Kurt Geiger tech test

User Stories

```
As a User
So that I can play a game of cards
I would like to have a deck of cards

As a User
So that I can play properly
I would like to have 4 suits each with 13 values

As a User
So that I can start a fresh game
I would like all cards to be in perfect sequence

As a User
So that I can make the game interesting
I would like to shuffle the cards

As a User
So that I can play fair game
I would like to see no two cards are still in sequence

As a User
So that I can start playing
I would like to deal seven cards to each player
```

Approach

- First I went through the instructions quite a lot of times and broke them into small user stories.
- My approach was to take one user story at a time so that I take small steps which will make it easier to implement the task.
- As I was new to PHP I read PHP documentation to understand how PHP works.
- Next was to decide what classes I need, so extracted verbs and nouns from user stories and made a rough sequence diagram to understand the flow of information between classes, encapsulate similar behaviors and not to assign more than one responsibility to one class.

Reasoning

- I made a Card class so that it can be reused to add different types of cards.
- I have declared value and suit array as instance variables which will give the flexibility of adding or removing any value from the array later.
- I made a Shuffler class so that I can add different rules to shuffle in future, currently it is just a normal shuffle.
- Making a separate Shuffler class will make testing of shuffle method easy.
- Used loop to test the number of cards in players hand as it will provide flexibility to testing if in

future game is played between less than or more than 4 players.

How to run Tests

- `./vendor/bin/phpunit tests --coverage-text --whitelist src/` to run the test with coverage(need to `install php-xdebug` for coverage).

```
Code Coverage Report:

 Summary:
  Classes: 80.00% (4/5)
  Methods: 95.00% (19/20)
  Lines:   95.00% (38/40)

Card
  Methods: 100.00% ( 3/ 3)   Lines: 100.00% (  5/  5)
Deck
  Methods: 100.00% ( 7/ 7)   Lines: 100.00% ( 13/ 13)
Game
  Methods:  83.33% ( 5/ 6)   Lines:  87.50% ( 14/ 16)
Player
  Methods: 100.00% ( 3/ 3)   Lines: 100.00% (  5/  5)
Shuffler
  Methods: 100.00% ( 1/ 1)   Lines: 100.00% (  1/  1)
```

How to use

- `composer install` to download the dependency
- `php -a` for PHP interactive mode:
  - require_once './src/Game.php';
  - $game = new Game();
  - $game->shuffleCards()
  - $game->deal();
  - print_r($game->getPlayers());

```
Array
(
    [0] => Player Object
        (
            [playerID:Player:private] =>
            [cards:Player:private] => Array
                (
                    [0] => Card Object
                        (
                            [value:Card:private] => 8
                            [suit:Card:private] => ♣
                        )

                    [1] => Card Object
                        (
                            [value:Card:private] => 4
```

```
                            [suit:Card:private] => ♣
                        )

                    [2] => Card Object
                        (
                            [value:Card:private] => 8
                            [suit:Card:private] => ♠
                        )

                    [3] => Card Object
                        (
                            [value:Card:private] => 5
                            [suit:Card:private] => ♠
                        )

                    [4] => Card Object
                        (
                            [value:Card:private] => 9
                            [suit:Card:private] => ♣
                        )

                    [5] => Card Object
                        (
                            [value:Card:private] => J
                            [suit:Card:private] => ♠
                        )

                    [6] => Card Object
                        (
                            [value:Card:private] => 3
                            [suit:Card:private] => ♠
                        )

                )

            [1] => 1
        )

    [1] => Player Object
        (
            [playerID:Player:private] =>
            [cards:Player:private] => Array
                (
                    [0] => Card Object
                        (
                            [value:Card:private] => 10
                            [suit:Card:private] => ♥
                        )

                    [1] => Card Object
                        (
                            [value:Card:private] => 3
                            [suit:Card:private] => ♥
                        )

                    [2] => Card Object
                        (
```

```
                            [value:Card:private] => 9
                            [suit:Card:private] => ♥
                        )

                    [3] => Card Object
                        (
                            [value:Card:private] => 5
                            [suit:Card:private] => ♣
                        )

                    [4] => Card Object
                        (
                            [value:Card:private] => 10
                            [suit:Card:private] => ♠
                        )

                    [5] => Card Object
                        (
                            [value:Card:private] => 2
                            [suit:Card:private] => ♥
                        )

                    [6] => Card Object
                        (
                            [value:Card:private] => A
                            [suit:Card:private] => ♠
                        )

                )

            [2] => 2
        )

    [2] => Player Object
        (
            [playerID:Player:private] =>
            [cards:Player:private] => Array
                (
                    [0] => Card Object
                        (
                            [value:Card:private] => 6
                            [suit:Card:private] => ♠
                        )

                    [1] => Card Object
                        (
                            [value:Card:private] => 9
                            [suit:Card:private] => □
                        )

                    [2] => Card Object
                        (
                            [value:Card:private] => A
                            [suit:Card:private] => ♥
                        )

                    [3] => Card Object
```

```
                    (
                        [value:Card:private] => 7
                        [suit:Card:private] => ♥
                    )

                [4] => Card Object
                    (
                        [value:Card:private] => 2
                        [suit:Card:private] => ♣
                    )

                [5] => Card Object
                    (
                        [value:Card:private] => A
                        [suit:Card:private] => □
                    )

                [6] => Card Object
                    (
                        [value:Card:private] => 7
                        [suit:Card:private] => ♣
                    )

            )

        [3] => 3
    )

[3] => Player Object
    (
        [playerID:Player:private] =>
        [cards:Player:private] => Array
            (
                [0] => Card Object
                    (
                        [value:Card:private] => 6
                        [suit:Card:private] => ♥
                    )

                [1] => Card Object
                    (
                        [value:Card:private] => 10
                        [suit:Card:private] => □
                    )

                [2] => Card Object
                    (
                        [value:Card:private] => 5
                        [suit:Card:private] => □
                    )

                [3] => Card Object
                    (
                        [value:Card:private] => A
                        [suit:Card:private] => ♣
                    )
```

```
                    [4] => Card Object
                        (
                            [value:Card:private] => 5
                            [suit:Card:private] => ♥
                        )

                    [5] => Card Object
                        (
                            [value:Card:private] => Q
                            [suit:Card:private] => □
                        )

                    [6] => Card Object
                        (
                            [value:Card:private] => 6
                            [suit:Card:private] => ♣
                        )

                )

            [4] => 4
        )

)
```

- require_once './src/Deck.php';
- $deck = new Deck;
- print_r($deck->getDeck());

```
Array
(
    [0] => Card Object
        (
            [value:Card:private] => A
            [suit:Card:private] => ♥
        )

    [1] => Card Object
        (
            [value:Card:private] => 2
            [suit:Card:private] => ♥
        )

    [2] => Card Object
        (
            [value:Card:private] => 3
            [suit:Card:private] => ♥
        )

    [3] => Card Object
        (
            [value:Card:private] => 4
            [suit:Card:private] => ♥
```

```
        )

    [4] => Card Object
        (
            [value:Card:private] => 5
            [suit:Card:private] => ♥
        )

    [5] => Card Object
        (
            [value:Card:private] => 6
            [suit:Card:private] => ♥
        )

    [6] => Card Object
        (
            [value:Card:private] => 7
            [suit:Card:private] => ♥
        )

    [7] => Card Object
        (
            [value:Card:private] => 8
            [suit:Card:private] => ♥
        )

    [8] => Card Object
        (
            [value:Card:private] => 9
            [suit:Card:private] => ♥
        )

    [9] => Card Object
        (
            [value:Card:private] => 10
            [suit:Card:private] => ♥
        )

    [10] => Card Object
        (
            [value:Card:private] => J
            [suit:Card:private] => ♥
        )

    [11] => Card Object
        (
            [value:Card:private] => Q
            [suit:Card:private] => ♥
        )

    [12] => Card Object
        (
            [value:Card:private] => K
            [suit:Card:private] => ♥
        )

    [13] => Card Object
```

```
        (
            [value:Card:private] => A
            [suit:Card:private] => ♣
        )

    [14] => Card Object
        (
            [value:Card:private] => 2
            [suit:Card:private] => ♣
        )

    [15] => Card Object
        (
            [value:Card:private] => 3
            [suit:Card:private] => ♣
        )

    [16] => Card Object
        (
            [value:Card:private] => 4
            [suit:Card:private] => ♣
        )

    [17] => Card Object
        (
            [value:Card:private] => 5
            [suit:Card:private] => ♣
        )

    [18] => Card Object
        (
            [value:Card:private] => 6
            [suit:Card:private] => ♣
        )

    [19] => Card Object
        (
            [value:Card:private] => 7
            [suit:Card:private] => ♣
        )

    [20] => Card Object
        (
            [value:Card:private] => 8
            [suit:Card:private] => ♣
        )

    [21] => Card Object
        (
            [value:Card:private] => 9
            [suit:Card:private] => ♣
        )

    [22] => Card Object
        (
            [value:Card:private] => 10
            [suit:Card:private] => ♣
```

```
        )

    [23] => Card Object
        (
            [value:Card:private] => J
            [suit:Card:private] => ♣
        )

    [24] => Card Object
        (
            [value:Card:private] => Q
            [suit:Card:private] => ♣
        )

    [25] => Card Object
        (
            [value:Card:private] => K
            [suit:Card:private] => ♣
        )

    [26] => Card Object
        (
            [value:Card:private] => A
            [suit:Card:private] => ♠
        )

    [27] => Card Object
        (
            [value:Card:private] => 2
            [suit:Card:private] => ♠
        )

    [28] => Card Object
        (
            [value:Card:private] => 3
            [suit:Card:private] => ♠
        )

    [29] => Card Object
        (
            [value:Card:private] => 4
            [suit:Card:private] => ♠
        )

    [30] => Card Object
        (
            [value:Card:private] => 5
            [suit:Card:private] => ♠
        )

    [31] => Card Object
        (
            [value:Card:private] => 6
            [suit:Card:private] => ♠
        )

    [32] => Card Object
```

```
        (
            [value:Card:private] => 7
            [suit:Card:private] => ♠
        )

    [33] => Card Object
        (
            [value:Card:private] => 8
            [suit:Card:private] => ♠
        )

    [34] => Card Object
        (
            [value:Card:private] => 9
            [suit:Card:private] => ♠
        )

    [35] => Card Object
        (
            [value:Card:private] => 10
            [suit:Card:private] => ♠
        )

    [36] => Card Object
        (
            [value:Card:private] => J
            [suit:Card:private] => ♠
        )

    [37] => Card Object
        (
            [value:Card:private] => Q
            [suit:Card:private] => ♠
        )

    [38] => Card Object
        (
            [value:Card:private] => K
            [suit:Card:private] => ♠
        )

    [39] => Card Object
        (
            [value:Card:private] => A
            [suit:Card:private] => □
        )

    [40] => Card Object
        (
            [value:Card:private] => 2
            [suit:Card:private] => □
        )

    [41] => Card Object
        (
            [value:Card:private] => 3
            [suit:Card:private] => □
```

```
        )

    [42] => Card Object
        (
            [value:Card:private] => 4
            [suit:Card:private] => □
        )

    [43] => Card Object
        (
            [value:Card:private] => 5
            [suit:Card:private] => □
        )

    [44] => Card Object
        (
            [value:Card:private] => 6
            [suit:Card:private] => □
        )

    [45] => Card Object
        (
            [value:Card:private] => 7
            [suit:Card:private] => □
        )

    [46] => Card Object
        (
            [value:Card:private] => 8
            [suit:Card:private] => □
        )

    [47] => Card Object
        (
            [value:Card:private] => 9
            [suit:Card:private] => □
        )

    [48] => Card Object
        (
            [value:Card:private] => 10
            [suit:Card:private] => □
        )

    [49] => Card Object
        (
            [value:Card:private] => J
            [suit:Card:private] => □
        )

    [50] => Card Object
        (
            [value:Card:private] => Q
            [suit:Card:private] => □
        )

    [51] => Card Object
```

```
        (
            [value:Card:private] => K
            [suit:Card:private] => □
        )

)
```

Areas for development

- If I had more time I would have looked into mocking the output of shuffle method so that my test doesn't fail when shuffle method has not actually shuffled the array.
- Improve the shuffle method.