# Testing

## Test videos

### Test video

<bit.ly/project-tests>

### Normal use

<bit.ly/project-normal-use>

## Test table

Hands are ordered by card rank

Player 1: dealer

Player 2: SB

Player 3: BB

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| --- | --- | --- | --- | --- |
| Test no | Test description | Expected outcome | Actual outcome | Video timestamp |
| 1 | User signs up and logs in | If the data given by the user complies with profile restraints, the users profile is stored in the database.  The user can then log in with username and password. | As expected | 00:14 |
| 2 | Passwords stored using strong hashing algorithm SHA-256 | The password ‘testing11’ will be stored in the database as: | As expected | 01:14 |
| 3 | Logged in user clicks their username in the top right of the dashboard | The website recognises the user is accessing their own profile and shows your profile on the profile page | As expected | 01:20 |
| 4 | A logged in user creates a table called table1 with buy-in 100 and max no of players 3 | A table is created and stored in the database. The user will be redirected to the table | As expected | 01:55 |
| 5 | A player joins a table while another user is viewing the home page | The number of players in the table is incremented by 1 on the user’s home page without refreshing the page | As expected | 02:28 |
| 6 | Player 1 sends message ‘hello’ in chat | Every player in the table receive a message in the chat log: ‘Player 1: hello’ | As expected | 02:31 |
| 7 | Player has cards:  K♣ K♦ 10♦ 8♦ 4♥ 4♦ 4♠ | Detects a full house hand, uses cards:  4♥ 4♦ 4♠ K♣ K♦ | As expected | 03:21 |
| 8 | Player has cards:  8♥ 7♥ 6♥ 5♥4♥ 3♥ 2♥ | Detects a straight flush hand, uses cards:  8♥ 7♥ 6♥ 5♥4♥ | As expected | 04:15 |
| 9 | Player 1 hand:  2♥ 2♦ 2♠ A♦ K♦  Player 2 hand:  A♥ A♦ K♠ K♦ Q♠ | Player 1 beats player 2 as three of a kind is of greater strength than two pairs | As expected | 05:03 |
| 10 | Player 1 hand:  7♥ 7♦ K♠ J♠ 6♠  Player 2 hand:  7♥ 7♦ K♠ 10♦ 6♠ | Player 1 beats player 2, as the Jack kicker is higher rank than the 10 | As expected | 05:59 |
| 11 | Player 1 hand:  7♥ 7♦ K♠ J♠ 6♠  Player 2:  K♠ J♠ 6♠ 5♠ 2♠  Player 3:  7♥ 7♦ K♠ 10♦ 6♠ | Player 1’s cards are shown as he is first to the left of the dealer, player 2 cards are hidden as he has folded, even though he has the strongest hand. Player 3 cards are shown even though he cannot beat player 1’s hand because the hands are shown from the dealers left and as player 1 is the dealer his hand is shown last. | As expected | 06:30 |
| 12 | Player 1 and 2 calls BB, player 3 raises the bet by 10, player 1 goes all-in, player 2 folds, player 3 calls the all-in | The betting round continues back round to the player 3 as he was the last to bet in the round. The game is then skipped to showdown as only player 2 is capable of betting. | As expected | 06:30 |
| 13 | Player 1 hand:  7♥ 7♦ K♠ J♠ 6♠  Player 2 hand:  7♠ 7♦ K♠ J♠ 6♠  Player 3 hand:  K♠ J♠ 7♦ 6♠ 4♣  Player 1 raises 1 and player 2 and 3 call the bet. All players check till the round is finished. | Player 1 and player 2 have the same hand, so the pot is split between them, showing them both as winners in the poker log. However, the pot cannot be fairly split between the two players so the odd money is allocated to player 1 as the dealer is first in the betting order. | As expected | 07:23 |
| 14 | Player 1 hand:  7♥ 7♦ 7♣ K♠ J♠  Player 2 hand:  K♠ K♣ J♠ 7♦ 6♠  Player 3 hand:  K♠ J♠ 7♦ 6♠ 5♣  Player 1 goes all-in with 50, player 2 re-raises 50 and 3 call the bet. | A side pot is created as player 1 cannot stand to win all the money in the pot. Player 1 has the strongest hand so wins the side pot of 150, the remaining 100 goes to player 2 with the second strongest hand. | As expected | 07:50 |
| 15 | Player leaves the table | Hand is automatically folded | As expected | 08:21 |
| 16 | User tries to enter a full poker table then tries to enter a table with not enough money to meet the buy-in and finally a not logged in users try to join a table | Users are redirected to the home page | As expected | 09:08 |
| 17 | User accesses leaderboard page, clicks on themself and other users from the leaderboard. | A table of all players on the website shown, ordered by their total money. The rows of the table are buttons that redirect the user to the requested user’s profile. The website recognises a user accessing there own profile and displays the message your profile when clicked on. | As expected | 10:20 |

## Possible tests

### Poker algorithm

* The deck is randomly shuffled each game
* 2 random unique cards are dealt to each player and 5 more dealt as community cards
* Hands consist of the strongest set of 5 of the above 7 cards
* The algorithm detects hands:
  + High card
  + Pair
  + Two Pairs
  + Three of a kind
  + Straight
  + Flush
  + Full house
  + Straight flush
  + Royal flush
* The card rank is used to judge cards of same strength e.g. Ace beats a King
* Flush and straight use highest ranking cards first
* The full house 3 of a kind takes precedence in comparing hand rank
* Kickers (cards not used to contribute to the hand strength) used to break ties in strength
* Stronger hands beat weaker hands e.g. three of a kind beats a pair
* The dealer button moves clockwise each round
* Betting turns move clockwise around the table from the dealer
* If a player bets betting continues to that player, i.e. the round continues until every player has either matched the largest bet, gone all-in or folded
* If a player goes all-in, they will not be asked to bet again
* If players are all-in and can no longer bet the community cards are shown and the game goes to showdown
* The algorithm detects if people have same ranking hand and shares pot between them
* Shared pots are calculated based on how much money each player put in
* A player’s hand not shown if folded
* Player hands are shown from dealer left
* A hand is only shown if it can beat the current best shown hand
* In situations where the pot cannot be shared fairly, the odd chips go to the players that is first in the betting order
* Every round the SB and BB are compulsory posted by the two players to the dealers left
* The SB and BB rotate with dealer each game
* If a player leaves the table, they automatically fold their current hand
* When a player leaves their money in the table is added to their total money
* The amount of money in a game stays consistent i.e. no lost chips
* Any players still in a game can either raise call or fold on their turn
* If the current bet is 0 the call button replaced with check and the fold button is removed
* Players cannot make an action (call, raise fold) if it is not their turn
* Player action buttons disappear if not their turn
* Invalid raise values, i.e. not a positive integer, are caught and the user is prompted to enter the value again
* Pot, players hand, current money in table, dealer, community cards shown to player at the top left of the page
* Total player money (money in table + money outside table) updated live on top right

### Poker log

* The round winners, necessary players cards and hand strength along with money won by each player is shown at the end of the round
* Once a player chooses an action it is printed in the chat
* Community cards printed once turned
* SB BB players shown
* 'It's your turn’ message to indicate to the user it is their turn

### Poker chat

* Players can send and receive messages in chat
* When a player sends a message, it has <username>: prepended to message
* Words in censor list file censored out of the message with an appropriate amount of \*
* Players cannot enter messages greater than 100 characters

### Website interface

* Players on leaderboard page shown in a descending order by their total money
* Tables that have not been used for more than 15 minutes are removed
* All records in the temporary storage DB tables Players and Room are removed when the server is first started
* The current page in the navigation bar is highlighted
* If the user scrolls over navigation bar button the text is highlighted

#### Any user

* Can view every player on leaderboard page
* Users can click on player on the leaderboard to view their profile
* Can see the current tables
* Can view the number of players in a table be updated live
* Can read the how to play page
* Can sign up and log in
* Sign up users must comply with user restraints:
  + Username:
    - Can have a maximum length of 25
    - Can only use alphanumeric characters and underscores
  + Password:
    - Can't be too similar to other personal information.
    - Must contain at least 8 characters.
    - Can't be a commonly used password.
    - Can't be entirely numeric.
* CSRF tokens used in sign up and log in process to prevent CSRF attacks
* All new users start with 1000 money
* Users’ passwords stored using strong hashing algorithm with salt

#### Logged in users

* Users can join tables in which they have enough money to meet the initial buy-in and are not full, if not they are redirected to the home page
* Can create tables
* Cannot create tables with buy in under 100, max players 2-8. If the form data does not meet the requirements then an error is shown on how to fix it and the user can submit the form again
* Users can click their username on the top right to reach their profile
* Website recognises a user accessing their own profile
* Users can reset their money to 1000 if less than that amount from the home page
* Users over 1000 cannot reset their money
* Users can log out
* Users cookies saved in browser so can be automatically logged in after the tab is closed