

举例：

求 $\sin\sin\sin\cdots\sin x$ 的值（有 n 个 \sin ； x 和 n 的值在执行时输入）。

(1) $\sin\cdots\sin\sin\sin x$

```

      -----
      s
      -----
      t
      -----
      u
      ...

```

不断引入新变量，导致无法编写程序。

(2) $\sin\cdots\sin\sin\sin x$

```

      -
      s
      -----
      s
      -----
      s
      -----
      s
      -----
      ...
      -----
      s

```

用迭代方式编写程序。

```

s = x;
for (i = 1; i <= n; i++) {
    s = sin(s);
}

```

上机题：

1. 求 $\sqrt{100 + \sqrt{99 + \sqrt{98 + \sqrt{\cdots + \sqrt{1}}}}}$ 的近似值。

2. 根据 $\frac{\pi}{2} = \frac{2}{\sqrt{2}} \times \frac{2}{\sqrt{2+\sqrt{2}}} \times \frac{2}{\sqrt{2+\sqrt{2+\sqrt{2}}}} \times \cdots$ 求 π 的近似值，要求取前 100 个分式。

3. 根据 $\frac{\pi}{2} = 1 + \frac{1}{3} + \frac{1}{3} \times \frac{2}{5} + \frac{1}{3} \times \frac{2}{5} \times \frac{3}{7} + \frac{1}{3} \times \frac{2}{5} \times \frac{3}{7} \times \frac{4}{9} + \cdots$ 求 π 的近似值，要求取前 100 项。

4. 有两个两位正整数 i 和 j , 已知 i 减去 j 等于 56, i^2 的末两位数字等于 j^2 的末两位数字。求 i 和 j 的值。

5. Counting Numbers

Starting from a positive integer n ($1 \leq n \leq 2001$). On the left of the integer n , you can place another integer m to form a new integer mn , where m must be less than or equal to half of the integer n . If there is an integer k less than or equal to half of m , you can place k on the left of mn to form a new integer kmn , ..., and so on. For example, you can place 12 on the left of 30 to form an integer 1230, and you can place 6 to the left of 1230 to form an integer 61230, ..., and so on.

For example, start from $n = 8$, you can have the following 10 integers (including the integer you start with): 8, 18, 28, 38, 48, 128, 138, 148, 248, 1248.

Given an integer n , find the number of integers you can get using the procedure described above.