# Sorting

Card sorting implements a simple [selection sort](http://en.wikipedia.org/wiki/Selection_sort). Sorting should be done every time a card is drawn.

**public** **void** sortHand()

{

**for** (**int** iIter = 0; iIter < *HAND\_SIZE*; iIter++)

{

**int** iMinIndex = iIter;

**for** (**int** iIter2 = iIter + 1; iIter2 < *HAND\_SIZE*; iIter2++)

{

**if** (m\_Cards.get(iIter2).getCardValue().getValue() < m\_Cards.get(iMinIndex).getCardValue().getValue())

{

iMinIndex = iIter2;

}

}

**if** (m\_Cards.get(iIter).getCardValue() != m\_Cards.get(iMinIndex).getCardValue())

{

swapCards(iIter, iMinIndex);

}

}

}

**private** **void** swapCards(**int** iFirstIndex, **int** iMinIndex)

{

Card tempCard = **new** Card(0,0);

tempCard.setValue(m\_Cards.get(iFirstIndex).getCardValue());

m\_Cards.get(iFirstIndex).setValue(m\_Cards.get(iMinIndex).getCardValue());

m\_Cards.get(iMinIndex).setValue(tempCard.getCardValue());

}

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Simpler look at a selection sort

public void selectionSort()  
{

for (int i = 0; i < 14; i++)

{

int iMinIndex = i;

for (int j = i + 1; j < 14; j++)

{

if (array[j] < array[iMinIndex])

iMinIndex = j;

}

if (array[i] != array[iMinIndex])

swap(i, iMinIndex);

}  
}

private void swap(int iFirstIndex, int iMinIndex)

{

temp = array[iFirstIndex];

array[iFirstIndex] = array[iMinIndex];

array[iMinIndex] = temp;

}

# Game States and Flow

-FLIPPING

Menu displays "heads" and "tails". The only valid input is selecting between the two options. When the selection is made, the table is set up and the turn is set to the appropriate player.

-COMPUTER'S TURN

Menu displays "continue". Nothing happens until the player clicks the button. Clicking the button causes the computer to process its turn. At the end the game is set to PLAYER'S TURN.

-PLAYER'S TURN

Menu displays "discard". Player's hand is active. Clicking on "discard" changes the state to DISCARDING. Clicking on a card plays that card. See the "playing a card" page for descriptions of the actions there.

-DISCARDING

Menu displays "cancel". Player's hand is discardable. Clicking on a card places that card in the discard pile and replaces it with a newly drawn card. This counts as the player's turn and so it becomes the COMPUTER'S TURN after the discard is completed. Clicking on "cancel" returns the player to the PLAYER'S TURN state so they can play a card normally.

-MENU

Menu displays options based on the card picked. Player's hand is disabled. When the player selects from the menu, the appropriate action takes place and then it becomes the COMPUTER'S TURN.

-GAME OVER

Stats are recorded and the game is over. Cards are disabled. The menu can display "Start Game" to start a new game.

# Playing a Card

-OFFENSE (red cards: Footmen, Archers, Knights...)

Using a red offense card sets the user's "gathering slot" (bottom left on the field for the player, top right on the field for the computer) to the card selected. If a card is already in the gathering slot, the user's discard slot is first set to the value the gathering slot had before the card was played.

-DEFENSE (blue cards: Peasants, Pikemen, Rangers...)

Using a blue defense card sets the user's "defending slot" (bottom right on the field for the player, top left on the field for the computer) to the card selected. If a card is already in the defending slot, the user's discard slot is first set to the value of the defending slot before the card was played.

-UNIT NUMBER (green cards: 100, 300, 500...)

A unit number may only be played if the user currently has an offensive card in their gathering slot. If the computer tries to play a green card without having offense gathering, an error should fire. If a player tries, an alert message should pop up to inform the user of the illegal play. When a unit number is legally played, battle is initiated. Battle takes place in two steps. First we have to find out if the attack is successful or not. The formula for battle is ((iOffense + iNumber) / 2) - iDefense + (rand.nextInt(10) - 5) > 0. If the result is false, the attack is blocked. If the result is true, the attack succeeds and damage is done. An undefended attack always succeeds. After the defender's population is updated as necessary, the cards involved are removed from the field and put in the discard pile. The unit number is also placed on the attacker's discard pile on top of the offensive unit (effectively covering that card which makes it so "discarding the offensive card" is technically an unnecessary step).

-SPECIAL CARDS

(Random effect)

There are three random effect special cards, Divine Intervention, Bones of Fate, and Time Twist. When any of these three cards is played, the card's effect takes place and the card is placed in the discard pile.

(Special unit)

There are three special unit cards, Clerics, Spies, and Summoners. When any of these cards is played, a menu is displayed to provide options to the user. When the selection is made, the effect takes place and the card is put in the discard pile.