# 9. Fences

Program Name: Fences.java   Input File: fences.dat

Rob is a surveyor who is plotting the homesteads in a section of land in an unmapped area of Alaska. A section of land covers one square mile and contains 640 acres of land. Rob has divided the section he is surveying into 128 horizontally or vertically contiguous, congruent, rectangular plots of land each containing 5 acres. Below is a diagram of a 640 acre section of land that has been subdivided as noted in the diagram and chart below.
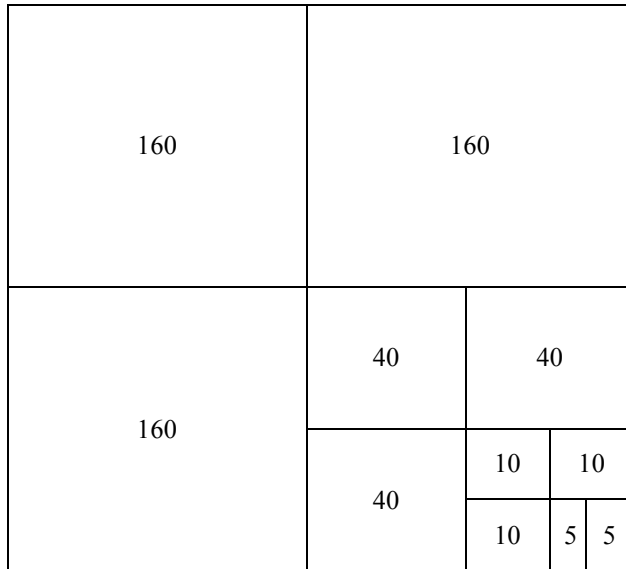
Name	Acres	Shape
Section	640	Square
Quarter section	160	Square
Quarter quarter section	40	Square
¼ quarter quarter section	10	Square
Plot of land	5	Rectangular

To visualize his survey on paper, Rob has created a section grid that is 8 rows by 16 columns. Each cell of the grid represents one 5 acre plot of land that is 660' x 330', that is, on the section grid the vertical sides of the homestead plot are 660 feet long, and the horizontal sides of the homestead plot are 330 feet long. Some people already have homesteads that contain one or more contiguous plots. Rob decided to denote those plots with capital letters of the alphabet using a unique letter of the alphabet for each person. You are to write a program that will tell how many feet of fencing a given homesteader needs to fence his lot.

Note: If a homesteader's land is contiguous to another homestead's land, each homesteader will need a separate fence for the common property line.

Input
The first line of input will contain a single integer n that indicates the number of surveys to follow. For each survey,
- the first line will contain an unknown number of capital letters (separated by a space) that appear in the section grid,
- the following lines contain the section grid for the survey, with each grid containing 8 lines with 16 characters on each line.
- The characters in each row will be a capital letter (A-Z) indicating who owns the plot of land, or an asterisk (*) indicating an un-owned plot of land.

Output
For each section grid, print SURVEY *X* where *X* is the number of the survey on a single line.   On subsequent lines, print, in alphabetical order, the letter of the homestead owner, a space, and the number of feet of fencing that homesteader will need to fence his land.

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Example Input File
```
2
A R D
***************
***DD******R****
**DDD*****RR****
***********R****
*********AA*****
*********AA*****
*********AA*****
*********AA*****
Z A
***************
***A***********
***A***********
***A***********
***************
*******ZZZ*****
***************
***************
```

Example Output to Screen
```
SURVEY 1
A 6600
D 4620
R 5280
SURVEY 2
A 4620
Z 3300
```