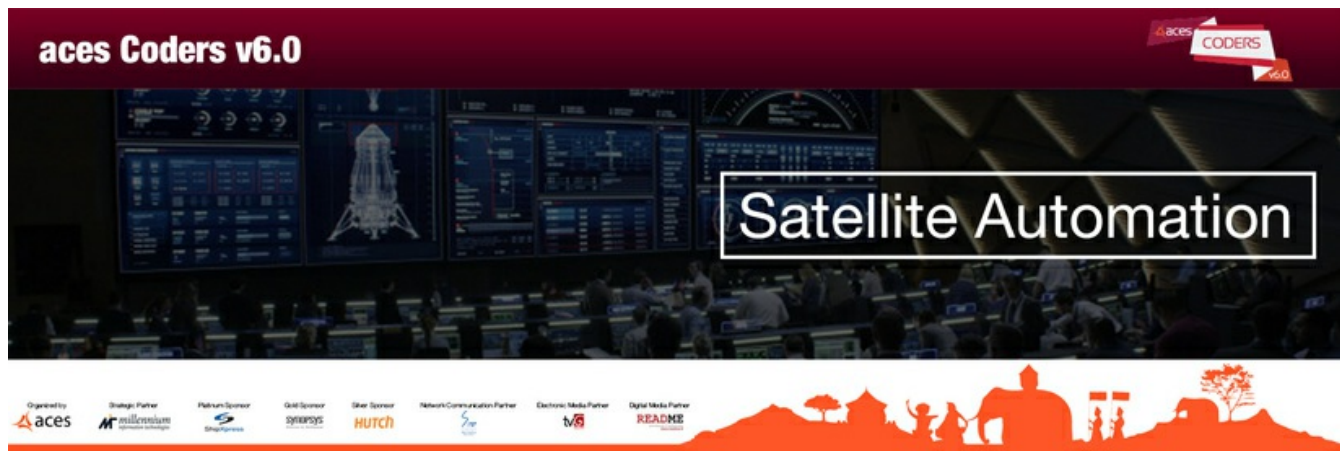


Satellite Automation

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In a Satellite, handling critical systems is a main concern. Some systems have pre-defined workflows and some others don't. Systems that do not have pre-defined workflows should be handled dynamically. You have been hired by NASA and assigned to a team working under the new Satellite project called "ACES". Your team's task is to automate a critical system that cannot be handled by a pre-defined workflow. So far your team has successfully implemented an Artificial Intelligence (AI), which generates priority levels for operations in the critical system. Now you have to automate the operation scheduling.

You are given details about operations by the implemented AI. One operation can depend on another. For an example, the output of operation A could be the input for operation B. Then A has to be scheduled before B. All the operations have priority levels. The AI is creating the operation name by appending the priority level to the real operation name. For an example, if operation A has a priority level of 5, the new operation name for A is A05. The highest priority level is 10 and the lowest level is 1. Operations are scheduled considering the facts in the order of dependencies, priority levels and then their real names.

Input Format

The first line of the input is the number (n) of operations to be scheduled. The next n lines contain operation names followed by the names of their successor operations.

Constraints

$$0 < n < 100$$

Output Format

Print the operation schedule

Sample Input

```
7
A05 D01,F02
B07 D01
C05 D01
D01 G10
E06
F02
G10
```

Sample Output

B07 E06 A05 C05 F02 D01 G10

Explanation

Considering the dependencies at first, available operations to schedule are A05, B07, C05 and E06. From them according to the priority levels, the first operation to be scheduled is B07. Next E06. Then from A05 and C05, A05 is scheduled considering the order by name. This makes F02 available to schedule next. But C05 is higher in the priority and therefore it gets scheduled next. Now D01 is available. From F02 and D01, F02 will be scheduled due to its priority. Then D01 will be scheduled. At last G10 will be scheduled.