Exoplanet Finder

CATALYSTS CODING CONTEST

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context

An **extrasolar planet**, or **exoplanet**, is a planet outside of our Solar System. The first was detected in 1995, and since then we found 841 confirmed exoplanets.

One method to find these planets is the transit method. If a planet crosses (transits) in front of its parent star's disk, then the observed visual brightness of the star drops by a small amount.

The Kepler space telescope measures over 140,000 stars and their brightness. A star's brightness can be influenced by many things: solar flares, black spots, dust grains (close to the telescope), or even planets. If the drop of brightness happens periodically, then it may be caused by a planet.

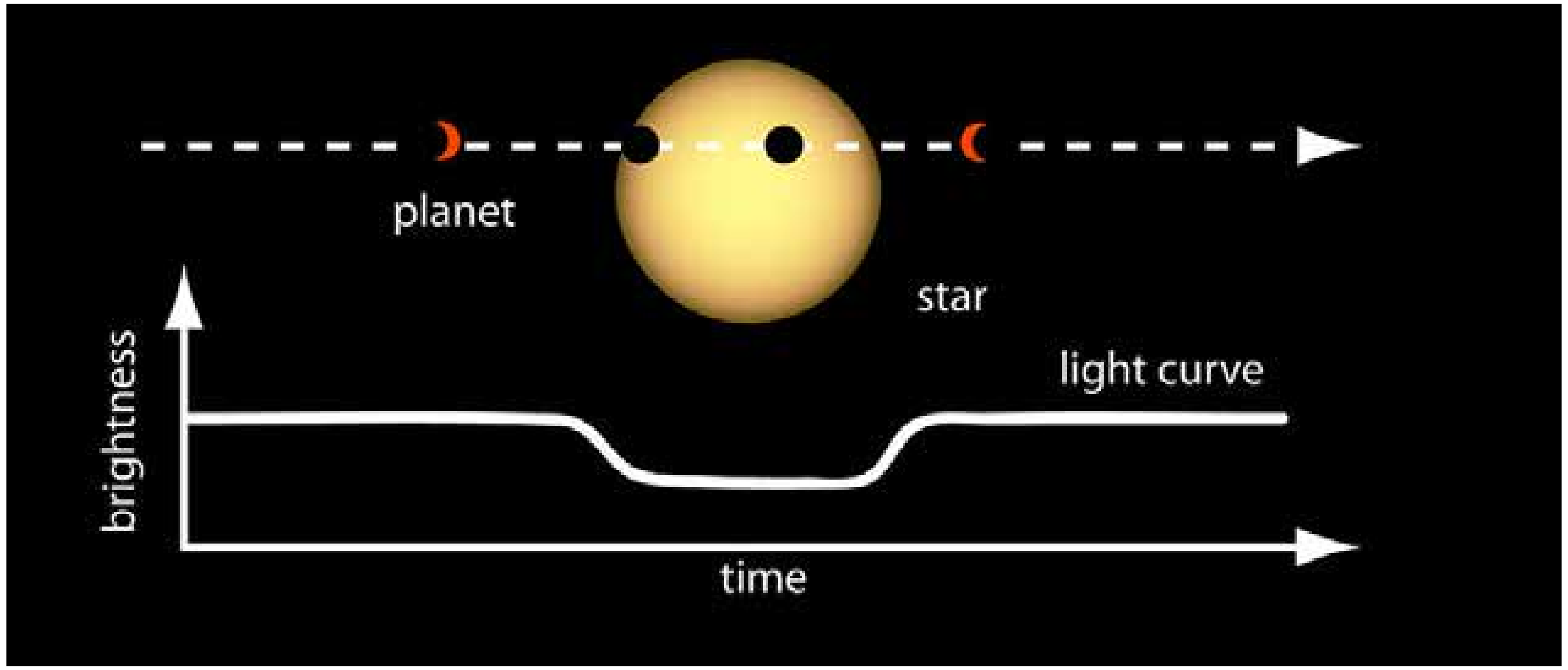
The transit method only reveals planet candidates. These are only indicators what the more powerful Earth based telescopes should look at.

Your task is to find exoplanets based on the data of Kepler!

your overall task

You have been asked to identify stars that have planet candidates. You are given a lightcurve of a star (a graph of the brightness of the star, as the function over time), and you must determine if that star has a planet candidate.

Find potential transits and conclude if the parent star has a planet candidate.



level 1

You are given the brightness values of the star over time. Your task is to group consecutive brightness values that have the same value.

Input:

- m starName$_1$ n_1 $L_1[1]$ $L_1[2]$ ... $L[n_1]$ starName$_2$ n_2 $L_2[1]$ $L_2[2]$ ... $L_2[n_2]$ ... starName$_m$ n_m $L_m[1]$ $L_m[2]$ ... $L_m[n_m]$
- m: number of stars in the file
- starName: name of the star
- n: length of the light curve array
- L: light curve array (an array of integers)
- Input items are separated by space characters.

Input Example:

```
2 Star1 10 100 100 100 100 90 90 90 90 90 100 Star2 6 100 100 100 80 100 100
```

level 1

Input constraints (valid for all levels):

- m >= 1
- n >= 10
- name: contains only alphanumeric characters (and no spaces). Stars are unique.
- 0 <= L[i] <= 2,000,000

Output:

- Output items are separated by space characters.
- starName1 [Value1] [Value1AppearancesCount] [Value2] [Value2AppearancesCount] ... [ValueN1] [ValueN1AppearancesCount]
  starName2 [Value1] [Value1AppearancesCount] [Value2] [Value2AppearancesCount] ... [ValueN2] [ValueN2AppearancesCount] ...
  starNamem[Value1] [Value1AppearancesCount] [Value2] [Value2AppearancesCount] ... [ValueNM] [ValueNMAppearancesCount]
- The output has to be ordered the same way as the input.

Output Example:

```
Star1 100 4 90 5 100 1 Star2 100 3 80 1 100 2
```