Group 8

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Software VALIDATIONs

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Table of Contents

[System Architecture 2](#_Toc44202405)

[T1: Unit Test 2](#_Toc44202406)

[T1.1: StartDB Unit Test 2](#_Toc44202407)

[T1.1.1: Test getStartPosition () 2](#_Toc44202408)

[T1.2: GameProcess Unit Test 4](#_Toc44202409)

[T1.2.1: Test transMatrix () 4](#_Toc44202410)

[T1.2.2: Test getCurrentChess () 5](#_Toc44202411)

[T1.2.3: Test move () 6](#_Toc44202412)

[T1.2.4: Test judge () 10](#_Toc44202413)

[T2: Integration Test 12](#_Toc44202414)

[T2.1: GameProcess+StartDB Integration 12](#_Toc44202415)

[T2.1.1: Test getStartPosition () with transMatrix() 12](#_Toc44202416)

[T2.1.2: Test getStartPosition () with getCurrentChess() 13](#_Toc44202417)

[T3: Functional Test 15](#_Toc44202418)

[T3.1: Use Case “Change Theme” 15](#_Toc44202419)

[T3.1.1: Test theme 15](#_Toc44202420)

[T3.2: Use Case “Change Mode” 15](#_Toc44202421)

[T3.2.1: Test mode 15](#_Toc44202422)

[T3.3: Use Case “DIY Chesses” 16](#_Toc44202423)

[T3.3.1: Test diy 16](#_Toc44202424)

[T3.4: Use Case “Play Game” 16](#_Toc44202425)

[T3.4.1: Test run 16](#_Toc44202426)

# System Architecture

The system architecture is shown below:



# T1: Unit Test

## T1.1: StartDB Unit Test

### T1.1.1: Test getStartPosition ()

function position = getStartPosition(process)

    switch process.mode

        case 'hengdaolima' Tcover1.1.1.1

            position = {[105 305 190 190],[5 305 90 190],[305 305 90 190],...

                 [5 105 90 190],[305 105 90 190],[105 205 190 90],...

                 [5 5 90 90],[105 105 90 90],[205 105 90 90],[305 5 90 90]};

        case 'qitoubingjin' Tcover1.1.1.2

            position = {[105 305 190 190],[5 305 90 190],[305 305 90 190],...

                 [5 5 90 190],[305 5 90 190],[105 105 190 90],...

                 [5 205 90 90],[105 205 90 90],[205 205 90 90],[305 205 90 90]};

        case 'bingfensanlu' Tcover1.1.1.3

            position = {[105 305 190 190],[5 205 90 190],[305 205 90 190],...

                 [5 5 90 190],[305 5 90 190],[105 205 190 90],...

                 [5 405 90 90],[305 405 90 90],[105 105 90 90],[205 105 90 90]};

        case 'weierbujian' Tcover1.1.1.4

            position = {[105 305 190 190],[5 305 90 190],[5 105 90 190],...

                 [105 5 90 190],[205 5 90 190],[105 205 190 90],...

                 [305 105 90 90],[305 205 90 90],[305 305 90 90],[305 405 90 90]};

        case 'jiezuxiandeng' Tcover1.1.1.5

            position = {[105 305 190 190],[5 5 90 190],[105 5 90 190],...

                 [205 5 90 190],[305 5 90 190],[105 205 190 90],...

                 [5 405 90 90],[5 305 90 90],[305 305 90 90],[305 405 90 90]};

        case 'test' Tcover1.1.1.6

            position={[5 105 190 190],[5 305 90 190],[105 305 90 190],...

                 [305 305 90 190],[305 105 90 190],[205 5 190 90],...

                 [205 305 90 90],[205 105 90 90],[5 5 90 90],[105 5 90 90]};

        case 'diy' Tcover1.1.1.7

            position = process.diyPosition;

    end

 end

* Coverage Criteria: Branch coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T1.1.1.1 |
| Coverage Item | Tcover1.1.1.1 |
| Input | None |
| State | db.mode = 'hengdaolima'; |
| Expected Output | od = {[105 305 190 190], [5 305 90 190], [305 305 90 190], [5 105 90 190], [305 105 90 190], [105 205 190 90], [5 5 90 90], [105 105 90 90], [205 105 90 90], [305 5 90 90]}; |

|  |  |
| --- | --- |
|  | Test Case T1.1.1.2 |
| Coverage Item | Tcover1.1.1.2 |
| Input | None |
| State | db.mode = 'qitoubingjin'; |
| Expected Output | od = {[105 305 190 190], [5 305 90 190], [305 305 90 190], [5 5 90 190], [305 5 90 190], [105 105 190 90], [5 205 90 90], [105 205 90 90], [205 205 90 90], [305 205 90 90]}; |

|  |  |
| --- | --- |
|  | Test Case T1.1.1.3 |
| Coverage Item | Tcover1.1.1.3 |
| Input | None |
| State | db.mode = 'bingfensanlu'; |
| Expected Output | od = {[105 305 190 190], [5 205 90 190], [305 205 90 190], [5 5 90 190], [305 5 90 190], [105 205 190 90], [5 405 90 90], [305 405 90 90], [105 105 90 90], [205 105 90 90]}; |

|  |  |
| --- | --- |
|  | Test Case T1.1.1.4 |
| Coverage Item | Tcover1.1.1.4 |
| Input | None |
| State | db.mode = 'weierbujian'; |
| Expected Output | od = {[105 305 190 190], [5 305 90 190], [5 105 90 190], [105 5 90 190], [205 5 90 190], [105 205 190 90], [305 105 90 90], [305 205 90 90], [305 305 90 90], [305 405 90 90]}; |

|  |  |
| --- | --- |
|  | Test Case T1.1.1.5 |
| Coverage Item | Tcover1.1.1.5 |
| Input | None |
| State | db.mode = 'jiezuxiandeng'; |
| Expected Output | od = {[105 305 190 190], [5 5 90 190], [105 5 90 190], [205 5 90 190], [305 5 90 190], [105 205 190 90], [5 405 90 90], [5 305 90 90], [305 305 90 90], [305 405 90 90]}; |

|  |  |
| --- | --- |
|  | Test Case T1.1.1.6 |
| Coverage Item | Tcover1.1.1.6 |
| Input | None |
| State | db.mode = 'test'; |
| Expected Output | od = {[5 105 190 190], [5 305 90 190], [105 305 90 190], [305 305 90 190], [305 105 90 190], [205 5 190 90], [205 305 90 90], [205 105 90 90], [5 5 90 90], [105 5 90 90]}; |

|  |  |
| --- | --- |
|  | Test Case T1.1.1.7 |
| Coverage Item | Tcover1.1.1.7 |
| Input | None |
| State | db.mode = 'diy';  db.diyPosition = {[5 105 190 190], [5 305 90 190],[105 305 90 190], [305 305 90 190], [305 105 90 190], [205 5 190 90], [205 305 90 90], [205 105 90 90], [5 5 90 90], [105 5 90 90]}; |
| Expected Output | od = {[5 105 190 190], [5 305 90 190], [105 305 90 190], [305 305 90 190], [305 105 90 190], [205 5 190 90], [205 305 90 90], [205 105 90 90], [5 5 90 90], [105 5 90 90]}; |

* Test coverage: 7/7=100%
* Test result: 7 passed

## T1.2: GameProcess Unit Test

### T1.2.1: Test transMatrix ()

function board = transMatrix(~,position) Tcover1.2.1.1

    % translate the board into a 4\*5 matrix

    board = zeros(5,4);

    %2\*2

    item = position{1};

    y = (item(1)-5)/100+1;

    x = (item(2)-5)/100+1;

    board(5-x:6-x,y:y+1) = [1,1;1,1];

    %1\*2

    item = position{6};

    y = (item(1)-5)/100+1;

    x = (item(2)-5)/100+1;

    board(6-x,y:y+1) = [6,6];

    %2\*1

    for i = 2:5

        item = position{i};

        y = (item(1)-5)/100+1;

        x = (item(2)-5)/100+1;

        board(5-x:6-x,y) = [i;i];

    end

    %1\*1

    for i = 7:10

        item = position{i};

        y = (item(1)-5)/100+1;

        x = (item(2)-5)/100+1;

        board(6-x,y) = i;

    end

end

* Coverage Criteria: Statement coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T1.2.1.1 |
| Coverage Item | Tcover1.2.1.1 |
| Input | position = {[105 305 190 190],[5 305 90 190],[305 305 90 190], [5 105 90 190], [305 105 90 190], [105 205 190 90], [5 5 90 90], [105 105 90 90], [205 105 90 90], [305 5 90 90]}; |
| State | Any |
| Expected Output | od = [2 1 1 3; 2 1 1 3; 4 6 6 5; 4 8 9 5; 7 0 0 10]; |

* Test coverage: 1/1=100%
* Test result: 1 passed

### T1.2.2: Test getCurrentChess ()

function currentchess = getCurrentChess(~,id,position) Tcover1.2.2.1

    % get the position of the chess

    currentchess = position(id);

end

* Coverage Criteria: Statement coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T1.2.2.1 |
| Coverage Item | Tcover1.2.2.1 |
| Input | id = 1;  positions = {[105 305 190 190], [5 305 90 190], [305 305 90 190], [5 105 90 190], [305 105 90 190], [105 205 190 90], [5 5 90 90], [105 105 90 90], [205 105 90 90], [305 5 90 90]}; |
| State | Any |
| Expected Output | od = {[105 305 190 190]}; |

* Test coverage: 1/1=100%
* Test result: 1 passed

### T1.2.3: Test move ()

function nextPosition = move(process,clickPoint)

    currentChess = process.chessDB.currentChess{1};

    if (1<clickPoint(1)&&clickPoint(1)<399)&&(1<clickPoint(2)&&clickPoint(2)<499)

        %2\*2

        if currentChess(3)==190 && currentChess(4)==190

            %up

            if clickPoint(1)-currentChess(1) >0 && clickPoint(1)-currentChess(1) <200 ...

                && clickPoint(2)-currentChess(2)>200 && clickPoint(2)-currentChess(2)<300     Tcover1.2.3.1

                nextPosition=[currentChess(1) currentChess(2)+100 currentChess(3) currentChess(4)];

            %down

            elseif clickPoint(1)-currentChess(1)>0 && clickPoint(1)-currentChess(1)<200 ...

                && clickPoint(2)-currentChess(2)<0 && clickPoint(2)-currentChess(2)>-100      Tcover1.2.3.2

                nextPosition=[currentChess(1) currentChess(2)-100 currentChess(3) currentChess(4)];

            %left

            elseif clickPoint(1)-currentChess(1)>-100&&clickPoint(1)-currentChess(1)<0 ...

                && clickPoint(2)-currentChess(2)>0&&clickPoint(2)-currentChess(2)<200      Tcover1.2.3.3

                nextPosition=[currentChess(1)-100 currentChess(2) currentChess(3) currentChess(4)];

            %right

            elseif clickPoint(1)-currentChess(1)>200&&clickPoint(1)-currentChess(1)<300 ...

                && clickPoint(2)-currentChess(2)>0 && clickPoint(2)-currentChess(2)<200       Tcover1.2.3.4

                nextPosition=[currentChess(1)+100 currentChess(2) currentChess(3) currentChess(4)];

            else Tcover1.2.3.5

                nextPosition = [currentChess(1) currentChess(2) currentChess(3) currentChess(4)];

            end

        %1\*2

        elseif currentChess(3)==190 && currentChess(4)==90

            %up

            if clickPoint(1)-currentChess(1) >0 && clickPoint(1)-currentChess(1) <200 ...

                && clickPoint(2)-currentChess(2)>100 && clickPoint(2)-currentChess(2)<200      Tcover1.2.3.6

                nextPosition=[currentChess(1) currentChess(2)+100 currentChess(3) currentChess(4)];

            %down

            elseif clickPoint(1)-currentChess(1)>0 && clickPoint(1)-currentChess(1)<200 ...

                && clickPoint(2)-currentChess(2)<0 && clickPoint(2)-currentChess(2)>-100       Tcover1.2.3.7

                nextPosition=[currentChess(1) currentChess(2)-100 currentChess(3) currentChess(4)];

            %left

            elseif clickPoint(1)-currentChess(1)>-100&&clickPoint(1)-currentChess(1)<0 ...

                && clickPoint(2)-currentChess(2)>0&&clickPoint(2)-currentChess(2)<100      Tcover1.2.3.8

                nextPosition=[currentChess(1)-100 currentChess(2) currentChess(3) currentChess(4)];

            %right

            elseif clickPoint(1)-currentChess(1)>200&&clickPoint(1)-currentChess(1)<300 ...

                && clickPoint(2)-currentChess(2)>0 && clickPoint(2)-currentChess(2)<100       Tcover1.2.3.9

                nextPosition=[currentChess(1)+100 currentChess(2) currentChess(3) currentChess(4)];

            else Tcover1.2.3.10

                nextPosition = [currentChess(1) currentChess(2) currentChess(3) currentChess(4)];

            end

        %2\*1

        elseif currentChess(3)==90 && currentChess(4)==190

            %up

            if clickPoint(1)-currentChess(1) >0 && clickPoint(1)-currentChess(1) <200 ...

                && clickPoint(2)-currentChess(2)>200 && clickPoint(2)-currentChess(2)<300       Tcover1.2.3.11

                nextPosition=[currentChess(1) currentChess(2)+100 currentChess(3) currentChess(4)];

            %up

            elseif clickPoint(1)-currentChess(1)>0 && clickPoint(1)-currentChess(1)<100 ...

                && clickPoint(2)-currentChess(2)<0 && clickPoint(2)-currentChess(2)>-100       Tcover1.2.3.12

                nextPosition=[currentChess(1) currentChess(2)-100 currentChess(3) currentChess(4)];

            %up

            elseif clickPoint(1)-currentChess(1)>-100 && clickPoint(1)-currentChess(1)<0 ...

                && clickPoint(2)-currentChess(2)>0&&clickPoint(2)-currentChess(2)<200    Tcover1.2.3.13

                nextPosition=[currentChess(1)-100 currentChess(2) currentChess(3) currentChess(4)];

            %up

            elseif clickPoint(1)-currentChess(1)>100 && clickPoint(1)-currentChess(1)<200 ...

                && clickPoint(2)-currentChess(2)>0&&clickPoint(2)-currentChess(2)<200    Tcover1.2.3.14

                nextPosition=[currentChess(1)+100 currentChess(2) currentChess(3) currentChess(4)];

            else Tcover1.2.3.15

                nextPosition = [currentChess(1) currentChess(2) currentChess(3) currentChess(4)];

            end

        %1\*1

        elseif currentChess(3)==90 && currentChess(4)==90

            %up

            if clickPoint(1)-currentChess(1) >0 && clickPoint(1)-currentChess(1) <100 ...

                && clickPoint(2)-currentChess(2)>100 && clickPoint(2)-currentChess(2)<200       Tcover1.2.3.16

                nextPosition=[currentChess(1) currentChess(2)+100 currentChess(3) currentChess(4)];

            %down

            elseif clickPoint(1)-currentChess(1)>0 && clickPoint(1)-currentChess(1)<100 && ...

                clickPoint(2)-currentChess(2)<0 && clickPoint(2)-currentChess(2)>-100 Tcover1.2.3.17

                nextPosition=[currentChess(1) currentChess(2)-100 currentChess(3) currentChess(4)];

            %left

            elseif clickPoint(1)-currentChess(1)>-100&&clickPoint(1)-currentChess(1)<0 ...

                && clickPoint(2)-currentChess(2)>0&&clickPoint(2)-currentChess(2)<100      Tcover1.2.3.18

                nextPosition=[currentChess(1)-100 currentChess(2) currentChess(3) currentChess(4)];

            %right

            elseif clickPoint(1)-currentChess(1)>100&&clickPoint(1)-currentChess(1)<200 ...

                && clickPoint(2)-currentChess(2)>0 && clickPoint(2)-currentChess(2)<100       Tcover1.2.3.19

                nextPosition=[currentChess(1)+100 currentChess(2) currentChess(3) currentChess(4)];

            else Tcover1.2.3.20

                nextPosition = [currentChess(1) currentChess(2) currentChess(3) currentChess(4)];

            end

        end

    else Tcover1.2.3.21

        nextPosition = [currentChess(1) currentChess(2) currentChess(3) currentChess(4)];

    end

end

* Coverage Criteria: Statement coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T1.2.3.1 |
| Coverage Item | Tcover1.2.3.1 |
| Input | click\_point = [105, 355]; |
| State | currentChess = {[5 105 190 190]}; |
| Expected Output | od = [5 205 190 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.2 |
| Coverage Item | Tcover1.2.3.2 |
| Input | click\_point = [205, 255]; |
| State | currentChess = {[105 305 190 190]}; |
| Expected Output | od = [105 205 190 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.3 |
| Coverage Item | Tcover1.2.3.3 |
| Input | click\_point = [55, 355]; |
| State | currentChess = {[105 305 190 190]}; |
| Expected Output | od = [5 305 190 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.4 |
| Coverage Item | Tcover1.2.3.4 |
| Input | click\_point = [355, 355]; |
| State | currentChess = {[105 305 190 190]}; |
| Expected Output | od = [205 305 190 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.5 |
| Coverage Item | Tcover1.2.3.5 |
| Input | click\_point = [205, 380]; |
| State | currentChess = {[105 305 190 190]}; |
| Expected Output | od = [105 305 190 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.6 |
| Coverage Item | Tcover1.2.3.6 |
| Input | click\_point = [205, 355]; |
| State | currentChess = {[105 205 190 90]}; |
| Expected Output | od = [105 305 190 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.7 |
| Coverage Item | Tcover1.2.3.7 |
| Input | click\_point = [205, 155]; |
| State | currentChess = {[105 205 190 90]}; |
| Expected Output | od = [105 105 190 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.8 |
| Coverage Item | Tcover1.2.3.8 |
| Input | click\_point = [55, 255]; |
| State | currentChess = {[105 205 190 90]}; |
| Expected Output | od = [5 205 190 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.9 |
| Coverage Item | Tcover1.2.3.9 |
| Input | click\_point = [355, 255]; |
| State | currentChess = {[105 205 190 90]}; |
| Expected Output | od = [205 205 190 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.10 |
| Coverage Item | Tcover1.2.3.10 |
| Input | click\_point = [205, 255]; |
| State | currentChess = {[105 205 190 90]}; |
| Expected Output | od = [105 205 190 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.11 |
| Coverage Item | Tcover1.2.3.11 |
| Input | click\_point = [105, 355]; |
| State | currentChess = {[5 105 90 190]}; |
| Expected Output | od = [5 205 90 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.12 |
| Coverage Item | Tcover1.2.3.12 |
| Input | click\_point = [55, 55]; |
| State | currentChess = {[5 105 90 190]}; |
| Expected Output | od = [5 5 90 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.13 |
| Coverage Item | Tcover1.2.3.13 |
| Input | click\_point = [255, 205]; |
| State | currentChess = {[305 105 90 190]}; |
| Expected Output | od = [205 105 90 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.14 |
| Coverage Item | Tcover1.2.3.14 |
| Input | click\_point = [155, 205]; |
| State | currentChess = {[5 105 90 190]}; |
| Expected Output | od = [105 105 90 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.15 |
| Coverage Item | Tcover1.2.3.15 |
| Input | click\_point = [105, 205]; |
| State | currentChess = {[5 105 90 190]}; |
| Expected Output | od = [5 105 90 190]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.16 |
| Coverage Item | Tcover1.2.3.16 |
| Input | click\_point = [255, 255]; |
| State | currentChess = {[205 105 90 90]}; |
| Expected Output | od = [205 205 90 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.17 |
| Coverage Item | Tcover1.2.3.17 |
| Input | click\_point = [255, 55]; |
| State | currentChess = {[205 105 90 90]}; |
| Expected Output | od = [205 5 90 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.18 |
| Coverage Item | Tcover1.2.3.18 |
| Input | click\_point = [155, 155]; |
| State | currentChess = {[205 105 90 90]}; |
| Expected Output | od = [105 105 90 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.19 |
| Coverage Item | Tcover1.2.3.19 |
| Input | click\_point = [355, 155]; |
| State | currentChess = {[205 105 90 90]}; |
| Expected Output | od = [305 105 90 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.20 |
| Coverage Item | Tcover1.2.3.20 |
| Input | click\_point = [255, 155]; |
| State | currentChess = {[205 105 90 90]}; |
| Expected Output | od = [205 105 90 90]; |

|  |  |
| --- | --- |
|  | Test Case T1.2.3.21 |
| Coverage Item | Tcover1.2.3.21 |
| Input | click\_point = [0, 0]; |
| State | currentChess = {[205 105 90 90]}; |
| Expected Output | od = [205 105 90 90]; |

* Test coverage: 21/21=100%
* Test result: 21 passed

### T1.2.4: Test judge ()

function judge(process)

    % judge whether the move is legal

    process.chessDB.position{process.chessDB.id}=process.chessDB.nextPosition;

    board = process.transMatrix(process.chessDB.position);

    if sum(board(:)==0) ~= 2  % the move is illegal Tcover1.2.4.1

        process.chessDB.position(process.chessDB.id)=process.chessDB.currentChess;

    else

        if isequal(board,process.chessDB.currentLocate) Tcover1.2.4.2

        else Tcover1.2.4.3

            process.chessDB.step = process.chessDB.step + 1;

            process.gameview.StepButton.Text=num2str(process.chessDB.step);

            switch process.chessDB.id

                case 1

                    process.gameview.Caocao.Position = process.chessDB.nextPosition;

                case 2

                    process.gameview.Zhangfei.Position = process.chessDB.nextPosition;

                case 3

                    process.gameview.Zhaoyun.Position = process.chessDB.nextPosition;

                case 4

                    process.gameview.Machao.Position = process.chessDB.nextPosition;

                case 5

                    process.gameview.Huangzhong.Position = process.chessDB.nextPosition;

                case 6

                    process.gameview.Guanyu.Position = process.chessDB.nextPosition;

                case 7

                    process.gameview.soldier1.Position = process.chessDB.nextPosition;

                case 8

                    process.gameview.soldier4.Position = process.chessDB.nextPosition;

                case 9

                    process.gameview.soldier2.Position = process.chessDB.nextPosition;

                case 10

                    process.gameview.soldier3.Position = process.chessDB.nextPosition;

            end

            if process.chessDB.nextPosition(3:4)==[190 190]

                if process.chessDB.nextPosition(1:2)==[105 5]

                    process.gameover\_view = gameover;

                end

            end

        end

    end

end

* Coverage Criteria: Branch coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T1.2.4.1 |
| Coverage Item | Tcover1.2.4.1 |
| Input | None |
| State | gp.chessDB.id = 2;  gp.chessDB.nextPosition = [105 305 190 190];  gp.chessDB.currentChess = {[5 305 90 190]};  gp.chessDB.position = {[105 305 190 190], [5 305 90 190], [305 305 90 190], [5 105 90 190], [305 105 90 190], [105 205 190 90], [5 5 90 90], [105 105 90 90], [205 105 90 90], [305 5 90 90]}; |
| Expected Output | gp.chessDB.position(gp.chessDB.id) = {[5 305 90 190]}; |

|  |  |
| --- | --- |
|  | Test Case T1.2.4.2 |
| Coverage Item | Tcover1.2.4.2 |
| Input | None |
| State | gp.chessDB.id = 2;  gp.chessDB.nextPosition = [5 305 90 190];  gp.chessDB.position = {[105 305 190 190], [5 305 90 190], [305 305 90 190], [5 105 90 190], [305 105 90 190], [105 205 190 90], [5 5 90 90], [105 105 90 90], [205 105 90 90], [305 5 90 90]}; |
| Expected Output | gp.chessDB.position(gp.chessDB.id) = {[5 305 90 190]}; |

|  |  |
| --- | --- |
|  | Test Case T1.2.4.3 |
| Coverage Item | Tcover1.2.4.3 |
| Input | None |
| State | gp.chessDB.id = 7;  gp.chessDB.step = 0;  gp.chessDB.nextPosition = [105 5 90 90];  gp.chessDB.position = {[105 305 190 190], [5 305 90 190], [305 305 90 190], [5 105 90 190], [305 105 90 190], [105 205 190 90], [5 5 90 90], [105 105 90 90], [205 105 90 90], [305 5 90 90]}; |
| Expected Output | gp.chessDB.position(gp.chessDB.id) = {[105 5 90 90]});  gp.chessDB.step = 1; |

* Test coverage: 3/3=100%
* Test result: 3 passed

# T2: Integration Test

## T2.1: GameProcess+StartDB Integration

### T2.1.1: Test getStartPosition () with transMatrix()

* Coverage Criteria: Branch coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T2.1.1.1 |
| Coverage Item | Tcover2.1.1.1 |
| Input | None |
| State | db.mode = 'hengdaolima'; |
| Expected Output | od = [2, 1, 1, 3; 2, 1, 1, 3; 4, 6, 6, 5; 4, 8, 9, 5; 7, 0, 0, 10]; |

|  |  |
| --- | --- |
|  | Test Case T2.1.1.2 |
| Coverage Item | Tcover2.1.1.2 |
| Input | None |
| State | db.mode = 'qitoubingjin'; |
| Expected Output | od = [2, 1, 1, 3; 2, 1, 1, 3; 7, 8, 9, 10; 4, 6, 6, 5; 4, 0, 0, 5]; |

|  |  |
| --- | --- |
|  | Test Case T2.1.1.3 |
| Coverage Item | Tcover2.1.1.3 |
| Input | None |
| State | db.mode = 'bingfensanlu'; |
| Expected Output | od = [7, 1, 1, 8; 2, 1, 1, 3; 2, 6, 6, 3; 4, 9, 10, 5; 4, 0, 0, 5]; |

|  |  |
| --- | --- |
|  | Test Case T2.1.1.4 |
| Coverage Item | Tcover2.1.1.4 |
| Input | None |
| State | db.mode = 'weierbujian'; |
| Expected Output | od = [2, 1, 1, 10; 2, 1, 1, 9; 3, 6, 6, 8; 3, 4, 5, 7; 0, 4, 5, 0]; |

|  |  |
| --- | --- |
|  | Test Case T2.1.1.5 |
| Coverage Item | Tcover2.1.1.5 |
| Input | None |
| State | db.mode = 'jiezuxiandeng'; |
| Expected Output | od = [7, 1, 1, 10; 8, 1, 1, 9; 0, 6, 6, 0; 2, 3, 4, 5; 2, 3, 4, 5]; |

|  |  |
| --- | --- |
|  | Test Case T2.1.1.6 |
| Coverage Item | Tcover2.1.1.6 |
| Input | None |
| State | db.mode = 'test'; |
| Expected Output | od = [2, 3, 0, 4; 2, 3, 7, 4; 1, 1, 0, 5; 1, 1, 8, 5; 9, 10, 6, 6] |

|  |  |
| --- | --- |
|  | Test Case T2.1.1.7 |
| Coverage Item | Tcover2.1.1.7 |
| Input | None |
| State | db.mode = 'diy';  db.diyPosition = {[5 105 190 190], [5 305 90 190],[105 305 90 190], [305 305 90 190], [305 105 90 190], [205 5 190 90], [205 305 90 90], [205 105 90 90], [5 5 90 90], [105 5 90 90]}; |
| Expected Output | od = [2, 3, 0, 4; 2, 3, 7, 4; 1, 1, 0, 5; 1, 1, 8, 5; 9, 10, 6, 6]; |

* Test coverage: 7/7=100%
* Test result: 7 passed

### T2.1.2: Test getStartPosition () with getCurrentChess()

* Coverage Criteria: Branch coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T2.1.2.1 |
| Coverage Item | Tcover2.1.2.1 |
| Input | None |
| State | db.mode = 'hengdaolima';  id = 1; |
| Expected Output | od = {[105 305 190 190]}; |

|  |  |
| --- | --- |
|  | Test Case T2.1.2.2 |
| Coverage Item | Tcover2.1.2.2 |
| Input | None |
| State | db.mode = 'qitoubingjin';  id = 2; |
| Expected Output | od = {[5 305 90 190]}; |

|  |  |
| --- | --- |
|  | Test Case T2.1.2.3 |
| Coverage Item | Tcover2.1.2.3 |
| Input | None |
| State | db.mode = 'bingfensanlu';  id = 3; |
| Expected Output | od = {[305 205 90 190]}; |

|  |  |
| --- | --- |
|  | Test Case T2.1.2.4 |
| Coverage Item | Tcover2.1.2.4 |
| Input | None |
| State | db.mode = 'weierbujian';  id = 4; |
| Expected Output | od = {[105 5 90 190]}; |

|  |  |
| --- | --- |
|  | Test Case T2.1.2.5 |
| Coverage Item | Tcover2.1.2.5 |
| Input | None |
| State | db.mode = 'jiezuxiandeng';  id = 5; |
| Expected Output | od = {[305 5 90 190]}; |

|  |  |
| --- | --- |
|  | Test Case T2.1.2.6 |
| Coverage Item | Tcover2.1.2.6 |
| Input | None |
| State | db.mode = 'test';  id = 6; |
| Expected Output | od = {[205 5 190 90]}; |

|  |  |
| --- | --- |
|  | Test Case T2.1.2.7 |
| Coverage Item | Tcover2.1.2.7 |
| Input | None |
| State | db.mode = 'diy';  id = 7;  db.diyPosition = {[5 105 190 190], [5 305 90 190],[105 305 90 190], [305 305 90 190], [305 105 90 190], [205 5 190 90], [205 305 90 90], [205 105 90 90], [5 5 90 90], [105 5 90 90]}; |
| Expected Output | od = {[205 305 90 90]}; |

* Test coverage: 7/7=100%
* Test result: 7 passed

# T3: Functional Test

## T3.1: Use Case “Change Theme”

### T3.1.1: Test theme

* Coverage Criteria: Branch coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T3.1.1.1 |
| Coverage Item | Tcover3.1.1.1 |
| Input | testCase.press(theme\_window.theme2); |
| State | theme1 |
| Expected Output | theme2 |

|  |  |
| --- | --- |
|  | Test Case T3.1.1.2 |
| Coverage Item | Tcover3.1.1.2 |
| Input | testCase.press(theme\_window.theme1); |
| State | theme2 |
| Expected Output | theme1 |

* Test coverage: 2/2=100%
* Test result: 2 passed

## T3.2: Use Case “Change Mode”

T3.2.1: Test mode

* Coverage Criteria: Branch coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T3.2.1.1 |
| Coverage Item | Tcover3.2.1.1 |
| Input | testCase.press(mode\_window.hengdaolima); |
| State | startDB.mode ~= 'hengdaolima'; |
| Expected Output | startDB.mode = 'hengdaolima'; |

|  |  |
| --- | --- |
|  | Test Case T3.2.1.2 |
| Coverage Item | Tcover3.2.1.2 |
| Input | testCase.press(mode\_window.qitoubingjin); |
| State | startDB.mode ~= 'qitoubingjin'; |
| Expected Output | startDB.mode = 'qitoubingjin'; |

|  |  |
| --- | --- |
|  | Test Case T3.2.1.3 |
| Coverage Item | Tcover3.2.1.3 |
| Input | testCase.press(mode\_window.bingfensanlu); |
| State | startDB.mode ~= 'bingfensanlu'; |
| Expected Output | startDB.mode = 'bingfensanlu'; |

|  |  |
| --- | --- |
|  | Test Case T3.2.1.4 |
| Coverage Item | Tcover3.2.1.4 |
| Input | testCase.press(mode\_window.weierbujian); |
| State | startDB.mode ~= 'weierbujian'; |
| Expected Output | startDB.mode = 'weierbujian'; |

|  |  |
| --- | --- |
|  | Test Case T3.2.1.5 |
| Coverage Item | Tcover3.2.1.5 |
| Input | testCase.press(mode\_window.jiezuiandeng); |
| State | startDB.mode ~= 'jiezuxiandeng'; |
| Expected Output | startDB.mode = 'jiezuxiandeng'; |

* Test coverage: 5/5=100%
* Test result: 5 passed

## T3.3: Use Case “DIY Chesses”

T3.3.1: Test diy

* Coverage Criteria: Statement coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T3.3.1.1 |
| Coverage Item | Tcover3.3.1.1 |
| Input | presses to place the chesses |
| State | startDB.mode = 'diy'; |
| Expected Output | chesses placed correctly on GameView |

* Test coverage: 1/1=100%
* Test result: 1 passed

## T3.4: Use Case “Play Game”

T3.4.1: Test run

* Coverage Criteria: Statement coverage
* Test case

|  |  |
| --- | --- |
|  | Test Case T3.4.1.1 |
| Coverage Item | Tcover3.4.1.1 |
| Input | presses to move chesses |
| State | chesses haves been placed on the GameView |
| Expected Output | CaoCao moves to the exit and a gameover UI shows |

* Test coverage: 1/1=100%
* Test result: 1 passed