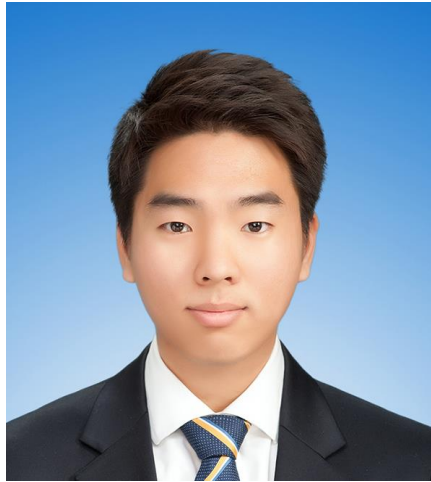


# Assignment 2 Presentation

# Group Tue 12i - Members

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John (Min Jae), Kim  
[MinJae.Kim@anu.edu.au](mailto:MinJae.Kim@anu.edu.au)

- Code structure design
- Back-end design



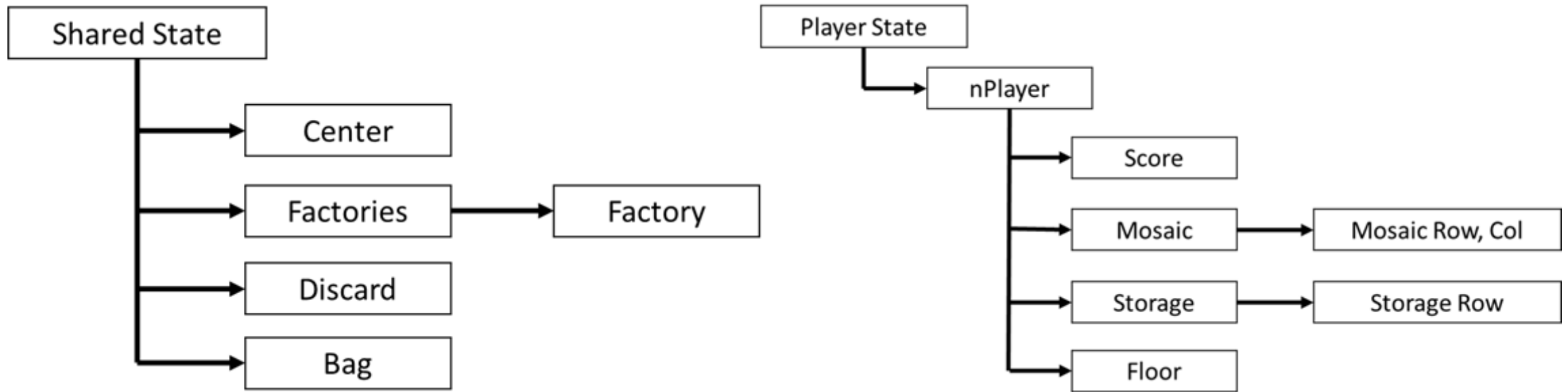
Si Bo, Hu  
[u7271125@anu.edu.au](mailto:u7271125@anu.edu.au)

- Code structure design
- Front-end design

# Table of Contents

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- Design Approach
- Starting Game
- Game Playing
- Further Improvements

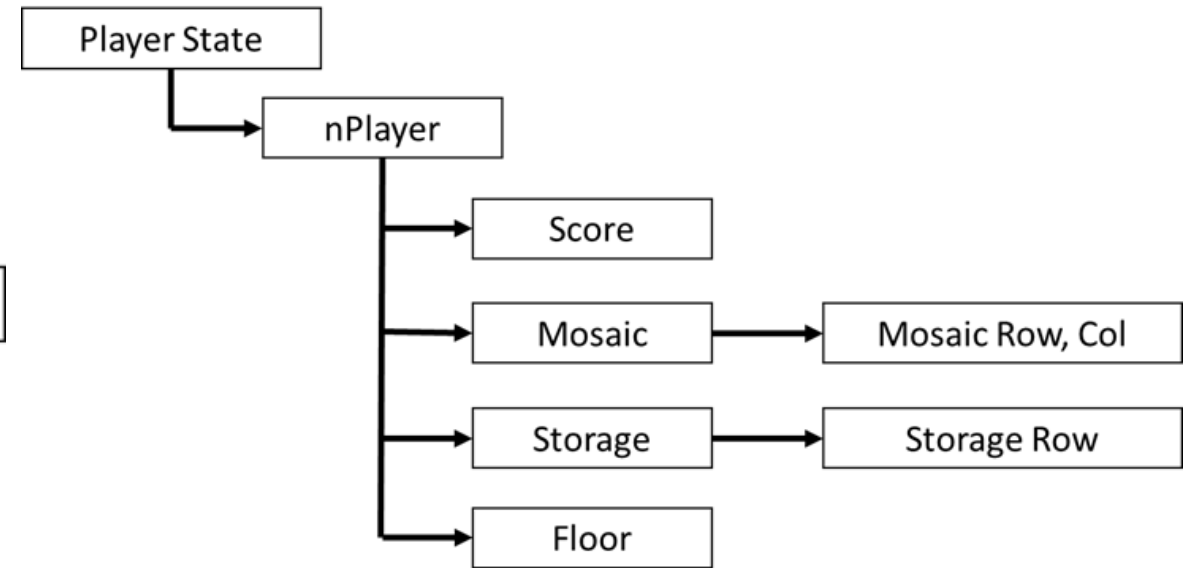
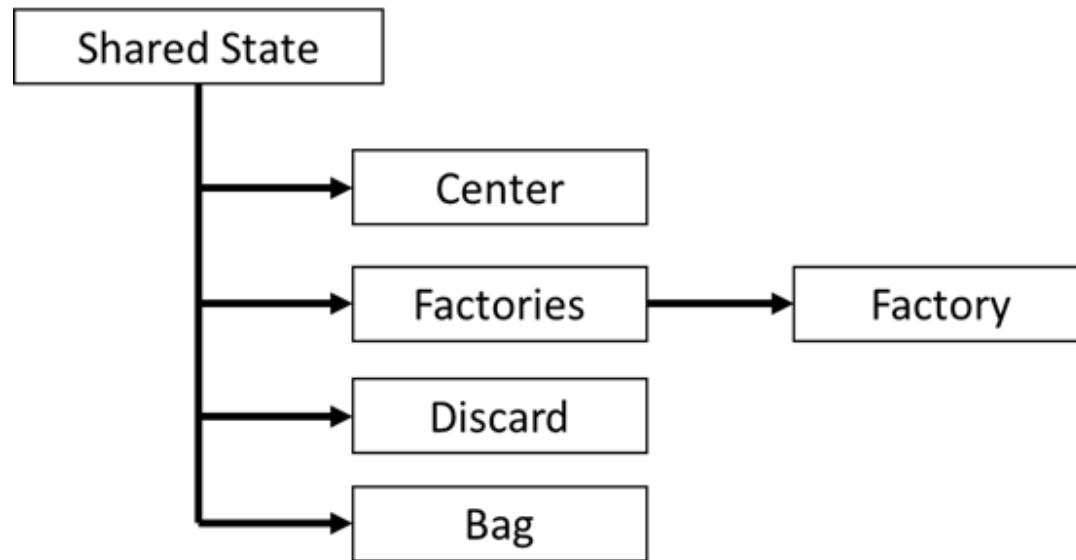


## Design Approach

# Design Approach

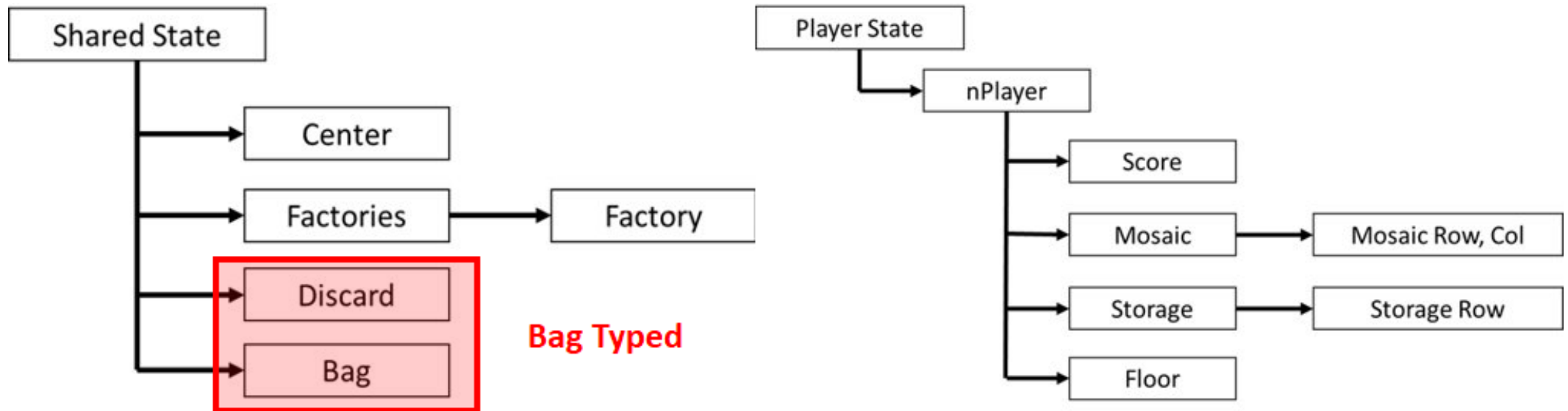
---

- Well defined structure and object
  - Shared State
  - Player State



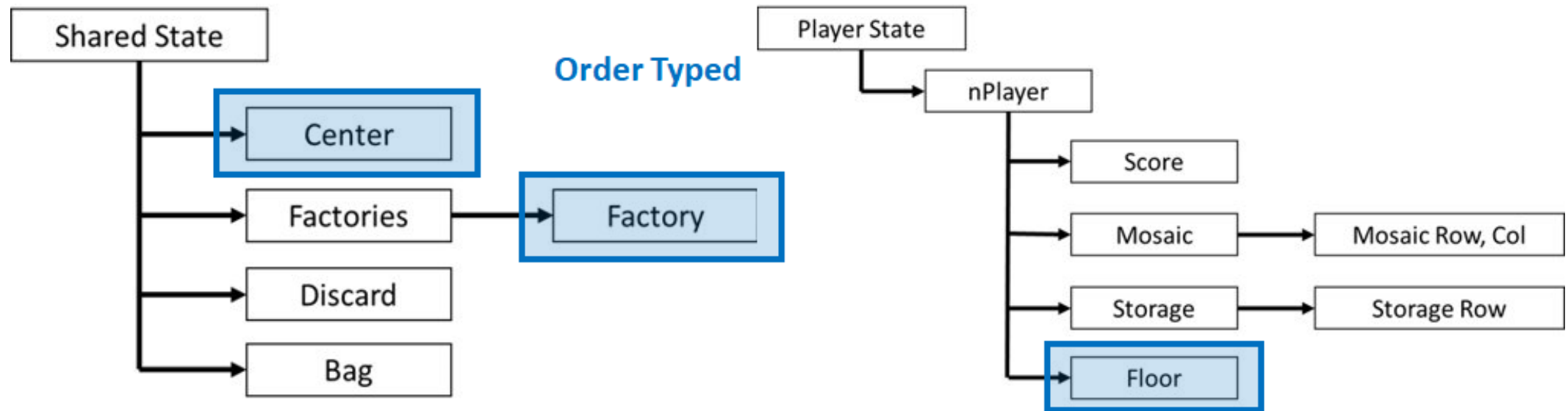
# Design Approach

- Well categorized object type
  - Bag typed : number of tiles
    - Tiles stored like "1215080914"



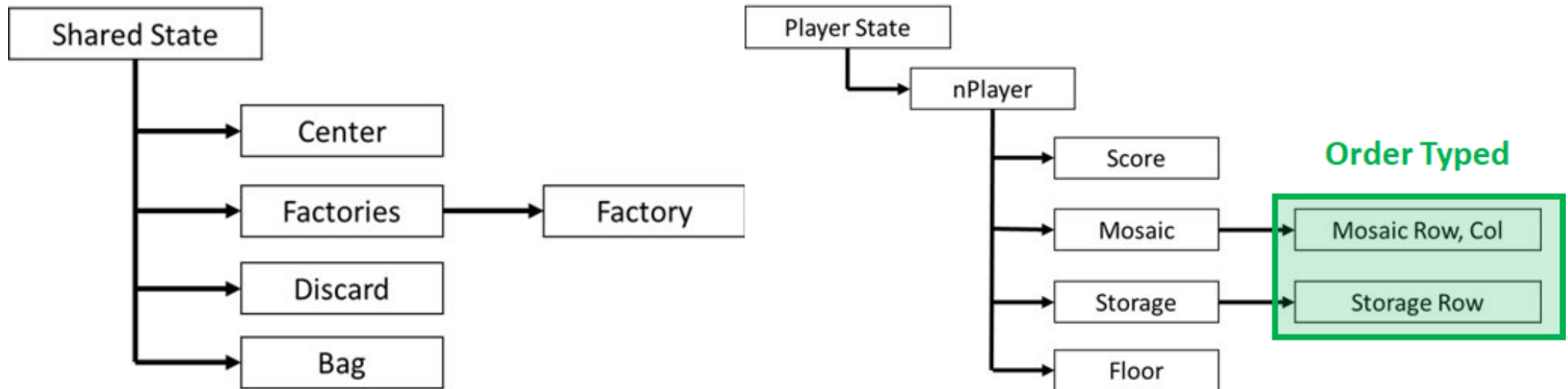
# Design Approach

- Well categorized object type
  - Order typed : color of tiles
    - Tiles stored like "aaabbbccdd"



# Design Approach

- Well categorized object type
  - Coordinate typed : position of tiles
    - Tiles stored with color and specific position

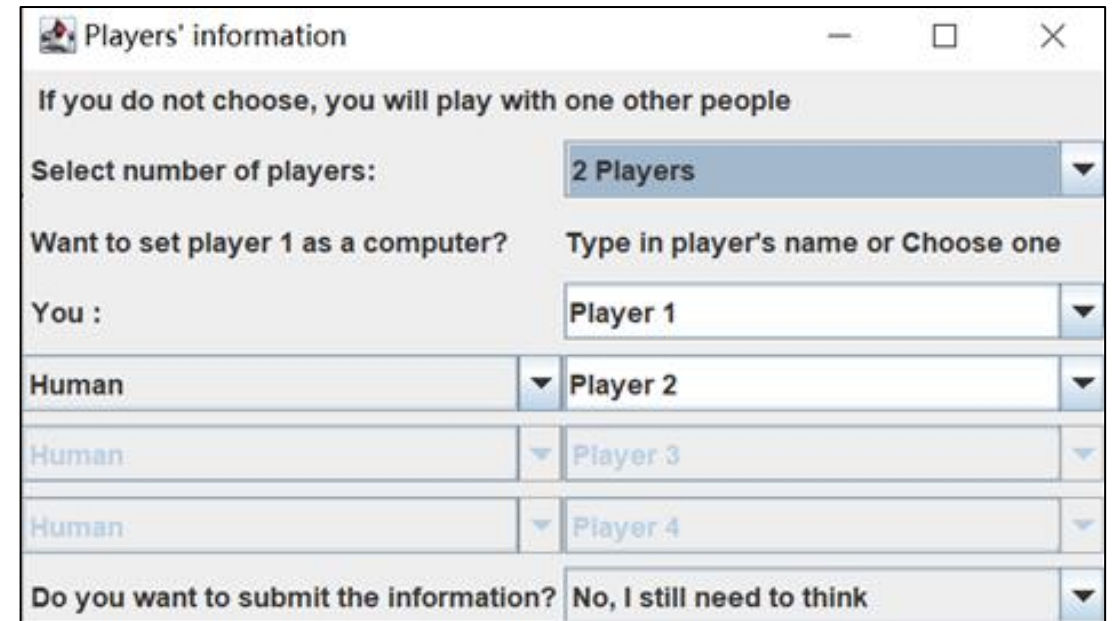






# Starting Game

- Game Start
  - Starting Page
  - Player Setting



# Starting Game

- Three main parts of Azul Viewer

- Player's Information
- Other Players' Board
- Current Player Board

Azul Viewer

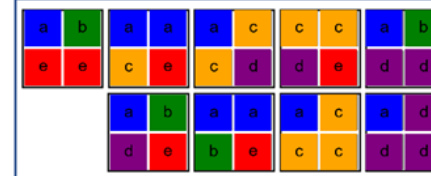
## PLAYERS' INFORMATION

PlayerNames :	Jhon	Leopold	Si Bo	John
PlayerTypes :	Human	Computer	Human	Computer
Scores :	0	0	0	0
Ranks :	1	1	1	1
Moves Log :				

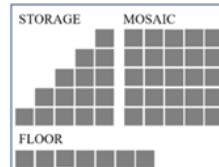
## Current Status

Current Player :  
Jhon  
  
Current Stage :  
Drafting Stage

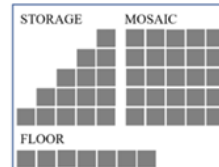
## FACTORIES



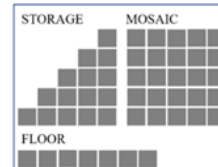
## Leopold's Board



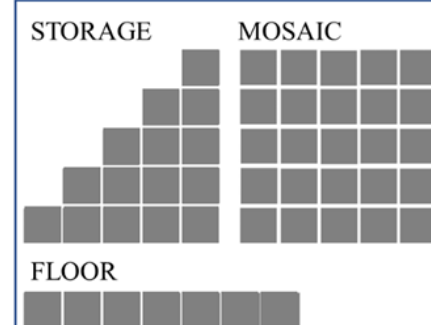
## Si Bo's Board



## John's Board



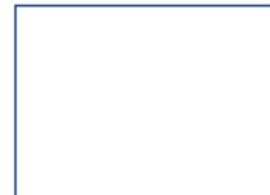
## CURRENT PLAYER BOARD



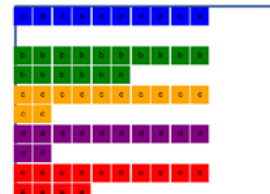
## INSTRUCTIONS OF CURENT STAGE

Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.  
Tiling Stage: You can move tiles from Storage to Mosaic.  
End Of Game: You can click End The Game button to go to end page.

C  
E  
N  
T  
E  
R  
  
D  
I  
S  
C  
A  
R  
D



B  
A  
G



End The Game

# Starting Game

- Player's Information

- Player Names
- Player Types
- Scores
- Ranks
- Move

- Current Status

- Current Player
- Current Stage
  - Drafting Stage
  - Tiling Stage
  - End of Game

Azul Viewer

**PLAYERS' INFORMATION**

PlayerNames :	Jhon	Leopold	Si Bo	John
PlayerTypes :	Human	Computer	Human	Computer
Scores :	0	0	0	0
Ranks :	1	1	1	1
Moves Log :				

**Current Status**  
Current Player : Jhon  
Current Stage : Drafting Stage

**Factories**

a	b	a	a	a	c	c	c	a	b
e	e	c	e	c	d	d	e	d	d
a	b	a	a	a	c	a	d		
d	e	b	e	c	c	d	d		

**Leopold's Board**

STORAGE					MOSAIC				
FLOOR									

**Si Bo's Board**

STORAGE					MOSAIC				
FLOOR									

**John's Board**

STORAGE					MOSAIC				
FLOOR									

**CURRENT PLAYER BOARD**

STORAGE					MOSAIC				
FLOOR									

**INSTRUCTIONS OF CURENT STAGE**  
Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.  
Tiling Stage: You can move tiles from Storage to Mosaic.  
End Of Game: You can click End The Game button to go to end page.

**CENTER DISCARD**

**BAG**

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h
i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i
j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j	j
k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k	k
l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l	l
m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
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s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t
u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u	u
v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y
z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z	z

End The Game

# Starting Game

- Other Players Board
  - Each players status
  - Not snappable
  - Only display
- Current Players Board
  - Snappable or draggable

Azul Viewer

**PLAYERS' INFORMATION**

PlayerNames :	Jhon	Leopold	Si Bo	John
PlayerTypes :	Human	Computer	Human	Computer
Scores :	0	0	0	0
Ranks :	1	1	1	1
Moves Log :				

**Current Status**

Current Player : Jhon  
Current Stage : Drafting Stage

**FACTORIES**

a	b	a	a	a	c	c	c	a	b
e	e	c	e	c	d	d	e	d	d
a	b	a	a	a	c	a	d		
d	e	b	e	c	c	d	d		

**C E N T E R**

**D I S C A R D**

**B A G**

**Leopold's Board**

**Si Bo's Board**

**John's Board**

**CURRENT PLAYER BOARD**

**INSTRUCTIONS OF CURENT STAGE**

Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.  
Tiling Stage: You can move tiles from Storage to Mosaic.  
End Of Game: You can click End The Game button to go to end page.

End The Game



# Game Playing – Player Setting

Select number of players

Players' information

If you do not choose, you will play with one other people

Select number of players:

Want to set player 1 as a computer?

You :

Human

Human

Human

Do you want to submit the information?

2 Players

2 Players

3 Players

4 Players

Player 2

Player 3

Player 4

No, I still need to think

3rd, 4th player setting enabled

Players' information

If you do not choose, you will play with one other people

Select number of players:

Want to set player 1 as a computer?

Type in player's name or Choose one

You :

Human

Human

Human

Human

Do you want to submit the information?

4 Players

Player 1

Player 2

Player 3

Player 4

No, I still need to think

# Game Playing – Player Setting

Select type of players

Players' information

If you do not choose, you will play with one other people

Select number of players: 4 Players

Want to set player 1 as a computer? Type in player's name or Choose one

You : Player 1

Human	Player 2
Human	Player 3
Computer	Player 4

Do you want to submit the information? No, I still need to think

Setting for each players

Players' information

If you do not choose, you will play with one other people

Select number of players: 4 Players

Want to set player 1 as a computer? Type in player's name or Choose one

You : Player 1

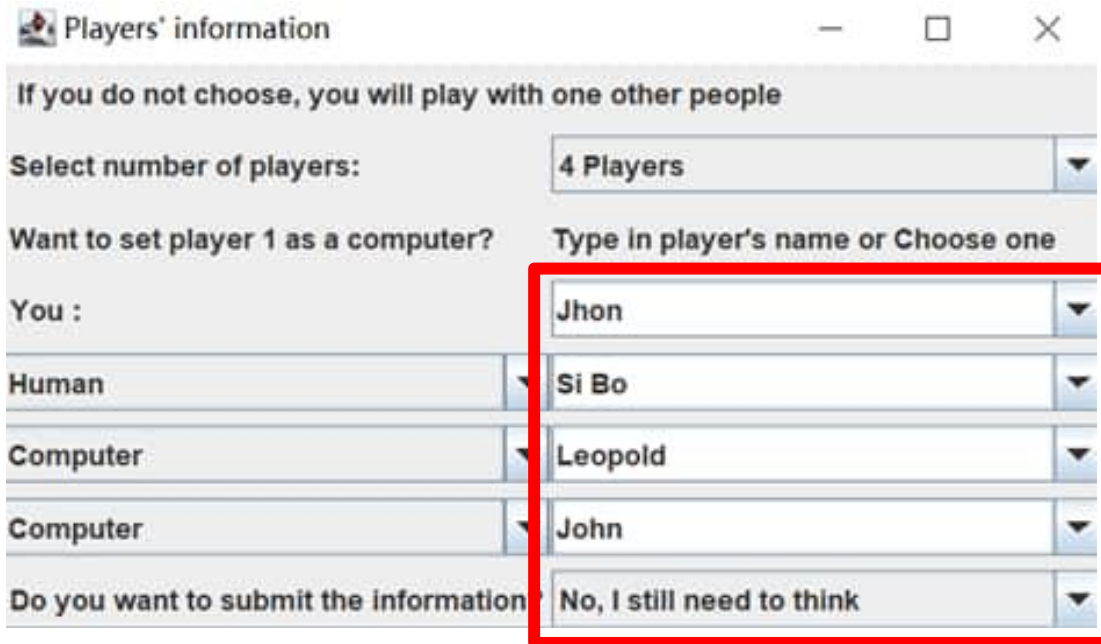
Human	Player 2
Computer	Player 3
Computer	Player 4

Do you want to submit the information? No, I still need to think



# Game Playing – Player Setting

Type in name of player



Players' information

If you do not choose, you will play with one other people

Select number of players: 4 Players

Want to set player 1 as a computer? Type in player's name or Choose one

You : Jhon

Human Si Bo

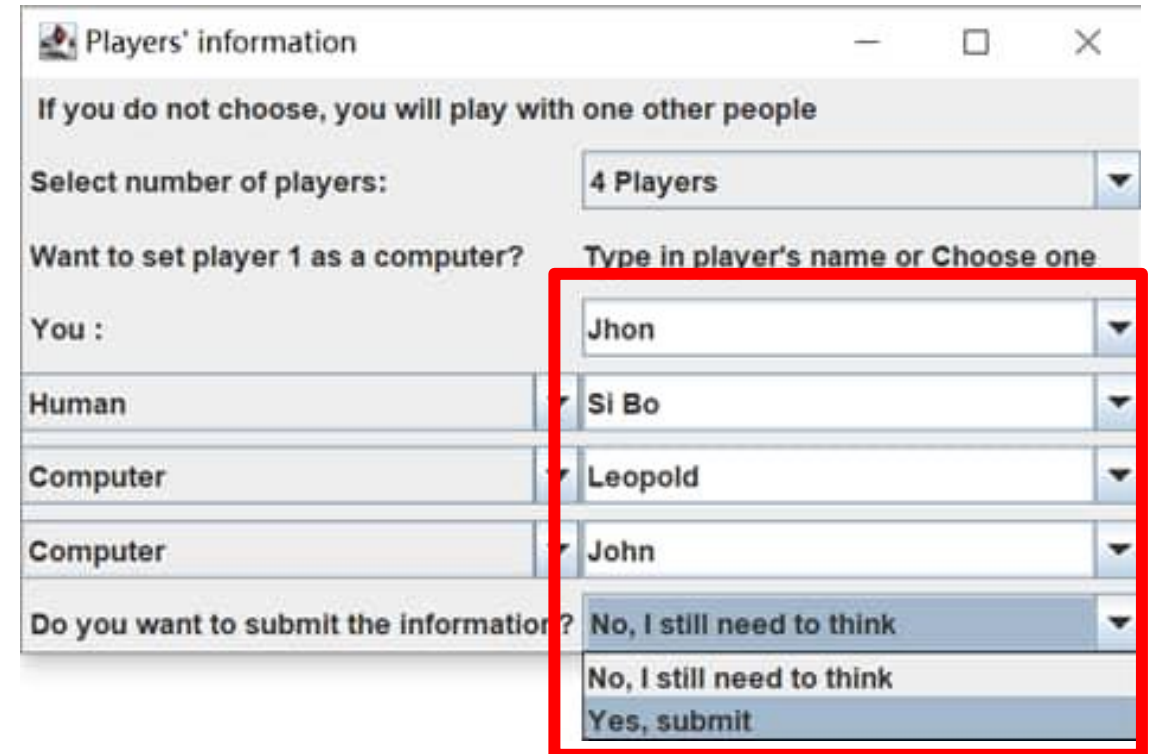
Computer Leopold

Computer John

Do you want to submit the information? No, I still need to think

This screenshot shows the 'Players' information dialog box. A red rectangle highlights the input fields for player names: 'You : Jhon', 'Human Si Bo', 'Computer Leopold', and 'Computer John'. The 'Do you want to submit the information?' dropdown is also highlighted, showing the option 'No, I still need to think'.

Finalize setting



Players' information

If you do not choose, you will play with one other people

Select number of players: 4 Players

Want to set player 1 as a computer? Type in player's name or Choose one

You : Jhon

Human Si Bo

Computer Leopold

Computer John

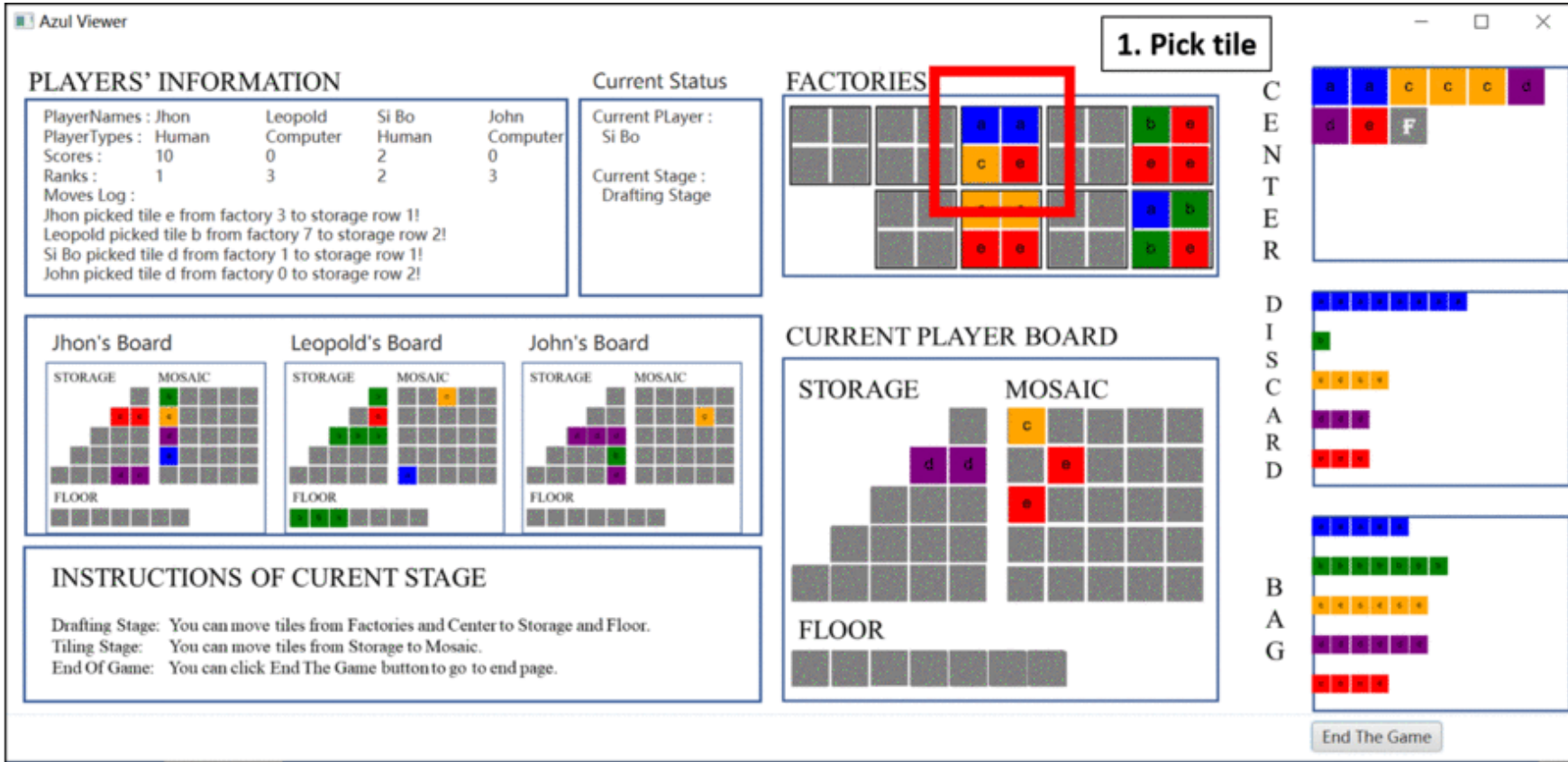
Do you want to submit the information? No, I still need to think

No, I still need to think

Yes, submit

This screenshot shows the same 'Players' information dialog box, but with the 'Do you want to submit the information?' dropdown menu open. A red rectangle highlights the dropdown menu, showing the options 'No, I still need to think' and 'Yes, submit'.

# Game Playing – Drafting Move Restore



# Game Playing – Invalid Drafting Move

Azul Viewer

**PLAYERS' INFORMATION**

PlayerNames :	Jhon	Leopold	Si Bo	John
PlayerTypes :	Human	Computer	Human	Computer
Scores :	10	0	2	0
Ranks :	1	3	2	3
Moves Log :				
Jhon picked tile e from factory 3 to storage row 1!				
Leopold picked tile b from factory 7 to storage row 2!				
Si Bo picked tile d from factory 1 to storage row 1!				
John picked tile d from factory 0 to storage row 2!				

**Current Status**

Current Player : Si Bo

Current Stage : Drafting Stage

**1. Pick tile**

**FACTORIES**

**CENTER**

**Jhon's Board**

STORAGE: [tiles]

MOSAIC: [tiles]

FLOOR: [tiles]

**Leopold's Board**

STORAGE: [tiles]

MOSAIC: [tiles]

FLOOR: [tiles]

**John's Board**

STORAGE: [tiles]

MOSAIC: [tiles]

FLOOR: [tiles]

**CURRENT PLAYER BOARD**

STORAGE: [tiles]

MOSAIC: [tiles]

FLOOR: [tiles]

**INSTRUCTIONS OF CURENT STAGE**

Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.

Tiling Stage: You can move tiles from Storage to Mosaic.

End Of Game: You can click End The Game button to go to end page.

**DISCARD**

**BAG**

End The Game

# Game Playing – Valid Drafting Move

Azul Viewer

**PLAYERS' INFORMATION**

PlayerNames :	Jhon	Leopold	Si Bo	John
PlayerTypes :	Human	Computer	Human	Computer
Scores :	10	0	2	0
Ranks :	1	3	2	3
Moves Log :				
Jhon picked tile e from factory 3 to storage row 1!				
Leopold picked tile b from factory 7 to storage row 2!				
Si Bo picked tile d from factory 1 to storage row 1!				
John picked tile d from factory 0 to storage row 2!				

**Current Status**

Current Player : Si Bo

Current Stage : Drafting Stage

**1. Pick tile**

**FACTORIES**

**CENTER**

**DISCARD**

**BAG**

**Jhon's Board**

STORAGE MOSAIC

FLOOR

**Leopold's Board**

STORAGE MOSAIC

FLOOR

**John's Board**

STORAGE MOSAIC

FLOOR

**CURRENT PLAYER BOARD**

STORAGE MOSAIC

FLOOR

**INSTRUCTIONS OF CURENT STAGE**

Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.

Tiling Stage: You can move tiles from Storage to Mosaic.

End Of Game: You can click End The Game button to go to end page.

End The Game

# Game Playing – Invalid Tiling Move

**Azul Viewer**

**PLAYERS' INFORMATION**

PlayerNames :	Jhon	Leopold	Si Bo	John
PlayerTypes :	Human	Computer	Human	Computer
Scores :	22	0	10	1
Ranks :	1	4	2	3

Moves Log :  
Jhon moved tile from storage row 1 to mosaic!  
Leopold picked tile a from factory 0 to storage row 3!  
Si Bo picked tile b from center to storage row 0!  
John picked tile c from center to storage row 2!

**Current Status**

Current Player : Jhon  
Current Stage : Tiling Stage

**Factories**

**CURRENT PLAYER BOARD**

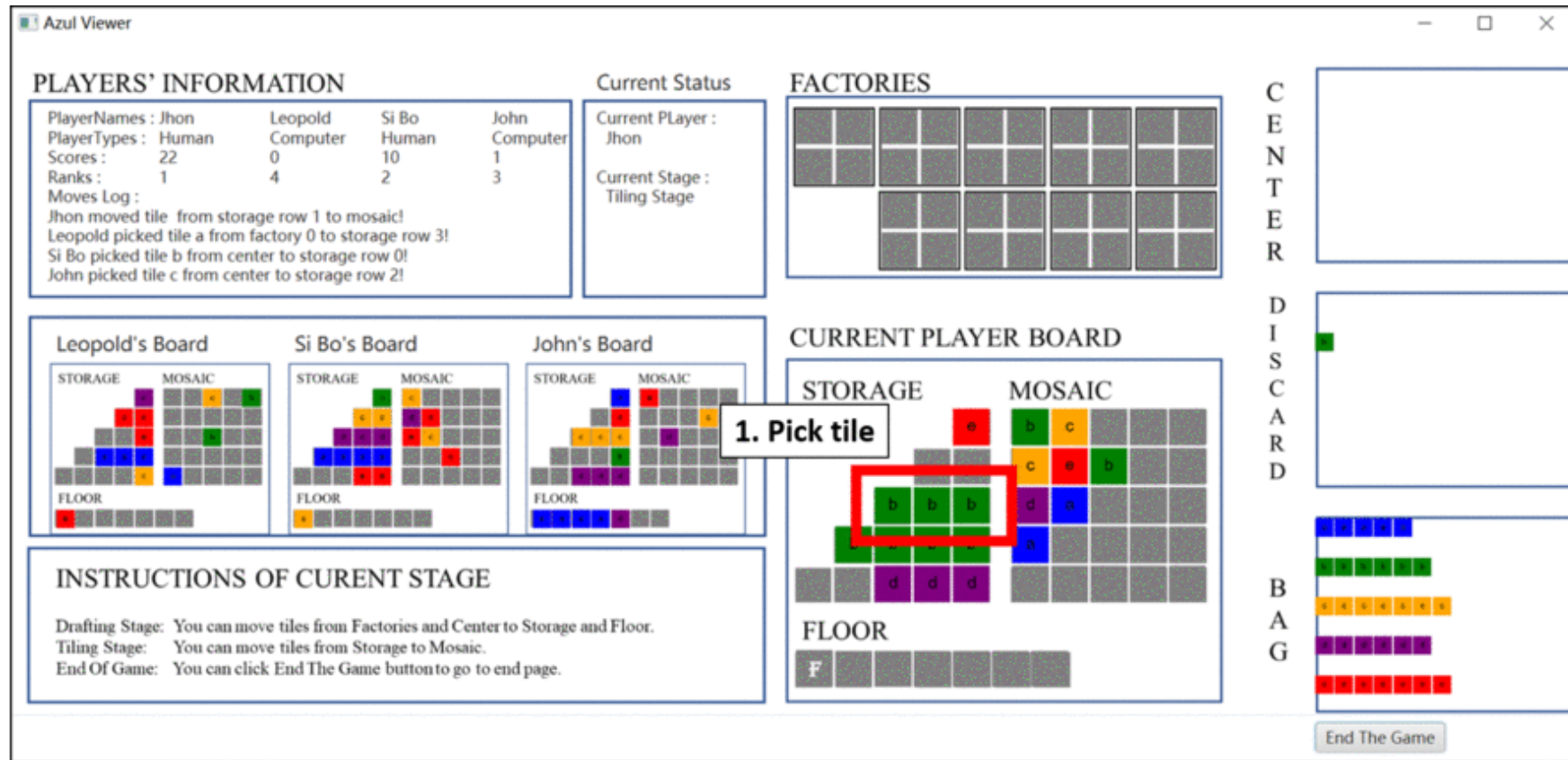
**1. Pick tile**

**Instructions of Current Stage**

Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.  
Tiling Stage: You can move tiles from Storage to Mosaic.  
End Of Game: You can click End The Game button to go to end page.

**Center Discard**

**End The Game**





# Game Playing – Valid Tiling Move

**Azul Viewer**

**PLAYERS' INFORMATION**

PlayerNames :	Jhon	Leopold	Si Bo	John
PlayerTypes :	Human	Computer	Human	Computer
Scores :	22	0	10	1
Ranks :	1	4	2	3

Moves Log :  
Jhon moved tile from storage row 1 to mosaic!  
Leopold picked tile a from factory 0 to storage row 3!  
Si Bo picked tile b from center to storage row 0!  
John picked tile c from center to storage row 2!

**Current Status**

Current Player : Jhon  
Current Stage : Tiling Stage

**Factories**

**CENTER DISCARD**

**Leopold's Board**

STORAGE MOSAIC

FLOOR

**Si Bo's Board**

STORAGE MOSAIC

FLOOR

**John's Board**

STORAGE MOSAIC

FLOOR

**CURRENT PLAYER BOARD**

STORAGE MOSAIC

**1. Pick tile**

FLOOR

**INSTRUCTIONS OF CURENT STAGE**

Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.  
Tiling Stage: You can move tiles from Storage to Mosaic.  
End Of Game: You can click End The Game button to go to end page.

**End The Game**

# Game Playing – Preparing Next Round

Azul Viewer

**PLAYERS' INFORMATION**

PlayerNames :	Jhon	Leopold	Si Bo	John
PlayerTypes :	Human	Computer	Human	Computer
Scores :	29	5	24	1
Ranks :	1	3	2	4

Moves Log :  
Jhon moved tile from storage row 0 to mosaic!  
Leopold moved tile from storage row 1 to mosaic!  
Si Bo moved tile from storage row 2 to mosaic!  
John picked tile c from center to storage row 2!

**Current Status**

Current Player : Si Bo  
Current Stage : Tiling Stage

**FACTORIES**

**CURRENT PLAYER BOARD**

**STORAGE**

**MOSAIC**

**FLOOR**

**1. Valid tiling move**

**INSTRUCTIONS OF CURENT STAGE**

Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.  
Tiling Stage: You can move tiles from Storage to Mosaic.  
End Of Game: You can click End The Game button to go to end page.

**Center**

**DISCARD**

**BAG**

End The Game

# Game Playing – End of Game

**Azul Viewer**

**PLAYERS' INFORMATION**


PlayerNames	Jhon	Leopold	Si Bo	John
PlayerTypes	Human	Computer	Human	Computer
Scores	51	6	51	0
Ranks	1	3	1	4

Moves Log:  
Jhon moved tile from storage row 3 to mosaic!  
Leopold picked tile b from center to floor!  
Si Bo moved tile from storage row 3 to mosaic!  
John picked tile a from center to storage row 4!

**Current Status**

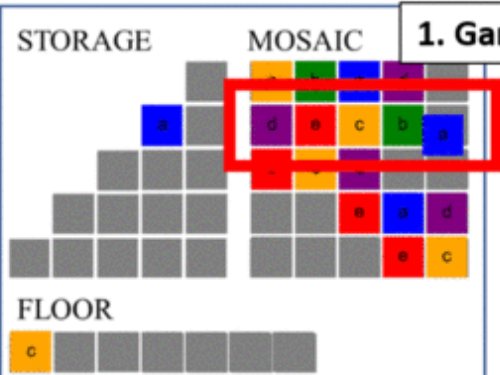
Current Player : Si Bo  
Current Stage : Tiling Stage

**FACTORIES**



**CURRENT PLAYER BOARD**

**1. Game ends with full row**



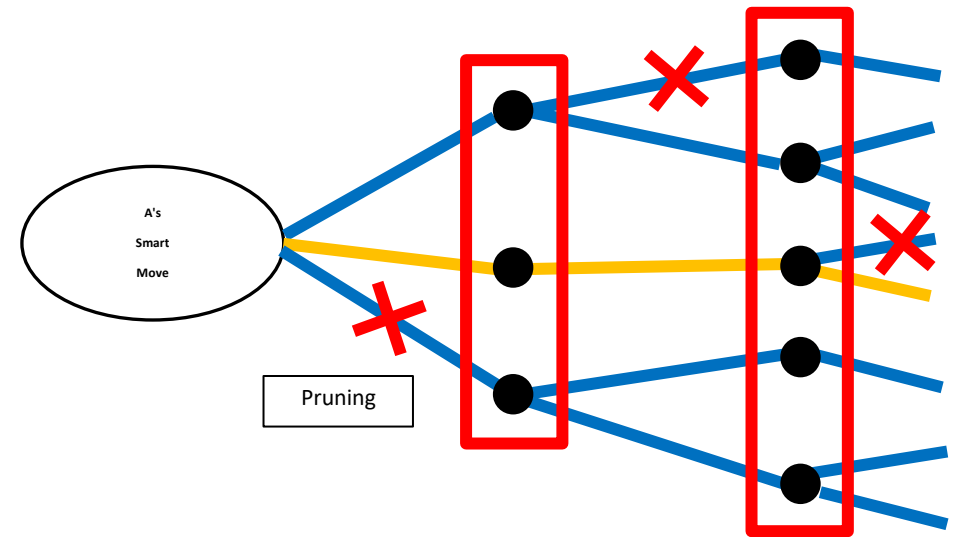
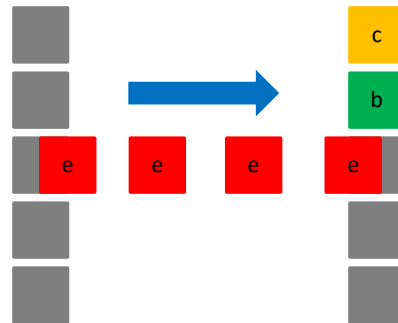
**Instructions of Current Stage**

Drafting Stage: You can move tiles from Factories and Center to Storage and Floor.  
Tiling Stage: You can move tiles from Storage to Mosaic.  
End Of Game: You can click End The Game button to go to end page.

**End The Game**



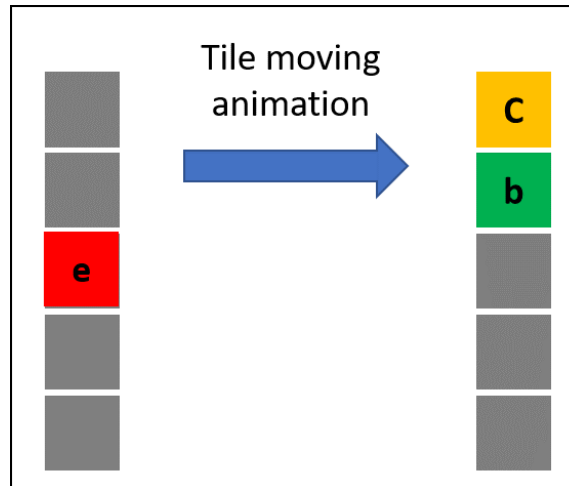
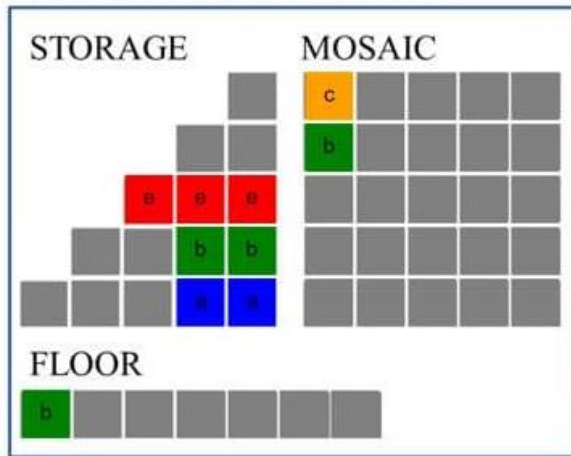
# Further Improvements



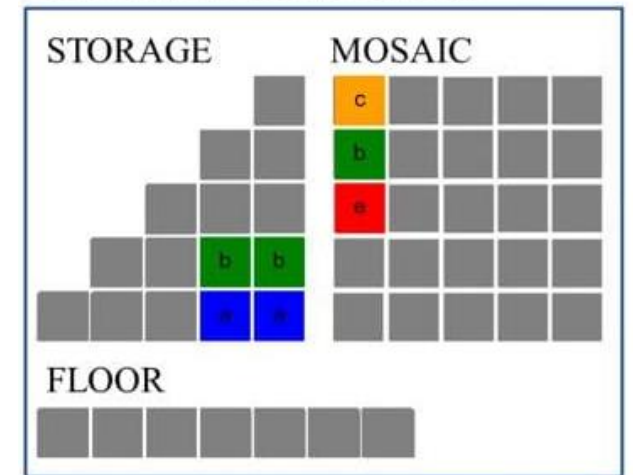
# Further Improvements

- Enhanced user interface
  - Show tile movement from start to the end

CURRENT PLAYER BOARD

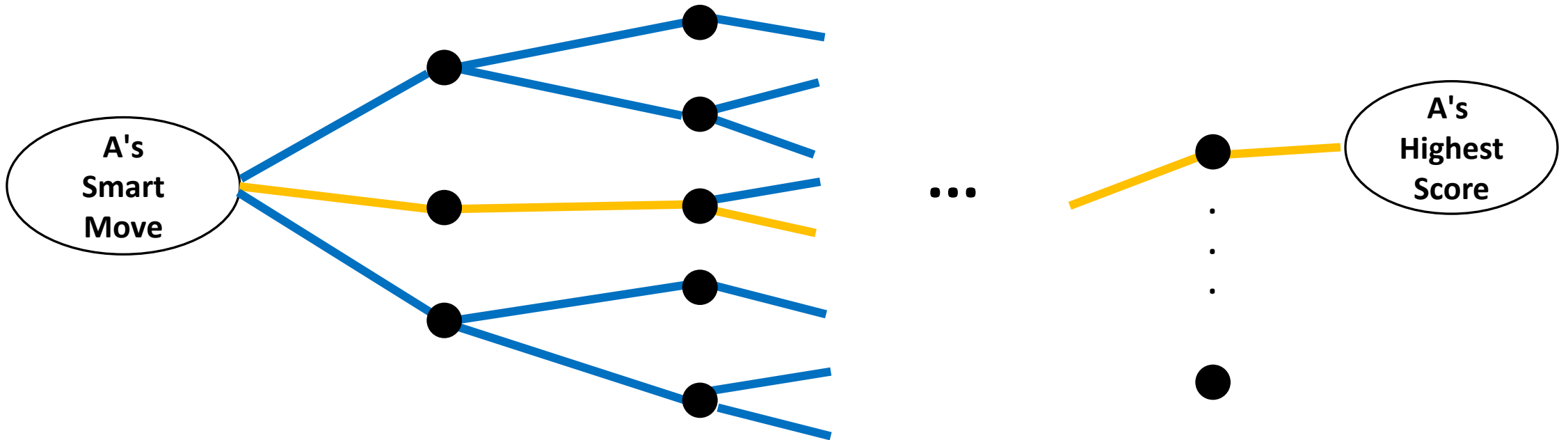


CURRENT PLAYER BOARD



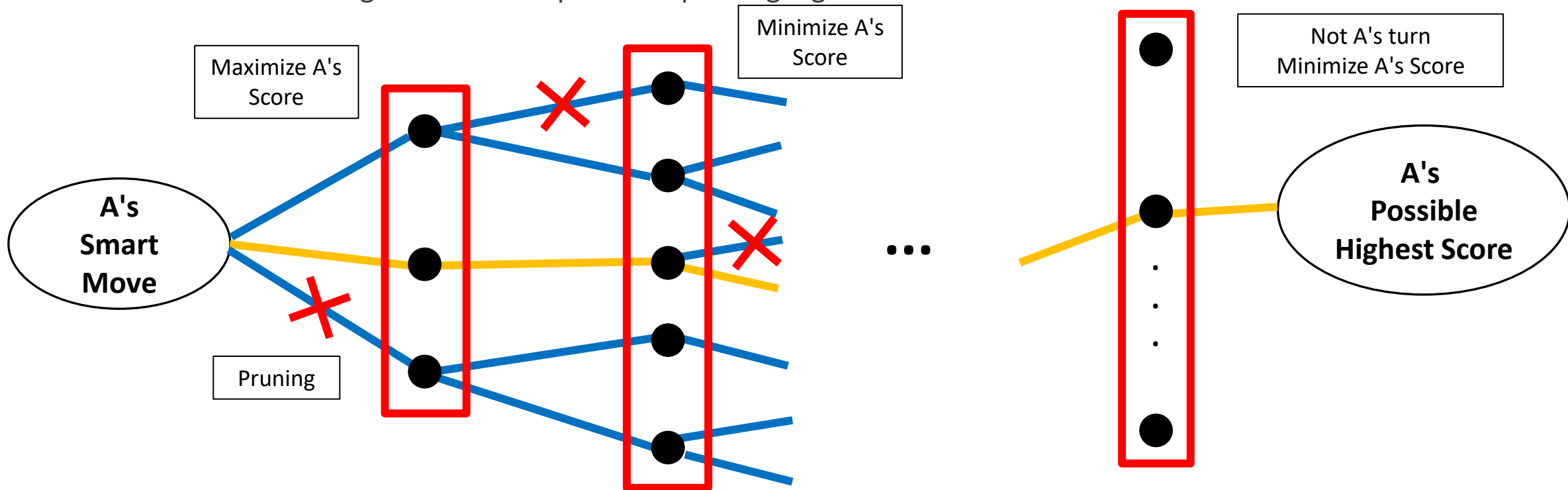
# Further Improvements

- Enhanced computer opponent
  - Make tree of every possible movement and calculate score
  - Use recursive method to find smart move



# Further Improvements

- Enhanced computer opponent
  - Advanced search algorithm with alpha-beta pruning algorithm



# Questions and Answers

