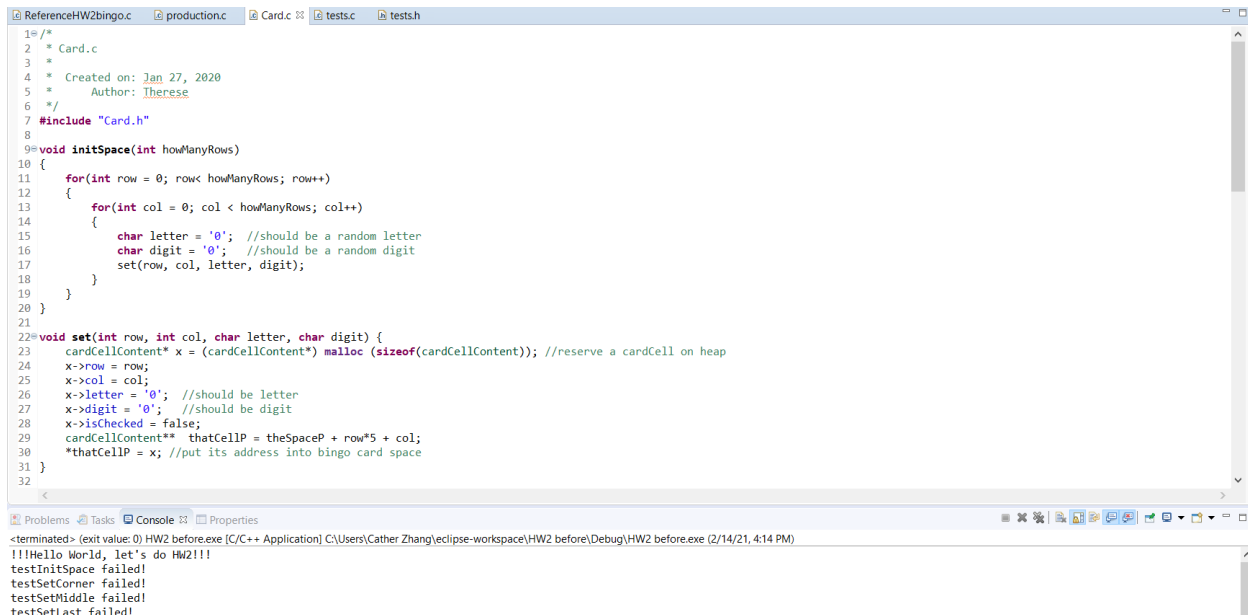


## Before-screenshots:



```
1 /*
2  * Card.c
3  *
4  * Created on: Jan 27, 2020
5  * Author: Therese
6  */
7 #include "Card.h"
8
9 void initSpace(int howManyRows)
10 {
11     for(int row = 0; row < howManyRows; row++)
12     {
13         for(int col = 0; col < howManyRows; col++)
14         {
15             char letter = '0'; //should be a random letter
16             char digit = '0'; //should be a random digit
17             set(row, col, letter, digit);
18         }
19     }
20 }
21
22 void set(int row, int col, char letter, char digit) {
23     cardCellContent* x = (cardCellContent*) malloc (sizeof(cardCellContent)); //reserve a cardCell on heap
24     x->row = row;
25     x->col = col;
26     x->letter = '0'; //should be letter
27     x->digit = '0'; //should be digit
28     x->isChecked = false;
29     cardCellContent** thatCellP = theSpaceP + row*5 + col;
30     *thatCellP = x; //put its address into bingo card space
31 }
32
```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2 before.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2 before\Debug\HW2 before.exe (2/14/21, 4:14 PM)

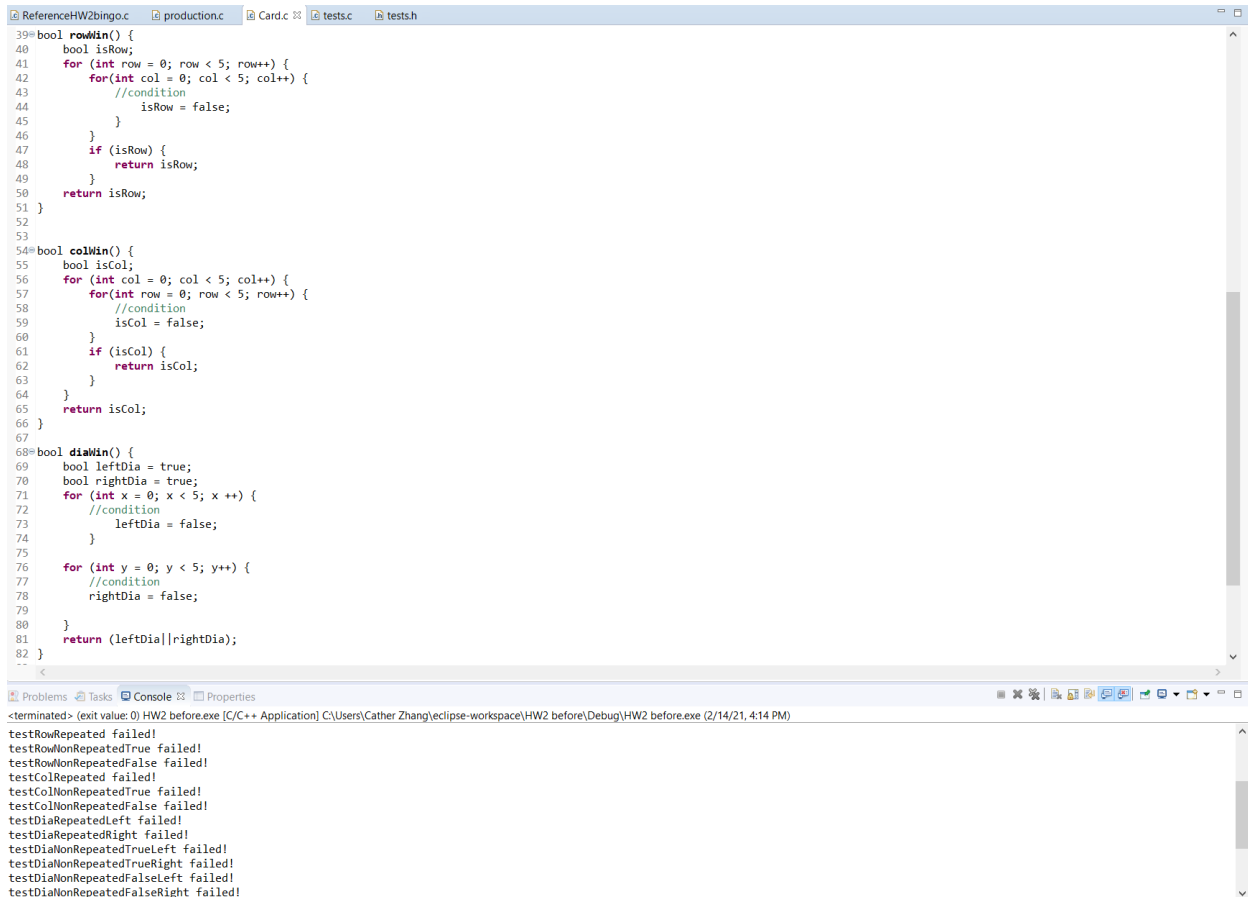
!!!Hello World, let's do HW2!!!

testInitSpace failed!

testSetCorner failed!

testSetMiddle failed!

testSetLast failed!



```
39 bool rowWin() {
40     bool isRow;
41     for (int row = 0; row < 5; row++) {
42         for(int col = 0; col < 5; col++) {
43             //condition
44             isRow = false;
45         }
46     }
47     if (isRow) {
48         return isRow;
49     }
50     return isRow;
51 }
52
53
54 bool colWin() {
55     bool isCol;
56     for (int col = 0; col < 5; col++) {
57         for(int row = 0; row < 5; row++) {
58             //condition
59             isCol = false;
60         }
61         if (isCol) {
62             return isCol;
63         }
64     }
65     return isCol;
66 }
67
68 bool diaWin() {
69     bool leftDia = true;
70     bool rightDia = true;
71     for (int x = 0; x < 5; x++) {
72         //condition
73         leftDia = false;
74     }
75
76     for (int y = 0; y < 5; y++) {
77         //condition
78         rightDia = false;
79     }
80     return (leftDia || rightDia);
81 }
82 }
--
```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2 before.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2 before\Debug\HW2 before.exe (2/14/21, 4:14 PM)

testRowRepeated failed!

testRowNonRepeatedTrue failed!

testRowNonRepeatedFalse failed!

testColRepeated failed!

testColNonRepeatedTrue failed!

testColNonRepeatedFalse failed!

testDiaRepeatedLeft failed!

testDiaRepeatedRight failed!

testDiaNonRepeatedTrueLeft failed!

testDiaNonRepeatedTrueRight failed!

testDiaNonRepeatedFalseLeft failed!

testDiaNonRepeatedFalseRight failed!

```

84 void printBoard() {
85     for (int i = 0; i < 25; i++) {
86         printf("cell%d", i); //should print out letter and digit
87         // if the cell is checked should print out something different so we can tell the difference
88     }
89 }
90
91

```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2 before.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2 before\Debug\HW2 before.exe (2/14/21, 4:16 PM)

cell0cell1cell2cell3cell4cell5cell6cell7cell8cell9cell10cell11cell12cell13cell14cell15cell16cell17cell18cell19cell20cell21cell22cell23cell24testPrintBoard failed!

```

92
93 void call(char letter, char digit) {
94     cardCellContent* calledCell;
95     for (int num = 0; num < 25; num++) {
96         calledCell = (*(theSpaceP + num));
97         if ((letter == (calledCell->letter)) && (digit == (calledCell->digit))) {
98             //check if the called cell in there
99             // do something
100         }
101     } //if the called cell is not in there, do something else
102 }
103

```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2 before.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2 before\Debug\HW2 before.exe (2/14/21, 4:16 PM)

testCallOne failed!  
testCallTwo failed!  
testCallThree failed!

```

10
11 void ready(int times) {
12     for (int i = 0; i < times; i++) { // execute the loops however many times we put in the argument
13         printf("Round %d:\n", i+1);
14         char let = '0';
15         char dig = '0';
16         printf("%c%c called\n", let, dig);
17         call(let, dig); //call the random letter and digit we generated
18         printBoard();
19     }
20 }
21

```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2 before.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2 before\Debug\HW2 before.exe (2/14/21, 4:19 PM)

!!!Hello World, let's do HW2!!!  
testInitSpace failed!  
testSetCorner failed!  
testSetMiddle failed!  
testSetLast failed!  
testCallOne failed!  
testCallTwo failed!  
testCallThree failed!  
testRowRepeated failed!  
testRowNonRepeatedTrue failed!  
testRowNonRepeatedFalse failed!  
testColRepeated failed!  
testColNonRepeatedTrue failed!  
testColNonRepeatedFalse failed!  
testDiaRepeatedLeft failed!  
testDiaRepeatedRight failed!  
testDiaNonRepeatedTrueLeft failed!  
testDiaNonRepeatedTrueRight failed!  
testDiaNonRepeatedFalseLeft failed!  
testDiaNonRepeatedFalseRight failed!  
testDidNotWin passed!  
cell0cell1cell2cell3cell4cell5cell6cell7cell8cell9cell10cell11cell12cell13cell14cell15cell16cell17cell18cell19cell20cell21cell22cell23cell24testPrintBoard failed!  
cell0cell1cell2cell3cell4cell5cell6cell7cell8cell9cell10cell11cell12cell13cell14cell15cell16cell17cell18cell19cell20cell21cell22cell23cell24Round 1:  
00 called  
cell0cell1cell2cell3cell4cell5cell6cell7cell8cell9cell10cell11cell12cell13cell14cell15cell16cell17cell18cell19cell20cell21cell22cell23cell24testReady failed!  
Not all tests passed; better luck next time

//test didNotWin passed because rowWin(), colWin(), and diaWin() all return false. So the board indeed never wins.

## After-screenshots:

```
tests.h  tests.c  ReferenceHW2bingo.c  Caller.h  Caller.c  Card.c
1  /*
2   * Card.c
3   *
4   * Created on: Jan 27, 2020
5   * Author: Therese
6   */
7  #include "Card.h"
8
9  void initSpace(int howManyRows)
10 {
11     for(int row = 0; row < howManyRows; row++)
12     {
13         for(int col = 0; col < howManyRows; col++)
14         {
15             char letter = (char)(rand() % 26 + 65);
16             char digit = (char)(rand() % 10 + 48);
17             set(row, col, letter, digit);
18         }
19     }
20 }
21
22 void set(int row, int col, char letter, char digit) {
23     cardCellContent* x = (cardCellContent*) malloc(sizeof(cardCellContent)); //reserve a cardCell on heap
24     x->row = row;
25     x->col = col;
26     x->letter = letter;
27     x->digit = digit;
28     x->isChecked = false;
29     cardCellContent** thatCellP = theSpaceP + row*5 + col;
30     *thatCellP = x; //put its address into bingo card space
31 }
32
```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2\Debug\HW2.exe (2/14/21, 4:23 PM)

!!Hello World, let's do HW2!!!

Q2, E6, G9, C8, M6,  
M1, Z6, R9, T0, T0,  
D5, W3, N2, J8, D4,  
M8, H3, X5, E4, A6,  
U1, P8, B1, A7, X1,

testInitSpace passed!  
testSetCorner passed!  
testSetMiddle passed!  
testSetLast passed!

```
tests.h  tests.c  ReferenceHW2bingo.c  Caller.h  Caller.c  Card.c
37 }
38
39 bool rowWin() {
40     bool isRow;
41     for (int row = 0; row < 5; row++) {
42         isRow = true;
43         for(int col = 0; col < 5; col++) {
44             cardCellContent* cell = (*(theSpaceP + row*5 + col));
45             if (!(cell->isChecked)) {
46                 isRow = false;
47             }
48         }
49         if (isRow) {
50             return isRow;
51         }
52     }
53     return isRow;
54 }
55
56
57 bool colWin() {
58     bool isCol;
59     for (int col = 0; col < 5; col++) {
60         isCol = true;
61         for(int row = 0; row < 5; row++) {
62             cardCellContent* cell = (*(theSpaceP + row*5 + col));
63             if (!(cell->isChecked)) {
64                 isCol = false;
65             }
66         }
67         if (isCol) {
68             return isCol;
69         }
70     }
71     return isCol;
72 }
73
```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2\Debug\HW2.exe (2/14/21, 4:23 PM)

testRowRepeated passed!  
testRowNonRepeatedTrue passed!  
testRowNonRepeatedFalse passed!  
testColRepeated passed!  
testColNonRepeatedTrue passed!  
testColNonRepeatedFalse passed!  
testDiaRepeatedLeft passed!  
testDiaRepeatedRight passed!  
testDiaNonRepeatedTrueLeft passed!  
testDiaNonRepeatedTrueRight passed!  
testDiaNonRepeatedFalseLeft passed!  
testDiaNonRepeatedFalseRight passed!  
testDidNotWin passed!

```

73
74=bool diaWin() {
75    bool leftDia = true;
76    bool rightDia = true;
77    for (int x = 0; x < 5; x++) {
78        cardCellContent* cellLeft = (*(theSpaceP + 6 * x));
79        if (!(cellLeft->isChecked)) {
80            leftDia = false;
81        }
82    }
83
84    for (int y = 0; y < 5; y++) {
85        cardCellContent* cellRight = (*(theSpaceP + 4*y + 4));
86        if (!(cellRight->isChecked)) {
87            rightDia = false;
88        }
89    }
90    return (leftDia||rightDia);
91 }
92
93=void printBoard() {
94    for (int i = 0; i < 25; i++) {
95        if (((cardCellContent*)(*(theSpaceP + i)))->isChecked) {
96            printf("%c%c", ' ', '<'); fflush(stdout);
97        }
98        else {
99            printf("%c%c", ((cardCellContent*)(*(theSpaceP + i)))->letter, ((cardCellContent*)(*(theSpaceP + i)))->digit); fflush(stdout);
100        }
101        if (i % 5 == 4)
102        {
103            printf("\n"); fflush(stdout);
104        }
105    }
106    printf("\n"); fflush(stdout);
107 }
108
+...

```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2\Debug\HW2.exe (2/14/21, 4:23 PM)

```

testDiaNonRepeatedTrueLeft passed!
testDiaNonRepeatedTrueRight passed!
testDiaNonRepeatedfalseLeft passed!
testDiaNonRepeatedfalseRight passed!
testDidNotWin passed!
testSaveCell passed!
A1, M8, R4, A5, L2,
Y3, X9, R5, R8, H8,
T1, X5, U8, I9, Q5,
M7, D1, T5, D3, F0,
W1, J2, B5, Z5, E3,

testPrintBoard passed!
Q5, R1, G8, L5, L2,
G4, Y7, A0, F0, K3,
R2, S0, M2, G3, W0,
M5, A9, Y2, I2, U5,
B1, C4, X8, L5, Y4,

```

```

tests.h tests.c ReferenceHW2Bingo.c Caller.h Caller.c Card.c LinkedList.c
1=/*
2 * Caller.c
3 *
4 * Created on: Feb 10, 2021
5 * Author: Cather Zhang
6 */
7
8 #include "Caller.h"
9
10
11=void ready(int times) {
12    for (int i = 0; i < times; i++) { // execute the loops however many times we put in the argument
13        printf("Round %d:\n", i+1);
14        char let = (char)(rand() % 26 + 65);
15        char dig = (char)(rand() % 10 + 48);
16        printf("%c%c called\n", let, dig);
17        call(let, dig); //call the random letter and digit we generated
18        printBoard();
19    }
20 }
21

```

Problems Tasks Console Properties

<terminated> (exit value: 0) HW2.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2\Debug\HW2.exe (2/14/21, 4:23 PM)

```

R2, S0, M2, G3, W0,
M5, A9, Y2, I2, U5,
B1, C4, X8, L5, Y4,

```

```

Round 1:
Q7 called
Q5, R1, G8, L5, L2,
G4, Y7, A0, F0, K3,
R2, S0, M2, G3, W0,
M5, A9, Y2, I2, U5,
B1, C4, X8, L5, Y4,

```

testReady passed!

```
31
32 void saveCell(LLNode* lp, cellCard* mp)
33 {
34     //if the list is empty, then make payP be mp
35     //else traverse the list,
36     //make a new list element
37     //put mp in that
38     //attach the new list element to the existing list
39     if(isEmpty(lp))
40     {
41         lp->called = mp;
42     }
43     else
44     {
45         LLNode* temp = lp;
46         while(temp->next)
47         {
48             temp=(LLNode*)temp->next;
49         }
50         //now temp points to the last element
51
52         //make a new element, attach mp to it, wire up the new element
53         LLNode* newList = makeEmptyLinkedList();
54         newList->called = mp;
55         temp->next = (struct LLNode*)newList;
56     }
57 }
58
59 void printHistory(LLNode* cellP)
60 {
61     <terminated> (exit value: 0) HW2.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2\Debug\HW2.exe (2/14/21, 4:23 PM)
testDialNonRepeatedTrueLeft passed!
testDialNonRepeatedTrueRight passed!
testDialNonRepeatedFalseLeft passed!
testDialNonRepeatedFalseRight passed!
testDidNotWin passed!
testSaveCell passed!
A1, M8, R4, A5, L2,
Y3, X9, R5, R8, H8,
T1, X5, U8, I9, Q5,
M7, D1, T5, D3, F0,
W1, J2, B5, Z5, E3,
```

```
58 }
59
60 void prinHistory(LLNode* cellP)
61 {
62     puts("Printing history");
63     if(cellP->called==(cellCard*)0)
64     {
65         puts("Empty list");
66     }
67     else
68     {
69         //traverse the list, printing as we go
70
71         LLNode* temp = cellP;
72         while(temp) //when temp is not null
73         {
74             if (temp->called->isChecked) {
75                 printf("%c%c is called, found on row %d, column %d.\n", temp->called->letter, temp->called->digit, temp->called->row + 1, temp->called->col + 1);
76             }
77             else {
78                 printf("%c%c is called, not found.\n", temp->called->letter, temp->called->digit);
79             }
80             temp=(LLNode*) (temp->next); // to the next node
81         }
82     }
83 }
84
85 }
86
<terminated> (exit value: 0) HW2.exe [C/C++ Application] C:\Users\Cather Zhang\workspace\HW2\Debug\HW2.exe (2/14/21, 4:23 PM)
Printing history
Empty list
testPrintEmptyHistory passed!
Printing history
D2 is called, not found.
testPrintNonEmptyHistory passed!
The tests all passed.
Didn't find any arguments.
```