```
Script started on 2023-04-12 15:44:31-05:00 [TERM="xterm" TTY="/dev/pts/0" COLUMNS=
vv73469@ares:~$ pwd
/home/students/vv73469
vv73469@ares:~$ cat WordPuzzle.info
Name : Vera Valenti
                                             Class : CSC122-001
Project: Where, oh where, has my little sheep gone?!
Level: 6 (basic program)
Description:
This is a wordsearch puzzle program where the user can generate a random
puzzle and play it. The list of words are taken from a separate file. The
user enters a set of coordinates for the start and end of each word. If
quessed correctly, the wordsearch will 'circle' the words by
capitalizing it.
vv73469@ares:~$ show-code WordPuzzle.cpp
WordPuzzle.cpp:
    1 #include <iostream>
     2 #include <string>
     3 #include <vector>
     4 #include <ctime>
     5 #include <fstream>
       #include <cstdlib>
    7 #include <arrav>
    8 #include <cctvpe>
       #include "WordSearch.h"
    10
    11 using namespace std;
   12
   13 int main()
   14 {
    15
            short beg row, beg col, end row, end col;
            char br1, br2, comma;
    16
    17
    18
            srand(static cast<unsigned>(time(nullptr))):
    19
    20
            const int MAX WORDS = 5;
    21
            char grid[MAX ROWS][MAX COLS] = \{ \{' \setminus 0' \} \};
    22
    23
            ifstream data file;
    24
    25
            data file.open("Words.text");
    26
    27
            data file.seekg(0, ios::end);
            streampos filesize = data file.tellg();
    28
    29
    30
            cerr << "File size is " << filesize << '\n';</pre>
    31
    32
            array <string,MAX WORDS> words;
```

```
33
34
        int num words = 0;
35
        while (num words < MAX WORDS) //while array is not full</pre>
36
37
38
            data file.seekg(rand() % filesize);
39
40
            while (filesize != 0 && !isspace(data file.peek()))
41
42
                 data file.seekg(-1, ios::cur); // move the pointer backwards
43
44
45
            data file >> words[num words];
46
            num words++:
47
        }
48
49
        cout << "\nHello, Welcome to the WordSearch Puzzle !\n"</pre>
                 "\nThe words you will need to find are : \n";
50
51
52
        size t arr size = size(words);
53
        for (size  \bar{ }  a =  0 : a < arr size: a++)
54
55
            cout << words[a] << " ":</pre>
56
57
        cout << "\n\n";
58
        cerr << "Words selected\n";</pre>
59
60
61
        // place each word in the grid
62
        vector<pair<int, int>,pair<int, int>>> UsedCoords;
63
64
        for (int i = 0; i < MAX WORDS; i++)</pre>
65
66
            string word(words[i]); // convert the row to a string
67
            PlaceWord(grid, word, UsedCoords); // pass the vector as an argument
68
        }
69
70
        cerr<<"Words placed\n";</pre>
71
        // initialize grid with random letters
72
73
        for (int i = 0: i < MAX ROWS: i++)
74
75
            for (int j = 0; j < MAX COLS; j++)
76
77
                 if (grid[i][i] == '\0')
78
79
                     grid[i][j] = static cast<char>('a' + rand() % 26);
80
81
82
83
        cerr<<"Rest of grid filled\n\n";</pre>
84
        // print the grid
85
86
        int count = 0;
```

```
87
    88
            do
    89
            {
    90
                PrintGrid(arid):
    91
    92
                cout << "\nEnter the coordinates of the word you found :\n"</pre>
    93
                         "\n1. Where does it begin? (row, column) : ";
    94
    95
                cin >> br1 >> beg row >> comma >> ws >> beg col >> br2;
    96
    97
                cout << "2. Where does it end? (row, column) : ";</pre>
    98
    99
                cin >> br1 >> end row >> comma >> ws >> end col >> br2;
   100
                bool FoundWords = false:
   101
   102
   103
                for (int i = 0; i < MAX WORDS; i++)
   104
   105
                    pair<int, int> start = UsedCoords[i].first;
   106
                    pair<int, int> end = UsedCoords[i].second;
   107
                    int start word row = (start.first + 1),
   108
   109
                         start word col = (start.second + 1),
   110
                         end word row = (end.first + 1),
                        end word col = (end.second + 1);
   111
   112
   113
                    bool upper = false;
   114
   115
                    if (beg row == start word row && beg col == start word col
                         && end row == end word row && end col == end word col)
   116
   117
   118
                         upper = true:
   119
                         PlaceWord(grid, words[i], UsedCoords, upper);
                         FoundWords = true;
   120
   121
                         count++;
                         cout << "\nCongrats!! You found the word "</pre>
   122
   123
                              << words[i] << "\n\n";
   124
                    }
   125
   126
                if (!FoundWords)
   127
   128
                    cout << "\nSorry you didn't find an actual word...\n";</pre>
   129
   130
            } while (count != MAX WORDS);
   131
   132
            PrintGrid(grid);
   133
            cout << "\nWow! You found everything! You are made "</pre>
   134
   135
                    "for wordsearch puzzles user!\n";
   136
   137
            return 0:
   138 }
vv73469@ares:~$ show-code WordSearch.cpp
```

WordSearch.cpp:

```
1 #include "WordSearch.h"
 2 #include <iostream>
 3 #include <string>
   #include <vector>
   #include <array>
    #include <cctype>
    using namespace std:
10
   void PrintGrid(char grid[][MAX COLS]) //can i just put it as int?
11
12
        for (int i = 0; i < MAX ROWS; i++)
13
14
            for (int j = 0; j < MAX COLS; j++)
15
16
                char c = grid[i][j];
17
                cout << c << " ":
18
19
            cout << endl;</pre>
20
        }
21 }
22
    bool CanPlaceWord(char grid[][MAX COLS], string word,
                     int row, int col, int dRow, int dCol)
24
25
26
27
        // check if word fits in the grid in this direction
28
        if (row + (word.length() - 1) * dRow >= MAX ROWS ||
29
            col + (word.length() - 1) * dCol >= MAX COLS)
30
31
        {
32
            return false:
33
34
35
        // check if word overlaps with existing letters
36
        for (string::size type i = 0; i < word.length(); i++)</pre>
37
            string::size type r, c;
38
39
            r = row + i * dRow;
40
            c = col + i * dCol;
41
42
            if (tolower(word[i]) != tolower(grid[r][c]) &&
43
                grid[r][c] != '\0')
44
45
                return false;
46
47
        }
48
49
        return true;
50 }
```

```
52 void PlaceWord(char grid[][MAX COLS], const string& word,
    53
                       vector<pair<pair<int, int>,pair<int, int>>>
    54
                       &UsedCoords. bool upper)
    55 {
    56
            bool placed = false;
    57
    58
            while (!placed)
    59
    60
                // pick a random beginning position and direction
    61
                int row = rand() % MAX ROWS;
    62
                int col = rand() % MAX COLS:
    63
                int dRow = rand() % 3 - 1; // -1, 0, or 1
    64
                int dCol = rand() % 3 - 1; // -1, 0, or 1
    65
    66
                // don't allow zero direction
    67
                if (dRow == 0 \&\& dCol == 0)
    68
    69
                    continue;
    70
    71
    72
                if (CanPlaceWord(grid, word, row, col, dRow, dCol))
    73
    74
                    string::size type r, c;
    75
                    // place the word
    76
                    for (string::size type i = 0; i < word.length(); i++)</pre>
    77
                        r = row + i * dRow;
    78
    79
                        c = col + i * dCol;
    80
                        if (upper)
    81
    82
                            grid[r][c] = static cast<char>(toupper (word[i]));
    83
    84
                        else
    85
    86
                            grid[r][c] = word[i];
    87
    88
    89
                    UsedCoords.push back({{row,col},{r, c}});
    90
    91
                    placed = true:
    92
    93
            }
vv73469@ares:~$ show-code WordSearch.h
WordSearch.h:
     1 #pragma once
     2 #include <iostream>
     3 #include <string>
     4 #include <vector>
```

```
5 #include <array>
     6
     7
        const int MAX ROWS = 10;
        const int MAX COLS = 10:
    10 void PrintGrid(char grid[][MAX COLS]);
    11
        bool CanPlaceWord(char grid[][MAX COLS], std::string word, int row,
                          int col, int dRow, int dCol);
    13
    14
    15 void PlaceWord(char grid[][MAX COLS], const std::string& word,
    16
                       std::vector<std::pair<std::pair<int. int>.
    17
                       std::pair<int, int>>>& usedCoords, bool upper = false);
vv73469@ares:~$ CPP WordPuzzle WordSearch
WordPuzzle.cpp***
WordSearch.cpp...
vv73469@ares:~$ cat Words.text
apple
orange
banana
pear
grapes
mangoes
coconut
papaya
lemon
cherry
mula
guava
kiwi
neach
lime
melon
fig
fruit
juicy
sweet
cake
candv
cookie
pie
pastry
tart
yoghurt
berry
crop
grain
nuts
beans
love
fun
cool
```

```
flower
                                                                   oknpbfnpti
rose
                                                                   wegrapesvo
lily
tulip
                                                                   Enter the coordinates of the word you found :
tea
                                                                   1. Where does it begin? (row, column): (9, 4)
coffee
sugar
                                                                   2. Where does it end? (row, column): (4, 9)
dessert
                                                                   Congrats!! You found the word papaya
teddy
bear
cute
                                                                   glrmcxrjsb
                                                                   nhiuAsutal
funnv
                                                                   kvddNvuvir
pretty
beautv
                                                                   hkvvAnktAh
pink
                                                                   vmtyNmmYjy
                                                                   nzqzAtAkvc
vv73469@ares:~$ ./WordPuzzle.out
                                                                   mxhjBPakfi
File size is 297
                                                                   vwwcAitdsu
                                                                   oknPbfnpti
Hello, Welcome to the WordSearch Puzzle!
                                                                   wegrapesvo
The words you will need to find are :
                                                                   Enter the coordinates of the word you found :
papaya banana nuts grapes juicy
                                                                   1. Where does it begin? (row. column): (6.6)
                                                                   2. Where does it end? (row, column): (1, 9)
Words selected
Words placed
                                                                   Sorry you didn't find an actual word...
Rest of grid filled
                                                                   qlrmcxrjsb
                                                                   nhjuAsutql
glrmcxrjsb
nhiuasutal
                                                                   k v d d N v u v i r
kvddnvuvir
                                                                   hkvvAnktAh
                                                                   v m t y N m m Y j y
hkvyanktah
vmtynmmyjy
                                                                   nzazAtAkvc
nzgzatakvc
                                                                   mxhjBPakfi
mxhjbpakfi
                                                                   vwwcAitdsu
                                                                   oknPbfnpti
vwwcaitdsu
oknpbfnpti
                                                                   wegrapesvo
wegrapesvo
                                                                   Enter the coordinates of the word you found :
Enter the coordinates of the word you found :
                                                                   1. Where does it begin? (row. column): (4, 6)
1. Where does it begin? (row, column): (7, 5)
                                                                   2. Where does it end? (row, column): (1, 9)
2. Where does it end? (row, column): (2, 5)
                                                                   Congrats!! You found the word nuts
Congrats!! You found the word banana
                                                                   glrmcxrjSb
glrmcxrjsb
                                                                   nhjuAsuTql
                                                                   kvddNvUvir
nhiuAsutal
kvddNvuvjr
                                                                   hkvyANktAh
hkvvAnktah
                                                                   vmtvNmmYiv
                                                                   nzazAtAkvc
vmtvNmmviv
nzqzAtakvc
                                                                   mxhjBPakfi
mxhjBpakfi
                                                                   vwwcAitdsu
vwwcaitdsu
                                                                   oknPbfnpti
```

```
wegrapesvo
                                                                     pydnacitqi
                                                                     wvimkvwmhk
Enter the coordinates of the word you found :
                                                                     oaeqnzinvo
                                                                     llongaksko
1. Where does it begin? (row. column): (10, 3)
                                                                     aeuacwkklc
2. Where does it end? (row, column): (10, 8)
                                                                     qfcherrvbk
                                                                     g m w g b g h b k x
Congrats!! You found the word grapes
                                                                     Enter the coordinates of the word you found :
glrmcxrjSb
nhiuAsuTal
                                                                     1. Where does it begin? (row. column): (9.3)
kvddNvUvir
                                                                     2. Where does it end? (row. column): (9.8)
hkvvANktAh
vmtvNmmYiv
                                                                     Congrats!! You found the word cherry
nzazAtAkvc
mxhiBPakfi
                                                                     ihdtojbtem
                                                                     vzyifkwrvo
vwwcAitdsu
oknPbfnptj
                                                                     dcqmqmpuqe
weGRAPESvo
                                                                     pydnacitqi
                                                                     wyjmkywmhk
Enter the coordinates of the word you found :
                                                                     oaeanzinvo
                                                                     llongaksko
1. Where does it begin? (row, column): (9, 10)
                                                                     aeuacwkklc
2. Where does it end? (row. column): (5. 10)
                                                                     a f C H E R R Y b k
                                                                     q m w q b q h b k x
Congrats!! You found the word juicy
                                                                     Enter the coordinates of the word you found :
q l r m c x r j S b
                                                                     1. Where does it begin? (row, column): (4, 6)
nhjuAsuTql
kvddNvUvir
                                                                     2. Where does it end? (row. column): (4. 2)
hkvvANktAh
                                                                     Congrats!! You found the word candy
v m t y N m m Y j Y
nzazAtAkvC
                                                                     ihdtojbtem
mxhjBPakfI
vwwcAitdsU
                                                                     vzyifkwrvo
oknPbfnptJ
                                                                     dcqmqmpuqe
weGRAPESvo
                                                                     pYDNACitqi
                                                                     wyjmkywmhk
Wow! You found everything! You are made for wordsearch puzzles user!
                                                                     oaegnzinvo
vv73469@ares:~$ ./WordPuzzle.out
                                                                     llongaksko
File size is 297
                                                                     aeuacwkklc
                                                                     q f C H E R R Y b k
Hello, Welcome to the WordSearch Puzzle!
                                                                     q m w q b q h b k x
The words you will need to find are :
                                                                     Enter the coordinates of the word you found :
cherry candy cookie kiwi funny
                                                                     1. Where does it begin? (row, column): (8, 10)
                                                                     2. Where does it end? (row. column): (3. 10)
Words selected
Words placed
Rest of arid filled
                                                                     Congrats!! You found the word cookie
ihdtojbtem
                                                                     ihdtojbtem
vzyifkwrvo
                                                                     vzyifkwrvo
dcqmqmpuqe
                                                                     dcqmqmpuqE
```

```
pYDNACitqI
                                                                    Words placed
wvimkvwmhK
                                                                    Rest of arid filled
oaeqnzinv0
llongaksk0
                                                                    ccidweloub
aeuacwkklC
                                                                    oxurvksavu
q f C H E R R Y b k
                                                                    chbananajp
g m w g b g h b k x
                                                                    oxzgspyhtm
                                                                    njbuulnzir
Enter the coordinates of the word you found :
                                                                    ukysnmxjjh
                                                                    tbzetucexi
1. Where does it begin? (row. column): (7.7)
                                                                    nmfmawamna
2. Where does it end? (row. column): (4.7)
                                                                    zvttkaksuz
                                                                    esngryebbc
Congrats!! You found the word kiwi
                                                                    Enter the coordinates of the word you found :
ihdtojbtem
                                                                    1. Where does it begin? (row, column): (7, 7)
vzyifkwrvo
                                                                    2. Where does it end? (row, column): (7, 4)
dcqmqmpuqE
pYDNACItqI
wyjmkyWmhK
                                                                    Congrats!! You found the word cute
oaeanz Inv O
                                                                    ccjdweloub
llongaKsk0
aeuacwkklC
                                                                    oxurvksavu
a f C H E R R Y b k
                                                                    chbananaip
g m w g b g h b k x
                                                                    oxzqspyhtm
                                                                    njbuulnzir
Enter the coordinates of the word you found :
                                                                    ukysnmxjjh
                                                                    tbzETUCexi
1. Where does it begin? (row, column): (9, 2)
                                                                    nmfmgwamnq
2. Where does it end? (row. column): (5. 6)
                                                                    zvttkaksuz
                                                                    esnarvebbc
Congrats!! You found the word funny
                                                                    Enter the coordinates of the word you found :
ihdtojbtem
vzyifkwrvo
                                                                    1. Where does it begin? (row, column): (3, 3)
                                                                    2. Where does it end? (row, column): (3, 8)
dcqmqmpuqE
pYDNACItqI
wyjmkYWmhK
                                                                    Congrats!! You found the word banana
oaegNzInv0
lloNaaKsk0
                                                                    ccidweloub
                                                                    oxurvksavu
aeUacwkklC
g F C H E R R Y b k
                                                                    ch B A N A N A j p
gmwqbghbkx
                                                                    oxzqspyhtm
                                                                    njbuulnzir
Wow! You found everything! You are made for wordsearch puzzles user!
                                                                    ukysnmxjjh
vv73469@ares:~$ ./WordPuzzle.out
                                                                    tbzETUCexi
File size is 297
                                                                    nmfmqwamnq
                                                                    zvttkaksuz
Hello, Welcome to the WordSearch Puzzle!
                                                                    esngryebbc
The words you will need to find are :
                                                                    Enter the coordinates of the word you found :
coconut sugar cute cake banana
                                                                    1. Where does it begin? (row, column): (6, 4)
Words selected
                                                                    2. Where does it end? (row, column): (2, 3)
```

```
ccidweloub
Sorry you didn't find an actual word...
                                                                    o x u R v k s a v u
ccidweloub
                                                                    ch B A N A N A i p
oxurvksavu
                                                                    oxzGspvhtm
ch B A N A N A i p
                                                                    nibUulnzir
oxzqspyhtm
                                                                    ukySnmxjjh
njbuulnzir
                                                                    tbzETUCexi
ukysnmxjjh
                                                                    nmfmqwamnq
tbzETUCexi
                                                                    zyttkaksuz
nmfmqwamnq
                                                                    esngryebbc
zvttkaksuz
                                                                    Enter the coordinates of the word you found :
esnarvebbc
Enter the coordinates of the word you found :
                                                                    1. Where does it begin? (row, column): (1,1)
                                                                    2. Where does it end? (row. column): (7. 1)
1. Where does it begin? (row, column): (6, 4)
2. Where does it end? (row, column): (2,4)
                                                                    Congrats!! You found the word coconut
Congrats!! You found the word sugar
                                                                    Ccidweloub
                                                                    0 x u R v k s a v u
ccidweloub
                                                                    Chbananaip
o x u R v k s a v u
                                                                    0 x z G s p y h t m
ch B A N A N A i p
                                                                    NibUulnzir
oxzGspvhtm
                                                                    UkvSnmxiih
                                                                    TbzETUCexi
nibUulnzir
ukySnmxjjh
                                                                    nmfmqwamnq
                                                                    zyttkaksuz
tbzETUCexi
nmfmqwamnq
                                                                    esngryebbc
zyttkąksuz
esnarvebbc
                                                                    Enter the coordinates of the word you found :
Enter the coordinates of the word you found :
                                                                    1. Where does it begin? (row, column): (7, 7)
                                                                    2. Where does it end? (row. column): (10.7)
1. Where does it begin? (row, column): (1,1)
2. Where does it end? (row, column): (1, 8)
                                                                    Congrats!! You found the word cake
Sorry you didn't find an actual word...
                                                                    Ccidweloub
ccidweloub
                                                                    0 x u R v k s q v u
o x u R v k s a v u
                                                                    Chbananaip
ch B A N A N A j p
                                                                    0 x z G s p y h t m
                                                                    NibUulnzir
oxzGspvhtm
nibUulnzir
                                                                    UkvSnmxiih
ukySnmxjjh
                                                                    TbzETUCexi
                                                                    nmfmgwAmnq
tbzETUCexi
nmfmqwamnq
                                                                    zyttkqKsuz
zyttkąksuz
                                                                    esngryEbbc
esngryebbc
                                                                    Wow! You found everything! You are made for wordsearch puzzles user!
Enter the coordinates of the word you found :
                                                                    vv73469@ares:~$ exit
                                                                    exit
1. Where does it begin? (row. column): (1.1)
2. Where does it end? (row, column): (8,1)
                                                                    Script done on 2023-04-12 15:57:51-05:00 [COMMAND EXIT CODE="0"]
Sorry you didn't find an actual word...
```