



College of Electrical and Mechanical
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Department of Electrical Engineering

Electrical Engineering
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FOP Lab Project Report

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Project Title

2D Crossword Puzzle

Project Description

Our project is a 2D Crossword Puzzle. It is a randomly generated character array which forms a 9*9 crossword puzzle. The compiler asks the user whether he/she would like a previously stored character array or if they desire to see a randomly generated crossword puzzle. Then the user is supposed to give an input and the compiler analyses whether the input is present in the crossword puzzle. The checking process includes a check along all 8 axis, no matter where in the array the pointer may be present. If the input is present in the cross word puzzle, then the answer would be correct. Otherwise, it would be incorrect. These both give a colour effect in the compiler.

Project Code

```
#include<iostream>
#include<string>
#include<windows.h>
#include<fstream>
using namespace std;

int length(char name[20])
{
    int count = 0;
    char temp = 'a';
    int i = 0;
    while (temp != '\0')
    {
        temp = name[i];
        count++;
        i++;
    }
    return count;
}

bool check(char arr[9][9], char name[], int size)
{
    bool condition = false;
    int count = 0;

    //FRONT horizontal check
    for (int i = 0; i < 9; i++)
    {
        for (int j = 0; j < 9; j++)
        {
            count = 0;
            if (name[count] == arr[i][j])
            {
                while (name[count] == arr[i][j])
                {
                    if (name[count + 1] == '\0')
                    {
                        condition = true;
                        break;
                    }
                    j++;
                    count++;
                }
            }
        }
    }
}
```

```
//Back horizontal check
for (int i = 0; i < 9; i++)
{
    for (int j = 8; j >= 0; j--)
    {
        count = 0;
        if (name[count] == arr[i][j])
        {
            while (name[count] == arr[i][j])
            {
```

```
                if (name[count + 1] == '\0')
                {
                    condition = true;
                    break;
                }
                j--;
                count++;
            }
        }
    }
}
```

```
//DOWN vertical check
for (int i = 0; i < 9; i++)
{
    for (int j = 0; j < 9; j++)
    {
        count = 0;
        if (name[count] == arr[j][i])
        {
            while (name[count] == arr[j][i])
            {
```

```
                if (name[count + 1] == '\0')
                {
                    condition = true;
                    break;
                }
                j++;
                count++;
            }
        }
    }
}
```

```
//UP vertically check
for (int i = 8; i >= 0; i--)
{
    for (int j = 0; j < 9; j++)
    {
```

```
count = 0;
if (name[count] == arr[i][j])
{
    while (name[count] == arr[i][j])
    {
```

```
        if (name[count + 1] == '\\0')
        {
            condition = true;
            break;
        }
        i--;
        count++;
    }
}
```

```
//diagnol check
for (int i = 0; i < 9; i++)
{
    for (int j = 0; j < 9; j++)
    {
        count = 0;
        if (name[count] == arr[i][j])
        {
            while (name[count] == arr[i][j])
            {
```

```
                if (name[count + 1] == '\\0')
                {
                    condition = true;
                    break;
                }
                i++;
                j++;
                count++;
            }
        }
    }
}
```

```
//Second Diagonal check
for (int i = 8; i >= 0; i--)
{
    for (int j = 8; j >= 0; j--)
    {
        count = 0;
        if (name[count] == arr[i][j])
        {
            while (name[count] == arr[i][j])
            {
```

```

        if (name[count + 1] == '\0')
        {
            condition = true;
            break;
        }
        i--;
        j--;
        count++;
    }
}

```

```

//Third Diagonal
for (int i = 0; i < 9; i++)
{
    for (int j = 0; j < 9; j++)
    {
        count = 0;
        if (name[count] == arr[i][j])
        {
            while (name[count] == arr[i][j])
            {

```

```

                if (name[count + 1] == '\0')
                {
                    condition = true;
                    break;
                }
                i++;
                j--;
                count++;
            }
        }
    }
}

```

```

//Fourth Diagonal
for (int i = 8; i >= 0; i--)
{
    for (int j = 8; j >= 0; j--)
    {
        count = 0;
        if (name[count] == arr[i][j])
        {
            while (name[count] == arr[i][j])
            {

```

```

                if (name[count + 1] == '\0')
                {
                    condition = true;

```

```

        break;
    }
    i--;
    j++;
    count++;
}
}
}
}
return condition;
}

```

```

void table(char b)
{
    int size;
    char name[20];
    bool condition;

```

```

    char choose;

```

```

    char grid[9][9] = { };

```

```

    anchor:
    system("cls");

```

```

    cout << "
=====
endl << "                > PROJECT      : 2D PUZZLE" << endl << "
> DESIGNED BY   : AZLAAN RANJHA & RANA ABDULLAH AZHAR" << endl << "
=====
endl << endl << endl;

```

```

    cout << "                What would you like to do?" << endl << "
1. Display Grid from File" << endl << "                2. Create a
Random Grid" << endl << "                3. Exit Program" << endl <<
endl;

```

```

    cout << "                > Answer : ";
    cin >> choose;

```

```

    if (choose == '1')
    {
        ifstream my_file;
        string value;

```

```

        system("cls");

```

```

        my_file.open("Grid.txt");

```

```

        for (int i = 0; i < 9; i++)
        {
            for (int j = 0; j < 9; j++)

```

```

        {
            my_file >> grid[i][j];
        }
    }

    my_file.close();
}

else if (choose == '2')
{
    system("cls");

    for (int i = 0; i < 9; i++)
    {
        for (int j = 0; j < 9; j++)
        {
            b += i + j;

            if (b < 90 && b > 65)
            {
                grid[i][j] = b;
            }

            else if (b > 90)
            {
                b = b - 25;
                grid[i][j] = b;
            }

            else if (b < 65)
            {
                b = b + 25;
                grid[i][j] = b;
            }
        }
    }

    else if (choose == '3')
    {
        exit (0);
    }

    else
    {
        cout << "\n\n" << "> INVALID INPUT! EXITING..";
        exit (0);
    }

    cout << "
=====
endl << "
> PROJECT : 2D PUZZLE" << endl << "
> DESIGNED BY : AZLAAN RANJHA & RANA ABDULLAH AZHAR" << endl << "

```

[illegible]


```
cout << "
<< endl;
cout << "
<< endl;
cout << "          " << grid[6][0] << "          " << grid[6][1]
<< "          " << grid[6][2] << "          " << grid[6][3] << "          " <<
grid[6][4] << "          " << grid[6][5] << "          " << grid[6][6] << "
" << grid[6][7] << "          " << grid[6][8] << endl;
cout << "
<< endl;
cout << "
<< endl;
cout << "          " << grid[7][0] << "          " << grid[7][1]
<< "          " << grid[7][2] << "          " << grid[7][3] << "          " <<
grid[7][4] << "          " << grid[7][5] << "          " << grid[7][6] << "
" << grid[7][7] << "          " << grid[7][8] << endl;
cout << "
<< endl;
cout << "
<< endl;
cout << "          " << grid[8][0] << "          " << grid[8][1]
<< "          " << grid[8][2] << "          " << grid[8][3] << "          " <<
grid[8][4] << "          " << grid[8][5] << "          " << grid[8][6] << "
" << grid[8][7] << "          " << grid[8][8] << endl;
cout << "
<< endl;
cout << "          * * * * *
* * * *" << endl;
```

```
cout << "\n\n\t\t\tEnter a word : ";  
cin >> name;
```

```
size = length(name);
```

```
condition = check(grid, name, size);
```

```
if (condition == true)
{
```

```
cout << "\n          > The entered word exists in puzzle!"  
<< endl;
```

```
for (int i = 0; i < 3; i++)
```

```
system("color 20");
system("color 07");
system("color 20");
system("color 07");
system("color 20");
```

$$\left. \begin{array}{l} \text{ } \\ \text{ } \end{array} \right\} \quad \left. \begin{array}{l} \text{ } \\ \text{ } \end{array} \right\}$$

```

else
{
    for (int i = 0; i < 3; i++)
    {
        system("color 40");
        system("color 07");
        system("color 40");
        system("color 07");
        system("color 40");
    }
}

```

```

    cout << "\n                > The entered word does not exist in
puzzle!" << endl;
}

```

```

}

```

```

char alphabet()
{
    char alphabets[26] =
{ 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P',
'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z' };
}

```

```

srand(time(NULL));

```

```

for (int i = 0; i < 9; i++)
{
    int temp = rand() % 26;
    return alphabets[temp];
}
}

```

```

int main()
{
    bool i = false;
    char puzzle = alphabet();
}

```

```

do
{
    puzzle += 3;
    system("cls");
    system("color 07");
}

```

```

    table(puzzle); //prints the grid on
the screen

```

```

    cout << "\n                Play again?" << " [1 / 0] " << endl;
    cout << "                Your choice : ";
    cin >> i;
}

```

```

    } while (i);
}

```

Project Output

C:\Users\Abdullah Azhar\Desktop\Azlaan And Abdullah\Azlaan Project\x64\Debug\ConsoleApplication2.exe

```
=====
> PROJECT      : 2D PUZZLE
> DESIGNED BY  : AZLAAN RANJHA & RANA ABDULLAH AZHAR
=====
```

```
* * * * *
```

```
A   F   M   B   N   D   L   O   D
```

```
C   F   J   K   W   I   T   C   I
```

```
D   F   C   O   L   L   E   G   E
```

```
G   K   M   R   F   D   I   V   O
```

```
F   C   F   L   J   I   W   Q   C
```

```
F   I   A   N   C   U   O   L   F
```

```
Q   R   O   T   R   B   C   M   I
```

```
I   L   I   E   W   Q   T   N   X
```

```
S   L   A   F   J   L   I   K   E
```

```
* * * * *
```

Enter a word : COLLEGE

> The entered word exists in puzzle!

Play again? [1 / 0]

Your choice :

File Stored Static Crossword Correct Input

```
=====
> PROJECT      : 2D PUZZLE
> DESIGNED BY  : AZLAAN RANJHA & RANA ABDULLAH AZHAR
=====
```

```
* * * * *
A   F   M   B   N   D   L   O   D
C   F   J   K   W   I   T   C   I
D   F   C   O   L   L   E   G   E
G   K   M   R   F   D   I   V   O
F   C   F   L   J   I   W   Q   C
F   I   A   N   C   U   O   L   F
Q   R   O   T   R   B   C   M   I
I   L   I   E   W   Q   T   N   X
S   L   A   F   J   L   I   K   E
* * * * *
```

Enter a word : TREE

> The entered word does not exist in puzzle!

Play again? [1 / 0]

Your choice :

File Stored Static Crossword Incorrect Input

```
=====
> PROJECT      : 2D PUZZLE
> DESIGNED BY  : AZLAAN RANJHA & RANA ABDULLAH AZHAR
=====
```

```
* * * * *
* * * * *
* * * * *
```

```
C   D   F   I   M   R   X   F   N
```

```
O   Q   T   X   D   J   Q   Y   I
```

```
K   N   R   W   D   K   S   C   M
```

```
P   T   Y   F   M   U   E   O   Z
```

```
E   J   P   W   F   O   Y   K   W
```

```
C   I   P   X   H   R   D   P   D
```

```
J   Q   Y   I   S   E   Q   E   S
```

```
Z   I   R   C   N   Z   N   C   R
```

```
Z   J   T   F   R   F   T   J   Z
```

```
* * * * *
* * * * *
* * * * *
```

Enter a word : DJ

> The entered word exists in puzzle!

Play again? [1 / 0]

Your choice :

Randomly Generated Crossword Correct Input

```
=====
> PROJECT      : 2D PUZZLE
> DESIGNED BY  : AZLAAN RANJHA & RANA ABDULLAH AZHAR
=====
```

```
* * * * *
```

```
F   G   I   L   P   U   B   I   Q
```

```
R   T   W   B   G   M   T   C   L
```

```
N   Q   U   Z   G   N   V   F   P
```

```
S   W   C   I   P   X   H   R   D
```

```
H   M   S   Z   I   R   C   N   Z
```

```
F   L   S   B   K   U   G   S   G
```

```
M   T   C   L   V   H   T   H   V
```

```
D   L   U   F   Q   D   Q   F   U
```

```
D   M   W   I   U   I   W   M   D
```

```
* * * * *
```

Enter a word : CAT

> The entered word does not exist in puzzle!

Play again? [1 / 0]

Your choice :

Randomly Generated Crossword Incorrect Input

C:\Users\Abdullah Azhar\Desktop\Azlaan And Abdullah\Azlaan Project\x64\Debug\ConsoleApplication2.exe

```
=====
> PROJECT      : 2D PUZZLE
> DESIGNED BY  : AZLAAN RANJHA & RANA ABDULLAH AZHAR
=====
```

What would you like to do?

1. Display Grid from File
2. Create a Random Grid
3. Exit Program

> Answer :

Crossword Puzzle Start Screen