

The Game

Project Phase I

Misty Camp

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ITE 450: Human-Computer Interaction

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1. PACT Analysis

1.1 People

The games are designed to be enjoyed by a variety of people. They can be played by children in elementary school up to senior citizens. The rules of the game will be clearly explained so anyone can understand how to play them.

1.2 Activities

The games can be played at any time. They can be played to increase mental stimulation, as a distraction from tasks, or in conjunction with other games made up by the players. The games are geared towards one player; however, it is possible to play with someone else by taking turns.

1.3 Contexts

The games can be played in numerous locations. Some examples include schools, home, the workplace, sitting outside, or at a library. At times there could be many people around. Other times the games will be played in solitude.

1.4 Technologies

These games can be played on either a desktop or laptop computer. There will be a main menu where the player selects which game they want to play. Each game will have a main menu, or homepage, of its own. On that screen players can select to read the rules, play the game, view high scores, or exit the game menu. They will navigate the screen and make game selections using their keyboard.

2. Personas and Scenarios

2.1 Sophia Lopez

Age: 9

Gender: Female

Hometown: El Paso, TX

Skills & Knowledge: 3rd grade, speaks Spanish and English fluently, honor roll student

Family: 1 older brother, 2 younger sisters, and 1 younger brother. She lives with her parents, siblings, and grandmother.

Likes: Cooking with her grandma, riding her bike, playing with her little sisters

Dislikes: Being called “Sophie”

Scenario 1: Sophia likes to play school with her sisters. One game they play at “school” is the number game. Sophia opens the High Roll Low Roll game on her laptop. A sister will choose high or low and then a number. Sophia creates a simple math problem from the selected number and the rolled number. If the sister wins, the other sister must answer the math problem. If the sister loses, she must answer the math problem. Sophia uses the game as a tool to help her sisters learn their numbers and basic math.

Scenario 2: Today is picture day at school and Sophia cannot decide what to wear. She really likes her blue dress, but she also has PE today so if she wears the dress, she will have to be careful not to mess it up in gym. She also really likes her new sweater. She could wear it with her favorite jeans and would be comfortable at PE, but she would not be dressed up for pictures. Since she cannot make up her mind, she plays the High Low game. If she wins, she will wear the dress and if she loses, she will wear the sweater.

Scenario 3: Nicolas, Sophia’s older brother, thinks he is right about everything. Sometimes they get into arguments, as brothers and sisters tend to do, and Sophia gets so mad because he tells her she is never right about anything. To make herself feel better, she likes to play the High Low game to see how many times she can guess correctly (be right) in a row. Her high score is 8 guesses.

Scenario 4: Sophia likes working puzzles with her siblings but sometimes she wants just wants to be alone to do something. She enjoys sitting in her tree house and playing Sudoku while drinking tejate her grandmother makes her.

Scenario 5: Sophia is one of the best readers in her class. Because of this, she usually completes her ELA tests before many of her classmates. The wait for them to finish can feel like forever to her and she has started to dread test day. Her teacher, Ms. Tiffany, told her she can play Sudoku on her Chromebook while the others finish their test. Now Sophia loves test day because she has something special to look forward to.

Scenario 6: One day Nicolas had a friend come over after school. Sophia was sitting at the table finishing her homework and the friend made a comment that she was not smart enough for fifth grade. Sophia declared that she was smart and challenged him to a game of Sudoku. She laughed to herself because he did not understand the game and she was able to complete it while he watched in amazement. The friend apologized and has not made that comment to Sophia anymore.

2.2 Jacob Brown

Age: 21

Gender: male

Hometown: Montgomery, AL

Skills & Knowledge: In his second year at the local community college working on a degree in General Studies. Spent the year after high school travelling across the country trying to find himself.

Family: Shares an apartment with his twin brother. Calls his mother on Sundays. Goes long periods of time without speaking to his father.

Likes: Playing the drums, colorful socks, cooking

Dislikes: Overly opinionated people, bananas, being late for anything

Scenario 1: Jacob and his brother, Hunter, may share a birthday and physically resemble each other but that is about all they have in common. However, they do both enjoy playing the High Low game. Each

weekend they host game night at their apartment and this is often a game they play with their friends. The twist is they bet money on each round. If you win the round, you win the money. If more than one person wins, the prize pot is split amongst the winners.

Scenario 2: Last weekend when the crew was over for game night, Hunter thought it would be fun to play a drinking game instead of betting money while playing High Low. Everyone thought that sounded like a good idea so they all pitched in some money and Jacob went to buy the beer. They decided each player would take a turn. If you did not win your round, you had to chug a beer. They had played for a while and found it odd that no one had a buzz. That is when they noticed Jacob had purchased Heineken 0.0, a non-alcoholic beer, which he claims he did not realize.

Scenario 3: Although the brothers are in their 20's, they still fuss over who will take out the trash. Hunter usually takes it out after Jacob nags him for hours, but they have decided a more civil (yet childish) way to resolve this issue is to play the High Low game. They play the best out of five and whoever loses must take out the trash for the week.

Scenario 4: Jacob had seen a Sudoku game before, but he never understood how to play it. One day, he read the rules to the game and decided to give it a try. He was curious if he could even finish the game. The first one took him a while. He would get close to being finished and then realize he had duplicate numbers in a row and would have to start over. It was frustrating at the time, but he was finally able to finish the game.

Scenario 5: Jacob is uncertain of many things in his life. He is a young adult, living in his own place (which he shares with his brother), and is in college but he is still very confused about adulthood. He does not know what he wants to do with his life and is unsure of who he really is many days. It was a bit unexpected, but Jacob really like the sense of accomplishment he felt when he completed his first Sudoku game. With so much bewilderment in his life it was nice to feel like he had done something

right. He has not told anyone but now he plays a game of Sudoku each morning because he likes to feel like a winner.

Scenario 6: Yesterday Jacob had a big test in his Chemistry class. He had studied the periodic table and formulas he needed to know until he could not longer think in complete thoughts. That morning he woke up and made a good breakfast. He remembers his mom doing this for him when he had important tests in school when he was younger. As he ate his oatmeal, his egg white omelet, and drank his fresh squeezed, organic orange juice, he played his morning game of Sudoku. Once finished, he took a quick shower and headed to class. Much to his surprise, his thoughts were flowing smoothly when he began taking his test. He was amazed at how easy it was to remember what he had studied. Usually, he stared at his paper at least 10 minutes before he could start developing a response. He concluded that his brain had already “woke up” when he played Sudoku that morning and that is why he was able to better concentrate on his test.

2.3 Ashley Welderdine-Smith

Age: 34

Gender: Female

Hometown: Milwaukee, WI

Skills & Knowledge: The semester after high school, she began attending Marquette University and obtained her Pre-Law degree. From there she was accepted to the University of Wisconsin Law School in Madison where she graduated in the top 10% of her class. She is now a divorce attorney in her hometown.

Family: Married 3 years. She has a white Persian cat named Pearl. Is considering starting a family in the next 1-2 years.

Likes: Red wine, wearing stilettos in the courtroom, running, cookies

Dislikes: Cupcakes, doing the dishes, rollercoasters

Scenario 1: Ashley prides herself on being able to figure things out. She is good and recognizing patterns in behavior and has built a reputation for herself as a powerful divorce attorney. Her clients usually come out on the up-side of the divorce because she can present her clients side of the story in a way to make the other party look more responsible. Although she has never taken any coding courses, she feels confident there is a pattern to High Low game. When she eats lunch at her desk, she gets out a notebook where she has been recording the results of guessing “high” and entering either the number “3”, “4”, or “5”. She plays the game while she eats and is starting to think she might be on to something.

Scenario 2: Every morning, while the sun is rising, Ashley gets up for her daily run. She runs mostly for the cardiovascular benefits but sometimes she will run a little farther to help maintain her weight. Ashley is a bit of a cookie fanatic. There is a gourmet cookie shop around the corner from her firm where she frequently stops to get treats. She knows all these cookies are not good for her figure, especially at her age so sometimes she makes a deal with herself. When she is playing the High Low game at lunch, sometimes she will take a break from finding the pattern, and she will tell herself she can only stop for a cookie after work if she wins so many times in a row. Of course, she has already figured out some of the patterns, so if she really wants a cookie she knows how to guess correctly, but she thinks this has helped her limit her weekly cookie intake.

Scenario 3: The lottery. Some people think it is a waste of money while others think it is their only hope of ever getting rich. Ashley likes to play the lottery from time to time but only when the jackpot has reached a certain amount and only if she is on a winning streak playing the High Low game. On Tuesday afternoon, if she can correctly guess the outcome 15 out of 20 plays, she will send her assistant

out to get tickets for Wednesday's Powerball drawing. If she does not win 15 times, she will skip the lottery for the week because she does not feel she will be able to choose the winning numbers.

Scenario 4: Do you ever get a song stuck in your head and all you can do is sing or over and over? "Hey, I just met you / And this is crazy / But here's my number / So call me maybe?" Ashley is completely unable to focus anytime she hears this song because it sticks with her. She has found that she can break this cycle by playing a game of Sudoku. Focusing on the numbers and patterns of the game gets her mind off the lyrics. Once the game is over, she can get back to work without any problems...unless she hears the song again.

Scenario 5: Ashley likes to drink a glass of red wine at the end of the day. During this time, she likes to play a couple of games of Sudoku too. It helps her relax and clear her mind before going to bed.

Scenario 6: One morning, early in her career, Ashley was preparing for a heated divorce case. The wife was asking for alimony, but the husband was refusing to pay anything to her other than child support. He also wanted the house because his job is what provided the money for the residence. The wife was upset and did not know how she was going to make it because she did not finish college or have a career because he told her she did not have to work. She stayed home and cared for the children and house the past 12 years. Ashley was nervous because this was the first time she had case like this one. That morning, she played a couple of games of Sudoku to clear her mind and calm her nerves. Ashley was well-spoken and presented the case to the judge. That day turned out to be a huge win for Ashley and the wife. The judge granted the home to the wife. She also got alimony and child support until the youngest child completes high school. Since that was a victory, Ashley now plays a game, or two, of Sudoku before any big trial because she feels it is good luck.

2.4 David Emmerson

Age: 57

Gender: Male

Hometown: Reno, NV

Skills & Knowledge: Dave is an old-school developer. He graduated college in 1984 and jumped right on the computer bandwagon. He has been in the industry long enough to have experienced many changes and is continually learning new languages.

Family: Married. Has 2 sons from his first marriage, a daughter and stepdaughter with his current wife.

Likes: Thai food, riding his motorcycle, going to Disney

Dislikes: Oversharing on social media, pessimists, when people the cap off the toothpaste

Scenario 1: Working in IT, there is always a meeting about some new project that is in the works. Many of the meetings could quickly been discussed via email but everyone insists on having a conference call. Dave has a High Low game on his laptop that he enjoys playing during these meetings. He can quickly take notes if needed, but he can also be entertained by playing this game when the meeting will not seem to end.

Scenario 2: Last Thursday as Dave was driving home from work, his wife, Suzy, called and asked him to stop and get some stick butter so she could bake a dessert. Dave reluctantly stops at the supermarket and grabbed a box of Parkay and heads home. When he arrived, he handed the bag to Suzy and went to sit in his recliner. Suddenly, Suzy starts yelling at him, exclaiming that he never listens and cannot get anything right. She asked him to get butter not margarine. Last week she asked him to get fabric softener and he came home with dryer sheets. Dave asks her to come in the living room so he can prove

that he is right sometimes. He shows her the High Low game and makes a correct guess. He said, "See, sometimes I am right." Suzy did not find that as funny as he did, and Dave did not get dessert that night.

Scenario 3: Sometimes homelife is hectic. The kids are always coming and going, and Dave just needs a break. He sneaks into the bathroom and pretends to be "going" but what he is really doing is sitting there playing the High Low game. It is something he can do to distract him from the chaos and gives him a moment to relax.

Scenario 4: Sometimes while Suzy is finishing supper, Dave just wants to unwind. Instead of watching the news he will relax in his recliner while playing Sudoku. He finds this helps him let go of whatever he has been focused on all day and puts him in a better mindset to be a father and husband.

Scenario 5: Dave is not a competitive man in general. However, he does like to challenge himself by trying to complete a Sudoku game faster than his previous fastest time. When he first started playing, the fastest he could complete the game was 8.3 minutes. Now his fastest time is 6.6 minutes. Of course, some games are more difficult than others, but he can finish them quickly when he puts his mind to it.

Scenario 6: The IT department where Dave works is a cubical land. There is some separation from your neighbor but not much privacy. Dave likes to get to work early so he can get the first batch of coffee started. Some mornings, Bill arrives early too. Dave is not sure why, but it seems Bill only comes in early to have a chance to clip his nails. Dave cannot stand to hear the sound of the clippers and can only imagine where all the nail clippings are going. On these mornings, Dave will distract himself by playing Sudoku. While playing the game he is focused on the patterns in the game and the correct placement of the numbers which quickly drowns out the sound of Bills clipping habits.

2.5 Betty Miller

Age: 84

Gender: Female

Hometown: Garland, TX

Skills & Knowledge: High school graduate. Worked as a lunch lady at the local middle school for 25 years.

Family: Widowed. 3 grown children, 8 grandchildren, many great-grandchildren. Lives alone.

Likes: Birdwatching, Game Show Network, going out to eat

Dislikes: Not being able to drive anymore

Scenario 1: It has been years since Betty has gone to a casino. She and her husband, John, used to have so much fun travelling and visiting different casinos. Betty remembers the time they flew out to Vegas back in the late 70's. The lights were so bright and the shows were marvelous. Betty found the High Low game on the computer her kids got her. She has not learned how to do much on the computer, but she knows how to play this game. It reminds her of the good old days and the different games they would play at the casinos they visited. Playing High Low makes her happy.

Scenario 2: Betty says the commercial are getting longer and longer. She does not like to watch them anymore because it reminds her there are things she cannot do anymore. New foods to try, new places to go, new things to do but she cannot drive anymore and her children tell her she is too old for some things she still wants to do. She likes to play the High Low game to distract herself from all the "new" things she cannot experience.

Scenario 3: When the great grandkids come over, they always want to play "that" game with Maw Maw. Betty turns on her computer and they all gather around to take turns playing the High Low game. Their

favorite part is when everyone guesses right and she gives them all a piece of candy. Her favorite part is hearing the children laugh and seeing them enjoy a game as much as she does.

Scenario 4: Betty loves to read and do crossword puzzles in the paper. She also likes when they put a Sudoku game in there, but they only do that once a week. Her daughter showed her how to play Sudoku on her computer and she loves it. She still completes the one in the paper on Thursdays, but the computer version allows her to play anytime she wants.

Scenario 5: Now that Betty is retired and living alone, she finds herself getting bored. Although she loves watching her gameshows and reading new books so still feels like she needs to do something challenging. This is one of the reasons she likes playing Sudoku so much. Some of the puzzles are difficult and she likes the challenge of figuring it out.

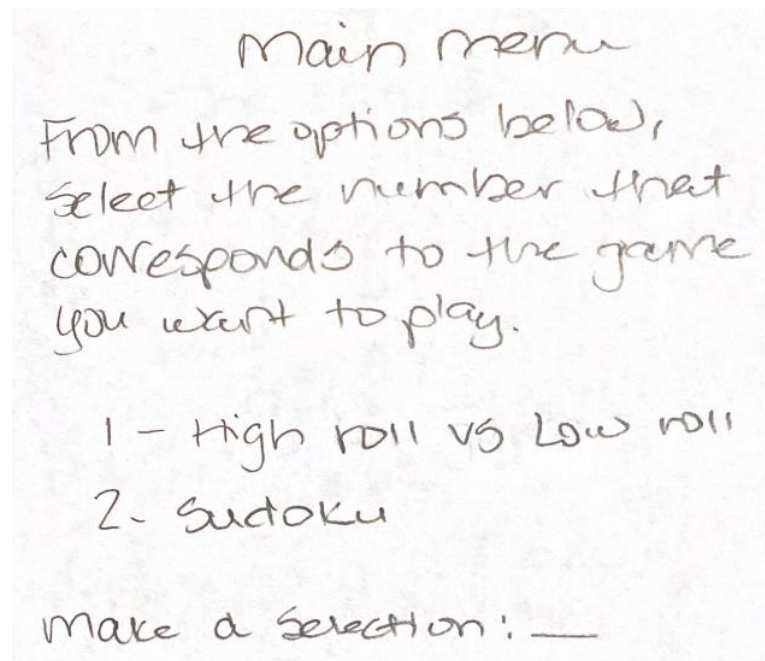
Scenario 6: Mary Sue takes her mom, Betty, to see Dr. Mathis every 3 months. About once a year, the nurse will ask Betty a series of questions to check her memory. The doctor is always impressed with how well Betty does for a woman her age. At her last visit, he told her she is sharp as a tack and asks what activities she enjoys. When she mentioned she likes working puzzles and playing Sudoku on her computer he tells her that it has been proven these types of activities help improve her memory and other brain functions. Mary Sue was glad to hear that and now Betty is motivated to continue playing Sudoku.

3. Design Interface

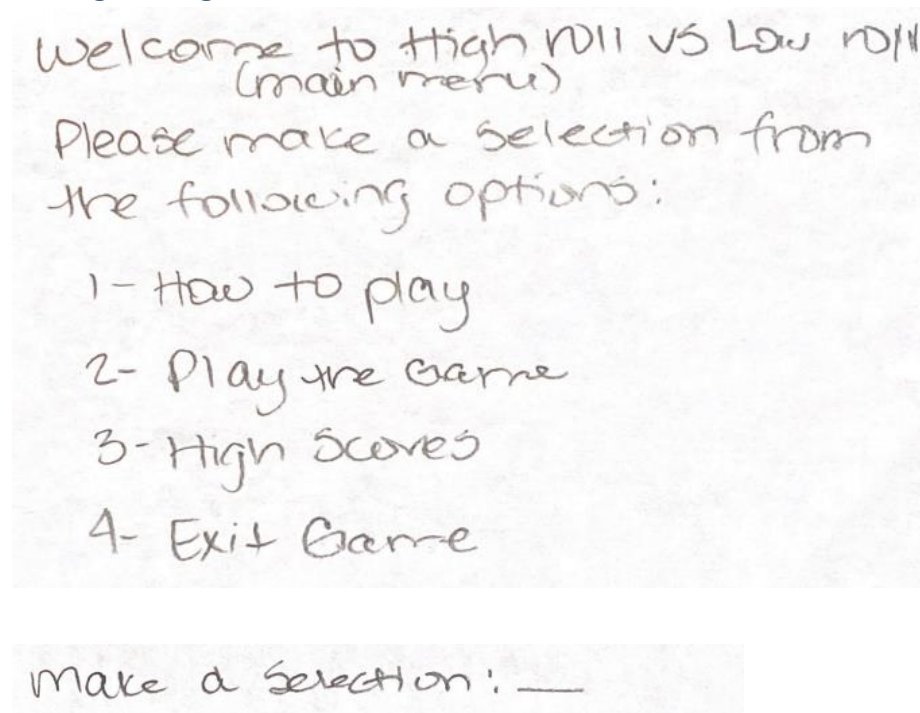
The two games will be programmed in C++ with the console window being used to navigate the games.

Following are hand sketched interface examples.

3.1 Main Menu



3.2 High Low game menu



3.3 Sudoku game menu

Please make a selection
from the following options:

- 1- how to play
- 2- Play the Game
- 3- High Scores
- 4- EXIT

make a selection: —

4. References

[https://sudoku.com/how-to-play/5-reasons-to-play-](https://sudoku.com/how-to-play/5-reasons-to-play-sudoku/#:~:text=Many%20people%20make%20Sudoku%20a,help%20your%20brain%20stay%20healthy)

[sudoku/#:~:text=Many%20people%20make%20Sudoku%20a,help%20your%20brain%20stay%20healthy](https://sudoku.com/how-to-play/5-reasons-to-play-sudoku/#:~:text=Many%20people%20make%20Sudoku%20a,help%20your%20brain%20stay%20healthy)

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