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1 Plan

This plan will cover general idea and overall plan of implementation with milestones.

2 General Ideas

Electronic game play does not offer the same opportunities that personal game play allows. That can be simulated with both people keeping boards set up and using an exact terminology through e-mail or chat. Wouldn't it be better to have a virtual board that lets the people play without the space considerations while the computer worries about terminology?

The goal of this project is to develop a set of programs that is a virtual game in a box. I want to keep to "classic" games since these are the games people

love to play. It also helps that they are completely free so that there are no legal problems.

We create a set of programs so that each can do their job well and just define a set of interchangeable data files (text, but not necessarily human readable) for them all to work on.

These data files should define and recreate all the components that go into a game for the electronic media.

Game components consist of:

- Boards
- Boxes
- Cards
- Dice
- Rules
- Tiles
- Tokens
- Trays

Implementation of these components can serve as our milestones.

3 Implementation

3.1 Board

The board is hereby defined as a non-changing playing surface that other components are placed upon. This definition can also include score sheets.

There is no such thing as a board game, here meaning a game using only a board, since an unchanging surface is not much of a game.

This milestone is accomplished when we have decided upon a graphics format and can convert some graphics files to it.

This will be version 0.05.

Suggested graphic format is a small extension to the xpm graphic format. The color associated with an initial substring of player will serve as notice of the color which will become the same color as the player. The color associated with an initial substring of transp will serve as notice of the color which will represent transparent portions of the image.

These extensions are not required for completion of version 0.05 and most boards should just be .xpm files. It is just noted to plan for an xpm type of graphic format.

These graphic images should have the extension of .board.

3.2 Box

The box is hereby defined as a container to hold all the other components.

There is no such thing as a box game. This milestone is technically already accomplished when the board milestone is done since it will mean file formats and usage are thought out.

This will be version 0.1.

I would claim that a game exists in three stages.

1. The potential of all games that could be played with those types of components
2. The initial setup prepared to play the game
3. The game in progress

So there should be three portions of the program (or three programs to manipulate the data files) ready.

First should be a type of "game paint" program where all the artwork is defined and then divided into boards and tokens. One of each is all that needs to exist. Similar to a wargame having all sorts of pieces with the computer advantage of cheap duplication available. For example, a backgammon set would have 1 board and 3 tokens (classic six-sided, checker with user's color applied automatically and the doubling cube).

At this point, how the tokens are used is not important. There's nothing to prevent a variant of backgammon where people roll the doubling cube (for an average move of 21 for one or 42 for two instead of 7) for movement and use a six-sided die for point multiplication.

The ability to copy/import/paste/save individual parts will be required and a small library of "standard" boards and tokens will be kept.

Suggested formats are:

.board see definition of board

.box number of images, images, number of boards, indexes to images that are boards, number of tokens, tokens (see .token definition).

.deck number of images, images, index to back image (-1 if not shared back) number of cards, indexes to card front images, indexes to card back images if not shared back.

.game name of .scene based upon, fingerprint of scene version, every move that has been made.

.scene name of .box based upon, fingerprint of box version, for each board (how many allowed with -1 meaning no limit, owners, permissions), for each token (how many allowed with -1 meaning no limit, owners, permissions, type, how many placed, for each placement (location)).

.token number of images/sides, images, stack height. Some tokens will have 1 side (like cards), some will have 2 sides and some will have more (like dice).

Next is a "scenario" program that sets up the pieces and is ready for the beginning of the game. Much like scenarios in wargames. This defines the number of players and how many of each piece (including unlimited if so desired) is allowed. For example, all sorts of backgammon variants could be stored based upon the basic backgammon set. The standard backgammon would have 1 copy of the board, 2 copies of the six-sided dice to be used as dice, 15 copies of the checker for each player to be used as tokens and set in their starting places on the board, and 1 copy of the doubling cube used as a token and set off the board with the "2" face-up.

Next is the game in progress which starts with the scenario and stores moves until someone says they are done.

Note that none of these programs knows or enforces the rules, it is just a virtual medium for playing. When a player has lost, a player will declare that person removed and all players must agree.

3.3 Board/Box

There is no board/box game. This milestone is completed when we can utilize multiple boards and handle viewing rights correctly. This matters in games with hidden tally sheets and other similar devices.

Each game piece or set of game pieces should have a viewing setting and a manipulation setting in the scenario.

Viewing settings control who can see the piece and anything attached to it. Possible settings are: owner, non-owner, player "", everybody.

Manipulation settings control who can manipulate it with the same settings as well as transfer ownership, change manipulation settings, and delete.

For many games, everyone can see everything and everyone can manipulate everything. For a game like chess, you would need to give the non-owner permission to at least delete the piece.

Since the ability to use a box is implied in every other milestone, it will not be revisited.

Since every game uses some sort of board (even if it's blank space or just the order things are held in your hand) it will not be revisited.

This will be version 0.2.

3.4 Card

A card is hereby defined as a two-sided token designed to be stacked with one or more visible and randomly distributed.

This definition allows us to take advantage of inheritance (we begin defining a token specifying that it can have two sides). It also points out the differences: there is a stack ability (add/remove from/to bottom/top), a visible depth, and

a shuffle command. Then again, in order to limit hex cheaters to be hex card counters we could just have a "shuffled" portion and list its possibilities.

What about stacks with zero visible? Really they are one visible, sharing the same back graphic, and face down.

We should be able to take advantage of the fact that they tend to share the same back.

One feature I do want is a hand outside of the board.

This milestone will be complete when we can play canasta. Though it's not a board in the minds of many (a blank playing area) it does require the interaction of board and cards to lay out sets.

This will be version 0.3.

3.5 Die

A die is hereby defined as a multi-sided token designed to be randomly "rolled" which will determine the side that is up.

This definition allows us to take advantage of inheritance (sides of a token need to be variable or maybe a card is a two-sided die with roll disabled). It also points out the difference, you roll it. You may have noticed that I did not call the backgammon double die a die but a token. That is because you don't roll it.

This milestone will be complete when we can play ship, captain, mate.

This will be version 0.4.

3.6 Card/Die

This milestone will be complete when we can play centennial.

This will be version 0.5.

3.7 Rule

Rules are ancillary documents telling how to use the items in the game, explaining scenarios, special rules, and win conditions. This is actually outside the realm of this project (text usually works, pdf should always work) so there is no milestone and it will not be covered again.

3.8 Tile

A tile is hereby defined as both a card and a die. I can't think of a game that would use such an item but I don't want to discriminate either.

There is no milestone for this item and it won't be covered again. We just need to remember not to limit ourselves.

3.9 Token

A token is hereby defined as something with one or more sides placed to indicate game status.

This allows us to finish the token code. It needs a location (board or "hand" and x,y coordinates which we may already have or move up from other items). It is probably almost complete by the time we get here.

This milestone will be complete when we can play shogi. Shogi has a few more options than western chess which make it a slightly more complete test.

This will be version 0.6.

3.10 Card/Token

This milestone will be complete when we can play maze master. An invention of my own that will not be very entertaining but will allow testing of card and token interaction.

If anyone knows of a completely free (in both the "free gift" and the "freedom" sense) game, I am willing to change my milestone.

This will be version 0.7.

3.11 Die/Token

This milestone will be complete when we can play backgammon.

This will be version 0.8.

3.12 Card/Die/Token

This milestone will be complete when we can play centurion. An invention of my own with the same warnings as maze master.

This will be version 0.9.

3.13 Tray

A tray is hereby defined as a place to store components not yet in play.

A tray is a hand, which could be unowned, that holds pieces and manages such things as an unlimited number of pieces properly. In the case of an unowned tray, the pieces could become owned by the mover upon possession so that players do not have to manually take ownership.

Since any game with pieces that aren't initially in play could, but in not required to, use a tray it will not be revisited.

This milestone means completion of the system. After this it's a matter of making reusable components, games, and scenarios.

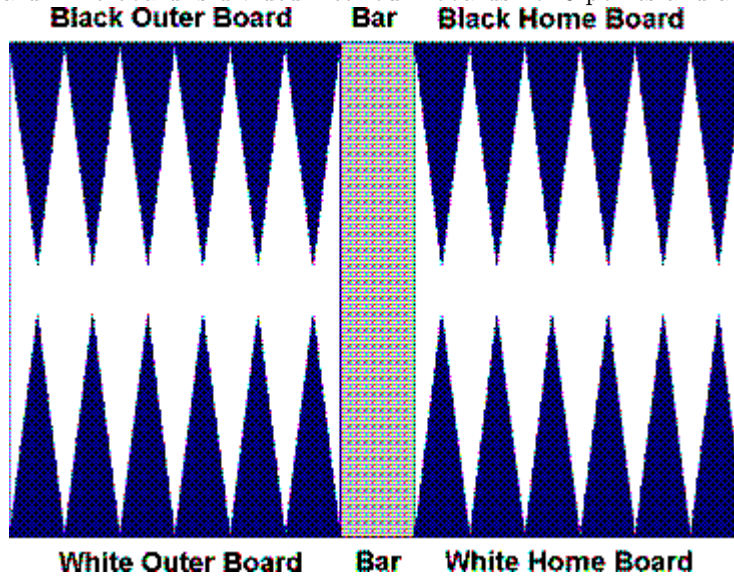
This will be version 1.0.

After some retesting of each game, this will be version 2.0.

4 Game rules

4.1 Backgammon

Board: The board is divided into four "boards" of 6 points and a bar.

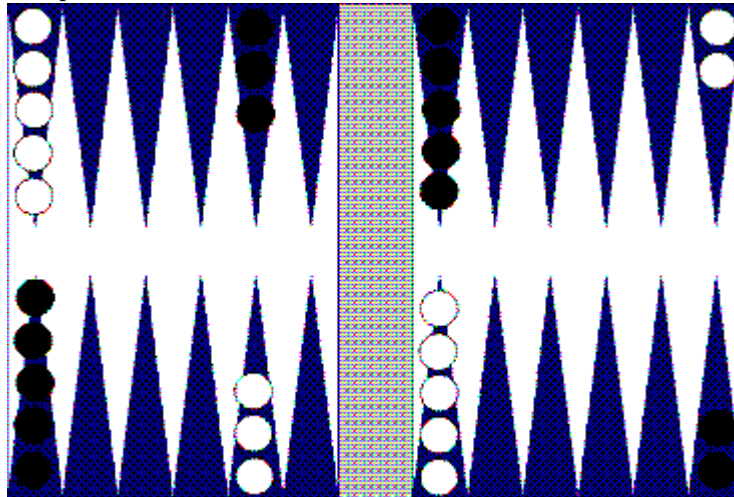


Cards: None

Dice: 2 six-sided dice

Tokens: Each player has fifteen checkers and there is a doubling die with six sides labeled 2, 4, 8, 16, 32, and 64.

Setup:



Object: Each player is to move their pieces off the bar, then to their home board, and then off the board.

Beginning: Randomly determine who starts by having each player roll one of the dice. Highest result goes first. Ties are rerolled.

Turn: A player who has possession of the doubling cube, or if the doubling cube is unowned, may propose a doubling of the stake.

If the other player refuses, then the other player loses.

If the other player agrees, then the other player possesses the doubling cube and the stakes are doubled.

If the doubling cube was unowned, then the 2 is on top and placed on the bar. Otherwise the die is rotated until the next number (4, 8, 16, 32, or 64) is on top and replaced on the bar.

Player rolls both dice. The numbers on the dice indicate how many points you may move.

If the result of the die roll is two dice of the same value (doubles), the player gets twice as many points to move.

The checkers are always moved off the bar, toward home or off, never the other direction.

The checker can be moved to a point not occupied by two or more opposing checkers.

Movement from the bar is always to the point farthest from home and counts as one point of movement.

Each die (twice for doubles) is a separate move for a checker which must be used in its entirety.

If all dice cannot be used, the player is only required to use the ones that can be used.

If either die could be used but not both, the higher value one must be used.

If the player has pieces on the bar and not all of them can be moved off the bar, then as many as possible are moved off the bar and the turn is complete.

If no number can be used, there is no movement that turn.

If a movement lands on a point occupied by a single checker of the opposing color, the opposing checker is removed and placed on the bar.

No checkers can be moved off the board until all the pieces are moved to the home board.

Moving from the last home point to off the board counts as one point and does not have to be by exact count.

A player must have all of his active checkers in his home board in order to bear off. If a checker is hit during the bear-off process, the player must bring that checker back to his home board before continuing to bear off. The first player to bear off all fifteen checkers wins the game.

After all movement is complete, the turn is over and passes to the other player.

Winning: When one player has successfully removed all his pieces, the game is won.

If the losing player has removed at least one piece, the winner has won by the value of the doubling cube, or 1 point if the doubling cube has never been used.

If the losing player has all the pieces off the bar and out of the winning players home board, then it is called a gammon and the points are double.

Otherwise, it is called a backgammon and the points are triple.

4.2 Canasta

Board: None.

Cards: 108 cards, two standard decks

2 Jokers worth 50 points.

A and 2 worth 20 points.

K, Q, J, 10, 9, 8 worth 10 points.

7, 6, 5, 4 worth 5 points.

3 not meldable.

Dice: none.

Tokens: none.

Setup: Each player is dealt 11 cards. The top card of the stock is placed face up in a discard pile. If the top card is a wild card or red 3, it is locked and placed rotated from the rest of the future discard pile.

Object: Be the first to go out by having no cards in your hand.

Beginning: Randomly determine who starts by any method preferred.

Turn: Draw, Meld, Discard

Draw: You may draw from the discard pile if it is not a black three and you can use the top card for a meld (which you will be required to do this turn) and the discard pile is not frozen.

If you draw from the discard pile, you add the entire discard pile to your hand.

Otherwise you draw one card from the stock.

If you draw a red 3, you immediately place it face up in front of you and draw another card.

Meld: A meld consists of at least 3 cards of the same rank. Jokers and 2s are wild. Your first set of melds has to be worth at least 50 points and you can maintain as many melds as you wish.

Once you have at least one meld, you may add cards to your opponents melds in order to use your cards.

You cannot use your next to last or your last card unless you have at least 1 canasta (7 card set).

Discard: you discard 1 card from your hand on the discard pile. If you discard a black 3, the next player is prevented from drawing from the discard pile. If you discard a red 3 (that you were dealt) or a wild card, it is placed in a rotated position on the discard pile and the discard pile becomes locked.

If you use all your cards and have none to discard, you have gone out.

If you use all but one of your cards, discard it and you have now gone out.

Scoring:

For going out	100 points
For going out concealed	an additional 100 points
For each wild canasta	700 points
For each natural canasta	500 points
For each mixed canasta	300 points
For each red three if you have at least one meld	100 points
For each red three if you do not have at least one meld	-100 points
For all four red threes if you have at least one meld	an additional 400 points
For all four red threes if you do not have at least one meld	an additional -400 points
For each meld	cards according to points given at the beginning
For each black 3 in hand	-5 points
For each card in hand	negative of cards according to points given at the beginning

Winning: Highest score wins

4.3 Centenial Rules

Board: The board is blank.

Cards: 24 for each player. 2 each numbered 1-12.

Dice: 3 six-sided dice numbered 1-6.

Tokens: none

Setup: Each player shuffles their cards and places them face up in front of them.

Object: Be the first to go out by having no cards in your stock.

Beginning: Randomly determine who goes first by rolling dice, high roller first, ties re-rolled.

Turn: Roll all three dice.

Find a combination of 1, 2, or 3 dice that total up to the number on the top of your stock pile.

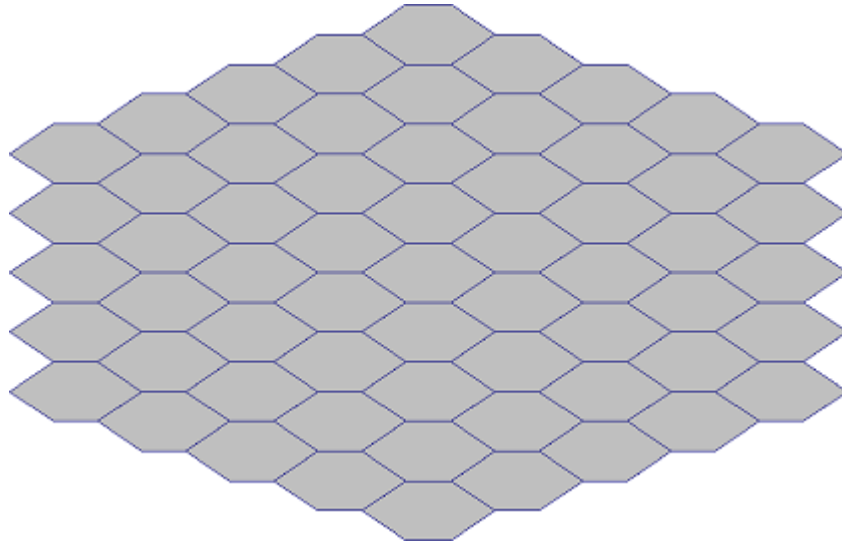
If you do find such a total, discard the top card and try to find another combination of 1, 2, or 3 dice that total up to the number on the new top of your stock pile. Continue until no combination can be found.

Pass the dice to the next player.

Winning: The first player to discard all eir cards is the winner.

4.4 Centurion

Board: The board is blank hex field that is hex shaped and 9 hexes top to bottom.



Cards: 61 each of plain, hill, mountain, and water.

4 of crown/plain.

Dice: 1 red four-sided die, 1 red six-sided die, 1 red eight-sided die, 1 white four sided, 1 white six-sided die, and 1 eight-sided die.

Tokens: Infinite supply of “I”, “V”, and “X” tokens for each player.

Infinite supply of boats in a neutral color.

Setup: One player takes a plain card and one “I” token and places it in a corner of the board, the other player takes one plain card and one “I” token and places it in the opposite corner.

Each additional corner receives a “crown/plain” card.

The other cards are shuffled.

Object: Either be the first to control all crown points or be the only player not eliminated.

Beginning: Randomly determine who goes first by rolling dice, high roller first, ties re-rolled.

Each player is dealt 5 terrain cards.

Turn: Draw, Place, Build, Move, Attack, Discard.

Draw: draw one terrain tile from the stock. If all the terrain has been defined, then don't draw.

Place: place one of your 6 terrain card next to a terrain that you control. The card can only be placed on a previously undefined terrain. To control a terrain you must have at least 1 “I”, “V”, or “X” in it.

Build: For each plain that you control, you get one build extra soldier. This means that an additional “I” is placed in each plain.

Any combination of 5 “I” may be traded in for a “V”. Any combination of 10 “I” may be traded in for an “X”. The reverse trade in and intermediate trades are allowed as well.

Any space that had a “X” at the beginning of last turn and the beginning of this turn may have a boat placed in it if there is a water hex adjacent to the

terrain.

Move: You may move none, any, or all of your pieces either one hex, or on a boat, or off a boat if the boat is not on a water hex.

You may then move none, any or all of your boats one hex. If the boat is not on a water hex, it must move on to a water hex. If it is on a water hex, it may move to a non-water hex.

Attack: Any movement may have caused you to be adjacent to a hex with an enemy unit. For all such hexes, continue rounds of combat until only no enemy soldiers are in adjacent hexes. If soldiers are in a boat, they are not considered adjacent until the boat is on the terrain. If both sides of soldiers are in a boat, they are not considered adjacent unless until both boats are in the same terrain.

For each round of combat, the attacker gets a red die and the defender gets a white die depending upon the location of the attackers and defenders:

R/W		Attacker			
		Boat	Plain	Hill	Mountain
Defender	Boat	d4/d4	d4/d6	d4/d8	d4/d8
	Plain	d8/d4	d6/d6	d6/d8	d6/d8
	Hill	d8/d4	d6/d6	d6/d8	d6/d8
	Mountain	d8/d4	d8/d6	d6/d6	d6/d8

Subtract the lower roll from the higher roll and the loser subtracts that many soldiers.

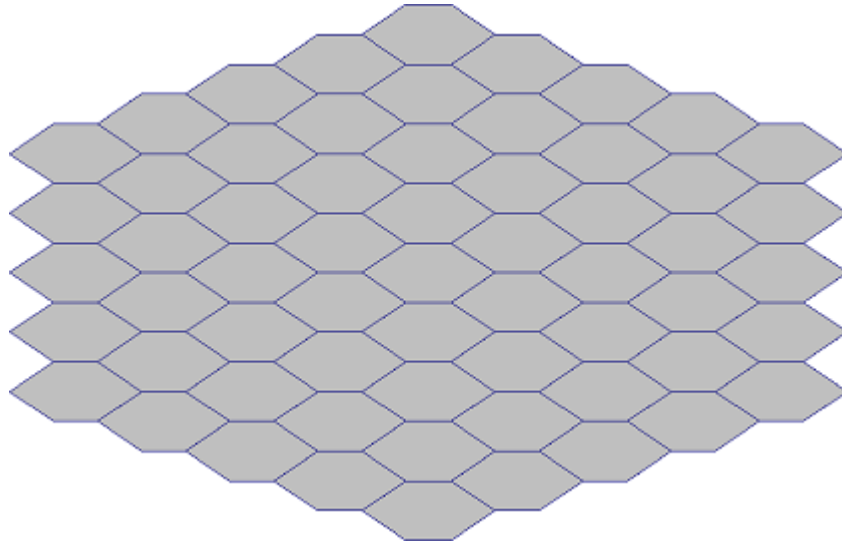
Discard: If you have 6 terrain tiles, discard 1.

Winning: If you controlled all 5 crown points from the beginning of last turn to the beginning of this turn, you have won.

If you have completely eliminated the other player you have one.

4.5 Maze Master

Board: The board is blank hex field that is hex shaped and 9 hexes top to bottom.



Cards: 61 each of dead end, 2 adjacent, 2 1 apart, 2 2 apart, 2 straight, 3 adjacent, 3 1 1 apart, 3 1 2 apart, 3 every other, 4 adjacent, 4 1 1 apart, 4 2 1 apart, 5 adjacent, all.

1 crown all card.

Dice: None.

Tokens: Each player has one checker.

Setup: One player takes 3 adjacent card and places it in a corner of the board with eir token on top, the other player takes one 3 adjacent card and places it in the opposite corner with eir token on top.

Place the crown all card in the center.

The other cards are shuffled.

Object: Be the first to reach the center crown card.

Beginning: Randomly determine who goes first by any method you wish.

Each player is dealt 5 maze cards.

Turn: Draw, Place, Move, Discard.

Draw: draw one maze tile from the stock. If all the terrain has been defined then don't draw.

Place: place one of your maze tiles adjacent to either your token or your opponents token. The card can only be placed on a previously undefined hex, all paths must line up, and no paths can lead off the board.

Move: move your token one space along a path.

Discard: If you have 6 maze cards, discard 1.

Winning: If you make it to the center crown tile first you win.

If all hexes are defined and only one player has a path to the center crown tile, that player wins.

If all hexes are defined and neither player can make it to the center crown tile, it is a tie.

4.6 Ship, Captain, Mate

Board: None.

Cards: None.

Dice: 10 six-sided dice numbered 1-6.

Tokens: None.

Setup: Each player receives 5 dice.

Object: Have the largest crew.

Beginning: Randomly determine who goes first by rolling dice, high roller first, ties re-rolled.

Turn: Roll all dice that aren't set aside.

If you don't have a ship and one of them is a 6, set it aside as your ship.

If you do have a ship and don't have your captain and one of them is a 5, set it aside as your captain.

If you do have a ship and a captain but don't have your mate and one of them is a 4, set it aside as your mate.

If you have your ship, captain, and mate, the remaining dice are your crew.

If you have your crew you do not roll.

Get as close to having a crew as you can with your one roll, then your turn is over.

Winning: The first player to get eir crew stops rolling until the other player has eir crew.

Once the last player has eir crew, the first player can choose to roll eir crew one more time.

The player with the largest crew wins.

4.7 Shogi

Board: 9 squares by 9 squares.

Cards: None.

Dice: None.

Tokens:

Jeweled General can move one space in any direction just like the king in western chess.

Gold General can move one space any direction except diagonally rearward.

Silver General can move one space diagonally or forward.

When promoted it becomes a Gold General.

Honorable Horse can move one space forward followed by one space diagonally forward. Like a knight in western chess with limitations.

When promoted it becomes a gold General.

Lance can move one or more spaces forward.

When promoted it becomes a Gold General.

Angle Goer can move one or more squares diagonally. Like the bishop in western chess.

When promoted it becomes a Dragon Horse which adds the moves of a Jeweled General.

Flying Chariot can move one or more spaces along a straight line. Like the rook in western chess.

When promoted it becomes a Dragon King which adds the moves of a Jeweled General.

Soldier can move one space forward. Like a pawn in western chess without the special capture.

When promoted it becomes a Gold General.

Setup:

L	H	S	G	J	G	S	H	L
	A						F	
s	s	s	s	s	s	s	s	s
s	s	s	s	s	s	s	s	s
	F						A	
L	H	S	G	J	G	S	H	L

Object: Capture the opposing general without having yours captured.

Beginning: Randomly determine who goes first.

Turn: Move one piece.

If the piece you move could not move again, you must promote it as you move.

If you are moving into or out of the last three ranks, you may promote the piece as part of its move.

Instead of moving you may drop a previously captured piece onto any square that is: empty; able to make a legal move; does not checkmate with a pawn; in the same file as another unpromoted pawn.

Winning: If you checkmate the Jeweled General, you win.

If the same position (including who has captured pieces) occurs 4 times, it is a draw.

If both players get their king (or cannot be prevented from moving) to the promotion zone, and both agree, then count pieces. Flying chariot and Angle goer count as 5 points, everything else counts as 1 point. If they both have 24 points, it is a draw or the person with more loses.