Group 7 – Poker Tournament

**1st Betting Phase**:

**Draw Phase**: A decision tree is used based on the rank of the player’s hand.

If the rank is greater than or equal to 5, the player discards no cards, as each possible hand with a rank that high has a less than 1% chance of occurring in 5-card draw.

If the hand is a three-of-a-kind that isn’t a full house, the player will discard cards that are not part of the pairing (usually both, but 5% of the time just one).

If the hand has two pairs, the player always gets rid of the loose card, but will also get rid of the lower of the two pairs 1% of the time.

If the hand has only one pair, there are three possible outcomes depending on what the rank could improve to. If there is potential for a straight, the player discards one of the two cards in the pair. If there is potential for a flush, the player discards all of the cards that are not part of the majority suit. In all other cases, the player simply discards the three cards that are not in the pair.

If the hand is merely a high card, the player anticipates the highest possible potential rank that the hand could have after replacing cards. Since a high card cannot have potential for a four-of-a-kind or a full house without being a higher ranking hand in the first place, the player tries to see if it can get a royal flush, a straight flush, a regular flush, or a straight. Once determining the highest possible rank from that subset, the player discards only the cards that do not contribute to the requirements of the potential hand. If, however, the hand does not have the potential to have one of those specified ranks, the player discards three to five of the lowest ranking cards in the hand.

**2nd Betting Phase**: