Input format

The input file contains a description of the game tree. Each line in the description can be of two types:

- A node line, which introduces a node in the game tree; or
- An information set line, which introduces an information set of the game tree.

Node lines

All node lines begin with the string "node". There are three types of node lines:

Internal player nodes

Notes that belong to a non-chance player X, have the format

```
node <HISTORY> player <X> actions <A1> ... <An>
```

where:

- `HISTORY` contains the history of the node, that is the sequence of actions that lead to the node starting from the root of the game tree. See below for a formal description of the format of `HISTORY`.
- `X` is the id of the player, and can either be `1` or `2`.
- `A1`, ..., `An` are action names. These are the actions that are available to Player X at the node.

Internal chance nodes

Nodes that belong to the chance (aka nature) player, have the format

```
node <HISTORY> chance actions <A1>=<P1> ... <An>=<Pn>
```

where:

- `HISTORY` contains the history of the node, that is the sequence of actions that lead to the node starting from the root of the game tree. See below for a formal description of the format of `HISTORY`.
- `A1`, ..., `An` are action names. These are the actions that are available to the chance player at the node.
- `P1`, ..., `Pn` are the non-normalized probabilities according to which the chance player picks actions `A1`, ..., `An` respectively. Of course `P1`, ..., `Pn` >= 1. Thus, the corresponding probabilities can be easily found normalizing each `Pi` by `P1` + ... + `Pn`.

Terminal/Leaf nodes

Terminal nodes (aka leaves) have the format

```
node <HISTORY> leaf payoffs 1=<Q1> 2=<Q2>
```

where:

- `HISTORY` contains the history of the node, that is the sequence of actions that lead to the node starting from the root of the game tree. See below for a formal description of the format of `HISTORY`.

- `Q1` is the payoff that Player 1 receives at the terminal node.
- `Q2` is the payoff that Player 2 receives at the terminal node.

Node history

The history of a node is the sequence of actions that lead to the node starting from the root of the game. Each node history has the format

`/<E1>/<E2>/.../<En>`
where `E1`, ..., `En` represent the edges on the path. Each edge has the form:
`<P>:<A>`
where:

- `P` identifies the player that was acting. We use the string `P1` to denote Player 1, `P2` to denote Player 2, and `C` to denote the chance player.
- `A` is the name of the action.

Examples:

- `/` denotes the root node.
- `/C:JQ` denotes the node that is reached by playing action JQ at the root, which must belong to the chance player.
- `/C:JK/P1:c/P2:r/P1:f` denotes the node that is reached by playing the sequence of actions JK, c, r, f.

Information set lines

Each information set line starts with the string "infoset" and has the format

`infoset <NAME> nodes <N1> ... <Nn>`
where:

- `NAME` is a unique name for the information set.
- `N1`, ..., `Nn` are the histories of the nodes that belong to the information set. See the section about node histories for the specific format.

Output format

The output file contains the strategy. Each line in the description can be of one type:

- An information set line, which provides the probabilities associated with the available actions will be played.

Strategy lines

The strategy at each information set has the format

```
infoset <NAME> strategies <A1>=<S1> ... <An>=<Sn>
```

where:

- `NAME` is a unique name for the information set.
- `A1`, ..., `An` are the actions available to the information set.
- `S1`, ..., `Sn` are the probabilities of the actions available at the information set.