Friday the Thirteenth

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Brute force is a wonderful thing. 400 years is only 4800 months, so it is perfectly practical to just walk along every month of every year, calculating the day of week on which the 13th occurs for each, and incrementing a total counter.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <assert.h>

int
isleap(int y)
{
    return y%4==0 && (y%100 != 0 || y%400 == 0);
}

int mtab[] = { 31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31 };

/* return length of month m in year y */
int
mlen(int y, int m)
{
    if(m == 1)    /* february */
        return mtab[m]+isleap(y);
    else
        return mtab[m];
}

void
main(void)
{
    FILE *fin, *fout;
    int i, m, dow, n, y;
    int ndow[7];

    fin = fopen("friday.in", "r");
    fout = fopen("friday.out", "w");
    assert(fin != NULL && fout != NULL);

    fscanf(fin, "%d", &n);

    for(i=0; i<7; i++)
        ndow[i] = 0;

    dow = 0;    /* day of week: January 13, 1900 was a Saturday = 0 */
    for(y=1900; y<1900+n; y++) {
        for(m=0; m<12; m++) {
            ndow[dow]++;
            dow = (dow+mlen(y, m)) % 7;
        }
    }

    for(i=0; i<7; i++) {
        if(i)
            fprintf(fout, " ");
        fprintf(fout, "%d", ndow[i]);
```

```
    }
    fprintf(fout, "\n");

    exit(0);
}
```

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