

## 6550 Freeze Frame

A word frame puzzle is a new twist on the classic word search puzzle. In a word frame puzzle, the hidden words are arranged in a rectangular frame, rather than in a single straight line. Consider the two sample word frame puzzles below:

<pre> Q U N J O I P P C H Y Q U E N P L O Z Z N Y J A C N E T O T S C I L L T H O C H E M I X S G R S S E S P S W A I R T H C T O X E W L L M J L C O S N O O T A N S Q U A K E T D I Z L R O L X Y B B E X R Y C J P G L J S O I X O P S S A C I L M E G I A S T L I C V N O O B Y P E T M A N I T I F R E P U G R E S E X E C O L O U T E M O P A I N D M O C I B U S D R C E X A T O M I S H S J I T A R R H R A W I B E O S E N I B B E V I T W T T E M M R G D E W                 </pre>	<p><b>Hidden Word List</b></p> <p>&lt;--</p> <p>REPRESENTATIVE AMENDMENTS DISTRICT</p> <hr style="width: 50%; margin: auto;"/> <p>--&gt;</p> <p>PAINTERS MEDICALDOCTORS BOOKKEEPER</p>	<pre> R I H C R N E R B R A I N T E O O F E O N Y O U I N A P S R P R A C T T A L K C C H I R O R S L A N T O R S M E C I A N U E R T S C A R P O D I C A B N S P L Y O D L A C I T U A E A R F U S N E I S T P A R E L E E B M E G R R K O O B B U T S E R S A I E T A I D R E E L I A R P P N E M S T R I K S O A C P A S T B A R B E T A N R O S E R R E P E S S S S M U S U R N A B A R E N N U S R O C R E T R O O K K G O R J E T A F O O R E F A T I E G A N I T                 </pre>
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The solver must locate words from a given wordlist hidden in the puzzle diagram in the form of a rectangular frame parallel to the sides of the puzzle (a *word frame*). Only words appearing in the puzzle in a word frame count (finding the letters of a word in a straight line or in any other rectilinear pattern is not considered to be the discovery of a hidden word). Word frames may be nested or overlap within a puzzle. Once all word frames have been located and all words not appearing in the puzzle have been discarded, the *frozen letters* (letters that are not part of any word block) must be indicated on a line-by-line basis. Note that any letters surrounded by a word frame are also considered frozen unless they are part of some other word block.

Write a program that will solve word frame puzzles.

### Input

The input file will contain a series of datasets in standard textfile format. Each dataset will consist of a puzzle (15 lines of 15 characters), an integer representing the size of the wordlist on the sixteenth line, and the wordlist itself (one word per line) beginning on the seventeenth line. No word in the wordlist will be longer than 20 characters and all words which are hidden in the puzzle and wordlist will be in uppercase. There will be no intervening whitespace or extraneous characters. There are an unknown number of datasets in the input file. Your program must process all datasets in the file.

### Output

The output from this program will show the results of solving each puzzle. Each result should be labeled with a puzzle number, beginning with 1. These should be followed by a list of words from the wordlist which do not appear in the puzzle in the form of a word frame. Following the list of unused words will be a line-by-line listing of the frozen letters (from left to right). If a row contains no frozen letters, it will appear in the frozen letters list with no letters indicated. Several blank lines should separate the results from each dataset. Refer to the example for the acceptable output format for this problem.

**Sample Input**

QUNJOIPPCHYQUEN  
PLOZZNYJACNETOT  
SCILLTHOCHEMIXS  
GRSSESPSWAIRTHC  
TOXEWLLMJLCOSNO  
OTANSQUAKETDIZL  
ROLXYBBEXRYCJPG  
LJSOIXOPSSACILM  
EGIASTLICVNOOBY  
PETMANITIFREPUG  
RESEXECOLOUTEMO  
PAINDMOCIBUSDRC  
EXATOMISHSJITAR  
RHRAWIBEBOSENIBB  
EVITWTTEMMRGDEW  
20  
POLITICS  
AMENDMENTS  
BUSINESS  
COMMETTEES  
DISTRICT  
CONSTITUENTS  
DEBATING  
TABLED  
DEMOCRAT  
FILIBUSTER  
JOINTSESSION  
SPEAKERS  
LOBBYIST  
MAKELAWS  
PRESTIGE  
REPRESENTATIVE  
CHAIRMEN  
REPUBLICAN  
SENATORS  
LEGISLATOR  
RIHCRNERBRAINTE  
OOFEONYOUINAPSR  
PRACTTALKCCHIRO  
RSLANTORSMECIAN  
UERTSCARPODICAB  
NSPLYODLACITUAE  
ARFUSNEISTPAREL  
EEBMEGRRKOOBBUT  
SERSAIETAIDREEL  
IARPPNEMSTRIKSO  
ACPASTBARBETANR  
OSERREPESSSSMUS  
URNABARENNUROC

RETROOKKGORJETA  
FOOREFATIEGANIT  
25  
CARPENTERS  
JANITORS  
APPRAISERS  
PROFESSORS  
SURGEONS  
PLUMBERS  
BARBER  
CONSULTANT  
MECHANIC  
ROOFER  
BARTENDERS  
BEAUTICIAN  
NURSES  
ENGINEER  
SEAMSTRESS  
ATTORNEY  
BRICKLAYER  
MEDICALDOCTORS  
PODIATRIST  
BOOKKEEPER  
DRESSMAKER  
PAINTERS  
COUNSELORS  
BUTLER  
CHIROPRACTOR

### Sample Output

---Results of Puzzle #1---

TABLED - not found

Frozen Letters in Row # 1: QUPPCHYQ  
Frozen Letters in Row # 2: PLZZYJAO  
Frozen Letters in Row # 3: SCLLHOCEX  
Frozen Letters in Row # 4: GPH  
Frozen Letters in Row # 5: TXWLLJO  
Frozen Letters in Row # 6: SQUZL  
Frozen Letters in Row # 7: OXXYCJPH  
Frozen Letters in Row # 8: JOXM  
Frozen Letters in Row # 9: IVOOY  
Frozen Letters in Row #10: EAG  
Frozen Letters in Row #11: XCOOU  
Frozen Letters in Row #12: AIR  
Frozen Letters in Row #13: XAOIHJ  
Frozen Letters in Row #14: HRWBOIB  
Frozen Letters in Row #15: WMMRW

---Results of Puzzle #1---

PROFESSORS - not found

BARTENDERS - not found

Frozen Letters in Row # 1: A

Frozen Letters in Row # 2: OFENOU

Frozen Letters in Row # 3: CIRO

Frozen Letters in Row # 4: L

Frozen Letters in Row # 5: RSARPOCA

Frozen Letters in Row # 6: Y

Frozen Letters in Row # 7: AF

Frozen Letters in Row # 8: EEKO

Frozen Letters in Row # 9:

Frozen Letters in Row #10: I

Frozen Letters in Row #11: AASTBRBT

Frozen Letters in Row #12: OR

Frozen Letters in Row #13: UAARN

Frozen Letters in Row #14: RGEA

Frozen Letters in Row #15: FOOATIT