

VI Civilization

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64bit IO Format: %lld

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In the game VI Civilization, the player needs to achieve a science victory: accumulating at least s science points in the science victory slot within t turns.

There are n technologies in the game. Initially, only the first technology, $Tech_1$, is unlocked and can be completed. All other technologies are locked. The player must complete the technologies in a fixed sequence: $Tech_1 \rightarrow Tech_2 \rightarrow \dots \rightarrow Tech_n$. This order cannot be skipped or changed. Specifically, technology $Tech_i$ is unlocked only after all preceding technologies ($Tech_1$ to $Tech_{i-1}$) have been completed.

Completing each technology requires a certain amount of science points. The player can allocate production to trigger the technology's "Eureka" moment, which reduces the science points required for completion. **Each technology's Eureka can only be triggered once.** Upon completing a technology, the science points gained per turn will increase.

Each technology $Tech_i$ has four parameters:

- a_i : The science points required to complete this technology.
- k_i : The increase in science points per turn after completion.
- b_i : The production required to trigger its Eureka.
- c_i : The reduction in required science points after triggering the Eureka ($0 \leq c_i < a_i$).

VI Civilization is a turn-based game. In each turn, the player first gains science points and production, and then allocates them. The allocation of science points and production must be **indivisible (cannot be split among multiple tasks)**, and the science points and production gained in the current turn **are not saved for the next turn**.

The game proceeds as follows:

- At the start of each turn, the player gains:
 - Science points m (after completing technology i , m permanently increases by k_i).
 - A fixed amount of production p (remains constant throughout the game).
- Then, the player performs actions:
 - Science Point Allocation:**
 - Allocate the entire amount of science points m gained this turn to either an unlocked technology or the science victory slot.
 - When allocating to a technology, any excess points are wasted and do not carry over to the next technology. After completing technology $Tech_i$: m permanently increases by k_i .

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