Sprint 3 Requirements

Requirement 2.1

The GUI must contain the basic essentials of the Poker game. It must display the public cards as they are dealt. They can either be hidden until they are dealt(unveiled) or added to the GUI in an animated manner. Similarly, there must be some way to display the current number of chips bet by each player, either as an aggregate total(the pot that the players stand to win) or as individual figures. Similarly, the chips bet can be represented either in a numerical form or by the presence of chip icons.

Requirement 2.2

AI opponents must be present in the Poker game. They can optionally be represented with avatars if possible. More importantly, the user should be able to specify the initial number of AI opponents in the game. Once specified, only the proper amount of AI opponents should be displayed (no grayed out unused opponents). This initial number should not be able to be changed once the user first starts a game of poker. For instance, after one game of Poker, the user should not be able to remove any other opponents. However, if the user chooses to leave the Poker mode entirely, the AI opponents should be completely reset, allowing the user to initially remove opponents once again.

Requirement 2.3

AI opponents should be initialized with a randomized balance of chips (between 1000-10000 chips). This balance should be reset every time the player reenters Poker mode. Effectively, each new entry into the Poker mode spawns new AI opponents with a new chip balance.

Requirement 2.4

Each player, both human and AI, should receive two cards upon the start of a game. The cards for each AI opponent should be displayed with the card face down, preventing the player from seeing the cards. However, the player should easily be able to see their own cards (display the

proper card face in the GUI). The cards should arrive to each player in an animated fashion, originating from a location on the GUI representing the deck of cards.

Requirement 2.5

The game must track not only the chip balance of the human player, but also the chip balance of all the AI players throughout the Poker games.

Requirement 2.6

After the initial card dealing, three public cards must be made immediately visible in the center of the GUI. This is the flop phase. After the flop, all players, human and AI, must be prompted for game action. After all player make an action, another public card must be added to the center of the screen, known as the turn. All players must again be prompted for action. Finally, a fifth card should be added to the center (the river phase), prompting the players for action. These public card additions should be done in an animated manner, with the cards originating from the card deck location on the GUI.

Requirement 2.7

AI opponents must have some discernible strategy when determining whether to bet, check, or fold. This decision should consider the best possible poker hand using their private cards and the public cards displayed. If their best possible hand is within the middle third (~4-6) of the hand precedence hierarchy, they should check, betting no chips. If their best possible hand is in the top third, they should match the current bet plus some random percentage of their current chip balance. If their best hand is in the lower third of the precedence, they should fold if they are in the river phase. Otherwise, they should just check.

Requirement 2.8

After a phase, the user must have the ability to bet chips, with some limits. They must bet a minimum of the maximum bet placed by another player during this phase. If they have insufficient chips, they should not be able to bet. They should be free to bet over the current

maximum, raising the bet. If so, any opponents going after the user would also be bound by this new maximum. This action should update a GUI element displaying the current bet maximum if applicable and the element displaying the current pot for the game.

Requirement 2.9

Alternatively, the user must also be able to fold during a phase. This effectively forfeits a game, losing all chips they currently bet. For time-saving, this action will effectively end the game. The turns and bets must continue in the background so that the proper AI opponent gets their updated chips. However, the user should not be forced to sit through this process, instead receiving some message conveying the winner and their new chip amount.

Requirement 2.10

During betting, the user should be given a special “all-in” option, which will immediately put all of their chips into the game’s pot. They will not be permitted to bet after this, nor will any opponent during the phase unless they can match or raise the bet.

Requirement 2.11

Conversely, the user should be permitted to check, doing nothing, after a phase. This will simply initiate the next phase of the game, unless an AI opponent goes after the player.

Requirement 2.12

After the final round of actions following the river phase, all hands should be made visible in the GUI. The best hands of each player should be ranked, with the highest-ranking player receiving all chips in the pot. The rankings should use the precedence described in the following website https://www.pokernews.com/poker-hands.htm. The chip rewarding could be implemented in an animated manner or through a message displayed to the user.

Requirement 2.13

After an AI opponent folds or loses a game of Poker, their chip balance should be checked. If it is zero, they should be "removed" from the table, making their avatar invisible. A message should be displayed to the user after such an event, congratulating them for defeating an opponent.

Requirement 2.14

The user should be able to freely exit to the main menu upon folding or finishing a game of Poker, leaving with their proper amount of chips. If they chose to leave during the game without folding, they must forfeit any chips bet during the game.

Requirement 2.15

Like the AI opponents, the user must be removed to the main menu after folding or losing results in a chip balance of zero. A message should be displayed to the user explaining this before forcing them to the menu.

Requirement 2.16

If all AI opponents are removed from the GUI upon losing all their chips, the player should be rewarded with a message congratulating them for winning. Then, they should be forced back to the main menu, so that new AI opponents can be regenerated.

Requirement 2.17

There must be a button in the GUI that displays a message explaining the basic rules, game flow and moves, and the hand precedence of Poker.

Requirement 5.4

The card deck for Sabacc differ significantly from the cards used in Poker and Blackjack. A Sabacc card deck must contain sixty-two cards. Sixty of those cards are divided into circle, square, and triangle suits. Each suit should have cards numbered from –10 to –1 and from 1 to 10. Negative cards should be red in color, and positive cards should be green in color. There should also be two 0 cards, which can be any color.

Requirement 5.8

At the beginning of a Sabacc game, each player should receive two cards(GUI not important in this sprint). There must also be a public card dealt to represent a discard pile.

Requirement 5.9

After an initial deal, a sabacc game must be dealt in three rounds. In each round, each player must be prompted for a game action (draw, swap, stand, or junk).

Requirement 5.11

A player choosing to draw a card must have a randomly selected card added to their hand. After receiving a card, the player must be given the option to release a card, placing it at the top of the discard pile.

Requirement 5.12

Alternatively, a player should be able to exchange a card in their hand with a card at the top of the discard pile (not focused on GUI management yet).

Requirement 5.13

A player should also be able to chose not to do anything during their turn, choosing to stand instead.

Requirement 5.14

A player should also be able to junk. In this instance, each card in their hand is added to the discard pile, and the player is considered to be out of the game, forfeiting any possbility to win chips.

Requirement 5.17

The game must track the chip balance not only of the user but any AI players as well.

Requirement 5.18

Similar to poker, a user should also be given the opportunity to bet some of their chips during their turn. They must at least match the current maximum bet during the round, but they have the option to raise it as high as they want.

Requirement 5.19

After all turns in a round of Sabacc, two six-sided dice should be rolled (don’t worry about the GUI). In the final sprint(or this sprint in time), the GUI must display the results of the dice rolls.

Requirement 5.20

In the event that the double-dice roll results in the same two numbers, all players must discard their hands into the discard pile. Afterward, they must redraw a hand equal in length to their previous hand.

Requirement 5.21

After all rounds are complete, the total value of each player's hand, determined using the number on the card, is used as the deciding metric for victory or defeat.

Requirement 5.22

The player with a total closest to zero wins the game. In the event that two players have the same absolute value from zero (such as 1 vs –1), the player with the positive sum wins the game.

Requirement 5.23

In the event that multiple players have a sum of 0, the player with the most number of cards in their hand is the winner.

Requirement 5.24

Naturally, the player who wins the Sabacc game must receive all chips bet during the Sabacc game. These chips must be added to their total (the casino total in the user's case).

Requirement 5.25

A "sabacc" is defined as a score of zero. In a later sprint, there will be a Sabacc pot, which will collect the entry fee required to enter a game of Sabacc. While the full implementation of the sabacc pot is not covered by this requirement, a player who wins on a "sabacc" should also be rewarded the entire contents of the sabacc pot, adding it to their chip balance.

Requirement 1.2

This is a low-priority requirement that focuses more on the program as a whole, not any specific game. Once a player has been kicked to the main menu upon losing a game, the program should also forcefully exit when the user loses all chips. There should be a message displayed to the user that explains the situation (no chips, get out), and the program should give the user enough time to read the form before exiting (5-7 seconds most likely).