

# CS 100 Project Five – Fall 2017

For this project, we are going to take you back to your grade school days. Specifically, you will write a simple **word search** game, similar to those puzzles that you were given in second or third grade right before a holiday. With those puzzles, you were given a square matrix of letters and you had to find words like *turkey* and *pilgrim* and *mayflower* before Thanksgiving, and words like *santa* and *snow* and *elf* before Christmas.

This project takes an integer **size** and a **filename** as its two command-line arguments. The size represents the number of rows and columns in a square matrix of characters. The filename specified contains the actual square matrix of these characters. As a quick example, consider the file **data1** that is shown at the right (a 5x5 puzzle):

c	c	a	t	i
d	o	g	a	c
o	t	a	c	e
g	o	t	a	c
e	c	a	t	a

For the puzzle above, you would specify **5** and **data1** as your two command-line arguments, as in **./a.out 5 data1**. With this example, a sample execution of the program is shown below (the user is searching for the word **cat**).

The word puzzle is:

ccati  
dogac  
otace  
gotac  
ecata

Enter a word to find in the puzzle : cat

The word cat was found 6 times, as shown below

2 times written left-to-right  
1 times written top-to-bottom  
1 times written bottom-to-top  
2 times written right-to-left

.cat.  
...a.  
.tac.  
..tac  
.cat.

Enter another word to find (or 'zzz' to exit) : zzz

A couple of comments regarding how the game should be structured:

- The input matrix will be lowercase letters, as will the words that the user enters to find
- Words can be written left-to-right (normal English), right-to-left (backwards), top-to-bottom (each letter below the previous letter), and bottom-to-top (each letter above the previous letter).

We have configured this project and its grading so that you can approach it in pieces. Start by getting the program to read (and print) the data file. Then tackle finding words that are written left-to-right. Once you have left-to-right implemented, pick another direction and implement that. Continue until you have written all four directions.

## What You Need To Do

- Create a directory **project5** on your machine. In that directory, create a file named **words.c**
- In **words.c**, write the code needed to implement this program. Make sure that you include a header block of comments with your name and a brief overview of the program.
- You **must** use a two-dimensional dynamic array for this project, as different data sets have different sizes
- You **must** use at least three functions in this program.
- To submit your project, first bundle your **project5** directory into a single (compressed) zip file. Once you have a compressed zip file that contains your **project5** code, submit that file to Blackboard.

**Project 5 is due at 5:00pm on Friday, November 10. Late projects are not accepted.**

## Vegetables Word Search Puzzle

E	G	G	P	L	A	N	T	C	T	E	Z	R	B	F
B	A	J	Z	R	C	K	A	H	C	E	E	A	R	R
C	G	N	W	G	E	R	P	U	U	W	E	S	A	E
O	Z	A	J	W	R	B	T	A	O	Y	E	B	B	P
L	B	E	R	O	A	T	M	L	R	O	W	J	U	P
L	R	G	T	L	E	T	F	U	T	S	Z	Y	H	E
A	O	A	R	L	I	I	E	A	C	U	N	F	R	P
R	C	B	U	Z	L	C	T	R	D	U	K	I	W	E
D	C	B	T	U	L	O	W	R	C	M	C	K	P	R
M	O	A	A	F	P	A	S	P	A	R	A	G	U	S
E	L	C	B	S	W	T	V	E	Y	D	E	C	R	L
L	I	Z	A	E	O	D	R	A	H	C	I	S	H	O
O	C	E	G	D	A	N	O	I	N	O	V	S	S	D
N	P	Q	A	P	H	N	T	Y	X	I	S	V	H	Q
I	B	A	R	L	H	O	K	N	P	I	N	R	U	T

ASPARAGUS	ONION
BEAN	PARSNIPS
BEET	PEAS
BROCCOLI	PEPPER
CABBAGE	POTATOES
CARROT	RADISH
CAULIFLOWER	RHUBARB
CHARD	RUTABAGA
COLLARD	TURNIP
CUCUMBER	WATERCRESS
EGGPLANT	
GARLIC	
KOHLRABI	
LETTUCE	
MELON	

<http://www.print-ables.com/wordsearch/vegetables.html>

## Popular Pizza Toppings

L	C	T	O	E	I	S	S	C	U	T	S	N	S
C	O	N	N	R	I	C	O	T	A	A	M	I	A
S	A	A	O	S	G	A	E	N	U	N	U	N	V
C	A	L	C	L	P	I	A	S	O	O	S	C	O
T	U	P	A	M	O	E	A	H	R	O	H	I	C
H	B	G	B	B	L	G	A	O	U	R	R	N	A
O	T	G	A	S	E	O	E	N	O	N	O	I	D
N	T	E	U	O	N	E	B	A	U	U	O	H	O
S	P	I	N	A	C	H	F	S	A	T	M	C	S
T	R	C	H	I	C	K	E	N	T	C	S	C	U
O	T	T	I	U	C	S	O	R	P	E	I	U	P
S	U	N	O	S	A	L	A	M	I	P	R	Z	U
T	A	P	I	N	C	I	L	A	N	T	R	O	H
T	G	N	S	S	S	N	O	I	N	O	M	C	H

SPINACH  
CILANTRO  
BEEF  
ZUCCHINI  
SAUSAGE  
SALAMI  
AVOCADO  
LOBSTER  
BACON  
EGGPLANT  
ONIONS  
MUSHROOMS  
CHICKEN  
PEANUTS  
RICOTA  
PROSCIUTTO

<https://thewordsearch.com/printable/>