B. Al-Khwarizmi's Scrolls (scrolls)

Time limit: 3.0 seconds
Memory limit: 256 MiB

At the legendary House of Wisdom in Baghdad, the illustrious scholar Al-Khwarizmi presents a test of intellect to his new apprentice, Tariq. He places N sealed clay jars in front of him. Exactly one of these jars contains a priceless artifact: an ancient scroll detailing the functional and symbolic meanings of the handkerchief motif in early folk legends, valued at $1,000,000$ dirhams.

Tariq must deduce which jar conceals the scroll by formulating queries. A single query consists of selecting a specific subset of jars. The answer to a query will be YES if the target jar is inside the chosen subset, and NO otherwise.

Tariq is provided with K initial queries that were prepared by previous scholars. He may add X additional queries of his own. However, there is a catch: Tariq must submit all of his additional queries **in advance**, before any answers are revealed. To guarantee success, the combined set of $K + X$ queries must produce a completely unique sequence of YES/NO answers for every single jar.

Each additional query Tariq introduces will deduct $5,000$ dirhams from the scroll's total worth. Determine the maximum amount of dirhams Tariq can preserve by finding the absolute minimum number of extra queries required.

Input

The initial line contains two integers N and K — representing the total number of clay jars and the count of initial scrolls (queries).

The subsequent K lines each begin with an integer S, followed by S distinct integers $s_1, s_2, \ldots, s_S$, indicating the specific jars included in that particular query.

Output

Print a single integer representing the maximum number of dirhams Tariq can preserve.

Constraints

- $1 \leq N \leq 200$
- $0 \leq K \leq 200$
- $1 \leq S \leq N$
- $1 \leq s_i \leq N$

Scoring

- **Subtask 1 (22 points):** $N, K \leq 4$
- **Subtask 2 (16 points):** $K = 0$
- **Subtask 3 (7 points):** $S = 1$ for all initial scrolls, and every single jar is included in at least one scroll.
- **Subtask 4 (26 points):** $S = 2$
- **Subtask 5 (29 points):** No further constraints.

Examples

standard input	standard output
5 1 3 1 2 3	990000

Explanation

Tariq designs two supplementary queries: $\{1, 2, 4\}$ and $\{1\}$. Combined with the initial scroll $\{1, 2, 3\}$, these three checks are sufficient to uniquely pinpoint the correct jar. Let us analyze the outcomes for each potential jar:

- **Jar 1:** All three queries yield a YES response. Because the third query contains only jar 1, the manuscript is definitely inside it.
- **Jar 2:** The first and second queries return YES, while the third returns NO. The NO from the third query rules out jar 1. Since jar 4 is missing from the first query and jar 3 is missing from the second query, jar 2 is uniquely identified.
- **Jar 3:** The first query evaluates to YES, while the second and third queries evaluate to NO. Only jars 1, 2, and 3 are candidates from the first scroll. The second query rules out jars 1 and 2, confirming that jar 3 contains the scroll.
- **Jar 4:** The second query yields YES, whereas the first and third queries yield NO. Only jars 1, 2, and 4 are candidates from the second query. The first query rules out jars 1 and 2, which uniquely isolates jar 4.
- **Jar 5:** Every query returns a NO response. This rules out jars 1, 2, 3, and 4, meaning jar 5 must contain the manuscript.

Since Tariq introduces exactly 2 additional questions, the prize decreases by $2 \times 5,000 = 10,000$ dirhams. The maximum value he can safeguard is $1,000,000 - 10,000 = 990,000$ dirhams. It can be verified that using only a single additional question is insufficient to tell all jars apart.