

## 1. Problem name

- Follow [common title capitalization rules](#) when writing English problem names. Example: **The Best of the Problems** instead of **The best of the problems**. This is not applicable to Ukrainian statements.
- Avoid using any special characters in problem names ( $\&^@*$  or similar).
- Must not be too long (7 words or less).
- Problem name must be unique in both English and Ukrainian (there should be no problem with the same name in the archive).

## 2. Limits

- Default time limit: 2s.
- Default memory limit: 256MB.
- Time limit up to 7s.
- Memory limit up to 1024MB, at least 128MB, and must be a power of 2.
- If time or memory limit is less than the default, make sure it's well solvable in Java and Python.

## 3. Paragraphs

- Separate paragraphs with an empty line in LaTeX; don't use paragraph indentation or `\par` command.
- Statement must not be a single large paragraph. Split the statement into multiple logical paragraphs for readability purposes.

## 4. Variables

- By default, all statement and input variables must be enclosed in `$`, for example: `$n$`.
- Variables must not be bold.
- It's recommended to keep variable names single-letter and lower-case.
- Use common variable names when available (e. g. `n` for the number of vertices, `m` for the number of edges, `k` or `q` for the number of requests).
- Avoid indexing variable names (e. g. `i` or `j`) as input variables.

## 5. Literals

- Literal numbers *must not* be enclosed in `$`. Example: **Vertices are numbered from 1 to `$n$`, inclusive**. Exception: if the statement requires outputting -1 when the answer does not exist, treat -1 as a literal string (see below).
- Literal strings must be enclosed in `\texttt{}`. For example, use `\texttt{YES}` when describing positive output string.
- Do not use quotes for literal strings.
- Numbering literals (or variables) must have a proper ending, e. g. the 2-nd, the `$i$`-th, etc. The same holds for the Ukrainian language.
- Array literals must not be enclosed in `$`, for example, `[4, 7]`.

## 6. Formulas

- All mathematical formulas must be enclosed in `$`, for example: `$n < m$`.
- Don't use `*` for multiplication. Use `\cdot` instead (e. g. `$n \cdot m$`).

- Use `\times` for matrix dimension description, e. g. `matrix of size $n \times m$`.
- Don't use division sign `/`. Use fraction instead: `\frac{a}{b}`.
- Use proper LaTeX commands as inequality signs: `\le` for 'less than or equal', `\ge` for 'greater than or equal'.
- Large formulas must be placed on a separate line and centered by enclosing in `$$` (double dollar-sign), for example: `$$n < m$`.
- Use `^` and `_` for sup and sub, for example: `$10^9$`, `$2^{nk}$`, `$a_i$`.
- Always use appropriate LaTeX commands when describing math symbols. Refer [to this page](#) for the full list of possible math commands.
- Arrays (except literals) should be written as following: `[$a_1, a_2, \ldots, a_n]$`.
- Use `\mbox{ XOR }` to describe XOR, AND, OR, or similar operation. Note the leading and trailing spaces.

## 7. Input

- Always specify if the input token is an integer, float, string, or single character.
- If the input contains floats, it must be clearly stated what format is expected.
- Use the following style when describing input in English: `The first line of the input contains a pair of integers ...`, `The following $m$ lines describe...`, etc. Always use proper English articles.
- Use the following style when describing input in Ukrainian: `У першому рядку задано одне ціле число $n$ --- ...`, `У наступних $n$ рядках задано пари цілих чисел $u_i$ $v_i$, які описують ребра графу...`, etc.
- Do not leave input over-simplified, e. g. avoid `Одне ціле число $n$`. Instead, write: `У єдиному рядку задано одне ціле число $n$ --- кількість пляшок`.
- Each variable in the input must be briefly described.

## 8. Output

- If it's possible to have no answer, it should be clearly stated in the output section.
- If there are multiple possible answers, it should be stated in the output section.
- If it's guaranteed that for the given input there's always an answer, this should be stated in the output section.
- If the answer contains float numbers, the output section must specify the allowed precision (absolute and/or relative).
- If the answer has to be output modulo some number, it should be stated in the output section. It should be explicitly stated if the modulo number is prime.
- Use the following style when describing output in English: `Print a single integer denoting the minimum number ...` etc. Always use proper English articles.
- Use the following style when describing output in Ukrainian: `У єдиному рядку виведіть $n$ цілих чисел --- ...`, etc.
- Do not leave output over-simplified, e. g. avoid `Відповідь на задачу`. Instead, write: `У єдиному рядку виведіть одне ціле число $n$ --- кількість пляшок`.

## 9. Constraints

- All constraints must be placed in the dedicated section of the statement. It's allowed to copy constraints in the main statement section for emphasis purposes.

- Combine constraints when appropriate:  $\$1 \leq n, m \leq 1000\$$ .
- Each constraint inequality must be placed in a separate line of the statement (hence separated by an empty line in LaTeX).
- Length of a string must be denoted as  $|s|$ .
- Use proper inequality signs (as described in the Formulas section).
- Always try to make constraint numbers as readable as possible. For example, write  $\$1 \leq n \leq 2 \cdot 10^9\$$  instead of  $\$1 \leq n \leq 2000000000\$$ .
- Use round numbers as constraints.
- Each constraint line should end with a comma, the last one - with a dot. Any statement (except the first one) should start in a lower-case.

## 10. Lists

- Use proper LaTeX commands for lists:

Unordered (bulletpoint) list:

```
\begin{itemize}
  \item One entry in the list
  \item Another entry in the list
\end{itemize}
```

Ordered (numerated) list:

```
\begin{enumerate}
  \item One entry in the list
  \item Another entry in the list
\end{enumerate}
```

## 11. Images

- All images must be uploaded in the Resources section of an Algotester problem.
- Images are references by resource name without file extension.
- Images must be centered by default, with the image description below:

```
\begin{figure}
  \caption{A picture of a gull.}
  \centering
  \includegraphics[width=0.5\textwidth]{resource-name}
\end{figure}
```

## 12. Samples

- A statement must contain at least one sample.
- Avoid too trivial samples (aka Boiko samples).
- The first sample must be the first test case of the problem. The same holds for the following samples, if any.

### 13. Notes

- The Notes section must contain sample descriptions when appropriate.
- The Notes section can also contain additional definitions when needed, but they must also be referenced in the main statement.

### 14. Miscellaneous

- Parts of statement that need special emphasis (non-obvious constraints or conditions, corrected parts of the statements, etc.) must be bold (enclosed in `\textbf{}`).
- Use --- in Ukrainian and -- in English, never use - as a long dash.
- Use spell-checker when writing English and Ukrainian statements.