**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.