

Sorcery Demo

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Introduction

Sorcery is a Hearthstone-like game in which players take turns to play cards and inflict damage on the opponent. When one of the players has life less than zero, the game finishes. In this demo we're going to illustrate how our implementation of Sorcery works by playing a game through Terminal.

Getting Started

Overview of directories:

`/codeForStudents`

- includes code for students, given by CS246

`/data:`

- includes player data

`/decks:`

- includes decks that can be loaded into the game

`/docs:`

- includes documentation, including `demo.pdf`, `uml-final.pdf`, and `design.pdf`

`/src`

- includes all source code

`/tests`

- includes all tests

To start the program, `cd` into `/src` and `make`. The executable `sorcery` should be produced. Run this to start the game.

Command-line Options

-testing: This enables testing mode, which enables commands `draw` and `discard i`. Decks are no longer shuffled before the game, and every time the player tries to play a card but does not have enough magic for it, the player's magic is set to 0 and the card is played. The same goes for abilities.

-init [init-file]: This specifies that the game will be initialized using [init-file], i.e. lines in init-file will be read as input before the user is prompted for standard input.

- deck1 [deck1-file]**: This specifies that player1's deck will be loaded from [deck1-file]
- deck2 [deck2-file]**: Same as above.

Game Start

Once the game is run (with or without arguments), the player is prompted for their names:

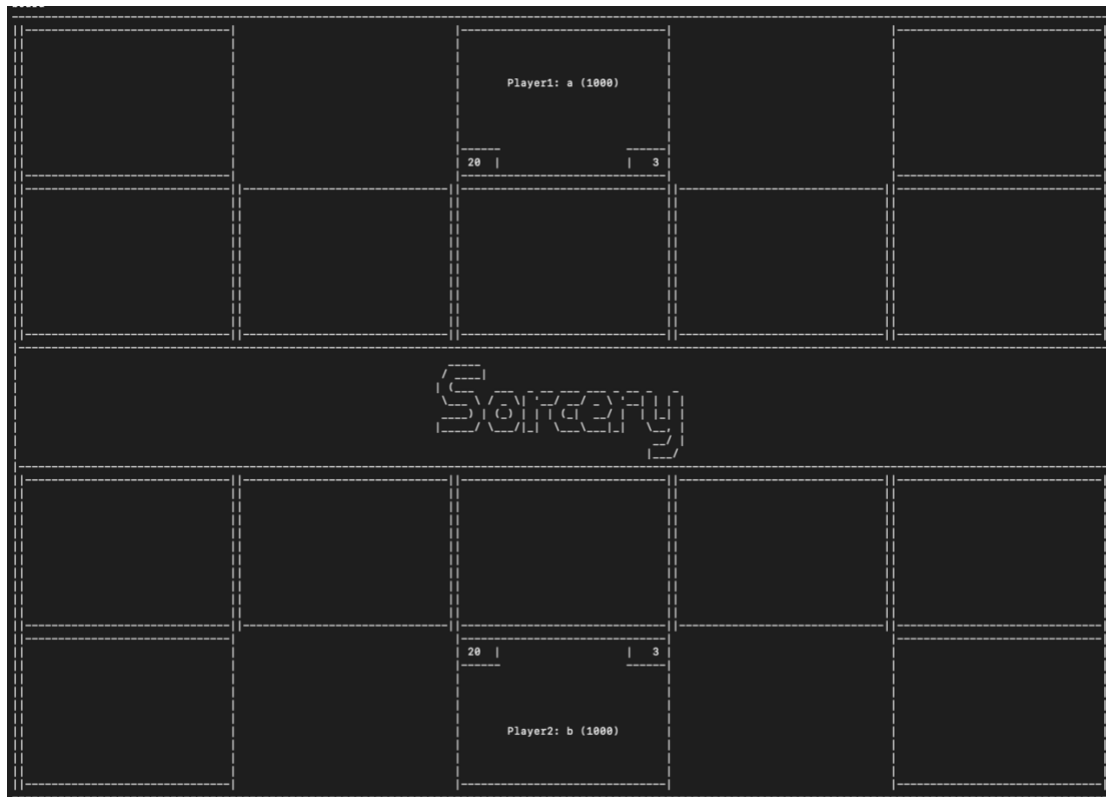
```
Enter Player1's name:
Adam
Enter Player2's name:
Brandon
Flipping a coin...
Adam goes first.
```

In this case, both player1 and player2 must give distinct names no longer than 10 characters (or else the player will be prompted again for the name).

Immediately after, a coin is flipped, and the starting player is determined. Now, the game begins.

Playing the Game

When you first arrive in the game, the board appears.



As you can see, the board contains the two players, slots for their minions and their rituals, and their graveyard. This is exactly the same as what was requested in Sorcery.pdf.

Side note on elo: The number to the right of the player is the elo of the player, a value that is read in from the /data folder if the player already has a elo record and defaulted to 1000 otherwise. At the end of the game, based on who wins or loses, the game calculates the new elos and writes them to files in /data.

We can now run the program with the following commands, just as specified in Sorcery.pdf.

help – prints the description of each command
end – ends current turn and starts the new turn for the other player (checks for start, end turn triggered abilities, increases magic, restores action all as required)
quit – quits the game immediately, without computing for a winner
draw – [only available in testing] draws a card
discard i – [only available in testing] discard card i
attack i – attacks enemy hero with ith minion
attack i j – attacks enemy jth minion with ith minion
play i – play ith card in hand
play i p t – play ith card in hand with target player p and target minion/ritual t (if minion, t must be an integer from 1 to 5; if ritual t must be the character r)

use i – use activated ability of ith minion

use i p t – use activated ability of ith minion with target player p and target minion/ritual t (if minion, t must be an integer from 1 to 5; if ritual t must be the character r)

inspect i – display ith minion on board and all of its enchantments

hand – display current player hand

board – display the entire board

Whenever we try to do an action that is impossible to carry out (e.g. play a spell that requires no target, attack a minion that does not exist, draw a card when hand is full), the game prints the corresponding reason (by throwing an exception) that explains why the action cannot be carried out, and the action is not played. We believe that our program has a **strong guarantee**.

All cards in Sorcery.pdf are implemented, as well as the additional features:

A Change of Luck 1	Contempt of the Weak 1	Nullify 2	Grand Summoner 5
Spell	Ritual	Spell	Minion
Shuffle you and your opponent's decks	1 At the end of each turn, move all minions with attack 1 or less to the graveyard	Destroy your enemy's ritual	1 Summon a 2/2 fire elemental
	3		2 5

Game Over

When the game finishes, the winner and elo are re-calculated and the elo is saved. The new elos are printed to the board.

Sample Game

Before the start of the game, players need to enter their names, and after both players enter their name the player who goes first will be automatically determined:

```
Enter Player1's name:
Adam
Enter Player2's name:
Brandon
Flipping a coin...
Brandon goes first.
```

Now the game has started, let's take a look at the board by using command "board":



Both players have now inspected the board. Player Adam now wants to check all his cards at his hand by typing the command “hand”:

Recharge	1	Silence	1	Standstill	3	Earth Elemental	3	Unsummon	1
Spell		Enchantment		Ritual		Minion		Spell	
Your ritual gains 3 charges		Enchanted minion cannot use abilities		2 Whenever a minion enters play, destroy it				Return target minion to its owner's hand	
				4		4		4	

Note that there’re different types of cards in the game of Sorcery. Here Adam has two “spells”, one “enchantment”, one “ritual” and one “minion”. Adam wishes to summon the minion “Earth Elemental”, which is his fourth card from left to right. So he types the command “play 4”. Now let’s take a look at the board:

		Player1: Adam (1000)		
		20 3		
SOLGEY				
Earth Elemental 3				
Minion				
4 4				
		20 0		
		Player2: Brandon (1000)		

Notice that the upper right number of each card represents the activation cost of that card. Each player has certain amounts of activation cost at the start of each turn. When a player plays a card, the amount of activation cost of the card is deducted from the activation cost of the player. When a player reaches activation cost of 0 or all his remaining cards in his hands have higher activation cost than his own activation cost, this means that he can't play any card. So now notice that Brandon has a activation cost of 0, he chooses to end his turn by the command "end".

Now it's Adam's turn. Adam checks his hand by command "hand":

Standstill 3	Banish 2	Fire Elemental 2	Giant Strength 1	Potion Seller 2
Ritual	Spell	Minion	Enchantment	Minion
2 Whenever a minion enters play, destroy it	Destroy target minion or ritual	Whenever an opponent's minion enters play, deal 1 damage to it		At the end of your turn, all your minions gain +0/+1
4		2 2	+2 +2	1 3

Adam decides to summon "Fire Elemental". He wants "Fire Elemental" to hit Brandon by the command "attack 1". In addition. He wants to play the enchantment "Giant Strength" on his "Fire Elemental". Enchantment is a type of card that modified the stat or the ability of an allied minion or enemy minion. The enchantment Giant Strength grants the minion two bonus attack points and defense points. The number at the left bottom of the minion represents its attack

and the number at the right bottom of the minion represents its defense. When a minion attacks another minion, both minions' defense points are deducted by each others' attack points. When a minion attacks the player, the player deducts life equals to the minion's attack. So Brandon types the command "play 3 1 1". He then end his turn by command "end" (Notice now Giant Strength is the third card from left to right):



It's Brandon's turn again. In this turn Brandon decides to use his ritual "Dark Ritual". Notice that ritual is a type of card that works like minion, but instead of minions who attack the opponent's minion and opponent player, ritual grants his owner some special abilities. For example, "Dark Ritual" gives his owner one magic at the start of his turn. Brandon wants more magic to play his cards so he uses his Dark Ritual. Meanwhile he wants his "Earth Elemental" to attack Brandon with the command "attack 1":

		Player1: Adam (1000)		
		16 1		
Fire Elemental 2				
Minion				
Whenever an opponent's minion enters play, deal 1 damage to it				
4 4				
SOLFGY				
Earth Elemental 3				
Minion				
4 4				
Dark Ritual 0		18 1		
Ritual				
1 At the start of your turn, gain 1 magic		Player2: Brandon (1000)		
5				

Notice the number of the left bottom square of Adam. It represents his health. Once one player reaches 0 or negative health, the player losses and the other player wins the game. Seems as Brandon is in lead. Brandon has nothing to do so he has to end.

Now back to Adam. Adam checks his hand and also plays the ritual “Dark Ritual”. After all these plays the board looks like:

		Player2: Brandon (1000)		Dark Ritual 0
				Ritual
				1 At the start of your turn, gain 1 magic
		18 1		5
Earth Elemental 3				
Minion				
4 4				
Sorcery				
Fire Elemental 2				
Minion				
Whenever an opponent's minion enters play, deal 1 damage to it				
4 4				
Dark Ritual 0		16 2		
Ritual				
1 At the start of your turn, gain 1 magic		Player1: Adam (1000)		
5				

Now it's Brandon's turn. Brandon feels that Adam's Fire Elemental is a huge threat to him, so he plays the ritual unsommon on Adam's Fire Elemental. But he didn't pay attention and accidentally typed "Play 4 2 1", which resulting in his own Earth Elemental:

		Player1: Adam (1000)		Dark Ritual 0
		16 2		Ritual
Fire Elemental 2				1 At the start of your turn, gain 1 magic
Minion				5
Whenever an opponent's minion enters play, deal 1 damage to it				
4 4				
Sorcery				
Dark Ritual 0		18 2		
Ritual				
1 At the start of your turn, gain 1 magic		Player2: Brandon (1000)		
4				

Back to Adam's turn. Adam decides to play his ritual "Standstill" such that whenever Brandon's minion enters a play, it is automatically destroyed (too OP!).

After Adam ends, Brandon checks his hand:

Recharge 1	Silence 1	Standstill 3	Enrage 2	Novice Pyromancer 1
Spell	Enchantment	Ritual	Enchantment	Minion
Your ritual gains 3 charges	Enchanted minion cannot use abilities	2 Whenever a minion enters play, destroy it		1 Deal 1 damage to target minion
		4	*2 -2	0 1

He wants to summon his novice pyromancer forgets that Adam has the standstill ritual. He types play 5, and let's take a look at the board again:

		Player1: Adam (1000)		Standstill 3 Ritual 2 Whenever a minion enters play, destroy it
		16 1		2
Fire Elemental 2 Minion Whenever an opponent's minion enters play, deal 1 damage to it				
4 4				
SOLFEY				
Dark Ritual 0 Ritual 1 At the start of your turn, gain 1 magic		18 3 Player2: Brandon (1000)		Novice Pyromancer 1 Minion 1 Deal 1 damage to target minion
3				0 1

The bottom right corner of the board is Brandon's graveyard. The dead minion are all removed to graveyard. So here Adam's graveyard (the right top corner of the board) is empty while Brandon's novice pyromancer stays in the graveyard.

Back to Adam's turn. Adam uses Enchantment "Giant Strength" on his Fire Elemental. When its Brandon's turn he checks his hand:

Banish 2 Spell Destroy target minion or ritual	Blizzard 3 Spell Deal 2 damage to all minions	Delay 1 Enchantment Enchanted minion does not gain an action on their next turn. This enchantment is automatically destroyed after 1 turn	Earth Elemental 3 Minion	Aura of Power 1 Ritual 1 Whenever a minion enters play under your control, it gains +1/+1
			4 4	4

He wants to use his spell "Blizzard". Spells is powerful ability that can be used only once. For example, Blizzard can deals 2 damage to all minions.

However, Blizzard doesn't take down Fire Elemental.

...

...

...

After several more rounds, due to better playing strategy and calculation, Adam wins over Brandon. Here's the display:

```
Game over! Adam wins!  
Adam's new elo: 1025  
Brandon's new elo: 977
```

As Adam wins, his elo increases from 1000 to 1025. Meanwhile Brandon loses so his elo decreases from 1000 to 977.