```
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
guessed correctly, the wordsearch will 'circle' the words by
capitalizing it.

vv73469@ares:~$ show-code WordPuzzle.cpp


WordPuzzle.cpp:
```

```cpp
#include <iostream>
#include <string>
#include <vector>
#include <ctime>
#include <fstream>
#include <cstdlib>
#include <array>
#include <cctype>
#include "WordSearch.h"

using namespace std;

int main()
{
    short beg_row, beg_col, end_row, end_col;
    char br1, br2, comma;

    srand(static_cast<unsigned>(time(nullptr)));

    const int MAX_WORDS = 5;
    char grid[MAX_ROWS][MAX_COLS] = { {'\0'} };

    ifstream data_file;

    data_file.open("Words.text");

    data_file.seekg(0, ios::end);
    streampos filesize = data_file.tellg();

    cerr << "File size is " << filesize << '\n';

    array <string,MAX_WORDS> words;

    int num_words = 0;

    while (num_words < MAX_WORDS) //while array is not full
    {
        data_file.seekg(rand() % filesize);

        while (filesize != 0 && !isspace(data_file.peek()))
        {
            data_file.seekg(-1, ios::cur); // move the pointer backwards
        }

        data_file >> words[num_words];
        num_words++;
    }

    cout << "\nHello, Welcome to the WordSearch Puzzle !\n"
            "\nThe words you will need to find are : \n";

    size_t arr_size = size(words);
    for (size_t a = 0; a < arr_size; a++)
    {
        cout << words[a] << " ";
    }
    cout << "\n\n";

    cerr << "Words selected\n";

    // place each word in the grid
    vector<pair<pair<int, int>,pair<int, int>>> UsedCoords;

    for (int i = 0; i < MAX_WORDS; i++)
    {
        string word(words[i]); // convert the row to a string
        PlaceWord(grid, word, UsedCoords); // pass the vector as an argumer
    }

    cerr<<"Words placed\n";

    // initialize grid with random letters
    for (int i = 0; i < MAX_ROWS; i++)
    {
        for (int j = 0; j < MAX_COLS; j++)
        {
            if (grid[i][j] == '\0')
            {
                grid[i][j] = static_cast<char>('a' + rand() % 26);
            }
        }
    }
    cerr<<"Rest of grid filled\n\n";
    // print the grid

    int count = 0;
```

```
    87
    88      do
    89      {
    90          PrintGrid(grid);
    91
    92          cout << "\nEnter the coordinates of the word you found :\n"
    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) : ";
    98
    99          cin >> br1 >> end_row >> comma >> ws >> end_col >> br2;
   100
   101          bool FoundWords = false;
   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
   108              int start_word_row = (start.first + 1),
   109                  start_word_col = (start.second + 1),
   110                  end_word_row = (end.first + 1),
   111                  end_word_col = (end.second + 1);
   112
   113              bool upper = false;
   114
   115              if (beg_row == start_word_row && beg_col == start_word_col
   116                  && end_row == end_word_row && end_col == end_word_col)
   117              {
   118                  upper = true;
   119                  PlaceWord(grid, words[i], UsedCoords, upper);
   120                  FoundWords = true;
   121                  count++;
   122                  cout << "\nCongrats!! You found the word "
   123                       << words[i] << "\n\n";
   124              }
   125          }
   126          if (!FoundWords)
   127          {
   128              cout << "\nSorry you didn't find an actual word...\n";
   129          }
   130      } while (count != MAX_WORDS);
   131
   132      PrintGrid(grid);
   133
   134      cout << "\nWow! You found everything! You are made "
   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>
    4  #include <vector>
    5  #include <array>
    6  #include <cctype>
    7
    8  using namespace std;
    9
   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;
   20      }
   21  }
   22
   23  bool CanPlaceWord(char grid[][MAX_COLS], string word,
   24                    int row, int col, int dRow, int dCol)
   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++)
   37      {
   38          string::size_type r, c;
   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  }
```

```
    51
    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++)
    77              {
    78                  r = row + i * dRow;
    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      }
    94  }
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;
     8  const int MAX_COLS = 10;
     9
    10  void PrintGrid(char grid[][MAX_COLS]);
    11
    12  bool CanPlaceWord(char grid[][MAX_COLS], std::string word, int row,
    13                    int col, int dRow, int dCol);
    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
plum
guava
kiwi
peach
lime
melon
fig
fruit
juicy
sweet
cake
candy
cookie
pie
pastry
tart
yoghurt
berry
crop
grain
nuts
beans
love
fun
cool
```

```
flower
rose
lily
tulip
tea
coffee
sugar
dessert
teddy
bear
cute
funny
pretty
beauty
pink

vv73469@ares:~$ ./WordPuzzle.out
File size is 297

Hello, Welcome to the WordSearch Puzzle !

The words you will need to find are :
papaya banana nuts grapes juicy

Words selected
Words placed
Rest of grid filled

g l r m c x r j s b
n h j u a s u t q l
k v d d n v u v j r
h k v y a n k t a h
v m t y n m m y j y
n z q z a t a k v c
m x h j b p a k f i
v w w c a i t d s u
o k n p b f n p t j
w e g r a p e s v o

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (7, 5)
2. Where does it end? (row, column) : (2, 5)

Congrats!! You found the word banana

g l r m c x r j s b
n h j u A s u t q l
k v d d N v u v j r
h k v y A n k t a h
v m t y N m m y j y
n z q z A t a k v c
m x h j B p a k f i
v w w c a i t d s u
o k n p b f n p t j
w e g r a p e s v o

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (9, 4)
2. Where does it end? (row, column) : (4, 9)

Congrats!! You found the word papaya

g l r m c x r j s b
n h j u A s u t q l
k v d d N v u v j r
h k v y A n k t A h
v m t y N m m Y j y
n z q z A t A k v c
m x h j B P a k f i
v w w c A i t d s u
o k n P b f n p t j
w e g r a p e s v o

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (6, 6)
2. Where does it end? (row, column) : (1, 9)

Sorry you didn't find an actual word...
g l r m c x r j s b
n h j u A s u t q l
k v d d N v u v j r
h k v y A n k t A h
v m t y N m m Y j y
n z q z A t A k v c
m x h j B P a k f i
v w w c A i t d s u
o k n P b f n p t j
w e g r a p e s v o

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (4, 6)
2. Where does it end? (row, column) : (1, 9)

Congrats!! You found the word nuts

g l r m c x r j S b
n h j u A s u T q l
k v d d N v U v j r
h k v y A N k t A h
v m t y N m m Y j y
n z q z A t A k v c
m x h j B P a k f i
v w w c A i t d s u
o k n P b f n p t j
```

```
w e g r a p e s v o

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (10, 3)
2. Where does it end? (row, column) : (10, 8)

Congrats!! You found the word grapes

g l r m c x r j S b
n h j u A s u T q l
k v d d N v U v j r
h k v y A N k t A h
v m t y N m m Y j y
n z q z A t A k v c
m x h j B P a k f i
v w w c A i t d s u
o k n P b f n p t j
w e G R A P E S v o

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (9, 10)
2. Where does it end? (row, column) : (5, 10)

Congrats!! You found the word juicy

g l r m c x r j S b
n h j u A s u T q l
k v d d N v U v j r
h k v y A N k t A h
v m t y N m m Y j Y
n z q z A t A k v C
m x h j B P a k f I
v w w c A i t d s U
o k n P b f n p t J
w e G R A P E S v o

Wow! You found everything! You are made for wordsearch puzzles user!
vv73469@ares:~$ ./WordPuzzle.out
File size is 297

Hello, Welcome to the WordSearch Puzzle !

The words you will need to find are :
cherry candy cookie kiwi funny

Words selected
Words placed
Rest of grid filled

i h d t o j b t e m
v z y i f k w r v o
d c q m g m p u g e
p y d n a c i t q i
w y j m k y w m h k
o a e q n z i n v o
l l o n g a k s k o
q e u q c w k k l c
g f c h e r r y b k
g m w q b g h b k x

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (9, 3)
2. Where does it end? (row, column) : (9, 8)

Congrats!! You found the word cherry

i h d t o j b t e m
v z y i f k w r v o
d c q m g m p u g e
p y d n a c i t q i
w y j m k y w m h k
o a e q n z i n v o
l l o n g a k s k o
q e u q c w k k l c
g f C H E R R Y b k
g m w q b g h b k x

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (4, 6)
2. Where does it end? (row, column) : (4, 2)

Congrats!! You found the word candy

i h d t o j b t e m
v z y i f k w r v o
d c q m g m p u g e
p Y D N A C i t q i
w y j m k y w m h k
o a e q n z i n v o
l l o n g a k s k o
q e u q c w k k l c
g f C H E R R Y b k
g m w q b g h b k x

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (8, 10)
2. Where does it end? (row, column) : (3, 10)

Congrats!! You found the word cookie

i h d t o j b t e m
v z y i f k w r v o
d c q m g m p u g E
```

```
p Y D N A C i t q I
w y j m k y w m h K
o a e q n z i n v O
l l o n g a k s k O
q e u q c w k k l C
g f C H E R R Y b k
g m w q b g h b k x

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (7, 7)
2. Where does it end? (row, column) : (4, 7)

Congrats!! You found the word kiwi

i h d t o j b t e m
v z y i f k w r v o
d c q m g m p u g E
p Y D N A C I t q I
w y j m k y W m h K
o a e q n z I n v O
l l o n g a K s k O
q e u q c w k k l C
g f C H E R R Y b k
g m w q b g h b k x

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (9, 2)
2. Where does it end? (row, column) : (5, 6)

Congrats!! You found the word funny

i h d t o j b t e m
v z y i f k w r v o
d c q m g m p u g E
p Y D N A C I t q I
w y j m k Y W m h K
o a e q N z I n v O
l l o N g a K s k O
q e U q c w k k l C
g F C H E R R Y b k
g m w q b g h b k x

Wow! You found everything! You are made for wordsearch puzzles user!
vv73469@ares:~$ ./WordPuzzle.out
File size is 297

Hello, Welcome to the WordSearch Puzzle !

The words you will need to find are :
coconut sugar cute cake banana

Words selected
Words placed
Rest of grid filled

c c j d w e l o u b
o x u r v k s q v u
c h b a n a n a j p
o x z g s p y h t m
n j b u u l n z i r
u k y s n m x j j h
t b z e t u c e x i
n m f m g w a m n q
z y t t k g k s u z
e s n q r y e b b c

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (7, 7)
2. Where does it end? (row, column) : (7, 4)

Congrats!! You found the word cute

c c j d w e l o u b
o x u r v k s q v u
c h b a n a n a j p
o x z g s p y h t m
n j b u u l n z i r
u k y s n m x j j h
t b z E T U C e x i
n m f m g w a m n q
z y t t k g k s u z
e s n q r y e b b c

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (3, 3)
2. Where does it end? (row, column) : (3, 8)

Congrats!! You found the word banana

c c j d w e l o u b
o x u r v k s q v u
c h B A N A N A j p
o x z g s p y h t m
n j b u u l n z i r
u k y s n m x j j h
t b z E T U C e x i
n m f m g w a m n q
z y t t k g k s u z
e s n q r y e b b c

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (6, 4)
2. Where does it end? (row, column) : (2, 3)
```

```
Sorry you didn't find an actual word...
c c j d w e l o u b
o x u r v k s q v u
c h B A N A N A j p
o x z g s p y h t m
n j b u u l n z i r
u k y s n m x j j h
t b z E T U C e x i
n m f m g w a m n q
z y t t k g k s u z
e s n q r y e b b c

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (6, 4)
2. Where does it end? (row, column) : (2,4)

Congrats!! You found the word sugar

c c j d w e l o u b
o x u R v k s q v u
c h B A N A N A j p
o x z G s p y h t m
n j b U u l n z i r
u k y S n m x j j h
t b z E T U C e x i
n m f m g w a m n q
z y t t k g k s u z
e s n q r y e b b c

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (1,1)
2. Where does it end? (row, column) : (1, 8)

Sorry you didn't find an actual word...
c c j d w e l o u b
o x u R v k s q v u
c h B A N A N A j p
o x z G s p y h t m
n j b U u l n z i r
u k y S n m x j j h
t b z E T U C e x i
n m f m g w a m n q
z y t t k g k s u z
e s n q r y e b b c

Enter the coordinates of the word you found :

1. Where does it begin? (row, column) : (1,1)
2. Where does it end? (row, column) : (8,1)

Sorry you didn't find an actual word...
c c j d w e l o u b
o x u R v k s q v u
c h B A N A N A j p
o x z G s p y h t m
n j b U u l n z i r
u k y S n m x j j h
t b z E T U C e x i
n m f m g w a m n q
z y t t k g k s u z
e s n q r y e b b c

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)

Congrats!! You found the word coconut

C c j d w e l o u b
O x u R v k s q v u
C h B A N A N A j p
O x z G s p y h t m
N j b U u l n z i r
U k y S n m x j j h
T b z E T U C e x i
n m f m g w a m n q
z y t t k g k s u z
e s n q r y e b b c

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)

Congrats!! You found the word cake

C c j d w e l o u b
O x u R v k s q v u
C h B A N A N A j p
O x z G s p y h t m
N j b U u l n z i r
U k y S n m x j j h
T b z E T U C e x i
n m f m g w A m n q
z y t t k g K s u z
e s n q r y E b b c

Wow! You found everything! You are made for wordsearch puzzles user!
vv73469@ares:~$ exit
exit

Script done on 2023-04-12 15:57:51-05:00 [COMMAND_EXIT_CODE="0"]
```