

Project 2 - Pasur

1. BASIC GAME SETTING

1. 52 card deck with 4 suits and 13 ranks in each suit.
2. # Players: 2-4
 - Take turns being dealer
 - Project provided implementation 中提供的例子是 2位玩家
3. 遊戲的最終目標是 贏得最多的分數
4. Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10 King Queen Jack
5. 玩家面前會有牌 屬於各自的“手牌” *
6. 最中間會有一個 Pool “卡池” *

2. Gameplay Rule

1. 每個玩家被輪流分發4張牌
2. 玩家依次 打牌 🖱️
3. a. Picking up/ capturing rule from the pool (可能會發生)
b. 選擇一張手牌 為牌池加入一張牌
4. 根據可能出現的 Sur 積分 (可能會發生)
5. 重複3-5條 直到玩家手中無牌
6. 重複1-6條直到牌庫無牌
7. 當前回合結束
8. 為每位玩家計分
9. 重新將52張牌洗回牌庫 開始新的回合
10. 直到有玩家的積分達到62或者以上 最高積分的玩家獲勝 (平局贏家判定)

3. Play

所有人在每回合會從a b中選擇一個行為去執行

a. Picking up/ capturing rule from the pool (可能會發生)

b. 選擇一張手牌 為牌池加入一張牌 (加入的牌不能是符合capturing rule的牌)

直到每位玩家的手牌都為 0

Dealer 會從牌庫中重新發牌 4張 直到牌庫清空 (當前回合結束)

4. Capturing rule

1. Number cards (including Aces, which are assigned the numerical value of one) pick up one or more other cards with which they combine to form a sum of eleven.

Example: The pool contains Ace, 2, 2, 4 and 10 in varying suits. A player needs to play a 10 to pick up the ace, a 9 to pick up either one of the twos, an 8 to pick up the Ace and one of the 2's, a 7 to pick up the 4 or both of the 2's, a 6 to pick up the Ace and either the 4 or both 2's, a 5 to pick up the 4 and one of the 2's, a 4 to pick up the 4, a 2 and the Ace, a 3 to pick up the 4 and both 2's, a 2 to pick up the 4, both 2's and the Ace, or an Ace to pick up the 10. The other cards would remain in the pool.

2. A King picks up one King, a Queen picks up one Queen.

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3. A Jack picks up all Jacks and number cards on the table, but not Kings and Queens.
4. When a player only has a single card left in the last hand of the deck, all remaining cards in the pool are picked up when the player is able to match: a) a king-king b) queen-queen c) combine to form a sum of 11. (Basically, on the last hand of the deck, whoever picks up the last card gets to pick up all remaining unmatched cards from the table).

1. 數字牌可以去牌池中去找到加起來為11的牌 比方說牌池裏有 1, 4, 4, 9
 - 我可以用手牌10去拿到Ace 因為 $1+10 = 11$
 - 我可以用手牌7去拿到兩張4中任意一張 因為 $7+4 = 11$
 - 我可以用手牌2去拿到9 因為 $2+9 = 11$
 - 我可以用手牌3去拿到兩張4 因為 $3+4+4 = 11$
2. King拿King Queen拿Queen
3. Jack最厲害 能夠拿除了King和Queen的所有牌
4. 手持牌庫中 最後一張牌的玩家可以直接獲得牌池中所有的牌

疑問: 那我使用的那張牌是會算做我的牌 最終會參與積分 還是 屬於棄牌了?

5. Sur

(A Sur is a specific event which occurs during the game when a player plays a card that picks up all the cards from the pool.)

遊戲事件: Sur 指的是玩家在他的回合內使用一張牌獲得當前牌池裏所有牌

禁 這些情況并不能算作Sur:

1. Jack清場
2. 最後一回合

Players keep track of the number of Surs which they score during the game by placing a card involved in scoring the sur face-up in a separate pile and will be awarded points for it during the game (see below). If other players have previously scored a Sur, the player uses his/her scored Sur to offset one of the Surs of other players. In the latter case, the player will not receive any points for his/her scored sur, and hence, no card will be added to his/her sur pile. (WTF???)

6. Scoring each round of the game

A round finished: deck is empty and each player calculates their round score.

Round of game	Round Score	Total Running Score
1	9	9
2	13	22
3	10	32

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- Player who has 7 or more **clubs**: 7 points (there are only 13 clubs so they must have the most if they have 7 or more) 7張梅花牌♣
- Player who has the 10 of diamonds: 3 points 方塊10♦
- Player who has the 2 of clubs: 2 points 2張梅花牌♣
- Each Ace: 1 point 每張Ace算1分
- Each Jack: 1 point 每張Jack算1分
- Each Sur: 5 points. 每次Sur算5分

This means that there are 20 total points which are available each round that are distributed between players (in addition to several 5-point bonuses for each Sur that occurs). 常規的20分

i.e., 20 points available each round consists of:

- *Most clubs (i.e., at least seven clubs): 7 points 擁有最多梅花牌的玩家♣*
- *10 of diamonds: 3 points 方塊10♦*
- *2 of clubs: 2 points 2張梅花牌♣*
- *4 Aces: 4 points 4張Ace*
- *4 Jacks: 4 points 4張Jack*

Round	Round Score	Total Running Score	>=62?	Has the player won?
1	9	9	No	No
2	13	22	No	No
3	10	32	No	No
4	8	40	No	No
5	8	48	No	No
6	22 (had a Sur)	70	Yes	Yes
Stop.		Game Ended.		

Note that if a point rewarding card such as a club card, 10 of Diamonds, ... is added to the sur pile, it should still be counted towards the regular 20 points. In addition, it also awards the player 5 points (as a sur).

如果是一張梅花牌或者方塊10當作觸發Sur事件的牌 這張牌會同時滿足常規20分并且算作Sur 5分的額外獎勵 (積分機制不冲突)

6. Tie

如果有玩家積分超出62則宣佈遊戲結束 得分最高的玩家獲得勝利
但是 如果有2位或以上的玩家同時滿足>62分并且平分的情況
則會再次開始遊戲 重複 [GamePlay Rule](#) Step 1-8 直到其中一位玩家有更高的積分

7. Project required Changes

7.1 Scoring (You need to add scoring as per the rules above.)

However, to make the game more exciting, in our version of the game, the round score of each player must be calculated and the total running score of each player must be updated and visualized during the game every time a player plays a card.

7.2 Logging

The activity of the Pasur trainer needs to be logged to a file called "pasur.log" stored in the project directory (next to the src folder).

The current version of the game logs everything on the terminal. This needs to be replaced by logging everything in the "pasur.log" file. Hence, in the new version of the game nothing must be printed on the terminal. Note that you should not add (resp. Remove) anything to (resp. from) the current log and must preserve the records of the current log and their order.

8. Report

You are required to produce a report describing the changes you have made to the system and providing a rationale for these changes using **design patterns and principles**. Note that to do this well, you should include **discussion of other reasonable options** which you considered, and **why you did not choose these options**. You should clearly identify the points of **evolution/variation supported by your design** with appropriate justification.

Note that you **should draw a class diagram for the whole project** (not only the changes, which was the case of project 1), and **also draw a design sequence diagram for computing the score of a player**.

Around 4 pages should be enough to provide a concise rationale. You should include and refer to diagrams in your report to help illustrate aspects of the changes.

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