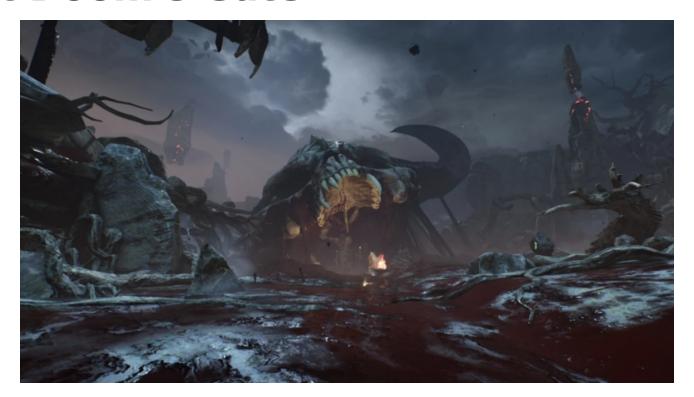# At Doom's Gate

In the 22nd century Earth is in a severe energy crisis. The United Aerospace Cooperation (UAC) led by Dr. Samuel Hayden discovers a new form of renewable energy called "Argent Energy" on the Promethei Terra region on Mars while on a geological survey. Over time this became the primary energy source for all of Earth. After mining deep into Mars, it is discovered that Argent Energy actually originates from Hell.

You and a team of top-tier UAC personnel led by Dr. Hayden are on the first manned expedition to Hell. After fighting countless demons you find your way to Kadingir Sanctum, a sprawling network of tunnels, catacombs, and temples. Here you find a sarcophagus along with various artifacts. The sarcophagus contains a scripture written in an unknown language. To decipher the scripture you need to send the information to the self-aware AI VEGA. However, the sat-link to the UAC command center is weak and you can't send a picture of the sarcophagus. You will need to send the writing in text form via sat-link.

The scripture has n symbols of three types; rectangles, crosses, and triangles. Your camera can take images of size 10 x 10 pixels of each symbol. However, due to high background radiation, the camera sensor can produce spurious output.

Your task is to write a program to classify each image as rectangles, crosses, or triangles as accurately as possible.

Each symbol is drawn on a 10 x 10 matrix where `-` denotes a white pixel and `#` denotes a black pixel.

The matrix has 10 rows where each row contains 10 space-separated characters consisting of `-` and `#` denoting the color of the pixel. Some sample shapes and their labels are shown below.

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cross

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tri

2/5

Note that due to the malfunctioning camera sensor, the last two inputs contain one missing pixel each.

Input Format

The first line contains n denoting the number of symbols in the scripture. For each symbol, there are 10 lines denoting the 10 x 10 matrix followed by a newline.

Constraints

$1 \leq n \leq 1000$
The minimum width and height of a rectangle is 2 pixels.
A triangle contains a minimum of 9 pixels.
Crosses are symmetrical and have a minimum height of 5 pixels.
At most one pixel may be missing from each shape.

Output Format

For each symbol output the name of the shape on a newline.

- For rectangles output `rect`

- For triangles output `tri`

- For crosses output `cross`

Scoring
If the output format is correct, you are scored according to the number of correct classifications X as follows:
$$Score = maxScore \times \left(\frac{X}{n}\right)^3$$

Otherwise, the $Score$ will be zero.

Sample Input 0

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Sample Output 0

```
cross
cross
cross
cross
tri
tri
tri
tri
rect
rect
```

Explanation 0

Symbol 1: Cross
Symbols 2 - 4: Cross with a missing pixel
Symbols 5 - 7: Triangle with a missing pixel
Symbol 8: Triangle
Symbol 9: A triangle contains a minimum of 9 pixels. So this is a 2x4 rectangle with a missing pixel
Symbol 10: Rectangle