

CS246 Final Project Demo: Sorcery

December 16th, 2020

Melody Yuan, Tianhui Yang, Ivan Chen

This demo will introduce the implemented features for our Sorcery program, along with the available cards for each player to choose from in their deck. Furthermore, demos of interesting card sequences are included to illustrate the execution of this game.

Basic Features

The following commands have been implemented in the program and are fully functional/can be tested:

- `[help]` displays a message describing the available commands and their usage in the program
- `[end]` ends current player's turn -- can occur anytime throughout the game
 - This will prompt the next player to enter their moves
- `[quit]` terminates the game promptly with none of the players as a winner
- `[attack i]` orders minion `i` to attack the opposing player
 - `i = 1` is the leftmost minion; `i = 5` is the rightmost minion
- `[attack i j]` orders the active player's minion `i` to attack the inactive player's minion `j`
 - format for `i` and `j` use numbers as stated above
- `[play i]` plays the `i`th card in the active player's hand with no target
 - `i` can be in the range of `[1, 5]`
 - the card can be a minion, ritual, or spell with no targets
- `[play i p t]` plays the `i`th card in the active player's hand on card `t` owned by player `p`
 - `p = 1` for player 1 or `p = 2` for player 2
 - `t` can be in the range of `[1, 5]` if there are 5 targets where all 5 are valid
 - can be used to play enchantments and spells with targets
- `[use i]` plays the `i`th minion owned by current player
 - Orders that minion to use its activated ability on the provided target (or no target)
 - Spends one action point and decreases the player's magic by the ability's activation cost
 - `[use i p t]` functions similarly to `[play i p t]`
- `[inspect]` inspects the `i`th minion owned by the active player
- `[hand]` displays the active player's hand
- `[board]` displays the current board

Commands that are only available in `-testing` mode

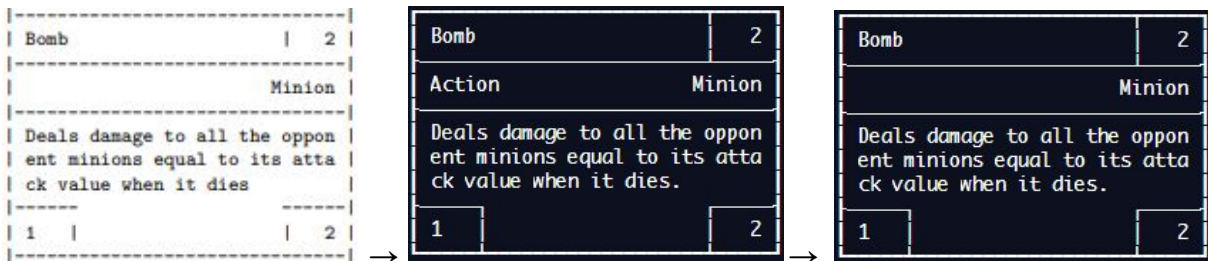
- `[draw]` draws a card — can only be used when the player's hand has less than 5 card
- `[discard i]` discards the `i`th card in the player's hand, removing it from the hand and destroying it

Commands-Line Arguments

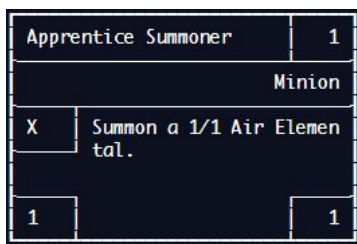
- [-deck1 *filename*] arguments in *filename* will specify player 1's deck
- [-deck2 *filename*] works similarly to -deck1 but for player 2
- [-init *filename*] arguments in *filename* will initialize the game
- [-testing] enables testing mode and changes the game in the following ways
 - If a player attempts to play a spell or activate an ability and does not have enough magic to do so, their magic is set to 0 and they play the spell or activate the ability as if they had enough magic
 - Players can use [discard *i*] command to discard the *i*th card in their hand
 - Players can use the [draw] command to draw a card
 - Decks are no longer randomized at the beginning of the game

Additional Features (Enhancements)

1. The entire project is implemented without memory leaks nor explicit memory management. All memory management is completed using STL containers and smart pointers; no `delete` statements are present in the program.
2. If a minion has an action, it is displayed on the board. Below, there is an image of the expected Card on the left, vs the enhanced card on the right:
 - a. After an Action is used, the "Action" label on the card will disappear
 - b. If the card does not have an Action to begin with, the Action location will remain empty



3. If a card's ability is silenced the ability cost will become an X, as shown below



Sorcery Cards

Spells

- Banish
- Unsummon
- Recharge *
- Disenchant
- Raise Dead *
- Blizzard

* can't be played if the ritual slot or graveyard respectively are empty

Minions

- Air Elemental
- Earth Elemental
- Bomb
- Fire Elemental **
- Potion Seller
- Novice Pyromancer **
- Apprentice Summoner *
- Master Summoner * → may be used if there is room for at least one more minion but not all three

* can not be used if their owner already has 5 minions on the board

** do not take damage from minions they damage with their abilities

Enchantments

- Giant Strength
- Enrage
- Delay ** → automatically destroyed after its effect is applied
- Magic Fatigue *
- Silence *

* can be played on minions with no activated ability → do nothing but remain on the minion as an enchantment

** applies its effect at the start of the next turn for the enchanted minion → affected minion will not receive an action point next turn

Rituals

- Dark Ritual
- Aura of Power
- Standstill → impacts personal minions

Setting up the Game

Run the program such that it compiles and the MakeFile produces an executable `./sorcery`

Complete the following steps to set up the Sorcery game:

1. Type `./sorcery -deck1 default.deck -deck2 default.deck -testing]`
2. Enter a name for Player 1 when prompted
3. Enter a name for Player 2 when prompted
4. Now it is Player 1's turn to play a move. Enter `[help]` to view available commands

```
help
Commands: help -- Display this message.
          end -- End the current player's turn.
          quit -- End the game.
          attack minion other-minion -- Orders minion to attack other-minion.
          attack minion -- Orders minion to attack the opponent.
          play card [target-player target-card] -- Play card, optionally targeting target-card owned by target-player.
          use minion [target-player target-card] -- Use minion's special ability, optionally targeting target-card owned by target
          inspect minion -- View a minion's card and all enchantments on that minion.
          hand -- Describe all cards in your hand.
          board -- Describe all cards on the board.
```

5. To view cards, enter `[hand]`. This yields the following display:

Air Elemental	0	Earth Elemental	3	Fire Elemental	2	Bomb	2	Potion Seller	2
Minion		Minion		Minion		Minion		Minion	
				Whenever an opponent's minion enters play, deal 1 damage to it.		Deals damage to all the opponent minions equal to its attack value when it dies.		At the end of your turn, all your minions gain +0/+1.	
1	1	4	4	2	2	1	2	1	3

Note: since this is in testing mode, the cards will not be randomized

6. Enter `[play 2]` to play Earth Elemental where 2 indicates the second leftmost card
7. Enter `[hand]` to view the updated display of available cards yielding:

Air Elemental	0	Fire Elemental	2	Bomb	2	Potion Seller	2
Minion		Minion		Minion		Minion	
		Whenever an opponent's minion enters play, deal 1 damage to it.		Deals damage to all the opponent minions equal to its attack value when it dies.		At the end of your turn, all your minions gain +0/+1.	
1	1	2	2	1	2	1	3

8. Enter `[play 4]` to play Potion Seller
9. Enter `[board]` to ensure the cards have been displayed on the board for Player 1. This yields the following display:

		Player1			
		20		0	
Earth Elemental	3	Potion Seller	2		
Minion		Minion			
		At the end of your turn, all your minions gain +0/+1.			
4	4	1	3		
SORCERY					

Note: the display for Player 2 has been cropped out as there are no cards from Player 2 on the board

- Enter `[end]` to end Player 1's turn
- It is now Player 2's turn. Enter `[hand]` to view the available cards for Player 2. This yields the following display:

Air Elemental	0	Earth Elemental	3	Fire Elemental	2	Bomb	2	Potion Seller	2
Minion		Minion		Minion		Minion		Minion	
				Whenever an opponent's minion enters play, deal 1 damage to it.		Deals damage to all the opponent minions equal to its attack value when it dies.		At the end of your turn, all your minions gain +0/+1.	
1	1	4	4	2	2	1	2	1	3

- Proceed to play as normally for the rest of the game.
- Entering `[quit]` will end the game with no winner

Bomb-Chain Demo

This demo will showcase the chaining effect of one card to another. The card in the spotlight for this demo is Bomb; how one Bomb can trigger other Bombs around it.

- Set up game as usually, but use `bomb.deck` for each player
`./sorcery -deck1 bomb.deck -deck2 bomb.deck -testing]`
- Enter player names when prompted
- When Player 1 is prompted to go, enter `[hand]` to display all cards which yields

Bomb	2	Bomb	2	Bomb	2	Bomb	2	Earth Elemental	3
Minion		Minion		Minion		Minion		Minion	
Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.			
1	2	1	2	1	2	1	2	4	4

- Keep entering `[play 1]` until all cards on the hand are on the board
- Enter `[end]` to prompt Player 2 to go
- Player 2 will keep entering `[play 1]` until all card on the hand are on the board
- Enter `[end]` to prompt Player 1 to go again. Enter `[board]` to see the state of the board

Bomb	2	Bomb	2	Bomb	2	Bomb	2	Earth Elemental	3
Minion		Minion		Minion		Minion		Minion	
Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.			
1	2	1	2	1	2	1	2	4	4
SORCERY									
Bomb	2	Bomb	2	Bomb	2	Bomb	2	Earth Elemental	3
Minion		Minion		Minion		Minion		Minion	
Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.		Deals damage to all the opponent minions equal to its attack value when it dies.			
1	2	1	2	1	2	1	2	4	4

- Enter `[attack 1 1]` to prompt Player 1's Bomb to attack Player 2's Bomb. Enter `[attack 2 1]` afterwards. This will set off Player 2's Bomb due to the 0 health on its bomb at position 1, along with Player 1's Bomb, which sets off the rest of the Bombs.
- To view the state of board, enter `[Board]`. This yields:

		p1		Earth Elemental	3
		20	1	Action	Minion
				4	0
SORCERY					
		20	0	Earth Elemental	3
		p2		Action	Minion
				4	0

Notice that the board is empty now, as desired, except for the Earth Elemental cards for each Player. The damage from the bombs have now been dealt to the Earth Elemental cards by decreasing their health by 4.

10. Enter `[quit]` to exit demo.

Fire Elemental / Summoner Demo

This demo will showcase the APNAP order in terms of the Fire Elemental, Master Summoner and Apprentice Summoner minions.

1. Set up game as usually, but use `summoner.deck` for each player
`[./sorcery -deck1 summoner.deck -deck2 summoner.deck -testing]`
2. For Player 1, `[hand]` yields

Master Summoner	3	Apprentice Summoner	1	Fire Elemental	2	Aura of Power	1	Sanish	2
Minion		Minion		Minion		Ritual		Spell	
2	Summon up to three 1/1 Air Elementals	1	Summon a 1/1 Air Elemental.	Whenever an opponent's minion enters play, deal 1 damage to it.	1	Whenever a minion enters play under your control, it gains +1/+1.		Destroy target minion or ritual.	
2	3	1	1	2	2	4			

3. Enter `[play 1]` to play Master Summoner
4. Enter `[play 1]` to play Apprentice Summoner
5. Enter `[end]`
6. For Player 2, Enter `[play 3]` to play Fire Elemental
7. Enter `[end]`
8. At Player 1 again, enter `[board]` which yields

Master Summoner	3	Apprentice Summoner	1						
Minion		Minion							
2	Summon up to three 1/1 Air Elementals	1	Summon a 1/1 Air Elemental.						
2	3	1	1						
SORCERY									
Fire Elemental	2								
Minion									
Whenever an opponent's minion enters play, deal 1 damage to it.									
2	2								

9. Enter [use 1] to use Master Summoner. This causes the 1/1 air elementals summoned to instantly be killed by fire elemental and sent to the graveyard. This is shown on the board when [board] is called

			p1		Air Elemental	0
			20	0	Minion	
					1	0
Master Summoner	3	Apprentice Summoner	1			
Minion		Action	Minion			
2	Summon up to three 1/1 Air Elementals	1	Summon a 1/1 Air Elemental.			
2		1				
SORCERY						
Fire Elemental	2					
Minion						
Whenever an opponent's minion enters play, deal 1 damage to it.						
2	2					
			20	2		
			p2			

10. Enter [play 2] to play Aura of Power such that the ritual is now on the board, the summoned air elementals will gain 1 health before getting hit with fire elemental so now they survive

Aura of Power	1		p1		Air Elemental	0
Ritual			20	0	Minion	
1	Whenever a minion enters play under your control, it gains +1/+1.					
4					1	0
Master Summoner	3	Apprentice Summoner	1			
Minion		Action	Minion			
2	Summon up to three 1/1 Air Elementals	1	Summon a 1/1 Air Elemental.			
2		1				
SORCERY						

11. Enter [use 2] to use the Apprentice Summoner so Air Elemental is now on the board as 2/1 instead of being sent to the graveyard, as Aura of Power affects the Minion first according to APNAP order.

Aura of Power	1		p1		Air Elemental	0
Ritual			20	0	Minion	
1	Whenever a minion enters play under your control, it gains +1/+1.					
3					1	0
Master Summoner	3	Apprentice Summoner	1	Air Elemental	0	
Minion		Minion		Minion		
2	Summon up to three 1/1 Air Elementals	1	Summon a 1/1 Air Elemental.			
2		1		2	1	