Contestant Number: _____

Time: _____

Rank: _____

C++ PROGRAMMING
(335)

STATE – 2019

Production Portion:

Job 1: Word Find Puzzle _____ (449 points)

TOTAL POINTS _____ ***(449 points)***

Failure to adhere to any of the following rules will result in disqualification:

1. **Contestant must hand in this test booklet and all printouts. Failure to do so will result in disqualification.**
2. **No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests or facsimile (handwritten, photocopied, or keyed) are allowed in the testing area.**
3. **Electronic devices will be monitored according to ACT standards.**

No more than ten (10) minutes orientation
No more than ninety (90) minutes testing time
No more than ten (10) minutes wrap-up

Your application will be graded on the following criteria:

Solution and Project

Project was found on the flash drive	____ 10 points
Project is named following the naming convention	____ 10 points

Program Execution

Program runs	____ 20 points

If program does not execute, then remaining items in this section are not scored.

The program gracefully handles an empty or missing input file	____ 10 points
The program allows for both types of word collection	____ 20 points
The program displays a puzzle in all upper case letters with the words placed in it	____ 20 points
The program displays the same puzzle with the words in lower case	____ 20 points
The program displays the list of words found in the puzzle	____ 10 points
The program displays a prompt for collecting words from the user that includes how many words left to enter.	____ 10 points

Source Code Review

Contestant ID is commented at the top of the program	____ 5 points
Code is commented at the top, for each method and as needed	____ 15 points
Directional code is commented ie. Left to Right	____ 24 points
Code uses reasonable and consistent variable naming conventions	____ 15 points
The program reads the words into the correct data structure	____ 10 points
The program gracefully handles remaining error checking	____ 20 points
The program generates random capital letters in the correct data structure	____ 20 points
The program deals with the difference between random letters and letters from a word	____ 20 points
A method called “Build_Clean_Puzzle” is implemented	____ 10 points
A method called “Read_Words_From_File” is implemented	____ 20 points
A method called “User_Words_Input” is implemented	____ 30 points
A method called “Hide_Words_In_Puzzle” is implemented	____ 80 points
A method called “Display_Puzzle_Hidden” is implemented	____ 20 points
A method called “Display_Puzzle_Show” is implemented	____ 20 points
The program uses the bool data type in a logical manor	____ 10 points

Total ____/449 points

Word Find Puzzle

You have been asked by the Social Studies teacher – Mr. O'Thuse, to write a program for him that will display a series of vocabulary words into a word find puzzle. The following are the specs needed for the project.

Teacher Supplied:

1. The vocabulary words can be entered by the user or read from a file. The file is titled **SocStudy_Vocab.txt**. The first line of the file always has how many words (including the title), with the last word being the word find puzzle's title. An example might be **Chapter#7**.
2. Give the user an option for which choice they want for the words input.
3. If collecting the words from the user, ask them how many words they would like to use **first**. Remind the user the size of the words allowed and how many words they have left to enter. After collecting the words collect one more for the puzzle's title.
4. The words can be any size from 3 to 8 charters long.
5. There can be a maximum of twenty (20) words hidden in the puzzle.
6. A word can be randomly placed in any direction possible.
7. The puzzle is always 20 x 20 square and uses only **CAPITAL LETTERS**. For readability horizontal lines should have a space between each letter. (See illustration #1)
8. There should be a list of words to the right of the puzzle under the title **Words in Puzzle**. This should contain all the words found in the puzzle.
9. When ready let the user press a key to display the puzzle again showing the hidden words in lower case letters so they can be seen.

Project supplied:

1. On the flash drive create a folder titled your contestant ID.
2. The project should be named Word Puzzle.
3. At the top of your program in a comment place your contestant ID.
4. The project must use a vector and 2D arrays – both in logically appropriate ways.
5. When reading from a file remember to deal with missing files and the words themselves.
6. When reading from the keyboard collect how many, the words, and finally the puzzle's title.
7. Include all error checking needed and user validation.
8. The developer does not need to allow words with the same letters to crosses on those letters. Example Communism and Capitalism do not have to both share the C in a puzzle.
9. Use the following method/function names –
    a. Build_Clean_Puzzle
    b. Read_Words_From_File
    c. User_Words_Input
    d. Hide_Words_In_Puzzle
    e. Display_Puzzle_Hidden
    f. Display_Puzzle_Show
10. Use a logical naming convention for project variables and code.

Illustration #1

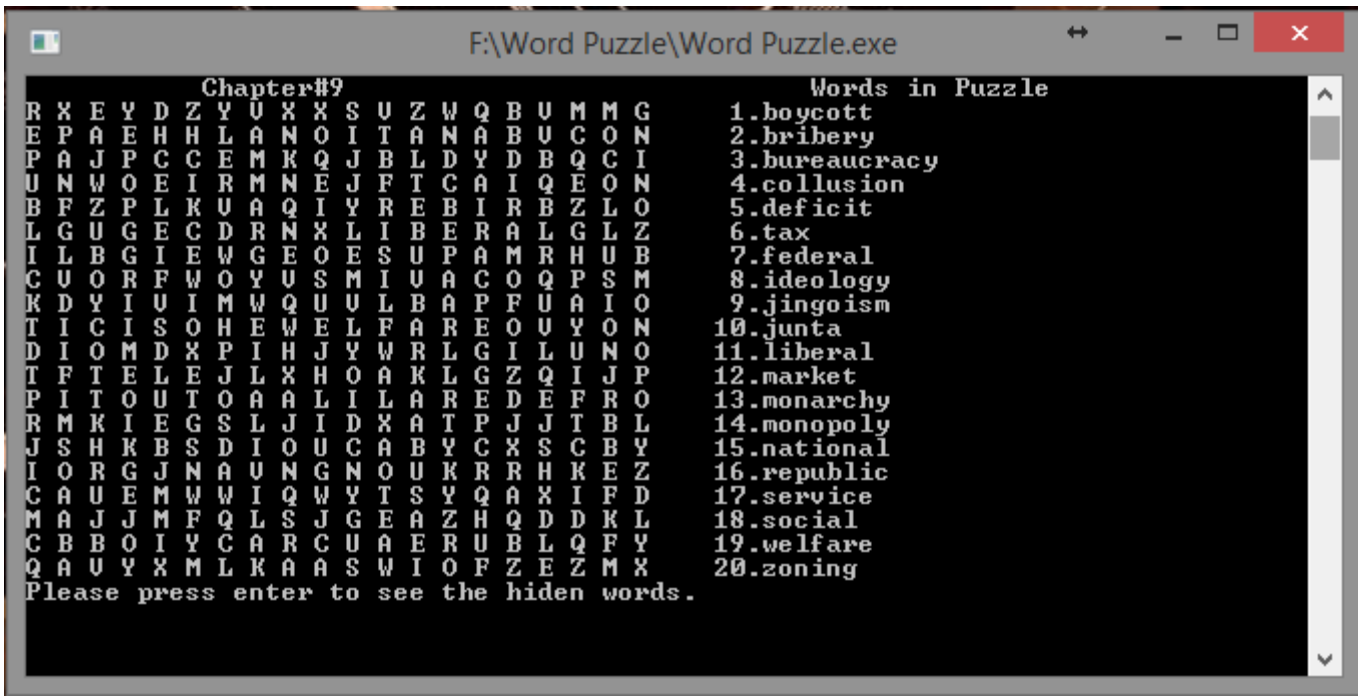

Illustration #2 – Words in shown in lowercase