Software validation

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group 5

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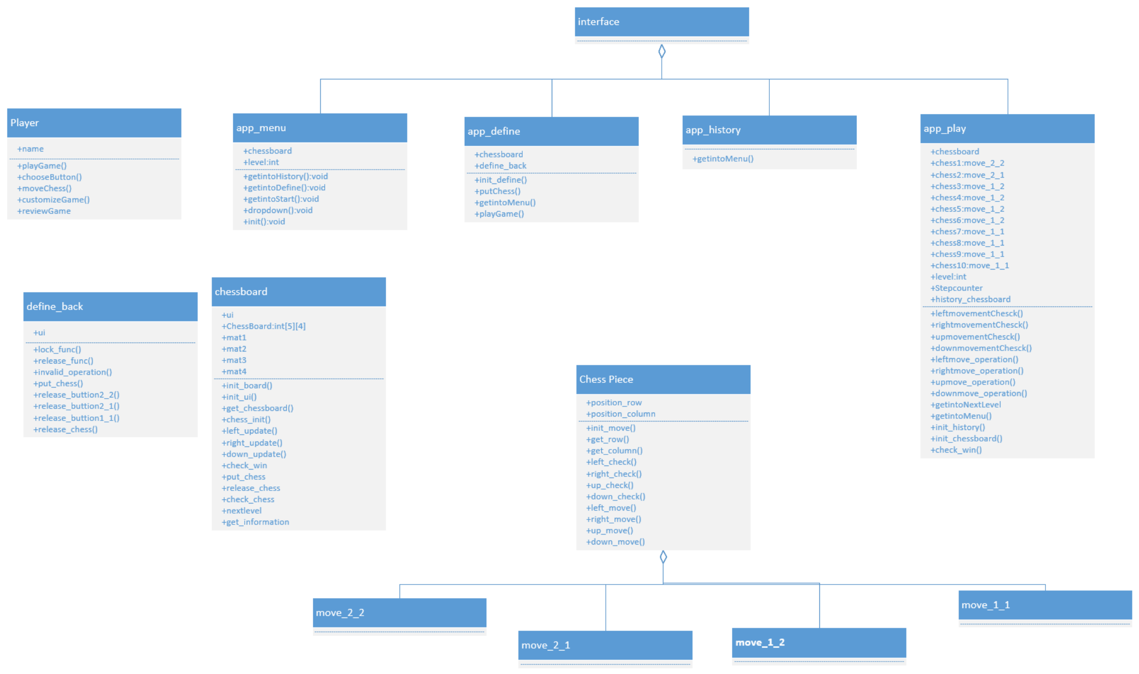
System Architecture



T1:Unit Test

There are two unit Test file.Unittest1 covers T1.1 to T1.5.Unittest2 covers T1.6

T1.1 chessboard Unit test

T1.1.1 init_board() Test

```
function init_board(board,matrix)
            %no input
            %Tcover1.1.1
            board.ChessBoard = matrix ;
        end
```

- Coverage Criteria :Statement Coverage
- Test Case

	Test Case T1.1.1
Coverage item	Tcover 1.1.1
input	matrix:[1,1,2,2;1,1,3,4;6,5,3,4;6,5,7,9;8,10,0,0]
State	Chessboard = [1,1,2,2;1,1,3,4;6,5,3,4;6,5,7,9;8,10,0,0]
Expected output	chessboard.Chessboard=[1,1,2,2;1,1,3,4;6,5,3,4;6,5,7,9;8,10,0,0]

  - Test coverage :1/1 = 100%
  - Test Result:1 passed

T1.1.2 left_update() Test

```
function left_update(chessboard,button_number,row,column)
            if button_number == 1 %Tcover1.1.2.1
                chessboard.ChessBoard(row(1,1),column(1,2)) = 0;
                chessboard.ChessBoard(row(1,2),column(1,2)) = 0;
                chessboard.ChessBoard(row(1,1),column(1,1)-1) = button_number;
                chessboard.ChessBoard(row(1,2),column(1,1)-1) = button_number;
                return
            elseif button_number == 2 %Tcover1.1.2.2
                chessboard.ChessBoard(row,column(1,2)) = 0;
                chessboard.ChessBoard(row,column(1,1)-1) = button_number;
                return
            elseif button_number == 3 || button_number == 4 || button_number ==
5 || button_number == 6
                %Tcover1.1.2.3 - %Tcover1.1.2.6
                chessboard.ChessBoard(row(1,1),column) = 0;
                chessboard.ChessBoard(row(1,2),column) = 0;
                chessboard.ChessBoard(row(1,1),column-1) = button_number;
                chessboard.ChessBoard(row(1,2),column-1) = button_number;
                return
            elseif button_number == 7 || button_number == 8 || button_number ==
9 || button_number == 10
                %Tcover1.1.2.7 - %Tcover1.1.2.10
                chessboard.ChessBoard(row,column) = 0;
                chessboard.ChessBoard(row,column-1) = button_number;
                return
            end
        end
```

- Coverage Criteria :Condition Coverage
- Test Case

	Test Case T1.1.2.1	**Test Case T1.1.2.2**	**Test Case T1.1.2.3**
Coverage item	Tcover1.1.2.1	Tcover1.1.2.2	Tcover1.1.2.3
input	1,[1,2],[2,3]	2,1,[2,3]	3,[1,2],3
State	chessboard = [0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,2,2,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,3,0;0,0,3,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [1,1,0,0;1,1,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,3,0,0;0,3,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.2.4	Test Case T1.1.2.5	Test Case T1.1.2.6
Coverage item	Tcover1.1.2.4	Tcover1.1.2.5	Tcover1.1.2.6
input	4,[1,2],3	5,[1,2],3	6,[1,2],3
State	chessboard = [0,0,4,0;0,0,4,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,5,0;0,0,5,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,6,0;0,0,6,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,4,0,0;0,4,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,5,0,0;0,5,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,6,0,0;0,6,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.2.7	Test Case T1.1.2.8	Test Case T1.1.2.9
Coverage item	Tcover1.1.2.7	Tcover1.1.2.8	Tcover1.1.2.9
input	7,1,3	8,1,3	9,1,3
State	chessboard = [0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,8,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,9,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,7,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,8,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,9,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.2.10		
Coverage item	Tcover1.1.2.10		
input	10,1,3		
State	chessboard = [0,0,10,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]		
Expected output	chessboard = [0,10,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]		

- Test coverage :10/10 = 100%
- Test Result:10 passed

T1.1.3 right_update() Test

```
function right_update(chessboard,button_number,row,column)
            if button_number == 1 %Tcover1.1.3.1
                chessboard.ChessBoard(row(1,1),column(1,1)) = 0;
                chessboard.ChessBoard(row(1,2),column(1,1)) = 0;
                chessboard.ChessBoard(row(1,1),column(1,2)+1) = button_number;
                chessboard.ChessBoard(row(1,2),column(1,2)+1) = button_number;
                return
            elseif button_number == 2 %Tcover1.1.3.2
                chessboard.ChessBoard(row,column(1,1)) = 0;
                chessboard.ChessBoard(row,column(1,2)+1) = button_number;
                return
            elseif button_number == 3 || button_number == 4 || button_number ==
5 || button_number == 6
                %Tcover1.1.3.3 - %Tcover1.1.3.6
                chessboard.ChessBoard(row(1,1),column) = 0;
                chessboard.ChessBoard(row(1,2),column) = 0;
                chessboard.ChessBoard(row(1,1),column+1) = button_number;
                chessboard.ChessBoard(row(1,2),column+1) = button_number;
                return
            elseif button_number == 7 || button_number == 8 || button_number ==
9 || button_number == 10
                %Tcover1.1.3.7 - %Tcover1.1.3.10
                chessboard.ChessBoard(row,column) = 0;
                chessboard.ChessBoard(row,column+1) = button_number;
                return
            end
        end
```

- Coverage Criteria :Condition Coverage
- Test Case

	Test Case T1.1.3.1	**Test Case T1.1.3.2**	**Test Case T1.1.3.3**
Coverage item	Tcover1.1.3.1	Tcover1.1.3.2	Tcover1.1.3.3
input	1,[1,2],[2,3]	2,1,[2,3]	3,[1,2],3
State	chessboard = [0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,2,2,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,3,0;0,0,3,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,0,1,1;0,0,1,1;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,2,2;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,3;0,0,0,3;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.3.4	Test Case T1.1.3.5	Test Case T1.1.3.6
Coverage item	Tcover1.1.3.4	Tcover1.1.3.5	Tcover1.1.3.6
input	4,[1,2],3	5,[1,2],3	6,[1,2],3
State	chessboard = [0,0,4,0;0,0,4,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,5,0;0,0,5,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,6,0;0,0,6,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,0,0,4;0,0,0,4;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,5;0,0,0,5;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,6;0,0,0,6;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.3.7	Test Case T1.1.3.8	Test Case T1.1.3.9
Coverage item	Tcover1.1.3.7	Tcover1.1.3.8	Tcover1.1.3.9
input	7,1,3	8,1,3	9,1,3
State	chessboard = [0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,8,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,9,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,0,0,7;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,8;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,9;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.3.10		
Coverage item	Tcover1.1.3.10		
input	10,1,3		
State	chessboard = [0,0,10,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]		
Expected output	chessboard = [0,0,0,10;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]		

- Test coverage :10/10 = 100%
- Test Result:10 passed

T1.1.4 up_update() Test

```
function up_update(chessboard,button_number,row,column)
            if button_number == 1
                %Tcover1.1.4.1
                chessboard.ChessBoard(row(1,2),column(1,1)) = 0;
                chessboard.ChessBoard(row(1,2),column(1,2)) = 0;
                chessboard.ChessBoard(row(1,1)-1,column(1,1)) = button_number;
                chessboard.ChessBoard(row(1,1)-1,column(1,2)) = button_number;
                return
            elseif button_number == 2
                %Tcover1.1.4.2
                chessboard.ChessBoard(row,column(1,1)) = 0;
                chessboard.ChessBoard(row,column(1,2)) = 0;
                chessboard.ChessBoard(row-1,column(1,1)) = button_number;
                chessboard.ChessBoard(row-1,column(1,2)) = button_number;

                return
            elseif button_number == 3 || button_number == 4 || button_number ==
5 || button_number == 6
                %Tcover1.1.4.3 - %Tcover1.1.4.6
                chessboard.ChessBoard(row(1,2),column) = 0;
                chessboard.ChessBoard(row(1,1)-1,column) = button_number;
                return
            elseif button_number == 7 || button_number == 8 || button_number ==
9 || button_number == 10
                %Tcover1.1.4.7 - %Tcover1.1.4.10
                chessboard.ChessBoard(row,column) = 0;
                chessboard.ChessBoard(row-1,column) = button_number;
                return
            end
        end
```

- Coverage Criteria :Condition Coverage
- Test Case

	Test Case T1.1.4.1	**Test Case T1.1.4.2**	**Test Case T1.1.4.3**
Coverage item	Tcover1.1.4.1	Tcover1.1.4.2	Tcover1.1.4.3
input	1,[2,3],[2,3]	2,2,[2,3]	3,[2,3],3
State	chessboard = [0,0,0,0;0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,2,2,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,3,0;0,0,3,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,2,2,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,3,0;0,0,3,0;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.4.4	Test Case T1.1.4.5	Test Case T1.1.4.6
Coverage item	Tcover1.1.4.4	Tcover1.1.4.5	Tcover1.1.4.6
input	4,[2,3],3	5,[2,3],3	6,[2,3],3
State	chessboard = [0,0,0,0;0,0,4,0;0,0,4,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,5,0;0,0,5,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,6,0;0,0,6,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,0,4,0;0,0,4,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,5,0;0,0,5,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,6,0;0,0,6,0;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.4.7	Test Case T1.1.4.8	Test Case T1.1.4.9
Coverage item	Tcover1.1.4.7	Tcover1.1.4.8	Tcover1.1.4.9
input	7,2,3	8,2,3	9,2,3
State	chessboard = [0,0,0,0;0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,8,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,9,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,8,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,9;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.4.10		
Coverage item	Tcover1.1.4.10		
input	10,2,3		
State	chessboard = [0,0,0,0;0,0,10,0;0,0,0,0;0,0,0,0;0,0,0,0]		
Expected output	chessboard = [0,0,10,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]		

- Test coverage :10/10 = 100%
- Test Result:10 passed

T1.1.5 down_update() Test

```
function down_update(chessboard,button_number,row,column)
            if button_number == 1
                %Tcover1.1.5.1
                chessboard.ChessBoard(row(1,1),column(1,1)) = 0;
                chessboard.ChessBoard(row(1,1),column(1,2)) = 0;
                chessboard.ChessBoard(row(1,2)+1,column(1,1)) = button_number;
                chessboard.ChessBoard(row(1,2)+1,column(1,2)) = button_number;
                return
            elseif button_number == 2
                %Tcover1.1.5.2
                chessboard.ChessBoard(row,column(1,1)) = 0;
                chessboard.ChessBoard(row,column(1,2)) = 0;
                chessboard.ChessBoard(row+1,column(1,1)) = button_number;
                chessboard.ChessBoard(row+1,column(1,2)) = button_number;

                return
            elseif button_number == 3 || button_number == 4 || button_number ==
5 || button_number == 6
                %Tcover1.1.5.3 - %Tcover1.1.5.6
                chessboard.ChessBoard(row(1,1),column) = 0;
```

```
        chessboard.ChessBoard(row(1,2)+1,column) = button_number;
        return
      elseif button_number == 7 || button_number == 8 || button_number ==
9 || button_number == 10
        %Tcover1.1.5.7 - %Tcover1.1.5.10
        chessboard.ChessBoard(row,column) = 0;
        chessboard.ChessBoard(row+1,column) = button_number;
        return
      end
    end
```

- Coverage Criteria :Condition Coverage
- Test Case

	Test Case T1.1.5.1	**Test Case T1.1.5.2**	**Test Case T1.1.5.3**
Coverage item	Tcover1.1.5.1	Tcover1.1.5.2	Tcover1.1.5.3
input	1,[2,3],[2,3]	2,2,[2,3]	3,[2,3],3
State	chessboard = [0,0,0,0;0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,2,2,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,3,0;0,0,3,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,0,0,0;0,0,0,0;0,1,1,0;0,1,1,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,2,2,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,3,0;0,0,3,0;0,0,0,0]
	chessboard = Test Case T1.1.5.4	Test Case T1.1.5.5	Test Case T1.1.5.6
Coverage item	Tcover1.1.5.4	Tcover1.1.5.5	Tcover1.1.5.6
input	4,[2,3],3	5,[2,3],3	6,[2,3],3
State	chessboard = [0,0,0,0;0,0,4,0;0,0,4,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,5,0;0,0,5,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,6,0;0,0,6,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,0,0,0;0,0,0,0;0,0,4,0;0,0,4,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,5,0;0,0,5,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,6,0;0,0,6,0;0,0,0,0]
	Test Case T1.1.5.7	Test Case T1.1.5.8	Test Case T1.1.5.9
Coverage item	Tcover1.1.5.7	Tcover1.1.5.8	Tcover1.1.5.9
input	7,2,3	8,2,3	9,2,3
State	chessboard = [0,0,0,0;0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,8,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,9,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	chessboard = [0,0,0,0;0,0,0,0;0,0,7,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,8,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,9,0;0,0,0,0;0,0,0,0]
	Test Case T1.1.5.10		
Coverage item	Tcover1.1.5.10		
input	10,2,3		
State	chessboard = [0,0,0,0;0,0,10,0;0,0,0,0;0,0,0,0;0,0,0,0]		
Expected output	chessboard = [0,0,0,0;0,0,0,0;0,0,10,0;0,0,0,0;0,0,0,0]		

- Test coverage :10/10 = 100%
- Test Result:10 passed

T1.1.6 check_win() Test

```
function result = check_win(chessboard)
            result = false;
            %Tcover1.1.6.1 - %Tcover1.1.6.2
            if(chessboard.ChessBoard(5,2) == 1 && chessboard.ChessBoard(5,3) ==
1)
                result = true;
            end
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	Test Case T1.1.6.1	Test Case T1.1.6.2
Coverage item	Tcover1.1.6.1	Tcover1.1.6.2
input	null	null
State	chessboard= [0,0,0,0;0,0,0,0;0,0,0,0;0,1,1,0;0,1,1,0]	chessboard= [0,0,0,0;0,0,0,0;0,1,1,0;0,1,1,0;0,0,0,0]
Expected output	true	false

- Test coverage :2/2 = 100%
- Test Result:2 passed

T1.1.7 put_chess() Test

```
function result = put_chess(chessboard,button_number,row,column)
            % 1 --- no button
            % 2 --- having space
            % 3 --- no space
            result = 1; %T1.1.7.1
            if button_number == 1
                %put 2*2 button
                if(row == 5 || column ==  4) %T1.1.7.2
                    result = 3;
                    return
                end
                if chessboard.ChessBoard(row,column) ==0 &&
chessboard.ChessBoard(row+1,column) == 0 && chessboard.ChessBoard(row,column+1)
== 0 && chessboard.ChessBoard(row+1,column+1) == 0 %T1.1.7.3
                    chessboard.ChessBoard(row,column) = button_number;
                    chessboard.ChessBoard(row+1,column) = button_number;
                    chessboard.ChessBoard(row,column+1) = button_number;
                    chessboard.ChessBoard(row+1,column+1) = button_number;
                    result = 2;
                    return
                else %T1.1.7.4
                    result = 3;
                    return
                end
            elseif button_number == 2
                %put 1*2 button
                if(column == 4) %T1.1.7.5
```

```
                    result = 3;
                    return
                end
                if chessboard.ChessBoard(row,column) ==0 &&
chessboard.ChessBoard(row,column+1) == 0  %T1.1.7.6
                   chessboard.ChessBoard(row,column) = button_number;
                   chessboard.ChessBoard(row,column+1) = button_number;
                   result = 2;
                   return
                else %T1.1.7.7
                   result = 3;
                   return
                end
            elseif button_number == 3 ||button_number == 4 ||button_number == 5
|| button_number ==6
                %put 2*1 button
                if(row == 5) %T1.1.7.8
                    result = 3;
                    return
                end
                if chessboard.ChessBoard(row,column) ==0 &&
chessboard.ChessBoard(row+1,column) == 0  %T1.1.7.9
                   chessboard.ChessBoard(row,column) = button_number;
                   chessboard.ChessBoard(row+1,column) = button_number;
                   result = 2;
                   return
                elseb  %T1.1.7.10
                   result = 3;
                   return
                end
            elseif button_number == 7 ||button_number == 8 ||button_number == 9
|| button_number == 10
                %put 2*1 button
                if chessboard.ChessBoard(row,column) ==0 %T1.1.7.11
                   chessboard.ChessBoard(row,column) = button_number;
                   result = 2;
                   return
                else %T1.1.7.12
                   result = 3;
                   return
                end
            end

        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	Test Case T1.1.7.1	**Test Case T1.1.7.2**
Coverage item	Tcover1.1.7.1	Tcover1.1.7.2
input	0,1,1	1,5,1
State	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	1	3
	Test Case T1.1.7.3	Test Case T1.1.7.4
Coverage item	Tcover1.1.7.3	Tcover1.1.7.4
input	1,1,1	1,1,1
State	chessboard = [7,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	3	2
	Test Case T1.1.7.5	Test Case T1.1.7.6
Coverage item	Tcover1.1.7.5	Tcover1.1.7.6
input	2,1,4	2,1,1
State	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [7,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	3	3
	Test Case T1.1.7.7	Test Case T1.1.7.8
Coverage item	Tcover1.1.7.7	Tcover1.1.7.8
input	2,1,1	3,5,1
State	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	2	3
	Test Case T1.1.7.9	Test Case T1.1.7.10
Coverage item	Tcover1.1.7.9	Tcover1.1.7.10
input	3,1,1	3,1,1
State	chessboard = [7,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	3	2
	Test Case T1.1.7.11	Test Case T1.1.7.12

	Test Case T1.1.7.1	Test Case T1.1.7.2
Coverage item	Tcover1.1.7.11	Tcover1.1.7.12
input	7,1,1	7,1,1
State	chessboard = [2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected output	3	2

- Test coverage :12/12 = 100%
- Test Result:12 passed

T1.1.8 release_chess() Test

```
function  release_chess(chessboard,button_number)
    for i = 1:5
        for m = 1:4 %T1.1.8.1
            if chessboard.ChessBoard(i,m) == button_number
                chessboard.ChessBoard(i,m) = 0;
            end
        end
    end
end
```

- Coverage Criteria :Statement Coverage
- Test Case

	TestCase1.1.8.1
Coverage item	Tcover1.1.8.1
input	1
State	chessboard = [1,1,0,0;1,1,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected final state	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]

- Test coverage :1/1 = 100%
- Test Result:1 passed

T1.1.9 check_chess() Test

```
function bool = check_chess(chessboard,button_number)
    bool = false;%T1.1.9.1
    for i = 1:5
        for m = 1:4 %T1.1.9.2
            if chessboard.ChessBoard(i,m) == button_number
                bool = true;
            end
        end
    end
end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.1.9.1	**TestCase1.1.9.2**
Coverage item	Tcover1.1.9.1	Tcover1.1.9.2
input	1	1
State	chessboard = [1,1,0,0;1,1,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	chessboard = [0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
Expected final state	true	false

- Test coverage :2/2 = 100%
- Test Result:2 passed

T1.2 move_2_2

T1.2.1 init_move() Test

```
function init_move(chess,chessboard,botton_num)
            %get the position of the botton
            for i = 1:5 %row
                for t = 1:4 %column
                    if chessboard(i,t) == botton_num
                        chess.position_row = [i,i+1];
                        chess.position_column = [t t+1];
                        return
                    end
                end
            end
end
```

- Coverage Criteria :state Coverage
- Test Case

	TestCase1.2.1.1
Coverage item	Tcover1.2.1.1
input	[1,1,0,0;1,1,0,0;0,0,0,0;0,0,0,0;0,0,0,0],1
State	null
Expected final state	position_row= [1,2];position_column = [1,2]

- Test coverage :1/1 = 100%
- Test Result:1 passed

T1.2.2 left_check() Test

```
        function result = left_check(chess,chessboard)
           % check 0 around the button
           left = false;
           %left? %T1.2.2.1
           if chess.position_column(1,1) ~= 1 %T1.2.2.2
               if
(chessboard(chess.position_row(1,1),chess.position_column(1,1)-1) == 0)&&
(chessboard(chess.position_row(1,2),chess.position_column(1,1)-1) == 0)%T1.2.2.3
                   left = true;
               end
           end
           result = left;
           return
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.2.2.1	TestCase1.2.2.2	TestCase1.2.2.3
Coverage item	Tcover1.2.2.1	Tcover1.2.2.2	Tcover1.2.2.3
input	[1,1,0,0;1,1,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[3,1,1,0;3,1,1,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= [1,2];position_column= [1,2]	position_row= [1,2];position_column = [2,3]	position_row= [1,2];position_column = [2,3]
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.2.3 right_check() Test

```
       function result = right_check(chess,chessboard)
           % check 0 around the button
           right = false;
           %right%T1.2.3.1
           if chess.position_column(1,2) ~= 4 %T1.2.3.2
               if
(chessboard(chess.position_row(1,1),chess.position_column(1,2)+1) == 0)&&
(chessboard(chess.position_row(1,2),chess.position_column(1,2)+1) == 0)
%T1.2.3.3
                   right = true;
               end
           end
           result = right;
           return
       end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.2.3.1	TestCase1.2.3.2	TestCase1.2.3.3
Coverage item	Tcover1.2.3.1	Tcover1.2.3.2	Tcover1.2.3.3
input	[0,0,1,1;0,0,1,1;0,0,0,0;0,0,0,0;0,0,0,0]	[0,1,1,3;0,1,1,3;0,0,0,0;0,0,0,0;0,0,0,0]	[0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= [1,2];position_column= [3,4]	position_row= [1,2];position_column = [2,3]	position_row= [1,2];position_column = [2,3]
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.2.4 up_check() Test

```
        function result = up_check(chess,chessboard)
            % check 0 around the button
            up = false;%T1.2.4.1
            %up
            if chess.position_row(1,1) ~= 1 %T1.2.4.2
                if
(chessboard(chess.position_row(1,1)-1,chess.position_column(1,1)) == 0)&&
(chessboard(chess.position_row(1,1)-1,chess.position_column(1,2)) == 0)
%T1.2.4.3
                    up = true;
                end
            end
            result = up;
            return
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.2.4.1	TestCase1.2.4.2	TestCase1.2.4.3
Coverage item	Tcover1.2.4.1	Tcover1.2.4.2	Tcover1.2.4.3
input	[1,1,0,0;1,1,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,2,2,0;0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0]	[0,0,0,0;0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0]
State	position_row= [1,2];position_column= [1,2]	position_row= [2,3];position_column = [2,3]	position_row= [2,3];position_column = [2,3]
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.2.5 down_check() Test

```
        function result = down_check(chess,chessboard)
            % check 0 around the button
            down = false;%T1.2.5.1
            %down
            if chess.position_row(1,2) ~= 5 %T1.2.5.2
                if
(chessboard(chess.position_row(1,2)+1,chess.position_column(1,1)) == 0)&&
(chessboard(chess.position_row(1,2)+1,chess.position_column(1,2)) == 0)
%T1.2.5.3
                    down = true;
                end
            end
            result = down;
            return
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.2.5.1	TestCase1.2.5.2	TestCase1.2.5.3
Coverage item	Tcover1.2.5.1	Tcover1.2.5.2	Tcover1.2.5.3
input	[0,0,0,0;0,0,0,0;0,0,0,0;1,1,0,0;1,1,0,0]	[0,1,1,0;0,1,1,0;0,2,2,0;0,0,0,0;0,0,0,0]	[0,1,1,0;0,1,1,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= [4,5];position_column= [2,3]	position_row= [1,2];position_column = [2,3]	position_row= [1,2];position_column = [2,3]
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.3 move_2_1

T1.3.1 init_move() Test

```
function init_move(chess,chessboard,botton_num)
            %get the position of the botton
            for i = 1:5 %row
                for t = 1:4 %column
                    if chessboard(i,t) == botton_num
                        chess.position_row = i;
                        chess.position_column = [t t+1];
                        return
                    end
                end
            end

        end
```

- Coverage Criteria :state Coverage
- Test Case

	TestCase1.3.1.1
Coverage item	Tcover1.3.1.1
input	[2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0],2
State	null
Expected final state	position_row= 1;position_column = [1,2]

- Test coverage :1/1 = 100%
- Test Result:1 passed

T1.3.2 left_check() Test

```
        function result = left_check(chess,chessboard)
            % check 0 around the button
            left = false;%T1.3.2.1
            %left?
            if chess.position_column(1,1) ~= 1 %T1.3.2.2
                if chessboard(chess.position_row,chess.position_column(1,1)-1)
== 0 %T1.3.3.1
                    left = true;
                end
            end
            result = left;
            return
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.3.2.1	**TestCase1.3.2.2**	**TestCase1.3.2.3**
Coverage item	Tcover1.3.2.1	Tcover1.3.2.2	Tcover1.3.2.3
input	[2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[7,2,2,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,2,2,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= 1;position_column= [1,2]	position_row= 1;position_column = [2,3]	position_row= 1;position_column = [2,3]
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.3.3 right_check() Test

```
        function result = right_check(chess,chessboard)
            % check 0 around the button
            right = false;%T1.3.3.1
            %right
            if chess.position_column(1,2) ~= 4 %T1.3.3.2
                if chessboard(chess.position_row,chess.position_column(1,2)+1)
== 0 %T1.3.3.3
                    right = true;
                end
            end
            result = right;
            return
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.3.3.1	TestCase1.3.3.2	TestCase1.3.3.3
Coverage item	Tcover1.3.3.1	Tcover1.3.3.2	Tcover1.3.3.3
input	[0,0,2,2;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[2,2,3,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= 1;position_column= [3,4]	position_row= 1;position_column = [1,2]	position_row=1;position_column = [1,2]
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.3.4 up_check() Test

```
        function result = up_check(chess,chessboard)
            % check 0 around the button
            up = false;%T1.3.4.1
            %up
            if chess.position_row ~= 1 %T1.3.4.2
                if (chessboard(chess.position_row-1,chess.position_column(1,1))
== 0)&&(chessboard(chess.position_row-1,chess.position_column(1,2)) ==
0)%T1.3.4.3
                    up = true;
                end
            end
            result = up;
            return
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.3.4.1	TestCase1.3.4.2	TestCase1.3.4.3
Coverage item	Tcover1.3.4.1	Tcover1.3.4.2	Tcover1.3.4.3
input	[2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,7,0,0;2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,0,0,0;2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row=1;position_column=[1,2]	position_row= 2;position_column = [2,3]	position_row= 2;position_column = [2,3]
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.3.5 down_check() Test

```
        function result = down_check(chess,chessboard)
            % check 0 around the button
            down = false;%T1.3.5.1
            %down
            if chess.position_row ~= 5 %T1.3.5.2
                if (chessboard(chess.position_row+1,chess.position_column(1,1))
== 0)&&(chessboard(chess.position_row+1,chess.position_column(1,2)) == 0)
%T1.3.5.3
                    down = true;
                end
            end
            result = down;
            return
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.3.5.1	TestCase1.3.5.2	TestCase1.3.5.3
Coverage item	Tcover1.3.5.1	Tcover1.3.5.2	Tcover1.3.5.3
input	[0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,2,2,0]	[2,2,0,0;0,7,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[2,2,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= 5;position_column=[2,3]	position_row= 1;position_column = [2,3]	position_row=1;position_column = [2,3]
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.4 move_1_2

T1.4.1 init_move() Test

```
        function init_move(chess,chessboard,botton_num)
            %get the position of the botton
            for i = 1:5 %row
                for t = 1:4 %column
                    if chessboard(i,t) == botton_num
                        chess.position_row = [i,i+1];
                        chess.position_column = t;
                        return
                    end
                end
            end

        end
```

- Coverage Criteria :state Coverage
- Test Case

	TestCase1.4.1.1
Coverage item	Tcover1.4.1.1
input	[3,0,0,0;3,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0],3
State	null
Expected final state	position_row= [1,2];position_column = 1

- Test coverage :1/1 = 100%
- Test Result:1 passed

T1.4.2 left_check() Test

```
         function result = left_check(chess,chessboard)
            % check 0 around the button
            left = false;%T1.4.2.1
            %left?
            if chess.position_column ~= 1 %T1.4.2.2
                if (chessboard(chess.position_row(1,1),chess.position_column-1)
== 0)&&(chessboard(chess.position_row(1,2),chess.position_column-1) == 0)
%T1.4.2.3
                    left = true;
                end
            end
            result = left;
         end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.4.2.1	TestCase1.4.2.2	TestCase1.4.2.3
Coverage item	Tcover1.4.2.1	Tcover1.4.2.2	Tcover1.3.2.3
input	[3,0,0,0;3,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[7,3,0,0;0,3,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,3,0,0;0,3,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= [1,2];position_column= 1	position_row= [1,2];position_column = 2	position_row= [1,2];position_column = 2
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.4.3 right_check() Test

```
        function result = right_check(chess,chessboard)
            % check 0 around the button
            right = false; %T1.4.3.1
            %right
            if chess.position_column ~= 4 %T1.4.3.2
                if (chessboard(chess.position_row(1,1),chess.position_column+1)
== 0)&&(chessboard(chess.position_row(1,2),chess.position_column+1) == 0)
%T1.4.3.3
                    right = true;
                end
            end
            result = right;
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.4.3.1	TestCase1.4.3.2	TestCase1.4.3.3
Coverage item	Tcover1.4.3.1	Tcover1.4.3.2	Tcover1.4.3.3
input	[0,0,0,3;0,0,0,3;0,0,0,0;0,0,0,0;0,0,0,0]	[0,3,7,0;0,3,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,3,0,0;0,3,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= [1,2];position_column= 4	position_row= [1,2];position_column= 2	position_row= [1,2];position_column= 2
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.4.4 up_check() Test

```
    function result = up_check(chess,chessboard)
          % check 0 around the button
          up = false; %T1.4.4.1
          %up
          if chess.position_row(1,1) ~= 1 %T1.4.4.2
              if chessboard(chess.position_row(1,1)-1,chess.position_column)
== 0 %T1.4.4.3
                  up = true;
              end
          end

          result = up;
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.4.4.1	TestCase1.4.4.2	TestCase1.4.4.3
Coverage item	Tcover1.4.4.1	Tcover1.4.4.2	Tcover1.4.4.3
input	[0,3,0,0;0,3,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,7,0,0;0,3,0,0;0,3,0,0;0,0,0,0;0,0,0,0]	[0,0,0,0;0,3,0,0;0,3,0,0;0,0,0,0;0,0,0,0]
State	position_row= [1,2];position_column= 2	position_row= [2,3];position_column= 2	position_row= [2,3];position_column= 2
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.4.5 down_check() Test

```
    function result = down_check(chess,chessboard)
        % check 0 around the button
        down = false;%T1.4.5.1
        %down
        if chess.position_row(1,2) ~= 5 %T1.4.5.2
            if chessboard(chess.position_row(1,2)+1,chess.position_column) == 0
%T1.4.5.3
                down = true;
            end
        end
        result = down;
    end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.4.5.1	TestCase1.4.5.2	TestCase1.4.5.3
Coverage item	Tcover1.4.5.1	Tcover1.4.5.2	Tcover1.4.5.3
input	[0,0,0,0;0,0,0,0;0,0,0,0;0,3,0,0;0,3,0,0]	[0,0,0,0;0,0,0,0;0,3,0,0;0,3,0,0;0,7,0,0]	[0,0,0,0;0,0,0,0;0,3,0,0;0,3,0,0;0,0,0,0]
State	position_row= [4,5];position_column= 2	position_row= [3,4];position_column= 2	position_row= [3,4];position_column= 2
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.5 move_1_1

T1.5.1 init_move() Test

```
function init_move(chess,chessboard,botton_num)
    %get the position of the botton
    for i = 1:5 %row
        for t = 1:4 %column
            if chessboard(i,t) == botton_num
                chess.position_row = i;
                chess.position_column = t;
                return
            end
        end
    end

end
```

- Coverage Criteria :state Coverage
- Test Case

	TestCase1.5.1.1
Coverage item	Tcover1.5.1.1
input	[7,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0],7
State	null
Expected final state	position_row= 1;position_column = 1

- Test coverage :1/1 = 100%
- Test Result:1 passed

T1.5.2 left_check() Test

```
        function result = left_check(chess,chessboard)
            % check 0 around the button
            left = false;%T1.5.2.1
            %left?
            if chess.position_column ~= 1 %T1.5.2.2
                if chessboard(chess.position_row,chess.position_column-1) == 0
%T1.5.2.3
                    left = true;
                end
            end
            result = left;
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.5.2.1	TestCase1.5.2.2	TestCase1.5.2.3
Coverage item	Tcover1.5.2.1	Tcover1.5.2.2	Tcover1.5.2.3
input	[7,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[8,7,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,7,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= 1;position_column= 1	position_row= 1;position_column = 2	position_row= 1;position_column = 2
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.5.3 right_check() Test

```
        function result = right_check(chess,chessboard)
            % check 0 around the button
            right = false;%T1.5.3.1
            %right
            if chess.position_column ~= 4 %T1.5.3.2
                if chessboard(chess.position_row,chess.position_column+1) == 0
%T1.5.3.3
                    right = true;
                end
            end
            result = right;
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.5.3.1	TestCase1.5.3.2	TestCase1.5.3.3
Coverage item	Tcover1.5.3.1	Tcover1.5.3.2	Tcover1.5.3.3
input	[0,0,0,7;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,0,7,8;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= 1;position_column= 4	position_row= 1;position_column= 3	position_row= 1position_column= 3
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.5.4 up_check() Test

```
        function result = up_check(chess,chessboard)
            % check 0 around the button
            up = false;%T1.5.4.1
            %up
            if chess.position_row ~= 1 %T1.5.4.2
                if chessboard(chess.position_row-1,chess.position_column) == 0
%T1.5.4.3
                    up = true;
                end
            end
            result = up;
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.5.4.1	TestCase1.5.4.2	TestCase1.5.4.3
Coverage item	Tcover1.5.4.1	Tcover1.5.4.2	Tcover1.5.4.3
input	[0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,0,8,0;0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,0,0,0;0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= 1;position_column= 3	position_row= 2;position_column= 3	position_row= 2;position_column= 3
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.5.5 down_check() Test

```
        function result = down_check(chess,chessboard)
            % check 0 around the button
            down = false;%T1.5.5.1
            %down
            if chess.position_row ~= 5 %T1.5.5.2
                if chessboard(chess.position_row+1,chess.position_column) == 0
%T1.5.5.3
                    down = true;
                end
            end
            result = down;
        end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.5.5.1	TestCase1.5.5.2	TestCase1.5.5.3
Coverage item	Tcover1.5.5.1	Tcover1.5.5.2	Tcover1.5.5.3
input	[0,0,0,0;0,0,0,0;0,0,0,0;0,0,0,0;0,0,7,0]	[0,0,0,0;0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0]	[0,0,0,0;0,0,7,0;0,0,0,0;0,0,0,0;0,0,0,0]
State	position_row= 5;position_column= 3	position_row= 2;position_column= 3	position_row= 2;position_column= 3
Expected output	false	false	true

- Test coverage :3/3 = 100%
- Test Result:3 passed

T1.6 define_back

T1.6.1 lock_func() Test

```
function lock_func(obj,button_number)
                switch(button_number)
                    case 1 %T1.6.1.1
                        obj.ui.Button.Value = 0;
                        obj.ui.Button.Enable = false;
                        obj.ui.Button.Text = num2str(obj.ui.operating_button);
                    case 2 %T1.6.1.2
                        obj.ui.Button_2.Value = 0;
                        obj.ui.Button_2.Enable = false;
                        obj.ui.Button_2.Text = num2str(obj.ui.operating_button);
                    case 3 %T1.6.1.3
                        obj.ui.Button_3.Value = 0;
                        obj.ui.Button_3.Enable = false;
                        obj.ui.Button_3.Text = num2str(obj.ui.operating_button);
                    case 4 %T1.6.1.4
                        obj.ui.Button_4.Value = 0;
                        obj.ui.Button_4.Enable = false;
                        obj.ui.Button_4.Text = num2str(obj.ui.operating_button);
                    case 5 %T1.6.1.5
                        obj.ui.Button_5.Value = 0;
                        obj.ui.Button_5.Enable = false;
                        obj.ui.Button_5.Text = num2str(obj.ui.operating_button);
                    case 6 %T1.6.1.6
                        obj.ui.Button_6.Value = 0;
                        obj.ui.Button_6.Enable = false;
                        obj.ui.Button_6.Text = num2str(obj.ui.operating_button);
                    case 7 %T1.6.1.7
                        obj.ui.Button_7.Value = 0;
                        obj.ui.Button_7.Enable = false;
                        obj.ui.Button_7.Text = num2str(obj.ui.operating_button);
                    case 8 %T1.6.1.8
                        obj.ui.Button_8.Value = 0;
                        obj.ui.Button_8.Enable = false;
                        obj.ui.Button_8.Text = num2str(obj.ui.operating_button);
                    case 9 %T1.6.1.9
                        obj.ui.Button_9.Value = 0;
                        obj.ui.Button_9.Enable = false;
                        obj.ui.Button_9.Text = num2str(obj.ui.operating_button);
                    case 10 %T1.6.1.10
                        obj.ui.Button_10.Value = 0;
                        obj.ui.Button_10.Enable = false;
                        obj.ui.Button_10.Text =
num2str(obj.ui.operating_button);
```

```
                    case 11 %T1.6.1.11
                        obj.ui.Button_11.Value = 0;
                        obj.ui.Button_11.Enable = false;
                        obj.ui.Button_11.Text =
num2str(obj.ui.operating_button);
                    case 12 %T1.6.1.12
                        obj.ui.Button_12.Value = 0;
                        obj.ui.Button_12.Enable = false;
                        obj.ui.Button_12.Text =
num2str(obj.ui.operating_button);
                    case 13 %T1.6.1.13
                        obj.ui.Button_13.Value = 0;
                        obj.ui.Button_13.Enable = false;
                        obj.ui.Button_13.Text =
num2str(obj.ui.operating_button);
                    case 14 %T1.6.1.14
                        obj.ui.Button_14.Value = 0;
                        obj.ui.Button_14.Enable = false;
                        obj.ui.Button_14.Text =
num2str(obj.ui.operating_button);
                    case 15 %T1.6.1.15
                        obj.ui.Button_15.Value = 0;
                        obj.ui.Button_15.Enable = false;
                        obj.ui.Button_15.Text =
num2str(obj.ui.operating_button);
                    case 16 %T1.6.1.16
                        obj.ui.Button_16.Value = 0;
                        obj.ui.Button_16.Enable = false;
                        obj.ui.Button_16.Text =
num2str(obj.ui.operating_button);
                    case 17 %T1.6.1.17
                        obj.ui.Button_17.Value = 0;
                        obj.ui.Button_17.Enable = false;
                        obj.ui.Button_17.Text =
num2str(obj.ui.operating_button);
                    case 18 %T1.6.1.18
                        obj.ui.Button_18.Value = 0;
                        obj.ui.Button_18.Enable = false;
                        obj.ui.Button_18.Text =
num2str(obj.ui.operating_button);
                    case 19 %T1.6.1.19
                        obj.ui.Button_19.Value = 0;
                        obj.ui.Button_19.Enable = false;
                        obj.ui.Button_19.Text =
num2str(obj.ui.operating_button);
                    case 20 %T1.6.1.20
                        obj.ui.Button_20.Value = 0;
                        obj.ui.Button_20.Enable = false;
                        obj.ui.Button_20.Text =
num2str(obj.ui.operating_button);

                end
            end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.6.8
Coverage item	Tcover1.6.1.1 - Tcover1.6.1.20

- Test coverage :20/20 = 100%
- Test Result:1 passed

T1.6.2 release_func() Test

```
function release_func(obj,button_number)
                switch(button_number)
                    case 1 %T1.6.2.1
                        obj.ui.Button.Value = 0;
                        obj.ui.Button.Enable = true;
                        obj.ui.Button.Text = '';
                    case 2 %T1.6.2.2
                        obj.ui.Button_2.Value = 0;
                        obj.ui.Button_2.Enable = true;
                        obj.ui.Button_2.Text = '';
                    case 3 %T1.6.2.3
                        obj.ui.Button_3.Value = 0;
                        obj.ui.Button_3.Enable = true;
                        obj.ui.Button_3.Text = '';
                    case 4 %T1.6.2.4
                        obj.ui.Button_4.Value = 0;
                        obj.ui.Button_4.Enable = true;
                        obj.ui.Button_4.Text = '';
                    case 5 %T1.6.2.5
                        obj.ui.Button_5.Value = 0;
                        obj.ui.Button_5.Enable = true;
                        obj.ui.Button_5.Text = '';
                    case 6 %T1.6.2.6
                        obj.ui.Button_6.Value = 0;
                        obj.ui.Button_6.Enable = true;
                        obj.ui.Button_6.Text = '';
                    case 7 %T1.6.2.7
                        obj.ui.Button_7.Value = 0;
                        obj.ui.Button_7.Enable = true;
                        obj.ui.Button_7.Text = '';
                    case 8 %T1.6.2.8
                        obj.ui.Button_8.Value = 0;
                        obj.ui.Button_8.Enable = true;
                        obj.ui.Button_8.Text = '';
                    case 9 %T1.6.2.9
                        obj.ui.Button_9.Value = 0;
                        obj.ui.Button_9.Enable = true;
                        obj.ui.Button_9.Text = '';
                    case 10 %T1.6.2.10
                        obj.ui.Button_10.Value = 0;
                        obj.ui.Button_10.Enable = true;
                        obj.ui.Button_10.Text = '';
                    case 11 %T1.6.2.11
                        obj.ui.Button_11.Value = 0;
                        obj.ui.Button_11.Enable = true;
                        obj.ui.Button_11.Text = '';
                    case 12 %T1.6.2.12
                        obj.ui.Button_12.Value = 0;
                        obj.ui.Button_12.Enable = true;
                        obj.ui.Button_12.Text = '';
                    case 13 %T1.6.2.13
                        obj.ui.Button_13.Value = 0;
                        obj.ui.Button_13.Enable = true;
                        obj.ui.Button_13.Text = '';
                    case 14 %T1.6.2.14
                        obj.ui.Button_14.Value = 0;
                        obj.ui.Button_14.Enable = true;
                        obj.ui.Button_14.Text = '';
                    case 15 %T1.6.2.15
                        obj.ui.Button_15.Value = 0;
                        obj.ui.Button_15.Enable = true;
                        obj.ui.Button_15.Text = '';
                    case 16 %T1.6.2.16
                        obj.ui.Button_16.Value = 0;
                        obj.ui.Button_16.Enable = true;
                        obj.ui.Button_16.Text = '';
                    case 17 %T1.6.2.17
                        obj.ui.Button_17.Value = 0;
                        obj.ui.Button_17.Enable = true;
                        obj.ui.Button_17.Text = '';
                    case 18 %T1.6.2.18
                        obj.ui.Button_18.Value = 0;
                        obj.ui.Button_18.Enable = true;
                        obj.ui.Button_18.Text = '';
                    case 19 %T1.6.2.19
                        obj.ui.Button_19.Value = 0;
                        obj.ui.Button_19.Enable = true;
                        obj.ui.Button_19.Text = '';
                    case 20 %T1.6.2.20
                        obj.ui.Button_20.Value = 0;
                        obj.ui.Button_20.Enable = true;
                        obj.ui.Button_20.Text = '';

                end
            end
```

- Coverage Criteria :Branch Coverage
- Test Case

	TestCase1.6.8
Coverage item	Tcover1.6.2.1 - Tcover1.6.2.20

- Test coverage :20/20 = 100%
- Test Result:1 passed

T1.6.3 invalid_operation() Test

```
function invalid_operation(obj,button_number)
                obj.ui.Label.Text = '无效操作';
                obj.release_func(button_number)
end
```

- Coverage Criteria :State Coverage
- Test Case

	TestCase1.6.2
Coverage item	Tcover1.6.3.1

- Test coverage :1/1 = 100%
- Test Result:1 passed

T1.6.4 put_chess() Test

```
function put_chess(obj,button_number,row,col)
                switch (obj.ui.operating_button)
                    case 0 %Tcover1.6.4.0
                        obj.ui.Label.Text = '请选择操作按键';
                        obj.release_func(button_number)
                    case 1
                        switch(obj.ui.chessboard.put_chess(1,row,col))
                            case 1  %Tcover1.6.4.1
                                obj.invalid_operation(button_number)
                                obj.ui.B1.Value = 0;
                            case 2 %Tcover1.6.4.2
                                obj.ui.B1_space = [button_number button_number+1 
button_number+4 button_number+5];
                               for i = 1:4
                                 obj.lock_func(obj.ui.B1_space(i))
                               end
                               obj.ui.Label.Text = '按钮放置';
                               obj.ui.B1_put = true;
                            case 3 %Tcover1.6.4.3
                               obj.invalid_operation(button_number)
                               obj.ui.B1.Value = 0;
                        end
                    case 2
                        switch(obj.ui.chessboard.put_chess(2,row,col))
                            case 1  %Tcover1.6.4.4
                               obj.invalid_operation(button_number)
                               obj.ui.B2.Value = 0;
                            case 2 %Tcover1.6.4.5
                                obj.ui.B2_space = [button_number 
button_number+1];
                                for i = 1:2
                                    obj.lock_func(obj.ui.B2_space(i))
                                end
                               obj.ui.Label.Text = '按钮放置';
                               obj.ui.B2_put = true;
                            case 3 %Tcover1.6.4.6
                               obj.invalid_operation(button_number)
                               obj.ui.B2.Value = 0;
                        end

                    case 3
                        switch(obj.ui.chessboard.put_chess(3,row,col))
                            case 1  %Tcover1.6.4.7
                                obj.invalid_operation(button_number)
                                obj.ui.B3.Value = 0;
                            case 2 %Tcover1.6.4.8
                                obj.ui.B3_space = [button_number
button_number+4];
                                for i = 1:2
                                    obj.lock_func(obj.ui.B3_space(i))
                                end
                               obj.ui.Label.Text = '按钮放置';
                               obj.ui.B3_put = true;
                            case 3 %Tcover1.6.4.9
                                obj.invalid_operation(button_number)
                                obj.ui.B3.Value = 0;
                        end

                    case 4
                        switch(obj.ui.chessboard.put_chess(4,row,col))
                            case 1  %Tcover1.6.4.10
                                obj.invalid_operation(button_number)
                                obj.ui.B4.Value = 0;
                            case 2 %Tcover1.6.4.11
                                obj.ui.B4_space = [button_number
button_number+4];
                                for i = 1:2
                                    obj.lock_func(obj.ui.B4_space(i))
                                end
                                obj.ui.Label.Text = '按钮放置';
                                obj.ui.B4_put = true;
                            case 3 %Tcover1.6.4.12
                                obj.invalid_operation(button_number)
                                obj.ui.B4.Value = 0;
                        end

                    case 5
                        switch(obj.ui.chessboard.put_chess(5,row,col))
                            case 1  %Tcover1.6.4.13
                                obj.invalid_operation(button_number)
                                obj.ui.B5.Value = 0;
                            case 2 %Tcover1.6.4.14
                                obj.ui.B5_space = [button_number
button_number+4];
                                for i = 1:2
                                    obj.lock_func(obj.ui.B5_space(i))
                                end
                               obj.ui.Label.Text = '按钮放置';
                               obj.ui.B5_put = true;
                            case 3 %Tcover1.6.4.15
                                obj.invalid_operation(button_number)
                                obj.ui.B5.Value = 0;
                        end
                    case 6
                        switch(obj.ui.chessboard.put_chess(6,row,col))
                            case 1  %Tcover1.6.4.16
                               obj.invalid_operation(button_number)
                               obj.ui.B6.Value = 0;
                            case 2 %Tcover1.6.4.17
                                obj.ui.B6_space = [button_number
button_number+4];
                                for i = 1:2
                                    obj.lock_func(obj.ui.B6_space(i))
                                end
                               obj.ui.Label.Text = '按钮放置';
                               obj.ui.B6_put = true;
                            case 3 %Tcover1.6.4.18
                               obj.invalid_operation(button_number)
                               obj.ui.B6.Value = 0;
                        end
                    case 7
                        switch(obj.ui.chessboard.put_chess(7,row,col))
                            case 1 %Tcover1.6.4.19
                                obj.invalid_operation(button_number)
                                obj.ui.B7.Value = 0;
                            case 2 %Tcover1.6.4.20
                                obj.ui.B7_space = button_number;
                                obj.lock_func(obj.ui.B7_space)
                                obj.ui.Label.Text = '按钮放置';
                                obj.ui.B7_put = true;
                            case 3 %Tcover1.6.4.21
                                obj.invalid_operation(button_number)
                                obj.ui.B7.Value = 0;
                        end
                    case 8
                        switch(obj.ui.chessboard.put_chess(8,row,col))
                            case 1 %Tcover1.6.4.22
                                obj.invalid_operation(button_number)
                                obj.ui.B8.Value = 0;
                            case 2 %Tcover1.6.4.23
                                obj.ui.B8_space = button_number;
                                obj.lock_func(obj.ui.B8_space)
                                obj.ui.Label.Text = '按钮放置';
                                obj.ui.B8_put = true;
                            case 3 %Tcover1.6.4.24
                                obj.invalid_operation(button_number)
                                obj.ui.B8.Value = 0;
                        end
                    case 9
                        switch(obj.ui.chessboard.put_chess(9,row,col))
                            case 1  %Tcover1.6.4.25
                                obj.invalid_operation(button_number)
                                obj.ui.B9.Value = 0;
                            case 2 %Tcover1.6.4.26
                                obj.ui.B9_space = button_number;
                                obj.lock_func(obj.ui.B9_space)
                                obj.ui.Label.Text = '按钮放置';
                                obj.ui.B9_put = true;
                            case 3 %Tcover1.6.4.27
                                obj.invalid_operation(button_number)
                                obj.ui.B9.Value = 0;
                        end
                    case 10
                        switch(obj.ui.chessboard.put_chess(10,row,col))
                            case 1 %Tcover1.6.4.28
                                obj.invalid_operation(button_number)
                                obj.ui.B9.Value = 0;
                            case 2 %Tcover1.6.4.29
                                obj.ui.B10_space = button_number;
                                obj.lock_func(obj.ui.B10_space)
```

```
                                obj.ui.Label.Text = '按钮放置';
                                obj.ui.B10_put = true;
                            case 3 %Tcover1.6.4.30
                                obj.invalid_operation(button_number)
                                obj.ui.B9.Value = 0;
                        end

                end
            end
```

- Coverage Criteria :State Coverage
- Test Case

	TestCase1.6.2	TestCase1.6.3	TestCase1.6.4
Coverage item	Tcover1.6.4.0 - Tcover1.6.4.3	Tcover1.6.4.4 - Tcover1.6.4.6	Tcover1.6.4.7 - Tcover1.6.4.9
	TestCase1.6.5	TestCase1.6.6	TestCase1.6.7
Coverage item	Tcover1.6.4.10 - Tcover1.6.4.12	Tcover1.6.4.13 - Tcover1.6.4.15	Tcover1.6.4.16 - Tcover1.6.4.18
	TestCase1.6.8	TestCase1.6.9	TestCase1.6.10
Coverage item	Tcover1.6.4.19 - Tcover1.6.4.21	Tcover1.6.4.22 - Tcover1.6.4.24	Tcover1.6.4.25 - Tcover1.6.4.27
	TestCase1.6.11		
Coverage item	Tcover1.6.4.28 - Tcover1.6.4.30		

- Test coverage :30/30 = 100%
- Test Result:10 passed

T1.6.5 release_button2_2() Test

```
        function release_button2_2(obj,button,number)
            if button%Tcover1.6.5.1
                    for i = 1:4
                        obj.release_func(button(i))
                    end
                    obj.ui.operating_button = 0;
                    obj.ui.chessboard.release_chess(number)
            end
            %Tcover1.6.5.2
        end
```

- Coverage Criteria :State Coverage
- Test Case

	TestCase1.6.2
Coverage item	Tcover1.6.5.1 ,Tcover1.6.5.2

- Test coverage :2/2 = 100%
- Test Result:1 passed

T1.6.6 release_button2_1() Test

```
        function release_button2_1(obj,button,number)
            if button %Tcover1.6.6.1
                    for i = 1:2
                        obj.release_func(button(i))
                    end
                    obj.ui.operating_button = 0;
                    obj.ui.chessboard.release_chess(number)

            end
            %Tcover1.6.6.2
        end
```

- Coverage Criteria :State Coverage
- Test Case

	TestCase1.6.3
Coverage item	Tcover1.6.6.1 ,Tcover1.6.6.2

- Test coverage :2/2 = 100%
- Test Result:1 passed

T1.6.7 release_button1_1() Test

```
        function release_button1_1(obj,button,number)
            if button %Tcover1.6.7.1
                    obj.release_func(button)
                    obj.ui.operating_button = 0;
                    obj.ui.chessboard.release_chess(number)
            end
            %Tcover1.6.7.2
        end
```

- Coverage Criteria :State Coverage
- Test Case

	TestCase1.6.8
Coverage item	Tcover1.6.7.1 ,Tcover1.6.7.2

- Test coverage :2/2 = 100%
- Test Result:1 passed

T2 Function Test

T2.1 choose 2*2 chess and do operation

T2.1.1 left move

T2.1.1.1 left move fail because of edge

```
function unit_2_2test_left1(testCase)
            matrix = [1,1,2,2;1,1,3,4;6,5,3,4;6,5,7,9;8,10,0,0];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[1,2])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.1.1
Coverage item	Tcover1.1.2 ,Tcover1.2.2
input	press chess1 ->press left move
output	no output

T2.1.1.2 left move fail because of other chess

```
%T2.1.1.2 left move false because of no empty space
function unit_2_2test_left2(testCase)
    matrix = [3 1 1 4 ; 3 1 1 4;5 2 2 6;5 8 9 6;7 0 0 10];
    testCase.start(matrix,0)
    testCase.press(testCase.ui.chess2_2)
    testCase.press(testCase.ui.left_move)
    testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
    testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
    testCase.verifyEqual(testCase.ui.move2_2.get_column(),[2,3])
    testCase.verifyEqual(testCase.ui.score_board.Text,'0')
    close all force;
end
```

	TestCase2.1.1.2
Coverage item	Tcover1.1.2 ,Tcover1.2.2
input	press chess1 ->press left move
output	no output

T2.1.1.3 left move succeed

```
        function unit_2_2test_left3(testCase)
            matrix = [0,1,1,6;0,1,1,6;5,2,2,4;5,3,9,4;7,3,10,8];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[1,2])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[1,1,0,6;1,1,0,6;5,2,2,4;5,3,9,4;7,3,10,8])
            close all force;
        end
```

	TestCase2.1.1.2
Coverage item	Tcover1.1.2 ,Tcover1.2.2
input	press chess1 ->press left move
output	chess1 left move

- Test case : TestCase2.1.1.1 - TestCase2.1.1.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.1.2 up move

T2.1.2.1 up move fail because of edge

```
        % up move false because of edge
        function unit_2_2test_up1(testCase)
            matrix = [1,1,2,2;1,1,3,4;6,5,3,4;6,5,7,9;8,10,0,0];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[1,2])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.1.1
Coverage item	Tcover1.1.4 ,Tcover1.2.4
input	press chess1 ->press upmove
output	no output

T2.1.2.2 up move fail because of other chess

```
        % up move false because of no emtpy space
        function unit_2_2test_up2(testCase)
            matrix = [6,2,2,5;6,1,1,5;4,1,1,3;4,9,7,3;8,0,0,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[2,3])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.1.2
Coverage item	Tcover1.1.4 ,Tcover1.2.4
input	press chess1 ->press upmove
output	no output

T2.1.2.3 up move succeed

```
        % up move successfully
        function unit_2_2test_up3(testCase)
            matrix = [6,0,0,5;6,1,1,5;4,1,1,3;4,9,7,3;8,2,2,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[6,1,1,5;6,1,1,5;4,0,0,3;4,9,7,3;8,2,2,10])
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.1.1.2
Coverage item	Tcover1.1.4 ,Tcover1.2.4
input	press chess1 ->press upmove
output	chess1 up move

- Test case : TestCase2.1.2.1 - TestCase2.1.2.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.1.3 right move

T2.1.3.1 right move fail because of edge

```
        function unit_2_2test_right1(testCase)
            matrix = [3 4 1 1 ; 3 4 1 1;5 2 2 6;5 8 9 6;7 0 0 10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[3,4])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.31
Coverage item	Tcover1.1.3 ,Tcover1.2.3
input	press chess1 ->press rightmove
output	no output

T2.1.3.2 right move fail because of other chess

```
        function unit_2_2test_right2(testCase)
            matrix = [3 1 1 4 ; 3 1 1 4;5 2 2 6;5 8 9 6;7 0 0 10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.3.2
Coverage item	Tcover1.1.3 ,Tcover1.2.3
input	press chess1 ->press rightmove
output	no output

T2.1.3.3 right move succeed

```
        function unit_2_2test_right3(testCase)
            matrix = [3 1 1 0 ; 3 1 1 0;5 4 7 6;5 4 9 6;8 2 2 10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),[3 0 1 1 ; 3
0 1 1;5 4 7 6;5 4 9 6;8 2 2 10])
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[3,4])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.1.3.2
Coverage item	Tcover1.1.3 ,Tcover1.2.3
input	press chess1 ->press rightmove
output	chess1 right move

- Test case : TestCase2.1.3.1 - TestCase2.1.3.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.1.4 down move

T2.1.4.1 down move fail because of edge

```
        function unit_2_2test_down1(testCase)
            matrix = [5,2,2,6;5,4,3,6;7,4,3,9;1,1,8,0;1,1,10,0];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[4,5])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[1,2])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.4.1
Coverage item	Tcover1.1.5 ,Tcover1.2.5
input	press chess1 ->press downmove
output	no output

T2.1.4.2 down move fail because of other chess

```
        function unit_2_2test_down2(testCase)
            matrix = [3 1 1 4 ; 3 1 1 4;5 2 2 6;5 8 9 6;7 0 0 10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.4.2
Coverage item	Tcover1.1.5 ,Tcover1.2.5
input	press chess1 ->press downmove
output	no output

T2.1.4.3 down move succeed

```
        function unit_2_2test_down3(testCase)
            matrix = [3 1 1 4 ; 3 1 1 4;5 0 0 6;5 8 9 6;7 2 2 10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),[3 0 0 4 ; 3
1 1 4;5 1 1 6;5 8 9 6;7 2 2 10])
            testCase.verifyEqual(testCase.ui.move2_2.get_row(),[2,3])
            testCase.verifyEqual(testCase.ui.move2_2.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.1.4.2
Coverage item	Tcover1.1.5 ,Tcover1.2.5
input	press chess1 ->press downmove
output	chess1 down move

- Test case : TestCase2.1.4.1 - TestCase2.1.4.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.2 choose 2*1 chess and do operation

T2.2.1 left move

T2.2.1.1 left move fail because of edge

```
function unit_2_1test_left1(testCase)
    matrix = [2,2,8,10;1,1,5,6;1,1,5,6;4,7,9,3;4,0,0,3];
    testCase.start(matrix,0)
    testCase.press(testCase.ui.chess2_1)
    testCase.press(testCase.ui.left_move)
    testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
    testCase.verifyEqual(testCase.ui.move2_1.get_row(),1)
    testCase.verifyEqual(testCase.ui.move2_1.get_column(),[1,2])
    testCase.verifyEqual(testCase.ui.score_board.Text,'0')
    close all force;
end
```

	TestCase2.2.1.1
Coverage item	Tcover1.1.2 ,Tcover1.3.2
input	press chess2 ->press left move
output	no output

T2.2.1.2 left move fail because of other chess

```
function unit_2_1test_left2(testCase)
    matrix = [8,2,2,10;1,1,5,6;1,1,5,6;4,7,9,3;4,0,0,3];
    testCase.start(matrix,0)
    testCase.press(testCase.ui.chess2_1)
    testCase.press(testCase.ui.left_move)
    testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
    testCase.verifyEqual(testCase.ui.move2_1.get_row(),1)
    testCase.verifyEqual(testCase.ui.move2_1.get_column(),[2,3])
    testCase.verifyEqual(testCase.ui.score_board.Text,'0')
    close all force;
end
```

	TestCase2.2.1.2
Coverage item	Tcover1.1.2 ,Tcover1.3.2
input	press chess2 ->press left move
output	no output

T2.2.1.3 left move succeed

```
        function unit_2_1test_left3(testCase)
            matrix = [0,2,2,10;1,1,5,6;1,1,5,6;4,7,9,3;4,8,0,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),1)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[1,2])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[2,2,0,10;1,1,5,6;1,1,5,6;4,7,9,3;4,8,0,3])
            close all force;
        end
```

	TestCase2.2.1.2
Coverage item	Tcover1.1.2 ,Tcover1.3.2
input	press chess2 ->press left move
output	chess2 left move

- Test case : TestCase2.2.1.1 - TestCase2.2.1.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.2.2 up move

T2.2.2.1 up move fail because of edge

```
        function unit_2_1test_up1(testCase)
            matrix = [6,2,2,5;6,1,1,5;4,1,1,3;4,9,7,3;8,0,0,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),1)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.1.1
Coverage item	Tcover1.1.4 ,Tcover1.3.4
input	press chess2 ->press upmove
output	no output

T2.2.2.2 up move fail because of other chess

```
        function unit_2_1test_up2(testCase)
            matrix = [5,7,9,6;5,2,2,6;4,1,1,3;4,1,1,3;8,0,0,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),2)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.2.1.2
Coverage item	Tcover1.1.4 ,Tcover1.3.4
input	press chess2 ->press upmove
output	no output

T2.2.2.3 up move succeed

```
        function unit_2_1test_up3(testCase)
            matrix = [5,0,0,6;5,2,2,6;4,1,1,3;4,1,1,3;8,7,9,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[5,2,2,6;5,0,0,6;4,1,1,3;4,1,1,3;8,7,9,10])
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),1)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.2.1.3
Coverage item	Tcover1.1.4 ,Tcover1.3.4
input	press chess2 ->press upmove
output	chess2 up move

- Test case : TestCase2.2.2.1 - TestCase2.2.2.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.2.3 right move

T2.2.3.1 right move fail because of edge

```
        function unit_2_1test_right1(testCase)
            matrix = [8,10,2,2;1,1,5,6;1,1,5,6;4,7,9,3;4,0,0,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),1)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[3,4])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.3.1
Coverage item	Tcover1.1.3 ,Tcover1.3.3
input	press chess2 ->press rightmove
output	no output

T2.2.3.2 right move fail because of other chess

```
        function unit_2_1test_right2(testCase)
            matrix = [2,2,8,10;1,1,5,6;1,1,5,6;4,7,9,3;4,0,0,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),1)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[1,2])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.1.3.2
Coverage item	Tcover1.1.3 ,Tcover1.3.3
input	press chess2 ->press rightmove
output	no output

T2.2.3.3 right move succeed

```
        function unit_2_1test_right3(testCase)
            matrix = [2,2,0,10;1,1,5,6;1,1,5,6;4,7,9,3;4,8,0,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[0,2,2,10;1,1,5,6;1,1,5,6;4,7,9,3;4,8,0,3])
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),1)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.1.3.2
Coverage item	Tcover1.1.3 ,Tcover1.3.3
input	press chess1 ->press rightmove
output	chess2 right move

- Test case : TestCase2.2.3.1 - TestCase2.2.3.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.2.4 down move

T2.2.4.1 down move fail because of edge

```
        function unit_2_1test_down1(testCase)
            matrix = [0,1,1,0;4,1,1,3;4,9,7,3;5,8,10,6;5,2,2,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),5)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.2.4.1
Coverage item	Tcover1.1.5 ,Tcover1.3.5
input	press chess1 ->press downmove
output	no output

T2.2.4.2 down move fail because of other chess

```
        function unit_2_1test_down2(testCase)
            matrix = [0,1,1,0;4,1,1,3;4,9,7,3;5,2,2,6;5,8,10,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),4)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.2.4.2
Coverage item	Tcover1.1.5 ,Tcover1.3.5
input	press chess1 ->press downmove
output	no output

T2.2.4.3 down move succeed

```
        function unit_2_1test_down3(testCase)
            matrix = [8,1,1,10;4,1,1,3;4,9,7,3;5,2,2,6;5,0,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[8,1,1,10;4,1,1,3;4,9,7,3;5,0,0,6;5,2,2,6])
            testCase.verifyEqual(testCase.ui.move2_1.get_row(),5)
            testCase.verifyEqual(testCase.ui.move2_1.get_column(),[2,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.2.4.2
Coverage item	Tcover1.1.5 ,Tcover1.3.5
input	press chess1 ->press downmove
output	chess2 down move

- Test case : TestCase2.2.4.1 - TestCase2.2.4.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.3 choose 1*2 chess and do operation

T2.3.1 left move

T2.3.1.1 left move fail because of edge

```
        function unit_1_2test_left1(testCase)
            matrix = [3,1,1,4;3,1,1,4;5,2,2,6;5,7,8,6;9,0,0,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.1.1
Coverage item	Tcover1.1.2 ,Tcover1.4.2
input	press chess3 ->press left move
output	no output

T2.3.1.2 left move fail because of other chess

```
        function unit_1_2test_left2(testCase)
            matrix = [4,1,1,3;4,1,1,3;5,2,2,6;5,7,8,6;9,0,0,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),4)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.1.2
Coverage item	Tcover1.1.2 ,Tcover1.4.2
input	press chess3 ->press left move
output	no output

T2.3.1.3 left move succeed

```
        function unit_1_2test_left3(testCase)
            matrix = [1,1,0,3;1,1,0,3;2,2,6,5;4,9,6,5;4,10,7,8];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),3)
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[1,1,3,0;1,1,3,0;2,2,6,5;4,9,6,5;4,10,7,8])
            close all force;
        end
```

	TestCase2.3.1.2
Coverage item	Tcover1.1.2 ,Tcover1.4.2
input	press chess3 ->press left move
output	chess3 left move

- Test case : TestCase2.3.1.1 - TestCase2.3.1.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.3.2 up move

T2.3.2.1 up move fail because of edge

```
        function unit_1_2test_up1(testCase)
            matrix = [3,1,1,4;3,1,1,4;5,2,2,6;5,7,8,6;9,0,0,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.2.1
Coverage item	Tcover1.1.4 ,Tcover1.4.4
input	press chess3 ->press upmove
output	no output

T2.3.2.2 up move fail because of other chess

```
        function unit_1_2test_up2(testCase)
            matrix = [5,1,1,4;5,1,1,4;3,2,2,6;3,7,8,6;9,0,0,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[3,4])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.2.2
Coverage item	Tcover1.1.4 ,Tcover1.4.4
input	press chess3 ->press upmove
output	no output

T2.3.2.3 up move succeed

```
        function unit_1_2test_up3(testCase)
            matrix = [0,1,1,6;0,1,1,6;3,2,2,9;3,5,4,10;7,5,4,8];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[0,1,1,6;3,1,1,6;3,2,2,9;0,5,4,10;7,5,4,8])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[2,3])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.3.2.3
Coverage item	Tcover1.1.4 ,Tcover1.4.4
input	press chess3 ->press upmove
output	chess3 up move

- Test case : TestCase2.2.2.1 - TestCase2.2.2.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.3.3 right move

T2.3.3.1 right move fail because of edge

```
        function unit_1_2test_right1(testCase)
            matrix = [4,1,1,3;4,1,1,3;5,2,2,6;5,7,8,6;9,0,0,10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),4)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.2.3.1
Coverage item	Tcover1.1.3 ,Tcover1.4.3
input	press chess3 ->press rightmove
output	no output

T2.3.3.2 right move fail because of other chess

```
        function unit_1_2test_right2(testCase)
            matrix = [3 1 1 4 ; 3 1 1 4;5 2 2 6;5 8 9 6;7 0 0 10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.3.2
Coverage item	Tcover1.1.3 ,Tcover1.4.3
input	press chess3 ->press rightmove
output	no output

T2.3.3.3 right move succeed

```
        function unit_1_2test_right3(testCase)
            matrix = [3,0,1,1;3,0,1,1;2,2,6,5;4,9,6,5;4,10,7,8];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[0,3,1,1;0,3,1,1;2,2,6,5;4,9,6,5;4,10,7,8])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[1,2])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),2)
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.3.3.2
Coverage item	Tcover1.1.3 ,Tcover1.4.3
input	press chess3 ->press rightmove
output	chess3 right move

- Test case : TestCase2.3.3.1 - TestCase2.3.3.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.3.4 down move

T2.3.4.1 down move fail because of edge

```
        function unit_1_2test_down1(testCase)
            matrix = [7,8,9,10;5,2,2,4;5,1,1,4;3,1,1,6;3,0,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[4,5])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.4.1
Coverage item	Tcover1.1.5 ,Tcover1.4.5
input	press chess3 ->press downmove
output	no output

T2.3.4.2 down move fail because of other chess

```
        %T2.3.4.2
        function unit_1_2test_down2(testCase)
            matrix = [7,8,9,10;3,2,2,4;3,1,1,4;5,1,1,6;5,0,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[2,3])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.4.2
Coverage item	Tcover1.1.5 ,Tcover1.4.5
input	press chess3 ->press downmove
output	no output

T2.3.4.3 down move succeed

```
        function unit_1_2test_down3(testCase)
            matrix = [5,8,9,10;5,2,2,4;3,1,1,4;3,1,1,6;0,7,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[5,8,9,10;5,2,2,4;0,1,1,4;3,1,1,6;3,7,0,6])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_row(),[4,5])
            testCase.verifyEqual(testCase.ui.move_1_2_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.3.4.3
Coverage item	Tcover1.1.5 ,Tcover1.4.5
input	press chess3 ->press downmove
output	chess3 down move

- Test case : TestCase2.3.4.1 - TestCase2.3.4.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.4 choose 1*1 chess and do operation

T2.4.1 left move

T2.4.1.1 left move fail because of edge

```
        function unit_1_1test_left1(testCase)
            matrix = [7,8,9,10;3,2,2,4;3,1,1,4;5,1,1,6;5,0,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),1)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.4.1.1
Coverage item	Tcover1.1.2 ,Tcover1.6.2
input	press chess7 ->press left move
output	no output

T2.4.1.2 left move fail because of other chess

```
        function unit_1_1test_left2(testCase)
            matrix = [8,7,9,10;3,2,2,4;3,1,1,4;5,1,1,6;5,0,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),1)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),2)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.1.2
Coverage item	Tcover1.1.2 ,Tcover1.6.2
input	press chess7 ->press left move
output	no output

T2.4.1.3 left move succeed

```
        function unit_1_1test_left3(testCase)
            matrix = [0,7,9,10;3,2,2,4;3,1,1,4;5,1,1,6;5,8,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),1)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[7,0,9,10;3,2,2,4;3,1,1,4;5,1,1,6;5,8,0,6])
            close all force;
        end
```

	TestCase2.3.1.2
Coverage item	Tcover1.1.2 ,Tcover1.6.2
input	press chess7 ->press left move
output	chess7 left move

- Test case : TestCase2.4.1.1 - TestCase2.4.1.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.4.2 up move

T2.4.2.1 up move fail because of edge

```
        function unit_1_1test_up1(testCase)
            matrix = [7,8,9,10;3,2,2,4;3,1,1,4;5,1,1,6;5,0,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),1)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.4.2.1
Coverage item	Tcover1.1.4 ,Tcover1.6.4
input	press chess7 ->press upmove
output	no output

T2.4.2.2 up move fail because of other chess

```
        function unit_1_1test_up2(testCase)
            matrix = [10,9,8,0;5,7,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),2)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),2)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.3.2.2
Coverage item	Tcover1.1.4 ,Tcover1.6.4
input	press chess7->press upmove
output	no output

T2.4.2.3 up move succeed

```
        function unit_1_1test_up3(testCase)
            matrix = [10,0,8,9;5,7,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.up_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[10,7,8,9;5,0,0,6;5,2,2,6;1,1,4,3;1,1,4,3])
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),1)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),2)
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.3.2.3
Coverage item	Tcover1.1.4 ,Tcover1.6.4
input	press chess7 ->press upmove
output	chess7 up move

- Test case : TestCase2.4.2.1 - TestCase2.4.2.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.4.3 right move

T2.4.3.1 right move fail because of edge

```
        function unit_1_1test_right1(testCase)
            matrix = [10,9,8,7;5,0,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),1)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),4)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.4.3.1
Coverage item	Tcover1.1.3 ,Tcover1.6.3
input	press chess7 ->press rightmove
output	no output

T2.4.3.2 right move fail because of other chess

```
        function unit_1_1test_right2(testCase)
            matrix = [10,9,8,0;5,0,7,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),2)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),3)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.4.3.2
Coverage item	Tcover1.1.3 ,Tcover1.6.3
input	press chess7 ->press rightmove
output	no output

T2.4.3.3 right move succeed

```
        function unit_1_1test_right3(testCase)
            matrix = [10,9,8,0;5,7,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[10,9,8,0;5,0,7,6;5,2,2,6;1,1,4,3;1,1,4,3])
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),2)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),3)
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.4.3.2
Coverage item	Tcover1.1.3 ,Tcover1.6.3
input	press chess7 ->press rightmove
output	chess7 right move

- Test case : TestCase2.4.3.1 - TestCase2.4.3.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.4.4 down move

T2.4.4.1 down move fail because of edge

```
        function unit_1_1test_down1(testCase)
            matrix = [3 1 1 4 ; 3 1 1 4;5 2 2 6;5 8 9 6;7 0 0 10];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),5)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.4.4.1
Coverage item	Tcover1.1.5 ,Tcover1.6.5
input	press chess7 ->press downmove
output	no output

T2.4.4.2 down move fail because of other chess

```
        function unit_1_1test_down2(testCase)
            matrix = [10,9,8,0;5,7,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),2)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),2)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.4.4.2
Coverage item	Tcover1.1.5 ,Tcover1.6.5
input	press chess7 ->press downmove
output	no output

T2.4.4.3 down move succeed

```
        function unit_1_1test_down3(testCase)
            matrix = [10,7,8,9;5,0,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[10,0,8,9;5,7,0,6;5,2,2,6;1,1,4,3;1,1,4,3])
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_row(),2)
            testCase.verifyEqual(testCase.ui.move_1_1_0.get_column(),2)
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            close all force;
        end
```

	TestCase2.4.4.3
Coverage item	Tcover1.1.5 ,Tcover1.6.5
input	press chess7 ->press downmove
output	chess7 down move

- Test case : TestCase2.4.4.1 - TestCase2.4.4.3
- Test coverage :3/3 = 100%
- Test Result:3 passed

T2.5 wins the game

T2.5.1 The initial game is completed

```
        function win_test1(testCase)
            matrix = [7,0,0,8;4,9,10,3;4,2,2,3;5,1,1,6;5,1,1,6];
            testCase.start(matrix,0)
            testCase.verifyEqual(testCase.ui.score_board.Text,'Win!')
            close all force;
        end
```

	TestCase2.5.1
Coverage item	Tcover1.1.6
input	initialize a winning chessboard
output	output win message

- Test case : TestCase2.5.1
- Test coverage :1/1 = 100%
- Test Result:1 passed

T2.5.2 Moving the chess and win the game

```
        function win_test2(testCase)
            matrix = [7,2,2,8;4,9,10,3;4,1,1,3;5,1,1,6;5,0,0,6];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.score_board.Text,'Win!')
            close all force;
        end
```

	TestCase2.5.2
Coverage item	Tcover1.1.6
input	initialize a chessboard->press chess1->downmove
output	output win message

- Test case : TestCase2.5.2
- Test coverage :1/1 = 100%
- Test Result:1 passed

T2.6 put 2*2 chess on the chessboard

```
        function putting_chess2_2_test1(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 1 1
0 ;0 1 1 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
```

```
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.Label.Text,'请选择操作按键')
            testCase.press(testCase.ui.B1)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 7 0
0 ;0 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 7 0
0 ;0 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B7)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_5)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B7)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_6)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;0 7 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;0 7 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B7)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            close all force
        end
```

	TestCase2.6
Coverage item	Tcover1.1.7,T1.6
input	press chess1 -> press B1 ->press chess1 -> press B1->press chess7 -> press B2 ->press chess 1 ->press B1 -> press chess7->press chess7 ->press B5 -> press chess1->press B1 ->press chess7->press chess7 ->press B6 -> press chess1->press B1->press B7
output	no chess on the board

- Test case : TestCase2.6

- Test coverage :1/1 = 100%
- Test Result:1 passed

T2.7 put 2*1 chess on the chessboard

```
        function putting_chess2_1_test2(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 1 1
0 ;0 1 1 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 1 1
0 ;0 1 1 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 1 1
0 ;0 1 1 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            testCase.press(testCase.ui.B1)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 2 2
0 ;0 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            close all force
        end
```

	TestCase2.7
Coverage item	Tcover1.1.7,T1.6
input	press chess1 -> press B2 ->press chess2 -> press B2->press chess2 -> press B1->press chess 1 ->press chess2 -> pressB2
output	chessboard = [0 2 2 0 ;0 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0]

- Test case : TestCase2.7
- Test coverage :1/1 = 100%
- Test Result:1 passed

T2.8 put 1*2 chess on the chessboard

```
        function putting_chess1_2_test2(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[3 0 0
0 ;3 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B3)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_5)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            close all force
        end
```

	TestCase2.7
Coverage item	Tcover1.1.7,T1.6
input	press chess3 -> press B1 ->press chess3 ->press chess7 -> press B5->press chess3 ->pressB1
output	chessboard = [0 0 0 0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0]

- Test case : TestCase2.8
- Test coverage :1/1 = 100%
- Test Result:1 passed

T2.9 put chess on the chessboard

T2.9.1 finish chess and reset

```
function finish_chessboard1(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_9)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button_3)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
0 ;1 1 3 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B4)
            testCase.press(testCase.ui.Button_4)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B5)
            testCase.press(testCase.ui.Button_13)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 0 0 0; 5 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B6)
            testCase.press(testCase.ui.Button_14)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_11)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B8)
            testCase.press(testCase.ui.Button_12)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B9)
            testCase.press(testCase.ui.Button_15)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B10)
            testCase.press(testCase.ui.Button_16)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 10; 5 6 0 0])
            testCase.press(testCase.ui.Button_21)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            pause(5)
            close all force
        end
```

	TestCase2.9.1
Coverage item	Tcover T1.1.7,T1.6

T2.9.2 finish chess and play

```
        function finish_chessboard2(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_9)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button_3)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
0 ;1 1 3 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B4)
            testCase.press(testCase.ui.Button_4)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B5)
            testCase.press(testCase.ui.Button_13)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 0 0 0; 5 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B6)
            testCase.press(testCase.ui.Button_14)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_11)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B8)
            testCase.press(testCase.ui.Button_12)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B9)
            testCase.press(testCase.ui.Button_15)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B10)
            testCase.press(testCase.ui.Button_16)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 10; 5 6 0 0])
            testCase.press(testCase.ui.play)
            pause(5)
            close all force
        end
```

	TestCase2.9.2
Coverage item	Tcover T1.1.7,T1.6

- Test case : TestCase2.9.1 - TestCase2.9.2
- Test coverage :2/2 = 100%
- Test Result:2 passed

T2.10 Check the process follow the roles

T2.10.1 check roles 1

```
function chessboard_rule1(testCase)
    testCase.start1()
    testCase.press(testCase.ui.B1)
    testCase.verifyEqual(testCase.ui.B1.Value,true)
    testCase.verifyEqual(testCase.ui.operating_button,1)
    testCase.press(testCase.ui.B2)
    testCase.verifyEqual(testCase.ui.B1.Value,false)
    testCase.verifyEqual(testCase.ui.B2.Value,true)
    testCase.verifyEqual(testCase.ui.operating_button,2)
    close all force
end
```

	TestCase2.10.1
Coverage item	Tcover T1.1.7,T1.6

T2.10.2 check roles 2

```
        function chessboard_rule2(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.verifyEqual(testCase.ui.B1.Value,true)
            testCase.verifyEqual(testCase.ui.operating_button,1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.verifyEqual(testCase.ui.B1.Value,true)
            testCase.verifyEqual(testCase.ui.operating_button,0)
            testCase.press(testCase.ui.B2)
            testCase.verifyEqual(testCase.ui.B2.Value,true)
            testCase.verifyEqual(testCase.ui.operating_button,2)
            testCase.press(testCase.ui.B1)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.verifyEqual(testCase.ui.operating_button,0)
            testCase.verifyEqual(testCase.ui.B1.Value,false)
            testCase.verifyEqual(testCase.ui.B2.Value,false)
            close all force
        end
```

	TestCase2.10.2
Coverage item	Tcover T1.1.7,T1.6

- Test case : TestCase2.10.1-TestCase2.10.2
- Test coverage :2/2 = 100%
- Test Result:2 passed

T2.11 back button

```
        function back_test(testCase)
            matrix = [10,7,8,9;5,0,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.back)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[10,0,8,9;5,7,0,6;5,2,2,6;1,1,4,3;1,1,4,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            testCase.press(testCase.ui.back)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.11
Coverage item	Tcover T1.1

- Test case : TestCase2.11
- Test coverage :1/1 = 100%
- Test Result:1 passed

T2.12 reset button

```
        function reset_test(testCase)
            matrix = [10,7,8,9;5,0,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.back)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.down_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[10,0,8,9;5,7,0,6;5,2,2,6;1,1,4,3;1,1,4,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'1')
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.right_move)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),
[0,10,8,9;5,7,0,6;5,2,2,6;1,1,4,3;1,1,4,3])
            testCase.verifyEqual(testCase.ui.score_board.Text,'2')
            testCase.press(testCase.ui.reset)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.12
Coverage item	Tcover T1.1

- Test case : TestCase2.12
- Test coverage :1/1 = 100%
- Test Result:1 passed

T2.13 next level button

```
function next_level_test(testCase)
            matrix = [10,7,8,9;5,0,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.Button)

 testCase.verifyEqual(testCase.ui.board.get_chessboard(),testCase.ui.board.mat1)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            testCase.press(testCase.ui.Button)

 testCase.verifyEqual(testCase.ui.board.get_chessboard(),testCase.ui.board.mat2)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            testCase.press(testCase.ui.Button)

 testCase.verifyEqual(testCase.ui.board.get_chessboard(),testCase.ui.board.mat3)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            testCase.press(testCase.ui.Button)

 testCase.verifyEqual(testCase.ui.board.get_chessboard(),testCase.ui.board.mat4)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            testCase.press(testCase.ui.Button)

 testCase.verifyEqual(testCase.ui.board.get_chessboard(),testCase.ui.board.mat4)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            close all force;
        end
```

	TestCase2.13
Coverage item	Tcover T1.1

- Test case : TestCase2.13
- Test coverage :1/1 = 100%
- Test Result:1 passed

T2.14 Can only choose one button

```
        function choose_one_chess(testCase)
            matrix = [10,7,8,9;5,0,0,6;5,2,2,6;1,1,4,3;1,1,4,3];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.chess2_2)
            testCase.verifyEqual(testCase.ui.operating_chess_number,1)
            testCase.press(testCase.ui.chess2_1)
            testCase.verifyEqual(testCase.ui.operating_chess_number,2)
            testCase.press(testCase.ui.chess1_2_0)
            testCase.verifyEqual(testCase.ui.operating_chess_number,3)
            testCase.press(testCase.ui.chess1_2_1)
            testCase.verifyEqual(testCase.ui.operating_chess_number,4)
            close all force;
        end
```

	TestCase2.14
Coverage item	Tcover T1.1

- Test case : TestCase2.14
- Test coverage :5/5 = 100%
- Test Result:5 passed

T3 Integration Test

T3.1 start the game from menu and return to menu

```
%T3.1.1
        function menu_starttest1(testCase)
            testCase.start2()
            pause(5)
            testCase.ui.DropDown.Value = '关卡1';
            testCase.press(testCase.ui.start)
            pause(2)
            close all force;
        end
        %T3.1.2
        function menu_starttest2(testCase)
            pause(2)
            testCase.start2()
            testCase.ui.DropDown.Value = '关卡2';
            testCase.press(testCase.ui.start)
            pause(2)
            close all force;
        end
        %T3.1.3
        function menu_starttest3(testCase)
            pause(2)
            testCase.start2()
            testCase.ui.DropDown.Value = '关卡3';
            testCase.press(testCase.ui.start)
            pause(2)
            close all force;
        end
        %T3.1.4
        function menu_starttest4(testCase)
```

```
            pause(2)
            testCase.start2()
            testCase.ui.DropDown.Value = '关卡4';
            testCase.press(testCase.ui.start)
            pause(2)
            close all force;
        end
        %T3.1.5
        function menu_returntest1(testCase)
            pause(2)
            matrix = [1,1,2,2;1,1,3,4;6,5,3,4;6,5,7,9;8,10,0,0];
            testCase.start(matrix,0)
            testCase.press(testCase.ui.menu)
            pause(2)
            close all force;
        end
```

	TestCase2.14
Coverage item	Tcover T3.1.1 -T3.1.5
input	press start
state	\
output	\

- Test case : TestCase3.1.1 - TestCase3.1.5
- Test coverage :5/5 = 100%
- Test Result:5 passed

T3.2 review the grade from menu and return to menu

```
%T3.2.1
        function menu_historytest(testCase)
            pause(2)
            testCase.start2()
            testCase.press(testCase.ui.getHistory)
            pause(2)
            close all force;
        end
        %T3.2.2
        function menu_returntest2(testCase)
            pause(2)
            testCase.start3()
            pause(10)
            testCase.press(testCase.ui.Button)
            pause(2)
            close all force;
        end
```

	TestCase3.2
Coverage item	Tcover T3.2.1 -T3.2.2
input	press start
state	\
output	\

- Test case : TestCase3.2.1 - TestCase3.2.2
- Test coverage :2/2 = 100%
- Test Result:2 passed

T3.3 customize the chessboard from menu and return to menu

```
%T3.3.1
        function menu_customizetest(testCase)
            pause(2)
            testCase.start2()
            testCase.press(testCase.ui.define)
            pause(2)
            close all force;
        end
        %T3.3.2
        function menu_returntest3(testCase)
            pause(2)
            testCase.start1()
            testCase.press(testCase.ui.Button_22)
            pause(2)
            close all force;
        end
```

	TestCase3.3
Coverage item	Tcover T3.3.1 -T3.3.2
input	press start
state	\
output	\

- Test case : TestCase3.3.1 - TestCase3.3.2
- Test coverage :2/2 = 100%
- Test Result:2 passed

T3.4 Win the level1

```
 %T3.4
        function win_level(testCase)
            matrix = [3,4,5,0;3,4,5,6;2,2,7,6;8,0,1,1;9,10,1,1];
            testCase.start(matrix,1)
            testCase.press(testCase.ui.chess1_2_3)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_1)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_2)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.score_board.Text,'Win!')
            pause(5)
            close all force;
            testCase.start3()
            pause(10)
            close all force;
        end
```

	TestCase3.4
Coverage item	Tcover T3.4
input	press chess pieces to win the game
state	\
output	win message

- Test case : TestCase3.4
- Test coverage :1/1 = 100%
- Test Result:1 passed

T3.5 Win the level1 and reset

```
%T3.5
        function reset_move(testCase)
            matrix = [3,4,5,0;3,4,5,6;2,2,7,6;8,0,1,1;9,10,1,1];
            testCase.start(matrix,1)
            testCase.press(testCase.ui.chess1_2_3)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_1)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_2)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.score_board.Text,'Win!')
            testCase.press(testCase.ui.reset)
            testCase.verifyEqual(testCase.ui.board.get_chessboard(),matrix)
            testCase.verifyEqual(testCase.ui.score_board.Text,'0')
            pause(5)
            close all force;
        end
```

	TestCase3.5
Coverage item	Tcover T3.5
input	press chess pieces to win the game then press reset
state	\
output	\

- Test case : TestCase3.5
- Test coverage :1/1 = 100%
- Test Result:1 passed

T3.6 Win the level1 and set back

```
%T3.6
        function back_move(testCase)
            matrix = [3,4,5,0;3,4,5,6;2,2,7,6;8,0,1,1;9,10,1,1];
            testCase.start(matrix,1)
            testCase.press(testCase.ui.chess1_2_3)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_1)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_2)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.score_board.Text,'Win!')
            testCase.press(testCase.ui.back)
            testCase.press(testCase.ui.back)
            testCase.press(testCase.ui.back)
            pause(5)
            close all force;
        end
```

	TestCase3.6
Coverage item	Tcover T3.6
input	press chess pieces to win the game then press back
state	\
output	\

- Test case : TestCase3.6
- Test coverage :1/1 = 100%
- Test Result:1 passed

T3.7 Win the level1 and get into the next level

```
%T3.7
    function next_level(testCase)
        matrix = [3,4,5,0;3,4,5,6;2,2,7,6;8,0,1,1;9,10,1,1];
        testCase.start(matrix,1)
        testCase.press(testCase.ui.chess1_2_3)
        testCase.press(testCase.ui.up_move)
        testCase.press(testCase.ui.chess1_1_0)
        testCase.press(testCase.ui.right_move)
        testCase.press(testCase.ui.chess2_1)
        testCase.press(testCase.ui.right_move)
        testCase.press(testCase.ui.chess1_1_1)
        testCase.press(testCase.ui.up_move)
        testCase.press(testCase.ui.chess1_1_2)
        testCase.press(testCase.ui.up_move)
        testCase.press(testCase.ui.chess1_1_3)
        testCase.press(testCase.ui.left_move)
        testCase.press(testCase.ui.chess1_1_3)
        testCase.press(testCase.ui.right_move)
        testCase.press(testCase.ui.chess1_1_3)
        testCase.press(testCase.ui.left_move)
        testCase.press(testCase.ui.chess2_2)
        testCase.press(testCase.ui.left_move)
        testCase.verifyEqual(testCase.ui.score_board.Text,'Win!')
        testCase.press(testCase.ui.Button)
        pause(5)
        testCase.press(testCase.ui.Button)
        pause(5)
        testCase.press(testCase.ui.Button)
        pause(5)
        testCase.press(testCase.ui.chess2_1)
        testCase.press(testCase.ui.down_move)
        testCase.press(testCase.ui.Button)
        pause(5)
        close all force;
    end
```

	TestCase3.7
Coverage item	Tcover T3.7
input	press chess pieces to win the game then press next level
state	\
output	\

- Test case : TestCase3.7
- Test coverage :1/1 = 100%
- Test Result:2 passed

T3.8 ask for help to solve the level1

```
 %T3.8
        function ask_for_help(testCase)
            matrix = [3,4,5,0;3,4,5,6;2,2,7,6;8,0,1,1;9,10,1,1];
            testCase.start(matrix,1)
            testCase.press(testCase.ui.Button_2)
            pause(5)
            close all force;
        end
```

	TestCase3.8
Coverage item	Tcover T3.8
input	press help
state	\
output	\

- Test case : TestCase3.8
- Test coverage :1/1 = 100%
- Test Result:2 passed

T3.9 Put all chess and reset

```
%T3.9
        function reset_chessboard(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_9)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button_3)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
0 ;1 1 3 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B4)
            testCase.press(testCase.ui.Button_4)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B5)
            testCase.press(testCase.ui.Button_13)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 0 0 0; 5 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B6)
            testCase.press(testCase.ui.Button_14)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_11)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B8)
            testCase.press(testCase.ui.Button_12)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B9)
            testCase.press(testCase.ui.Button_15)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B10)
            testCase.press(testCase.ui.Button_16)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 10; 5 6 0 0])
            pause(5)
            testCase.press(testCase.ui.Button_21)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            pause(5)
            close all force
       end
```

	TestCase3.2
Coverage item	Tcover T3.2.1 -T3.2.2
input	put all chesses on the board then reset
state	\
output	\

- Test case : TestCase3.9
- Test coverage :1/1 = 100%
- Test Result:1 passed

T3.10 Put all chess and play

```
%T3.10
        function finish_chessboard(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_9)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button_3)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
0 ;1 1 3 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B4)
            testCase.press(testCase.ui.Button_4)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B5)
            testCase.press(testCase.ui.Button_13)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 0 0 0; 5 0 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B6)
            testCase.press(testCase.ui.Button_14)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_11)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B8)
            testCase.press(testCase.ui.Button_12)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B9)
            testCase.press(testCase.ui.Button_15)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 0; 5 6 0 0])
            testCase.press(testCase.ui.play)
            testCase.verifyEqual(testCase.ui.Label.Text,'未完成所有按钮的初始化')
            testCase.press(testCase.ui.B10)
            testCase.press(testCase.ui.Button_16)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 10; 5 6 0 0])
            testCase.press(testCase.ui.play)
            pause(5)
            close all force
        end
```

	TestCase3.10
Coverage item	Tcover T3.10
input	put all chesses on the board then play
state	\
output	\

- Test case : TestCase3.10
- Test coverage :1/1 = 100%
- Test Result:1 passed

T3.11 Putting and release chess

```
%T3.11.1
        function putting_andrelease_test1(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 1 1
0 ;0 1 1 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.Label.Text,'请选择操作按键')
            pause(2)
            testCase.press(testCase.ui.B1)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 7 0
0 ;0 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            pause(2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 7 0
0 ;0 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B7)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_5)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            pause(2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B7)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_6)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;0 7 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            pause(2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;0 7 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B7)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            close all force
        end
        %T3.11.2
        function putting_chess2_1_test2(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 1 1
0 ;0 1 1 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 1 1
0 ;0 1 1 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 1 1
0 ;0 1 1 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            pause(2)
            testCase.press(testCase.ui.B1)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
```

```
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_2)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 2 2
0 ;0 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            pause(2)
            close all force
        end
        %T3.11.3
        function putting_chess1_2_test2(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[3 0 0
0 ;3 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B3)

 testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),zeros(5,4))
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_5)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[0 0 0
0 ;7 0 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.verifyEqual(testCase.ui.Label.Text,'无效操作')
            pause(2)
            close all force
        end
        %T3.11.4
        function putting_and_releasetest(testCase)
            testCase.start1()
            testCase.press(testCase.ui.B1)
            testCase.press(testCase.ui.Button)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;0 0 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B2)
            testCase.press(testCase.ui.Button_9)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 0
0 ;1 1 0 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B3)
            testCase.press(testCase.ui.Button_3)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
0 ;1 1 3 0 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B4)
            testCase.press(testCase.ui.Button_4)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 0 0 0 0; 0 0 0 0])
            testCase.press(testCase.ui.B5)
            testCase.press(testCase.ui.Button_13)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 0 0 0; 5 0 0 0])
            testCase.press(testCase.ui.B6)
            testCase.press(testCase.ui.Button_14)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 0 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.B7)
            testCase.press(testCase.ui.Button_11)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 0 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.B8)
            testCase.press(testCase.ui.Button_12)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 0 0; 5 6 0 0])
            testCase.press(testCase.ui.B9)
            testCase.press(testCase.ui.Button_15)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 0; 5 6 0 0])
            testCase.press(testCase.ui.B10)
            testCase.press(testCase.ui.Button_16)
            testCase.verifyEqual(testCase.ui.chessboard.get_chessboard(),[1 1 3
4 ;1 1 3 4 ;2 2 7 8 ; 5 6 9 10; 5 6 0 0])
            pause(5)
            testCase.press(testCase.ui.B1)
            pause(2)
            testCase.press(testCase.ui.B2)
            pause(2)
            testCase.press(testCase.ui.B3)
            pause(2)
            testCase.press(testCase.ui.B4)
            pause(2)
            testCase.press(testCase.ui.B5)
            pause(2)
            testCase.press(testCase.ui.B6)
            pause(2)
            testCase.press(testCase.ui.B7)
            pause(2)
            testCase.press(testCase.ui.B8)
            pause(2)
            testCase.press(testCase.ui.B9)
            pause(2)
            testCase.press(testCase.ui.B10)
            pause(2)
            close all force;
        end
```

	TestCase3.11
Coverage item	Tcover T3.11.1 -T3.11.4
input	put chess to judge the role and release chess
state	\
output	\

- Test case : TestCase3.10.1-TestCase3.10.4
- Test coverage :4/4 = 100%
- Test Result:4 passed

T3.12 History update

```
%T3.12
        function history_change(testCase)
```

```
            matrix = [3,4,5,0;3,4,5,6;2,2,7,6;8,0,1,1;9,10,1,1];
            testCase.start(matrix,1)
            testCase.press(testCase.ui.chess1_2_3)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_1)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_2)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.score_board.Text,'Win!')
            pause(5)
            close all force;
            testCase.start3()
            pause(10)
            close all force;
            matrix = [3,4,5,0;3,4,5,6;2,2,7,6;8,0,1,1;9,10,1,1];
            testCase.start(matrix,1)
            testCase.press(testCase.ui.chess1_2_3)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_0)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess2_1)
            testCase.press(testCase.ui.right_move)
            testCase.press(testCase.ui.chess1_1_1)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_2)
            testCase.press(testCase.ui.up_move)
            testCase.press(testCase.ui.chess1_1_3)
            testCase.press(testCase.ui.left_move)
            testCase.press(testCase.ui.chess2_2)
            testCase.press(testCase.ui.left_move)
            testCase.verifyEqual(testCase.ui.score_board.Text,'Win!')
            pause(5)
            close all force;
            testCase.start3()
            pause(10)
            close all force;
        end
```

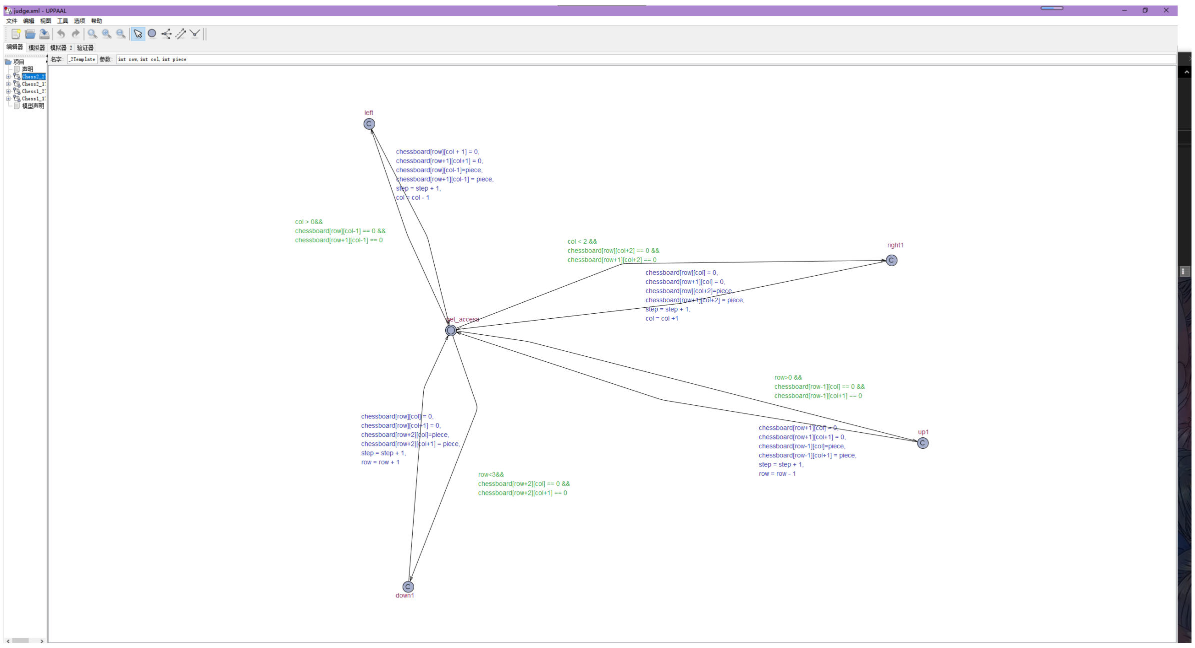
	TestCase3.12
Coverage item	Tcover T3.12
input	finish the game and use a faster way to finish the game again
state	\
output	\

- Test case : TestCase3.12.1
- Test coverage :1/1 = 100%
- Test Result:1 passed

T4 Model checking

A uppaal model of the HuaRong Path is built for model checking

Chess2_2



```
int row, int col, int piece
```

```
col > 0&&
chessboard[row][col-1] == 0 &&
chessboard[row+1][col-1] == 0
```

```
chessboard[row][col + 1] = 0,
chessboard[row+1][col+1] = 0,
chessboard[row][col-1]=piece,
chessboard[row+1][col-1] = piece,
step = step + 1,
col = col - 1
```

```
col < 2 &&
chessboard[row][col+2] == 0 &&
chessboard[row+1][col+2] == 0
```

```
chessboard[row][col] = 0,
chessboard[row+1][col] = 0,
chessboard[row][col+2]=piece,
chessboard[row+1][col+2] = piece,
step = step + 1,
col = col +1
```

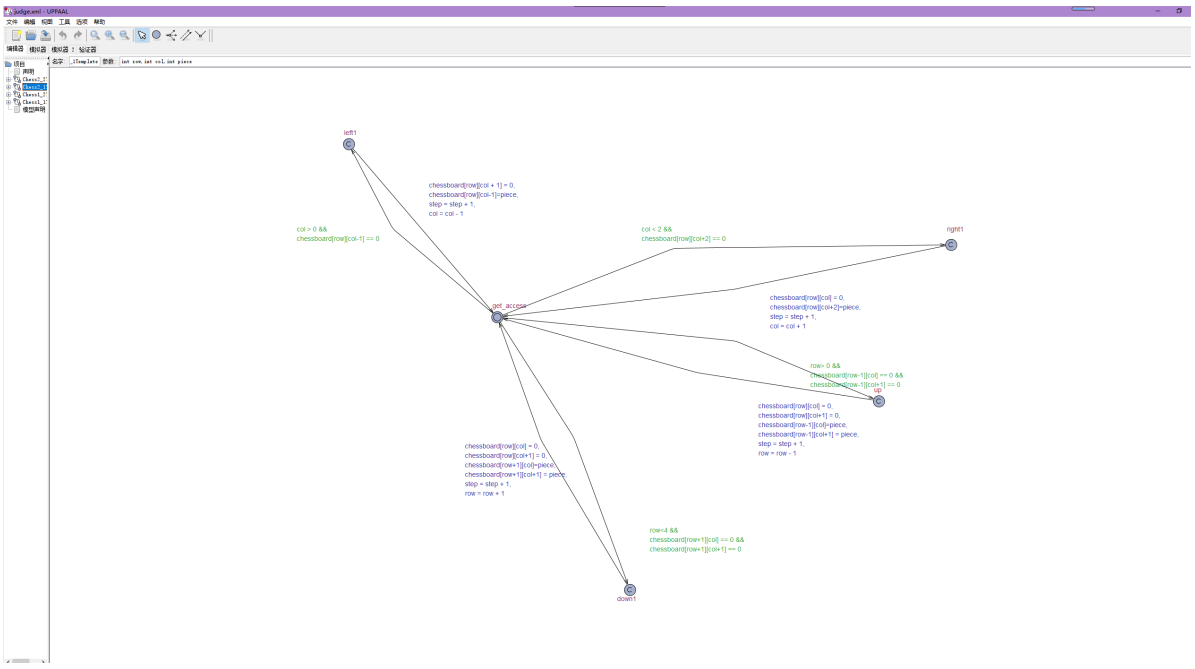
```
row>0 &&
chessboard[row-1][col] == 0 &&
chessboard[row-1][col+1] == 0
```

```
chessboard[row+1][col] = 0,
chessboard[row+1][col+1] = 0,
chessboard[row-1][col]=piece,
chessboard[row-1][col+1] = piece,
step = step + 1,
row = row - 1
```

```
chessboard[row][col] = 0,
chessboard[row][col+1] = 0,
chessboard[row+2][col]=piece,
chessboard[row+2][col+1] = piece,
step = step + 1,
row = row + 1
```

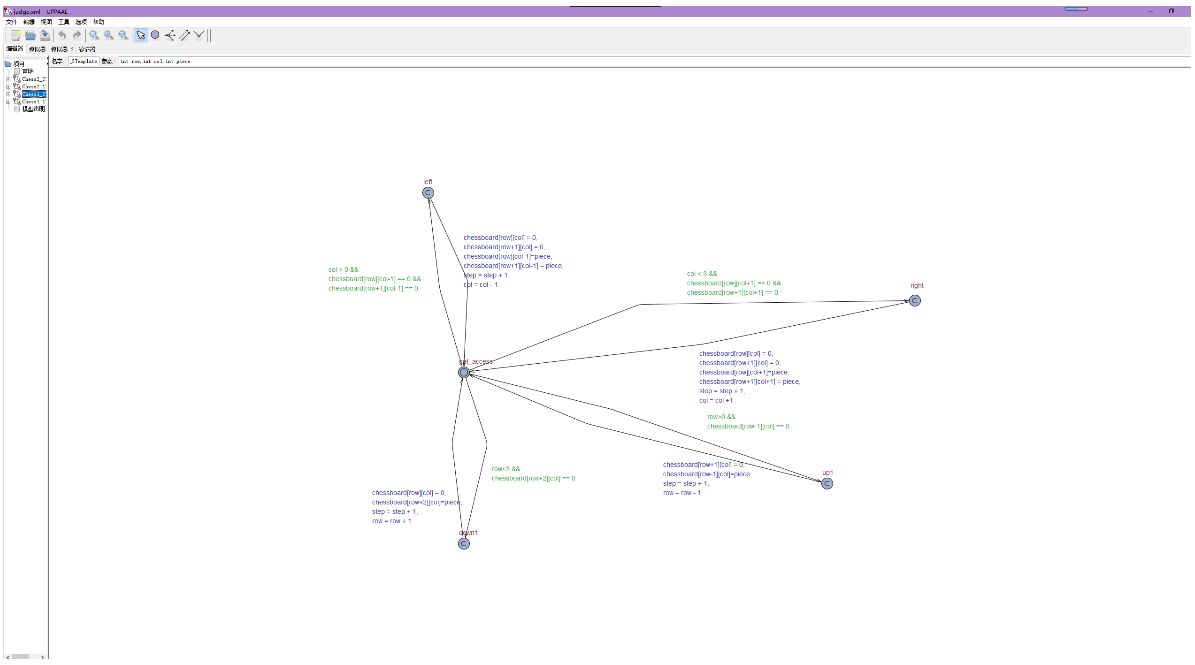
```
row<3&&
chessboard[row+2][col] == 0 &&
chessboard[row+2][col+1] == 0
```

Chess2_1


judge.xml - UPPAAL
文件 编辑 视图 工具 选项 帮助
编辑器 模拟器 模拟器 验证器
名字: _1Template 参数: int row, int col, int piece
left1
right1
get_access
up
down1

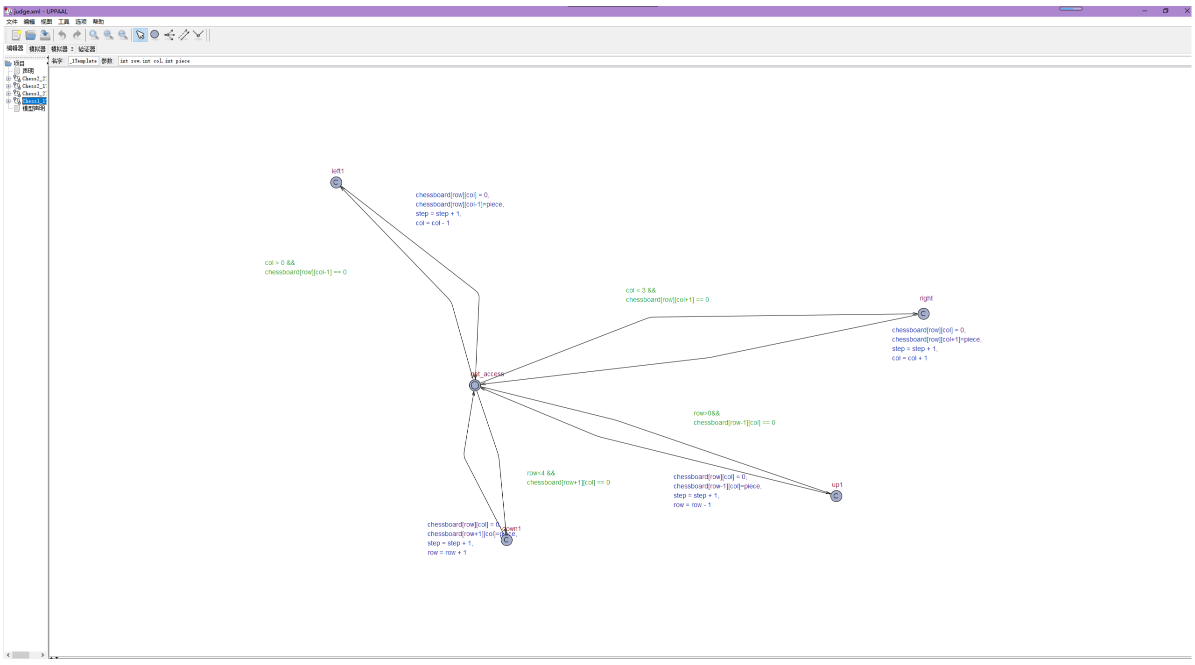
```
col > 0 &&
chessboard[row][col-1] == 0

chessboard[row][col + 1] = 0,
chessboard[row][col-1]=piece,
step = step + 1,
col = col - 1

col < 2 &&
chessboard[row][col+2] == 0

chessboard[row][col] = 0,
chessboard[row][col+2]=piece,
step = step + 1,
col = col + 1

row> 0 &&
chessboard[row-1][col] == 0 &&
chessboard[row-1][col+1] == 0

chessboard[row][col] = 0,
chessboard[row][col+1] = 0,
chessboard[row-1][col]=piece,
chessboard[row-1][col+1] = piece,
step = step + 1,
row = row - 1

chessboard[row][col] = 0,
chessboard[row][col+1] = 0,
chessboard[row+1][col]=piece,
chessboard[row+1][col+1] = piece,
step = step + 1,
row = row + 1

row<4 &&
chessboard[row+1][col] == 0 &&
chessboard[row+1][col+1] == 0
```

Chess1_2


judge.xml - UPPAAL
文件 编辑 视图 工具 选项 帮助
编辑器 模拟器 模拟器 验证器
名字: _1Template 参数: int row, int col, int piece
left
right
get_access
up1
down1

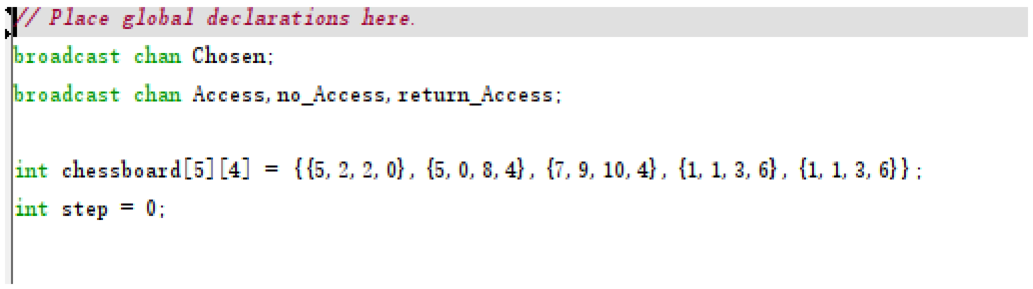
```
col > 0 &&
chessboard[row][col-1] == 0 &&
chessboard[row+1][col-1] == 0

chessboard[row][col] = 0,
chessboard[row+1][col] = 0,
chessboard[row][col-1]=piece,
chessboard[row+1][col-1] = piece,
step = step + 1,
col = col - 1

col < 3 &&
chessboard[row][col+1] == 0 &&
chessboard[row+1][col+1] == 0

chessboard[row][col] = 0,
chessboard[row+1][col] = 0,
chessboard[row][col+1]=piece,
chessboard[row+1][col+1] = piece,
step = step + 1,
col = col +1

row>0 &&
chessboard[row-1][col] == 0

chessboard[row+1][col] = 0,
chessboard[row-1][col]=piece,
step = step + 1,
row = row - 1

row<3 &&
chessboard[row+2][col] == 0

chessboard[row][col] = 0,
chessboard[row+2][col]=piece,
step = step + 1,
row = row + 1
```

Chess1_1


left1
chessboard[row][col] = 0,
chessboard[row][col-1]=piece,
step = step + 1,
col = col - 1
col > 0 &&
chessboard[row][col-1] == 0
col < 3 &&
chessboard[row][col+1] == 0
right
chessboard[row][col] = 0,
chessboard[row][col+1]=piece,
step = step + 1,
col = col + 1
get_access
row>0&&
chessboard[row-1][col] == 0
row<4 &&
chessboard[row+1][col] == 0
chessboard[row][col] = 0,
chessboard[row-1][col]=piece,
step = step + 1,
row = row - 1
up1
chessboard[row][col] = 0,
chessboard[row+1][col]=piece,
step = step + 1,
row = row + 1
down1

All the chess pieces are similar .And the condition is the same to judge whether the chess piece can move. We just judge the chess piece is not at the edge and it have empty space. Because we use commit point,there is no need for us to draw a chessboard to limit only one chess piece moving.

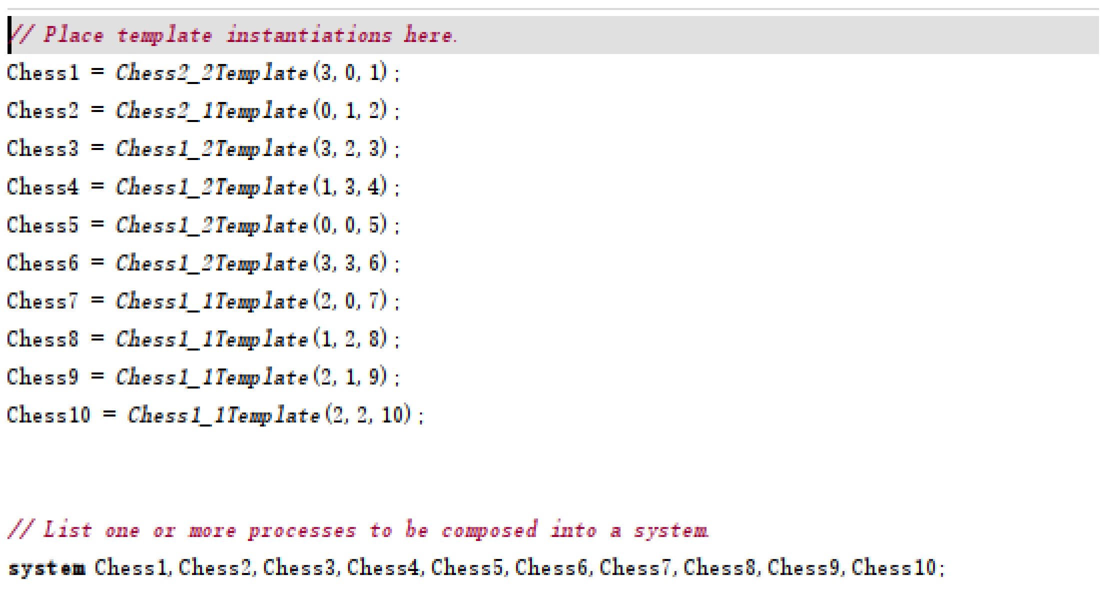
Global



```
// Place global declarations here.
broadcast chan Chosen;
broadcast chan Access,no_Access,return_Access;

int chessboard[5][4] = {{5, 2, 2, 0}, {5, 0, 8, 4}, {7, 9, 10, 4}, {1, 1, 3, 6}, {1, 1, 3, 6}};
int step = 0;
```

The global value we set is only chessboard,because it is used to judge movement in all chess pieces.

Model



```
// Place template instantiations here.
Chess1 = Chess2_2Template(3, 0, 1);
Chess2 = Chess2_1Template(0, 1, 2);
Chess3 = Chess1_2Template(3, 2, 3);
Chess4 = Chess1_2Template(1, 3, 4);
Chess5 = Chess1_2Template(0, 0, 5);
Chess6 = Chess1_2Template(3, 3, 6);
Chess7 = Chess1_1Template(2, 0, 7);
Chess8 = Chess1_1Template(1, 2, 8);
Chess9 = Chess1_1Template(2, 1, 9);
Chess10 = Chess1_1Template(2, 2, 10);


// List one or more processes to be composed into a system
system Chess1, Chess2, Chess3, Chess4, Chess5, Chess6, Chess7, Chess8, Chess9, Chess10;
```

The game is consist of 10 chesses.1 `2*2`chess,1 `2*1` chess , 4 `1*2` chesses and 4 `1*1`chesses. Just the same as the game , we need 10 chesses to consist the system

T4.1 have solution

Property	**E<>(Chess1.row == 3 && Chess1.col == 1 && step < 200)**
Description	At one time,there is a state that Chess1.row is 3,Chsee1.col is 1 and step is less than 200
Result	Passed

T4.2 no deadlock

Property	**A[]no deadlock**
Description	At all time,there is no deadlock
Result	Passed

T4.3 chess1 valid move

Property	**A[] (Chess1.row >= 0 && Chess1.row < 4 && Chess1.col >=0 &&Chess1.col < 3)**
Description	At all time,Chess1 's row is in range of [0,4) and its col is in range of [0,3)
Result	Passed

T4.4 chess2 valid move

Property	**A[] (Chess2.row >= 0 && Chess2.row <= 4 && Chess2.col >=0 &&Chess2.col < 3)**
Description	At all time,Chess2 's row is in range of [0,4] and its col is in range of [0,3)
Result	Passed

T4.5 chess3 valid move

Property	**A[] (Chess3.row >= 0 && Chess3.row < 4 && Chess3.col >=0 &&Chess3.col <= 3)**
Description	At all time,Chess3 's row is in range of [0,4) and its col is in range of [0,3]
Result	Passed

T4.6 chess7 valid move

Property	**A[] (Chess7.row >= 0 && Chess7.row <= 4 && Chess7.col >=0 &&Chess7.col <= 3)**
Description	At all time,Chess7 's row is in range of [0,4] and its col is in range of [0,3]
Result	Passed

T5 Risk management

- Risk: The player might create a game that has no solution
  - Evaluation : Likely to happen,with acceptable impact
  - Solution: We give help button to judge whether this game has solution or not
- Risk: The player might create a game without all pieces put on
  - Evaluation : Likely to happen ,with unacceptable impact
  - Solution: We add a function to judge whether all pieces are put on or not. If not,the game won't start
- Risk: The player might have no idea to solve the game while this game has solution
  - Evaluation : Likely to happen,with acceptable impact
  - Solution: We give help button to judge whether this game has solution or not
- Risk: The player might want to put another chess while there is a chess needs to be put
  - Evaluation : Unlikely to happen ,with unacceptable impact
  - Solution: We add an additional judge in the controller to eliminate such situation