Formal Specification: conception.games.host

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A game host provides a virtual space within which players can play games of different types.

1 Types

Given as basic types the set of game types.

$[GAMETYPE]$

A game can be in one of three basic stages.

$GameStage ::= pending \mid playing \mid over$

Each game has a unique number, a game type and a stage.

$$
\begin{array}{|l}
\hline
\_\,Game \\
\hline
number : \mathbb{Z} \\
type : GAMETYPE \\
stage : GameStage \\
\hline
number > 0 \\
\hline
\end{array}
$$

A game host reception has a set of supported game types, a set of existing games and a number to allocate to the next requested new game.

$$
\begin{array}{|l}
\hline
\_\,GameHost \\
\hline
supported : \mathbb{P}\, GAMETYPE \\
games : \mathbb{P}\, Game \\
nextGameNumber : \mathbb{Z} \\
\hline
\forall\, g : games \bullet g.type \in supported \\
\forall\, x, y : games \bullet x.number \neq y.number \\
nextGameNumber = max\{g : games \bullet g.number\} + 1 \\
\hline
\end{array}
$$

2 Safe Operations

Request the list of supported game types.

$$
\begin{array}{|l}
\hline
\_\,getSupportedGames \\
\hline
\Xi GameHost \\
supported! : \mathbb{P}\, GAMETYPE \\
\hline
supported! = supported \\
\hline
\end{array}
$$

3 Operations with Side-Effects

Request a new game.

$$
\begin{array}{l}
\rule{6cm}{0.4pt}\ newGame\ \rule{6cm}{0.4pt} \\
\Delta GameHost \\
gameType? : GAMETYPE \\
number! : \mathbb{Z} \\
\rule{4cm}{0.4pt} \\
gameType? \in supported \\
number! = nextGameNumber \\
nextGameNumber' = nextGameNumber + 1 \\
games' = games \cup \{\!(number == nextGameNumber, type == gameType?, stage == pending)\!\} \\
\end{array}
$$

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