Time Series: Predict the Web Traffic

Problem Statement

You are given the web traffic data for a particular website. It's measured in terms of the user sessions. You are provided with the number of sessions for a time series of 1133 consecutive days starting from *October 1st, 2012*. Your task is to predict the number of sessions for the next 30 days.

Scoring

The final score obtained on submitting your code will be based ONLY on the hidden test case.

We will compute the mean of the magnitude of the percentage difference by comparing your expected answers with the actual sessions, for each of the missing records (in all test cases - samples included).

d = Summation of **abs**((expected traffic - computed traffic)/expected sessions) x 100 (for all missing records, in all test cases).

Your final score on a scale of 100 will be: **5 x max(20 - d, 0)**

i.e, if the mean value of 'd' exceed 20% (your predictions are off by 20% or more on an average) you will score a zero. If your predictions are all right on target, you will score 100.

When you hit "Compile and Test" (instead of submit) we will run your solution against the sample test only. And the visible score at that time, will be normalized out of 1, rather than 100. In case your program throws an error (or an incorrect output format) for a single test case, the overall score assigned will be zero.

Input Format

The first row has an integer N. This is followed by N integers (the number of user sessions for N days).

Hidden Input File
The input file has 1134 rows ($N = 1133$), each containing an integer.
The first integer is the number of sessions on October 1st, 2012.
The second integer is the number of sessions on October 2nd, 2012.
And so on...
The last integer is the number of sessions on November 11th, 2015.

Sample Input File
The sample input file has the 501 rows ($N = 500$) from the same data for 500 consecutive days starting from *October 1st, 2012*. And your output for this data will be calibrated against the next 30 days of data in the series, as predicted by you.

On inspecting the data (you may plot the first 500 rows from the sample input) you may observe large periods of somewhat periodic and stable trends, followed by certain abrupt dips and jumps. The abrupt dips and jumps typically occur when there is a major change or revamp to the site content. You may assume that no such drastic change was made to the website after November 11th, 2015. So any major trend observed by you for the first 1133 days of data will not be drastically disrupted in the next 30 days, for which you need to predict the values.

Output Format

Output 30 integers, each on a new line.

The first integer should be the predicted number of sessions on November 12th, 2015.

The second integer should be the predicted number of sessions on November 13th, 2015.

And so on...

Sample Input

```
1339
1462
1702
1656
1439
1208
1613
1935
1964
2003
2023
1559
1274
1805
2051
2024
2049
...
...
...
```

Sample Output

```
1000
1500
....
....
....
(30 such integers, each on a new row)
```