Milestone 1:

Prepare a document that includes the answers for the following questions:

·       Group members

* + Jonathon Cooke-Akaiwa (jcookeak)
  + Anna Branam (akbranam)

·       Responsibilities

* + Working together to define the problem and build and test a heuristic algorithm.  Programming will be split based on who feels more confident on a topic than the other coder.
  + Meeting up on a regular basis to work together
    - If dividing the code up has been agreed upon, then updates should be sent on a semi-regular basis.
    - Input on others’ code should be constructive and always welcome
  + Report will be written together, probably over google docs to allow simultaneous editing.

·       Strategy

* + Strategy for evaluating a hand will be to assign a numeric value to a hand based on the probability of having the best hand.  This depends on the cards on the field and the ones in your hand.  As new information is revealed the score will be updated accordingly.
    - This is the highest priority
  + Start by assuming no bluffing to check for errors in evaluation.
    - Having a probabilistically sound strategy should make for a more effective AI.
  + Start by evaluating against one opponent and then scale our solution up against multiple opponents.
    - Test against humans and our own AI
  + Checking for a bluff should be based on previous actions by a player taking into account how well they did and their betting strategy.  Someone who constantly loses but bets high is more likely to be bluffing than someone who bets conservatively and then bets high.
    - bluff checking should take into account the probability that another player has a better hand.
    - check at what point someone folds and how much they invested in the game
  + Creating an effective alpha-beta search is very important.
    - Never overestimating our hands score based on known states
    - Heuristic
      * Calculate probability of our hand getting better with cards being flipped
      * Against odds of our opponents having a better hand
      * Score should take into account how likely a type of hand occurs (such as a flush or straight compared to pairs)
  + Treat any amount of money as a percentage
    - Amount bet/raised as percent of total money on hand
    - Amount opponent has as percent of starting value
  + Bluff strategy
    - In general bet conservatively (betting amounts should be based on the probability of having the best hand)
    - Have a (small) random chance of having a more aggressive strategy to mess with others’ bluff checkers.
  + Based on performance
    - Change how detailed the bluff check is
      * i.e. look at only the total amount bet and how well they did.
  + Folding
    - Have a threshold for percent of money invested in the pot and the odds of our hand
      * Take into account bluffs
    - Based on betting strategy at the time (conservative vs. aggressive) look at the odds of us getting a better hand than our opponents
      * This is part of how we calculate our threshold
  + Checking or Calling vs. Betting or Raising
    - We need a confidence value that depends on how likely we are to have the best hand
      * Lower probability - check
      * Higher probability - raise
      * Our betting strategy once again changes the value where we choose one over the other.