Game Design Document - Mancala

**Overview**

Mancala is a simple, two-player board game for every age. Users can play this game to pass time when there’s nothing to do. The rules of the game and the game description are provided in this design document.

The program offers simple graphics to represent the game board on screen. To play this game, users are required to play against another player and will not get a choice to play against a computer. Players will have to follow the rules of the game or will be caught by the program. To interact with the program, users need to type in their answer.

When the game is running, each player will take turns typing the number of the hole they want to take the beads out of. The computer will automatically sow (placing a bead in every hole next to it, until the beads run out) and reprint the game board for the next turn. This will continue until the game stops and the program announces the winner.

**Top Down Design:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Method name** | **Return Type** | **Parameters** | **Description** |
| drawScreen | void | Int [ ] holes | This method prints the new board, the player turn indication, and the new scoreboard after a turn/game has finished. This method calls dropBeads method. |
| dropBeads | void | Int [ ] holes, Int userInput | This method changes the main array values--the beads in every hole--after every turn. This method calls capture method to check if a capture happened. |
| capture | void | Int index1, int index2 | This method makes two holes 0 in the main array--the hole the last bead dropped in and the hole parallel to it. (When it is called). |
| gameOver | boolean | Int [ ] holes | This method returns true when all 6 holes on one side are empty (all 0). |
| playAgain | boolean | Int [ ] holes | This method returns true when a player ends their turn by putting a bead in their mancala (earning a free turn). |

**Main Method Pseudocode:**

boolean playerTurn=true; //global variable

Main Method {

Declare HSA console (named c);

Scanner sc=new Scanner (System.in);

int [ ] playerHoles={4,4,4,4,4,4,0,4,4,4,4,4,4,0}; //main array

String playerAnswer;

int index=0;

Print (“Mancala”); //In big letters

Print (“Welcome to Mancala! If you don’t what this is, Mancala is a board game ”

+”that requires two players. ”);

Print (“You cannot play against a computer, so find a friend to play against”);

Print (“Here are the rules: ”);

Print (prints the actual rules);

Println

Print (“Do you want to play?”);

playerAnswer=sc.next();

Do {

While (gameOver(*playerHoles*)==false) {

if (playerTurn==true){

drawScreen(*playerHoles*);

Print (“Which hole will you choose?”);

index=sc.nextInt();

dropBeads(playerHoles, index);

If (playAgain(*playerHoles*))==true){

playerTurn==true;

}

else{

playerTurn=false;

}

}

else{

drawScreen(*playerHoles*);

Print (“Which hole will you choose?”);

index=sc.nextInt();

dropBeads(playerHoles, index);

If (playAgain(*playerHoles*)==true){

playerTurn==false;

}

else{

playerTurn=true;

}

}

}

drawScreen(*playerHoles*);

Print (“Do you want to play again?”);

playerAnswer=sc.next();

} (while playerAnswer==”yes”)

}

**Game description**

The game has a board with 14 holes. Two big holes at the ends (called the Mancala) and 12 small holes lined in two rows in the middle. In every hole in the middle, there are 4 beads. In total, there are 48 beads. These beads are used to score and keep the game going.

**Rules:**

1. Every hole (except mancala) starts with 4 beads
2. The mancala on your right is your scoring and the row of holes nearest to you is your side
3. The game begins with one player picking up all of the beads in any one of the holes on their side.
4. The player deposits one stone in the next hole and the hole after that, in a counter-clockwise motion, until the stones run out.
5. You’re not allowed to take beads from your opponent's side
6. Your own Mancala counts as a hole but your opponent's Mancala does not count, so skip it and continue moving to the next hole.
7. Always place all captured beads in your Mancala.
8. The game ends when all six holes on a player's side of the Mancala board are empty.
9. The player who still has beads on their side of the board when the game ends, captures all of them.
10. Count all the beads in each Mancala. The winner is the player with the most beads.

**Special rules:**

1. If you end your turn by putting a bead in your own mancala then you get a free turn
2. If the last bead you drop is in an empty hole on your side, you capture that bead and any beads in the hole directly opposite.