Ambitious Utopion Osman is a space ʞıɯ delivery employee. They spend their days flying from planet to planet with their rocket, delivering ʞıɯ. But the ʞıɯ demand of their solar system is increasing day by day!

The amount of ʞıɯ Ambitious Rocket carries would require complicated space maths in AUO's universe, but luckily for us, the calculations are simple. It is sufficient to XOR (bitwise xor operation) the distance to be traveled with the liters of ıǝnɬ the rocket has.

AUO should always travel $A_i$ lightyears to reach the $i$'th planet. It doesn't matter where the Ambitious Rocket is located.

AUO has $M$ liters of ʞıɯ in total and AUO needs to visit $N$ planets in total. Can you calculate the maximum amount of ıǝnɬ AUO can take on their rocket without the amount of ʞıɯ they carry exceeding $M$?

- note: ʞıɯ and ıǝnɬ act differently from the matter we understand. Upon delivering ʞıɯ, Ambitious Rocket's ıǝnɬ doesn't decrease.

**Input**

The first line will include the integers $N$ and $M$.

The next will have $N$ positive integers in total. $A_i$ equals to the distance needs to be traveled to reach that planet.

**Batch #1:**

- $1 \leq N \leq 100$
- $1 \leq A_i \leq 100$
- $1 \leq M \leq 10^4$

**Batch #2:**

- $1 \leq N \leq 10^5$
- $1 \leq A_i \leq 10^{12}$
- $1 \leq M \leq 10^{15}$

**Output**

Print the amount of ıǝnɬ AUO should put into the Ambitious Rocket.

- If the amount of ʞıɯ that can be delivered always exceeds $M$, print "-1".
### Samples

**Input:**

\[
\begin{array}{cccccc}
6 & 20 \\
3 & 4 & 3 & 1 & 3 & 1 \\
\end{array}
\]

**Output:**

\[
3
\]

**Input:**

\[
\begin{array}{cccccc}
6 & 40 \\
3 & 8 & 4 & 4 & 6 & 9 \\
\end{array}
\]

**Output:**

\[
7
\]

**Girdi:**

\[
\begin{array}{cccccc}
5 & 10 \\
3 & 2 & 4 & 4 & 12 \\
\end{array}
\]

**Çıktı:**

\[
-1
\]

### Explanation

1. **Input**
   - \((3 \oplus 3) + (3 \oplus 4) + (3 \oplus 3) + (3 \oplus 1) + (3 \oplus 3) + (3 \oplus 1)\)
   - \(0 + 7 + 0 + 2 + 0 + 2 = 11 \leq 20\)
2. Input
- \((7 \oplus 3) + (7 \oplus 8) + (7 \oplus 4) + (7 \oplus 4) + (7 \oplus 6) + (7 \oplus 9)\)
- \(4 + 15 + 3 + 3 + 1 + 14 = 40 \leq 40\)

3. Input
- For all non-negative integers, the amount of \(\text{.cgiw}\) that can be delivered always exceeds \(M\). Therefore there's no valid answer.