Dos Date

In DOS, current date is stored in encoded form to reduce the space. Date is encoded in a single integer number. The binary form of the number can be divided to decode the date parameters.

Date is a sequence of 23 bits. First 14-bits for year, next 4-bits for month and finally 5 bits for date.

e.g., 12 February 1990 can be encoded as -

1990 02 12 ---> (11111000110 0010 01100) Binary Form
---> (1018956) Decimal Form

Your task is simple. You only will have to decode date from the given decimal encoded form. Score is source length.

Input

The input consists of N cases (equal to about 1000). The first line of the input contains only positive integer N. Then follow the cases. Each case consists of exactly one line with one positive integer X. This integer X is the encoded form which is to be decoded.

1<=N<=1000

X will fit in Integer(C Int) range.

Output

Output consist of exactly N lines of decoded form.

Example

Input:
5
1024275
1029012
1017036
903863
802507

Output:
19 August 2000
20 December 2009
12 June 1986
23 May 1765
11 June 1567