Panda and Numbers - Hackerearth

Saturday, February 29, 2020 12:44 PM

The Problem:

Panda is fond of numbers. Given a number, he subtracts it with squares of any one particular digit of that number to get new numbers. This operation can be applied any number of times (possibly zero) till he obtains a pandatic number. If he is able to reach to a pandatic number then he wins. A pandatic number is a number which can be expressed in the form A^A, where A is a positive integer.

Input Format:
The first line will contain T, the number of test cases.
Then T lines follow, each containing an integer N.

Output Format:
For each test case, output whether it's possible for panda to reach a pandatic number by doing the operations as described. If it's possible print "Yes" (without quotes), otherwise print "No" (without quotes).

Constraints:

- Subtask 1: (10 points)
  $1 <= T <= 10^3$
  $1 <= N <= 10^3$
- Subtask 2: (90 points)
  $1 <= T <= 10^5$
  $1 <= N <= 10^6$

SAMPLE INPUT

```
3
1
3
13
```

SAMPLE OUTPUT

```
Yes
No
Yes
```

Explanation
Case 1:
1 is a pandatic number, hence the answer is "Yes".

Case 2:
$3 - 3^2 = -6$ is not a "pandatic number". Hence the final answer is "No".

Case 3:
13 - 1^2 = 12 is not a pandatic number. 13 - 3^2 = 4 is a pandatic number. Hence the final answer is "Yes".

Note: You have to find out recursively. For 13 -> 13-1^2 = 12. Again find out if 12 is pandatic and so on. See the dynamic programming pattern?

The Code:

```
#include <stdio.h>
#include <math.h>
#include <stdbool.h>

void preparePandas(bool pandas[]) {
   long int temp, diff, i;
   int digit;

   long int knownPandas[7];
   for(i=1; i<=7; i++) {
      knownPandas[i-1] = (long int)pow(i,i);
      pandas[knownPandas[i-1]] = true;
   }

   for(i=1; i<1000001; i++){

      if(!pandas[i]) {
         temp = i;
         while(temp > 0) {
            digit = temp % 10;

            diff = i - (digit * digit);
            if(diff > 0 && pandas[diff]) {
               pandas[i] = true;
               break;
            }

            temp /= 10;
         }
      }
   }
}


int main(){
        int caseCount, num, i;
        bool pandas[1000001] = { false };

        preparePandas(pandas);

        scanf("%d", &caseCount);

        while(caseCount > 0) {
```

```
            scanf("%d", &num);

            if(pandas[num]) {
               printf("Yes\n");
            } else {
               printf("No\n");
            }

            caseCount--;
         }

}
```

The Stats:

Score
30.0

Time (sec)
1.17709

Memory (KiB)
64

Language
C