focus on a basic physics engine (not necessarily realistic, but as intuitive and helpful as possible in the working space).

Jason Walters

Strong programmer. Will focus on interface and menus, as he does not have as much experience in XNA or 3D as most others on the team.

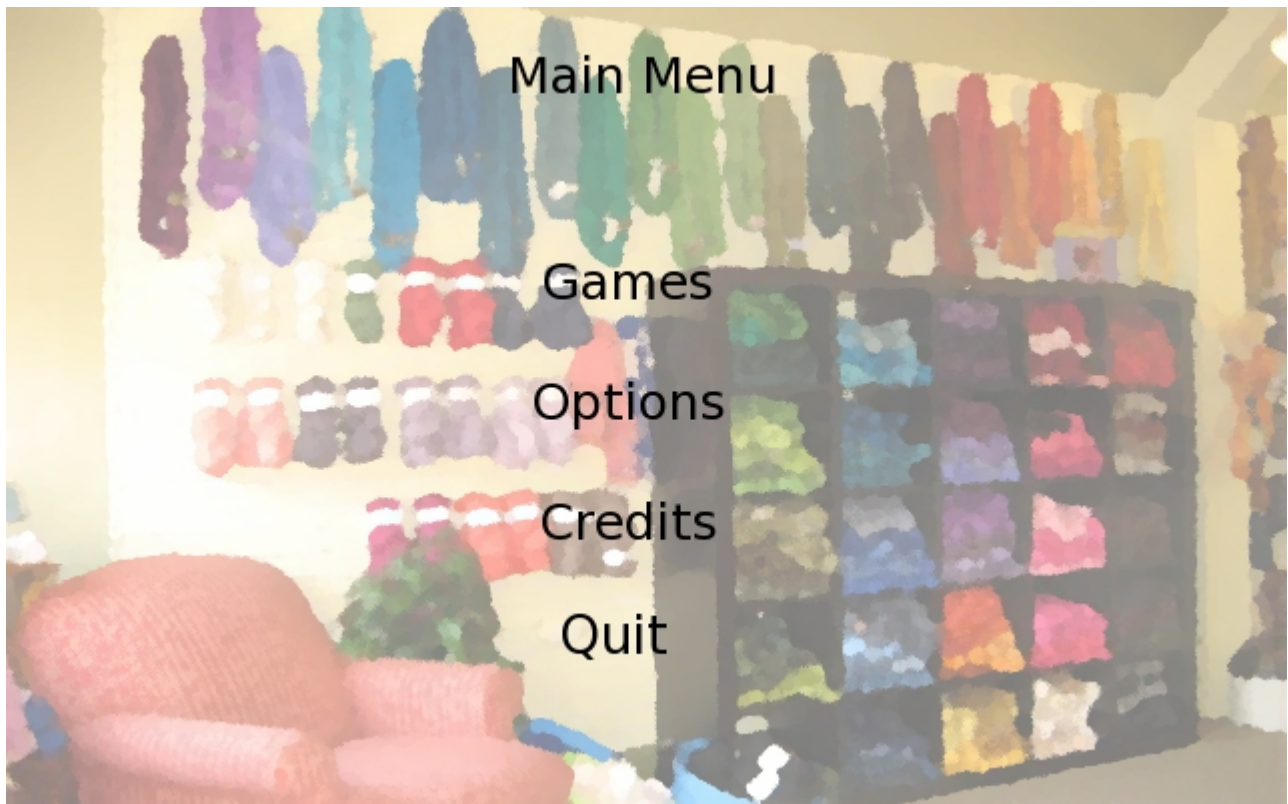
Magnus Plutte

Programmer. Will primarily focus on XNA implementation of yarn.

William Tuttle

Programmer. Will also primarily focus on XNA implementation of yarn.

10. Storyboard

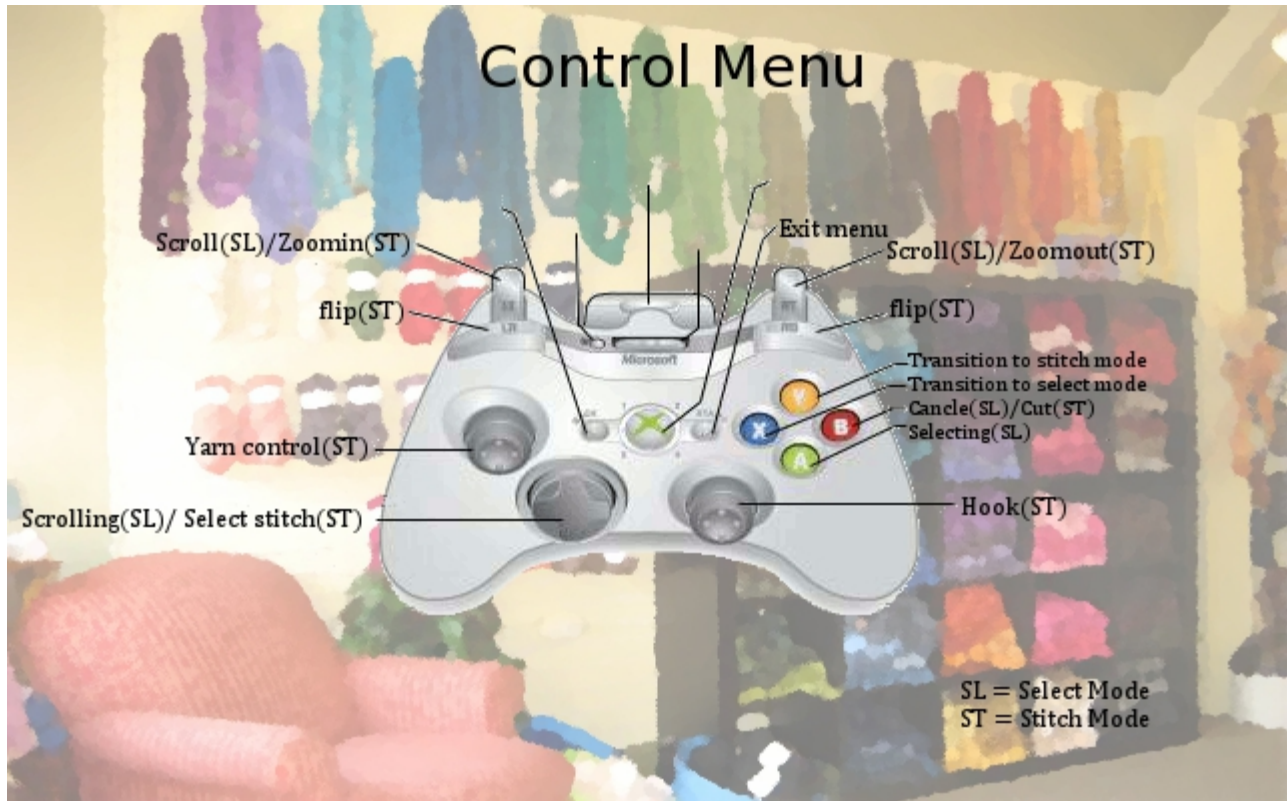


Purpose:

Main Menu contains options to go into games to start playing, options to configure controls and the environment, credits for those who want to know who made this game, and of course allowing the user to quit when desired.

Transition:

The options menu opens up to configuration for audio, background, and controller scheme. The configuration menus for audio and background is to allow customization to the environment but other than that, it is the control menu that allow players to become familiar with crocheting.



Purpose:

Control menu lays out functions for necessary actions where some function differently depending if the player is in selecting mode (SL) or in stitching mode (ST).

Start – Exit menu

Triggers – Scrolling (SL) or Zoom-in or out(ST)

Bumpers – Flipping model (ST)

Left Analogue – Yarn control (ST)

Right Analogue – Hook(ST)

X button – Transition to select mode (SL)

Y Button – transition to stitch mode (ST)

A button – Selecting (SL)

B button – Cancel (SL)/ Cut (ST)

Transition:

Moving on to the game element, it is split into free mode and story mode. However, because free mode’s freedom is based on the player’s progression in story mode in unlocking stitches, it is best to cover story mode first.

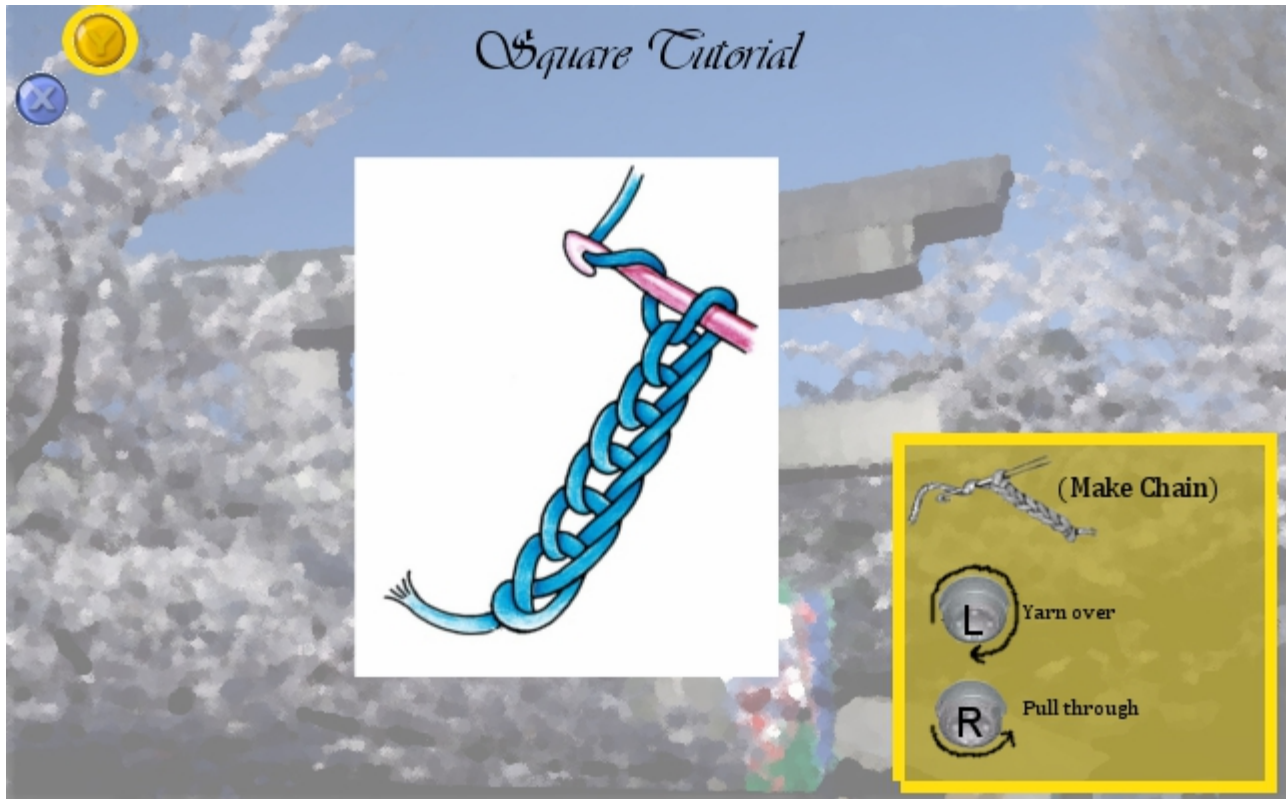


Purpose:

In story mode, the player is made to progress through the story while learning the basics of crocheting. In tutorials, the player is walked through each step one by one, but as soon beginner mode is unlocked, the player is not required to do everything; only some of the patterns need to be completed in order to move on. The same progression is followed through in intermediate level, and in advance, challenge and bonus modes open up for exploration.

Transition:

First tutorial to learn is a simple square.

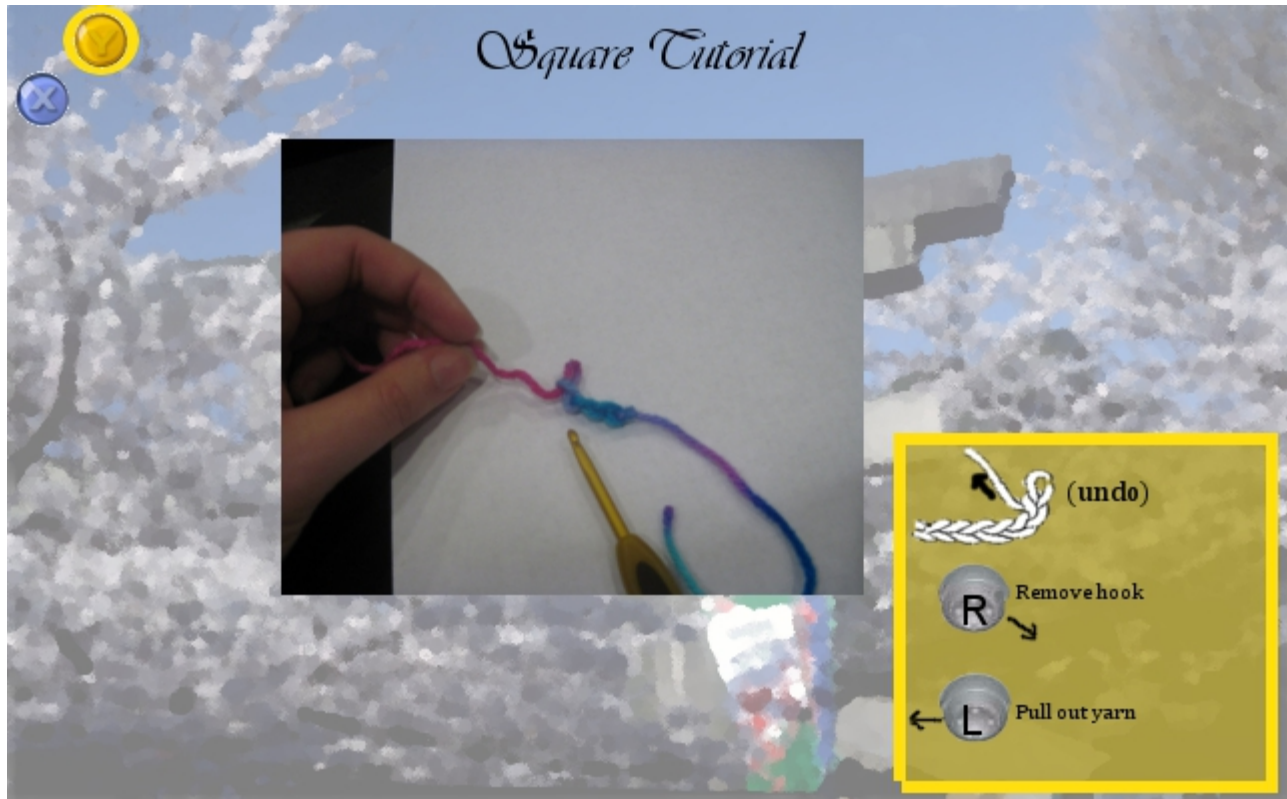


Purpose:

In the square tutorial, the slip knot is given but not taught yet. The player learns how to create a chain with control actions using images of the analog sticks and indicating the action with arrows. Simply yarn over by making a right-half circle with the left analog stick. Then pull the yarn through the loop the hook was in using a lower half circle motion on the right analog stick. The yarn will then form a new loop on the hook.

Transition:

Player is then told to continue to create a chain and continue after a certain amount of iteration.

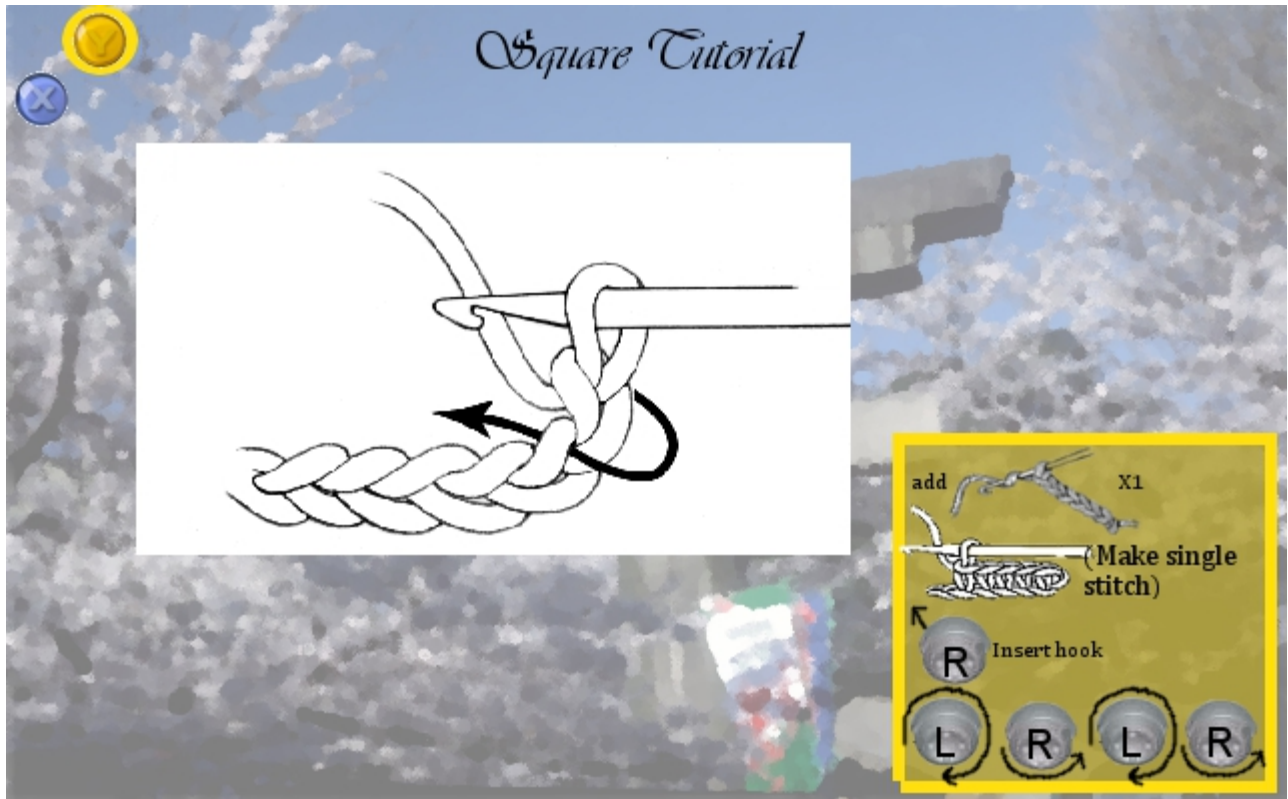


Purpose:

Undoing stitches is then introduced to the player. Simply remove the hook by tugging the right analog stick out and gently tug on the yarn using the left analog stick.

Transition:

The tutorial will ask the player to once again to chain stitch until it reaches a length and the player will be prompted to make a turning chain.

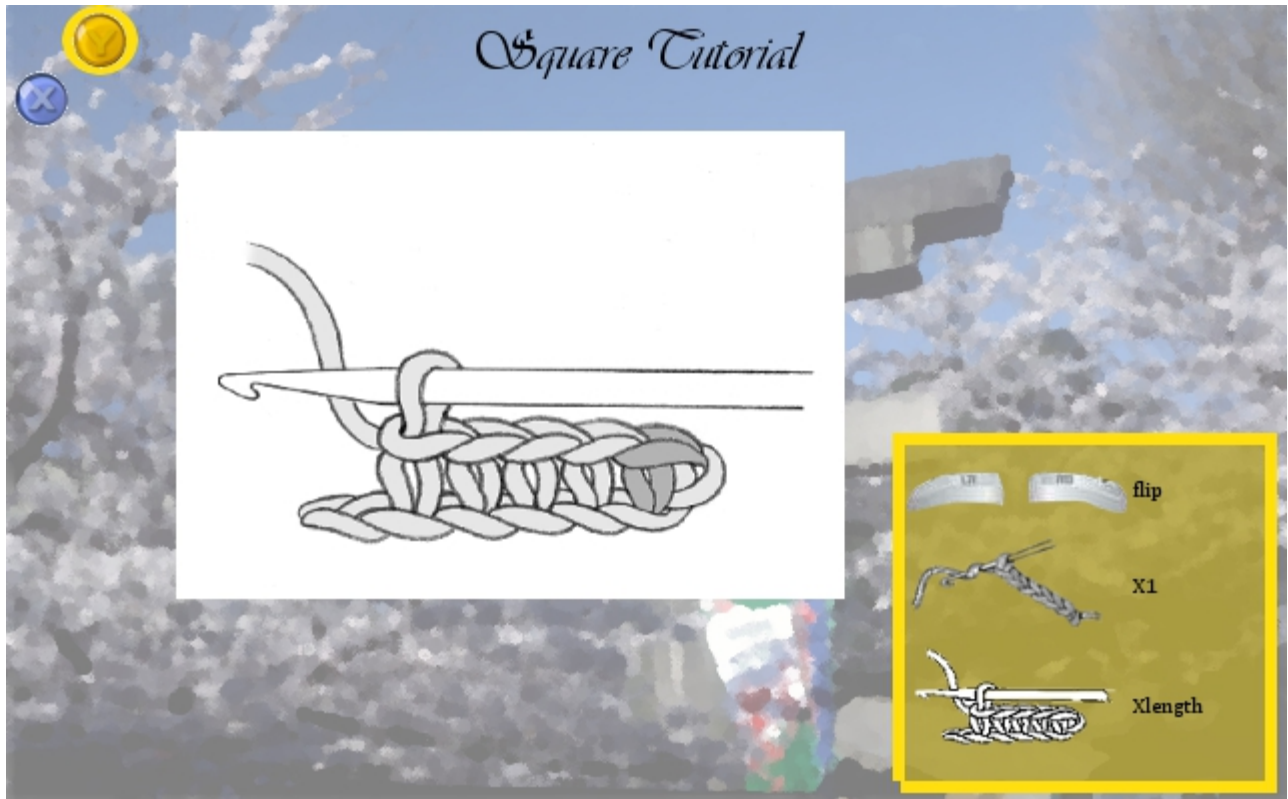


Purpose:

The turning chain is basically an extra chain added on the current desired chain length. It will equal the height of a single stitch and allows a nice transition to work on top of the chain that was just created. Now at a chain already selected for the player, do a single stitch using the right analog stick to tap diagonally toward top left. Then yarn over and pull the yarn out of the first, yarn over, and pull through the last two loops.

Transition:

The player will be guided to continue single crocheting on the chains. After reaching the end, the player will gain access to flipping using bumpers.

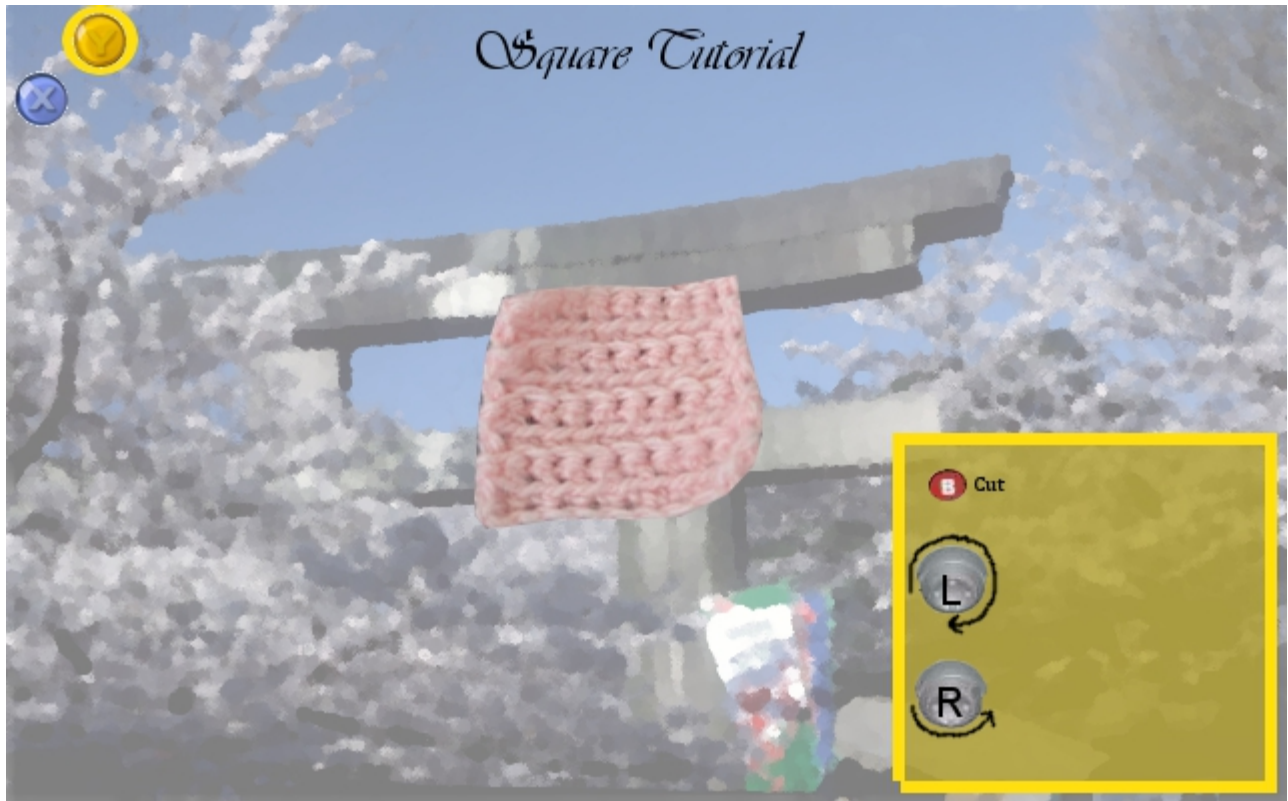


Purpose:

Now the bumpers on the controllers are enabled to flip the entire piece. This will allow the hook to stay on one side and smooth transitions on to the next row. A turning chain is once again asked before starting on the next row.

Transition:

Flipping, add turning chain, and single stitch the rest of the row will continue until the height has reached the same length as the original chain. Then the player will be instructed to complete the piece.



Purpose: Player will now be taught how to end a piece. Pressing the B button, this will cut the yarn at the end of the long end. After confirming the cut, do a yarn over and pull through.

Transition:

The square is complete!



Purpose:

Introduce unlockables to customize the environment or crochet pieces. In this case googly eyes were unlocked. By switching to select mode, googly eyes can be added to a crochet pieces.

Transition:

Now the circle tutorial is introduced and here we do not give a slip knot.

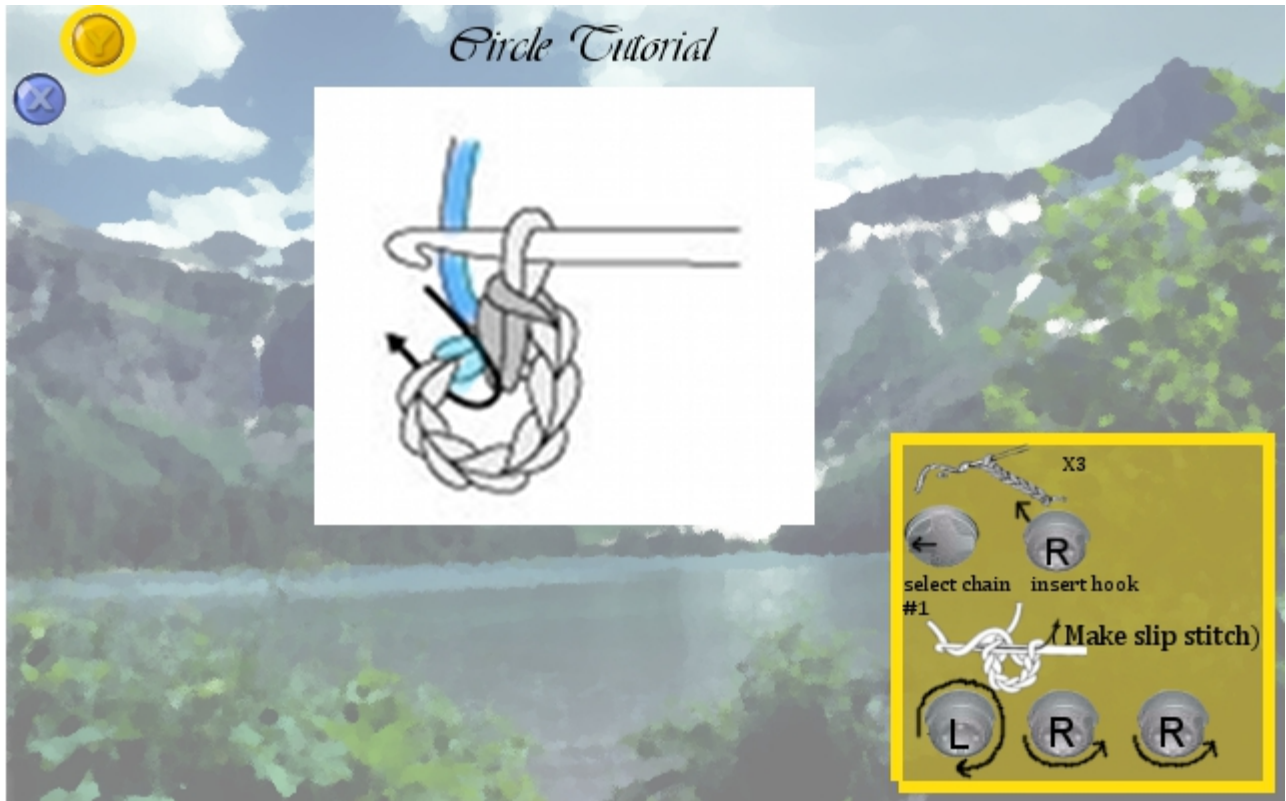


Purpose:

The player is introduced how to make a slip knot given a length of yarn. The d-pad is now made available for the user to select sections of yarn, which will also include stitches. Now select the right/short end of the yarn and use the right analog to make a clockwise circle that will create a loop. The loop will then be selected to flip, and the hook will automatically sit in that loop. Selecting the long end of the yarn, do a yarn over and pull through. This resulting loop will be the slip knot.

Transition:

Now moves on to creating a chain to set up a central loop.

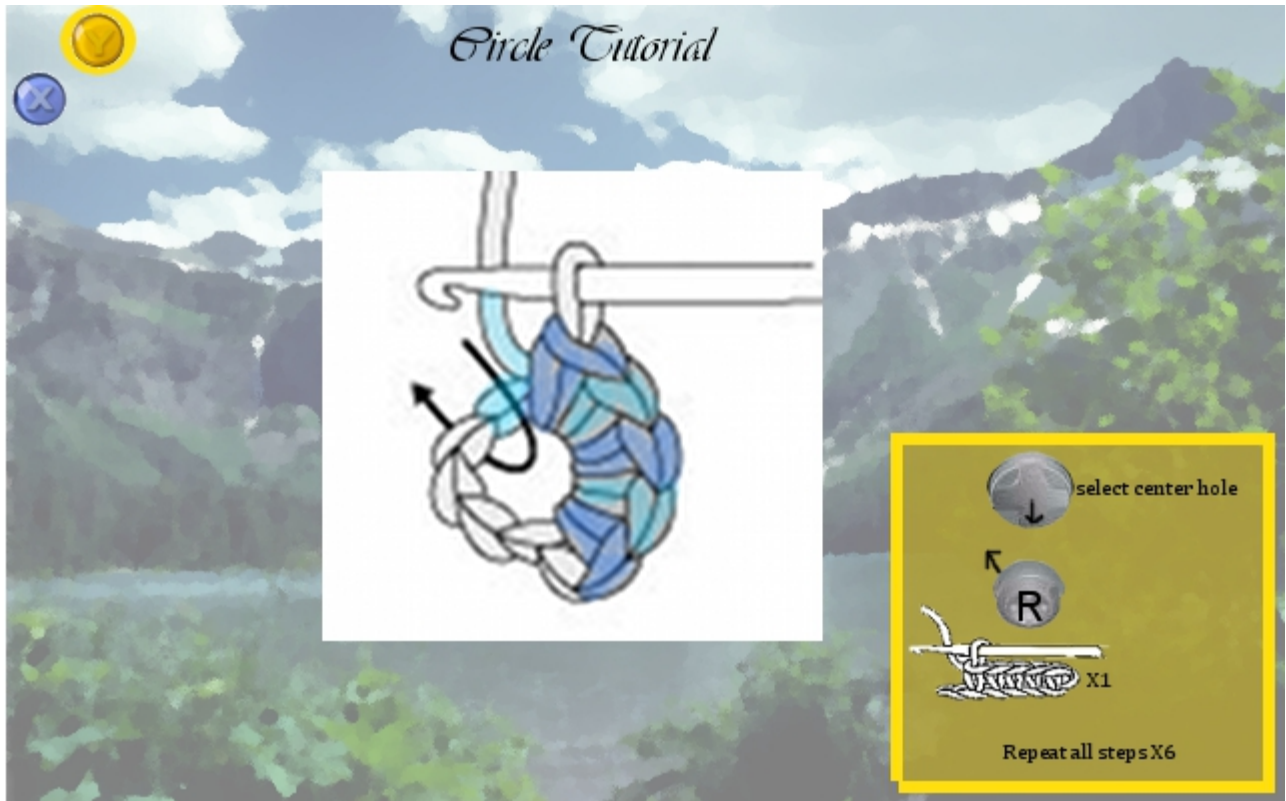


Purpose:

After creating a chain of a certain length, the player will be instructed to perform a slip stitch. The player must first select the first stitch on the chain and insert hook, yarn over, and pull out twice. The chain is then connected and the player has learned slip stitch.

Transition:

It must be noted that slip stitch and single stitch are very similar. Slip stitch is insert hook, yarn over, and pull out twice. Single stitch involves insert hook, yarn over, pull out once, yarn over, and pull out twice. Now the player will move on to creating a single crochet stitches around.

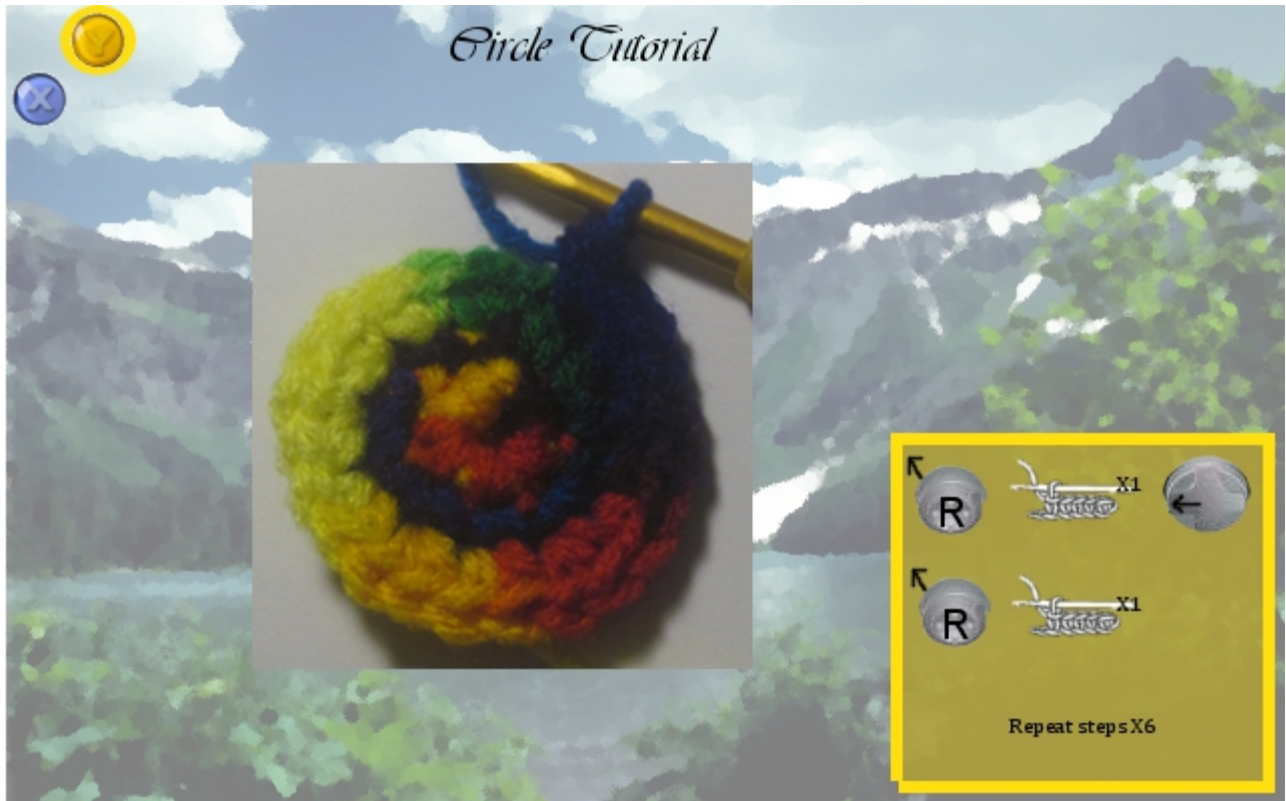


Purpose:

To make the next row, in order to reduce the hole in the middle, use the hole as a loop and do single crochet two times the length of the chain. The end result should look like a circle.

Transition:

Next, the player is given the option to add a chain to go a level up, but since this is a circle, it is not necessary.



Purpose:

The next row will now involve two single crochet in each stitch, which is twice as many single crochet as the last instruction. This is necessary in order to enlarge the circle and avoid gaps.

Transition:

Again, the player is given the option to add a chain to go a level up, but since this is a circle, it is not necessary.



Purpose:

To keep the circle flat, the stitches should not be stitched too tightly, so now, the player must start out doing two single crochets in a single stitch and a single crochet in the next stitch. Interchange the amount of stitches so by the end there should be 36 single crochets. Repeat this again for the next level and close the stitch.

Transition:

If instead a single crochet was done for every stitch, the structural integrity becomes awkward and the circle starts bunching.

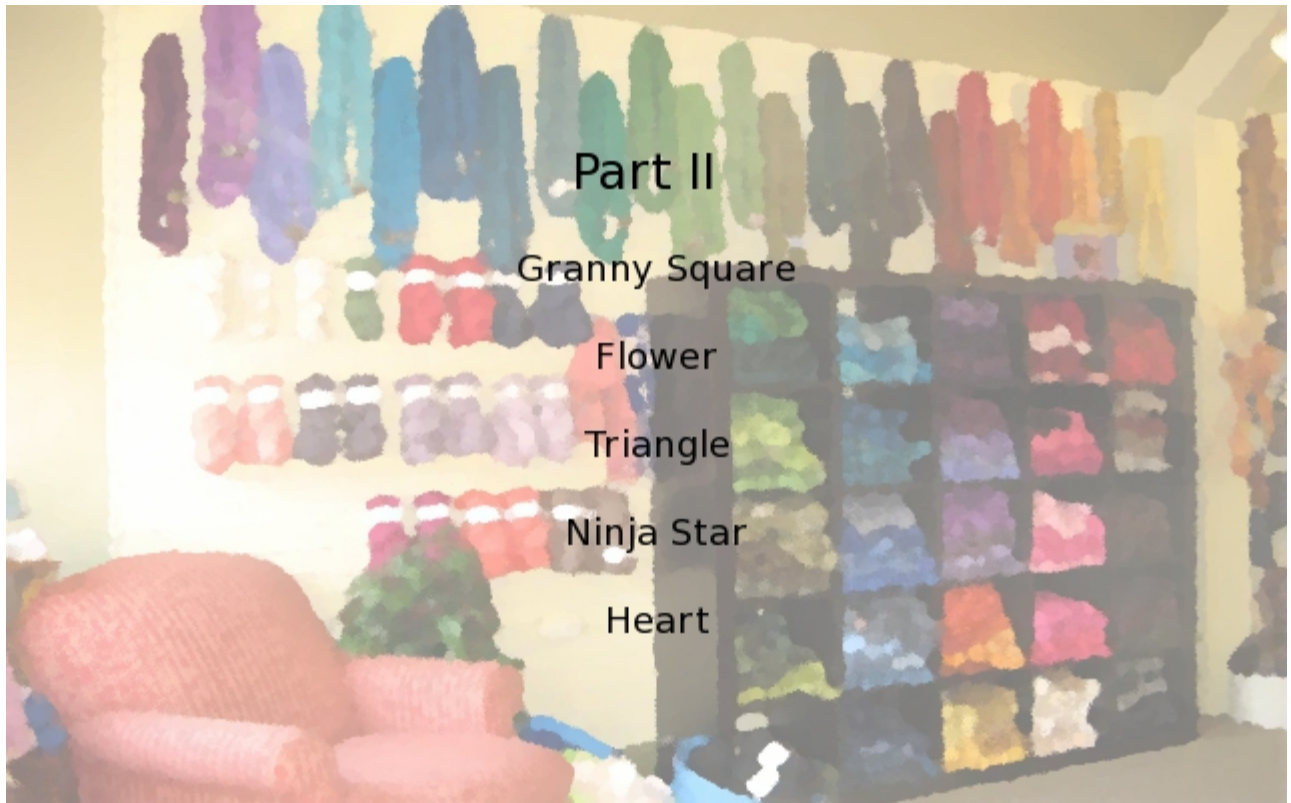


Purpose:

Now the tutorials are completed, and Beginner is now unlocked for slightly more complicated stitching.

Transition:

Beginner opens the player to a new selection of objects.



Purpose:

Allows the player to select from Granny Square, Flower, Triangle, Ninja Star, and Heart.

Transition:

Player has the ability to select any, but the storyboard will cover only the Granny Square, which will introduce how to add different colored yarn to a single piece.



Purpose:

To start the Granny Square, the player repeats the beginning steps from the circle tutorial. Start with a slip knot, then a chain of length 3, slip stitch the ends together, and create a chain of length 3 that will be the same length as a double crochet. The reason for the chain is because the next row is made of 16 double crochets and that chain will count as one.

Transition:

Player will now learn how to do a double crochet.



Purpose:

To make a double crochet: yarn over, select stitch, insert hook, yarn over, pull through the stitch, yarn over, pull through 2 loops, yarn over, and pull through the last two loops. Because there's a big loop in the center, like in the circle tutorial, use the hole as the stitch. Repeat this 15 more times so that there will be 16 counted double crochets in the center hole.

Transition:

Moving on to the next row after slip stitch, player will learn a new design.



Purpose:

After closing the last row with a slip stitch, create a chain of length 3 to represent a double crochet, and add a single chain to allow skipping over a stitch. Now skip over a stitch and make a double crochet in the next stitch. The end result should look like a large loop. Now like the chain, add a single chain to skip over a stitch and make a double crochet again. Repeat this till there are 16 double crochets.

Transition:

Finish off the circle by cutting the yarn, yarn over, and pull through. Now the player has to learn how to change yarn.



Purpose:

Player is now specifically told to go into selection mode by pressing, the X button. This will open a menu button with “Yarn Selection”, “Color Selection”, “Add-ons”, and “Embroidery”. Player will use the d-pad to select “Color Selection” using A button to switch the yarn to a new color and a wheel will pop up in with yarn colors to select from. The triggers will then be introduced to scroll through the wheel. When the yarn color is selected, just press B to cancel out of the wheel menu. To get out of selection mode and go back to stitching mode, just press Y button.

Transition:

Goes back to stitching mode with the previous made circle pattern.



Purpose:

Ignore the circle pattern and start a new slip knot with the new color. Now the player gets to learn how to add a new color by slip stitching the new color to any of the 16 loops on the circle. From there do a chain stitch of length 3, which will count as a double crochet and add two more double crochets in the same loop. This will be half of a corner for the Granny Square.

Transition:

Player is creating one side of the square right now.

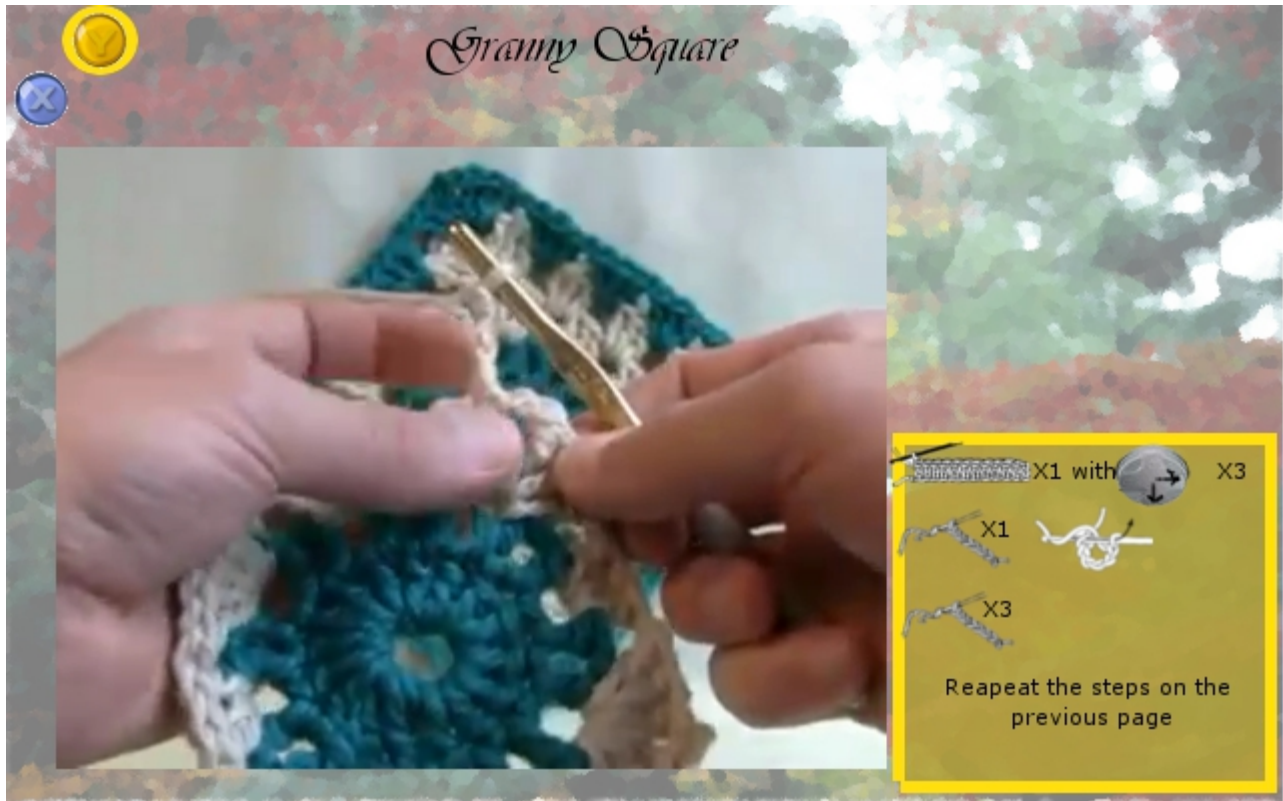


Purpose:

Next do a single chain, which will represent a skip of the next large loop, and do 3 double crochet in the loop after. Because this will be the middle of a side, make another single chain to skip the next loop. The next one will now be a full corner: do 3 double crochet, a turning chain, and 3 double crochet all in the same loop. This should form a full corner. Again, do a single chain to skip over and do 3 double crochet in the next loop, a single chain to skip over, and corner. Repeat steps until you come to the half corner.

Transition:

Player repeats steps till it reaches the half corner.



Purpose:

When approaching the last half corner, insert 3 double crochet and make a single chain to represent a turning chain. Then do a slip stitch to connect the corner halves. Now make a chain of length 3 and repeat the whole process of making a square. Finish the square after the second iteration.

Transition:

Player can now select the next color to repeat a 3rd iteration of the previous steps.



Purpose:

Do a 3rd iteration of the previous steps with just a different color yarn. Once again slip knot the new yarn, slip stitch it in one of the corners, and go along the side of the granny square. It should look like a border to the previous iterations. Finish it off, and a granny square is complete.

Transition:

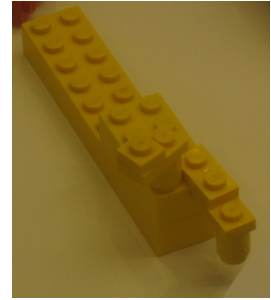
Player can choose to embellish by going to selection mode or they can choose to finish and move on to the next object in beginner mode.

11. Physical Prototype

First Iteration

Our Initial Question: Is guided creation fun? How guided?

We realized after this week's classes that the first question was not a good one. However, the first runs of this prototype were very helpful in developing the next iteration, which was able to answer many more questions.



Details

The prototype contained two steps:

1. We prepared three objects: a sword, a cat, and a pair of breasts (don't ask) from a block of modeling clay. We created step-by-step instructions (a pattern) on how to make each of these objects. We gave the tester modeling clay and asked them to make one of these three objects according to the pattern.



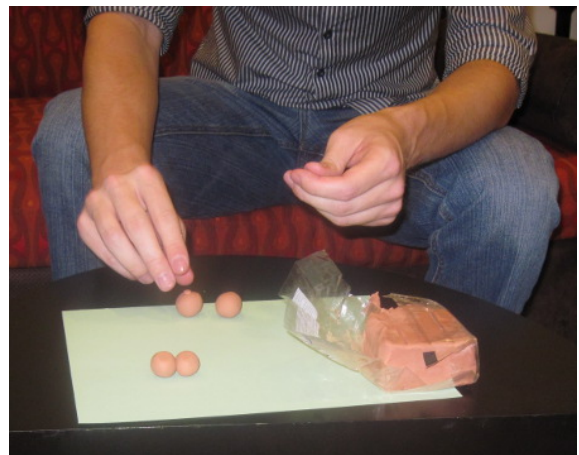
2. The three objects in step one belonged to three categories: weapons, animals, and body parts. We asked the tested to make an object from one of these three categories, and we would make a pattern for it as they ran along. This object would then be added to the pool of options in step one for the next person.

Goal(s)

1. We wanted to see if players could follow a pattern for clay to get them started. We used a combination of physical statue examples and written instructions.
2. We wanted to see if players liked being creatively guided with theme suggestions, and we could compare the results of using a specific goal to a broader goal.
3. We wanted to test the flow of our game from strict pattern-following to freedom using small, individual projects (to fulfill the "complete" physical prototype requirement).

Results/Observations

Subject: Chris Vossen



1. Subject used the physical examples more so than written steps.
2. Subject could in fact follow a pattern and did not seem too worried about being specific to the example (the resulting size was different).
3. Subject created a challenge for themselves to fit into all three categories at once by making a rooster.
4. Subject enjoyed the audience of Jason and I most of all.
5. Subject agreed that the progression of imagination was helpful. Once the player masters the tools, the player should be able to improvise and make their own designs if they wish.

Second Iteration

Our Initial Question: Is this a gentle enough progression using an unfamiliar media?

Other Questions for the Subject:

1. Which of these steps was the most enjoyable/comfortable?
2. What themes/ideas did you like the most?
3. Did you like simpler & faster or complex & epic?
4. Would you like to play this prototype with more people?
5. Would you be proud to show off what you made to others?
6. Would you like to keep what you've made?
7. Why did you choose that piece to follow?
8. Did you feel the need to touch the models while following them?
9. Did you feel an unlimited number of blocks would have been more enjoyable?
10. Do you feel that limitations on color selection inhibited or enhanced your creativity?
11. Do you feel that a time limit would have made for a more enjoyable experience?

Details

The prototype contained two major parts, each with their own steps. It was mainly conducted as a user study to gauge how we should handle the progression of an unfamiliar creative media.

Part A: Clay

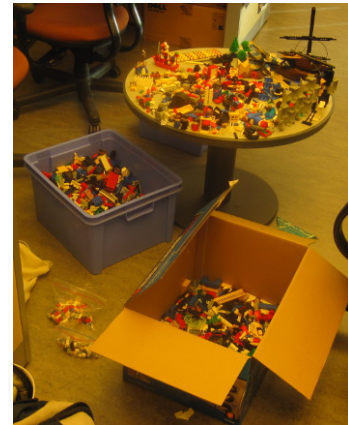


1. Same as the first step of the previous iteration. However, by this point we had had many other unofficial contributions, so there was a very wide selection of about 10-15 pieces.

2. Same as the second step of the previous iteration using the same three categories.

3. April starts off a collaborative piece, making an abstract shape. She passes this to the subject, who is to make changes or add pieces (never taking away). When the subject is satisfied, they pass it back to April, who makes further changes and passes it back to them for final alterations.

4. All people present and willing to contribute (in our case, five people including the subject) make at least one object, any object whatsoever, no restrictions, with the knowledge that it will be placed with other objects in a scene. It so happened that this step was executed sequentially, one object being created after another, so there was some guideline of what the subject wanted to add when it was his turn.



Part B: Legos

1. Asked the subject to pick one of two models. Then observed how they went about building the replica.

2. Answer questions that come up in the building process.

3. Question the subject about prototype goals.

4. Watch the person play with the legos in a free play and talk to them about non-prototype topics to distract their conscious mind.

Goal(s)

1. We wanted to expand on the goals of the previous iteration by adding more steps/possible gameplay modes/levels. We conducted these steps as individual level prototypes that culminated into a set of experiences that could be examined as a comparative user study. Specifically, the different levels of individual creativity would offer different experiences, a more complete learning curve.

2. We also wanted to address what amount and in what ways we could possibly integrate community into the crafting experience.

3. Get a thematic idea of what we should create in the game (since our classmates/friends will be our primary testers in the future).

4. Gauge the reaction/effect of being able to keep what the subject has made.

Results

Subject: Ben Samuel



NOTE: Ben was the only subject whom we were able to guide through the entire process and ask our whole slew of questions.

1. Subject ultimately enjoyed building with legos more than molding clay. Subject is more comfortable and experienced with legos as a freeform building material than clay.
2. Subject observed a disappointing disconnect between talent and end product when working with clay.
3. Subject would have liked a tutorial on clay techniques or on making specific sub-parts. Those sub-parts wouldn't have to be contextualized (ie: given the ability to make squares, triangles, and spheres, make an animal).
4. Having a finished statue to use as an example was the most disheartening to compare to the subject's end product.
5. Subject definitely enjoyed working on the part of a bigger whole (in collaboration and scene-building steps).



6. Subject was uncomfortable around the body parts that had been made. Subject did like abstract topics, such as "weapons" that gave the biggest non-judgemental freedom.
7. Subject observed that clay has the potential to be exact, a much more expansive learning curve, which is daunting. Legos are already abstracted and less intimidating to work with for a perfectionist/self-conscious person. Both are capable of their own magna opera (plural

form of magnum opus).

8. Subject was not terribly impressed with the effect of other people. While the subject enjoyed being part of a bigger process, the subject did not enjoy being an audience for others and sharing the creation time.

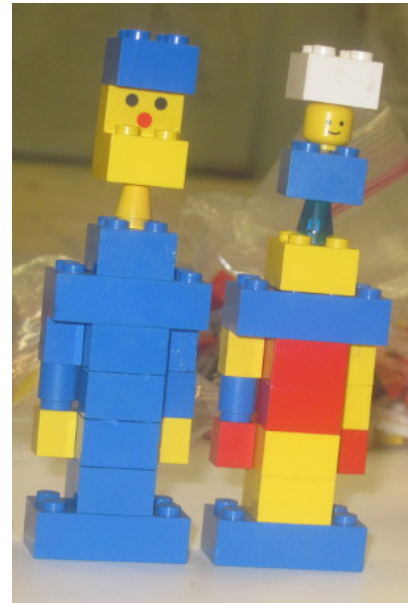
9. Subject would have needed more skill to want to keep or be proud of their clay creations, but that it could be a reason to drive becoming more skilled in the craft.

10. Key draw to a game like this would be to “jump in and make something!”

11. Subject felt that the ability to manipulate the model allowed for notice of details that otherwise would have been over looked, such as the cylinder on the right arm of the lego man model.

12. Subject felt that time limit would not have offered a more enjoyable experience but may have sped up the decision making process. Subject was also under a self-imposed time limit for the amount of time before having to go to dinner.

13. The subject exhibited much creativity and enjoyment with the free build mode, even with limited selection of pieces.



Subject: Chris Vossen

1. Far less self-conscious and judgemental of a subject -- enjoyed creation for the audience and community reaction.

2. Subject wanted more work between people and decided more people would have made the experience better.

3. Subject enjoyed community the most, and thus enjoyed the collaborative/interactive creation processes the most (scene building and passing an object around).

4. Subject enjoyed the perverse body parts and erotic objects the most.

5. Subject would also need more skill and experience before actually being proud of their work or wanting to keep it.



Subject: Elias Carrillo

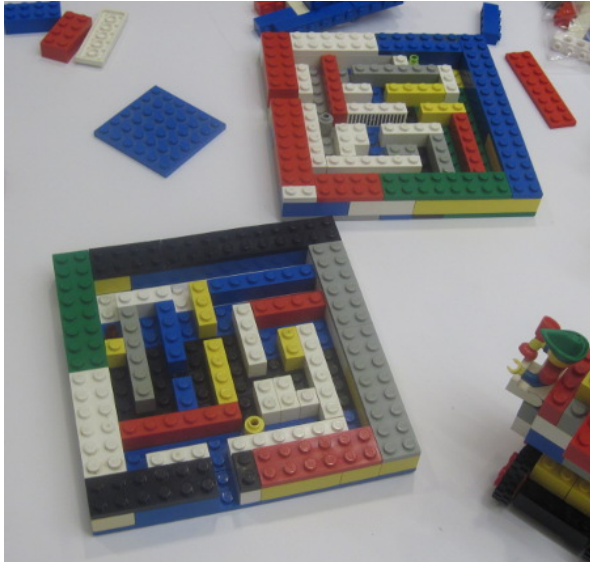
1. Subject liked kneading the clay.

2. Subject felt that touching the model didn't really add to the ability to recreate the piece but still did manipulate the model when given the chance.

3. Felt disassociated from the piece

once completed.

4. Would have enjoyed unlimited blocks more. This would have allowed for an exact replication of the piece and not the knock off duplication.



5. Both Ben and Elias felt breaking (accidental or intentional) when working with legos was saddening and should be left out.

6. In free play mode Elias enjoyed recreating a scene from an old video game.

Subject: Jordon Galdo

1. Subject found the process very relaxing and was a bit reluctant to leave.

2. Subject enjoyed learning how to mold the clay and manipulating it to look a certain way.

3. Placed a

lot of focus in one model and was unaware of his surroundings sometimes.

4. Subject repeatedly asked for more advanced techniques on how to smooth and manipulate the clay.



Future Physical Prototypes

We plan to have a crocheting workshop November 10th to help the group visualize and understand what they will be coding/drawing. April had hoped to avoid the obvious crochet physical prototype in a crochet game, but it is the quickest and dirtiest way to get everyone acquainted with the craft. This teaching session will also give us an example storyboard of how to tutor the player in the craft.

We also plan to have a series of “What if...?” physical prototypes that model what would happen physically in different situations. For example, “What happens if I don’t use turning chains?” “What if I put multiple stitches into one hole?” “What happens if I make a stitch through a hole on another row?” “What do these two stitches look like on top of each other?” “What happens if I change from wire to super bulky yarn?” For every interaction in our system, we can make a persistent physical example that will tell us how our model should perform. April and the team will be making a library of “What if...?” scenarios for 2D modeling code in CS 171 and 172.