

Grammar for Language Describing Game Structures

Brooks MacLachlan

March 25, 2019

Pretty-printed EBNF grammar:

```
 $\langle game \rangle ::= \text{'Players:'} \langle teamList \rangle \text{'Rounds:'} \langle roundList \rangle \text{'Win:'} \langle winConditionList \rangle$   
 $\langle teamList \rangle ::= (\langle team \rangle \{ \text{'}, ' } \mid \langle playerList \rangle \mid \text{'randomly divide'} \langle playerList \rangle$   
                   $\text{'into'} \langle nameList \rangle) [\text{'all with'} \langle attributeList \rangle]$   
 $\langle team \rangle ::= \text{'team'} \langle name \rangle \text{' : ' } \langle playerList \rangle$   
 $\langle playerList \rangle ::= \langle player \rangle \{ \text{'}, ' }$   
 $\langle player \rangle ::= \langle name \rangle [\langle attributeList \rangle]$   
 $\langle attributeList \rangle ::= \langle attribute \rangle \{ \text{'}, ' }$   
 $\langle attribute \rangle ::= \text{'affiliation called'} \langle name \rangle \mid (\text{'score'} \mid \text{'resource'} \mid \text{'counter'})$   
                   $\text{'called'} \langle name \rangle [\text{'starting at'} \langle number \rangle] [\text{'with minimum of'} \langle number \rangle]$   
                   $[\text{'with maximum of'} \langle number \rangle]$   
 $\langle roundList \rangle ::= \langle round \rangle \text{' ; ' } \{ \langle round \rangle \} [\langle modifierList \rangle]$   
 $\langle modifierList \rangle ::= \langle modifier \rangle \text{' ; ' } \{ \langle modifier \rangle \}$   
 $\langle modifier \rangle ::= [\text{'just'} \mid \text{'from'}] (\langle roundReference \rangle (\text{'before'} \mid \text{'after'} \mid \text{'instead of'})$   
                   $\langle phaseReference \rangle \text{'insert'} \langle phase \rangle)$   
 $\langle roundReference \rangle ::= \text{'round'} [\langle number \rangle]$   
 $\langle phaseReference \rangle ::= \text{'phase'} [\langle number \rangle]$   
 $\langle round \rangle ::= \langle phaseList \rangle [\text{'repeated'} \langle number \rangle \text{' times'}]$   
 $\langle phase \rangle ::= \langle action \rangle \mid \langle progression \rangle$   
 $\langle phaseList \rangle ::= \langle phase \rangle \{ \text{'\n'} \langle phase \rangle \}$ 
```

$\langle action \rangle ::= \langle competition \rangle \mid \langle decision \rangle$
 $\langle competition \rangle ::= [\text{'scored'}] [\text{'team'}] \text{'competition between'} \langle idList \rangle$
 $\langle decision \rangle ::= [\text{'self-included'}] \text{'vote by'} \langle idList \rangle \text{'between'} \langle idList \rangle \mid [\text{'self-included'}] \text{'nomination of'} \langle number \rangle \text{'by'} \langle identifier \rangle \text{'between'} \langle idList \rangle \mid \text{'allocation of'} \langle name \rangle \text{'by'} \langle idList \rangle \mid [\text{'self-included'}] \text{'directed vote by'} \langle idList \rangle \text{'between'} \langle idList \rangle \mid \text{'uses?' } \langle identifier \rangle \text{'then' '(' } \langle phaseList \rangle \text{')' } [\text{'otherwise' '(' } \langle phaseList \rangle \text{')'}]$
 $\langle progression \rangle ::= (\langle affiliationUpdate \rangle \mid \langle counterUpdate \rangle) (\text{'for' } \mid \text{'of'}) \langle idList \rangle$
 $\langle affiliationUpdate \rangle ::= \text{'elimination'} \mid (\text{'add' } \mid \text{'remove'}) \langle name \rangle \mid [\text{'number preserving'}] \text{'swap' } \langle nameList \rangle [\text{'adding' } \langle nameList \rangle] \mid \text{'change' } \langle name \rangle \text{'to' } \langle name \rangle \mid \text{'merge' } \langle nameList \rangle [\langle name \rangle]$
 $\langle counterUpdate \rangle ::= (\text{'increase' } \mid \text{'decrease'}) \langle name \rangle \text{'by' } \langle value \rangle \mid \text{'set' } \langle name \rangle \text{'to' } \langle value \rangle$
 $\langle value \rangle ::= \langle number \rangle \mid \langle name \rangle \mid \text{'results' } \text{'of' } (\langle compReference \rangle \mid \langle allocateReference \rangle \mid \langle voteReference \rangle) \mid \langle identifier \rangle \langle name \rangle$
 $\langle idList \rangle ::= \langle identifier \rangle \{ \text{' , ' } \langle identifier \rangle \} [\text{'except' } \langle idList \rangle]$
 $\langle identifier \rangle ::= (\text{'everyone' } \mid \langle name \rangle \mid \text{'chance' } \text{'(' } \langle idList \rangle \text{')' } \mid \text{'nominated' } \mid \text{'tied' } \mid \text{'eliminated' } \mid \text{'winner' } \mid \text{'loser'}) \text{'of' } \langle compReference \rangle \mid (\text{'majority' } \mid \text{'minority'}) \text{'of' } \langle voteReference \rangle [\langle tiebreaker \rangle] \mid (\text{'highest' } \mid \text{'lowest' } \mid \text{'most' } \mid \text{'least'}) \langle name \rangle \text{'(' } \langle idList \rangle \text{')' } [\langle tiebreaker \rangle] [\text{'*'} \langle value \rangle]$
 $\langle compReference \rangle ::= \text{'competition' } [\langle number \rangle]$
 $\langle allocateReference \rangle ::= \text{'allocation' } [\langle number \rangle]$
 $\langle voteReference \rangle ::= \text{'vote' } [\langle number \rangle]$
 $\langle tiebreaker \rangle ::= \text{'tiebroken by' } ([\langle action \rangle] \langle identifier \rangle)$
 $\langle name \rangle ::= (\text{'a' } \mid \dots \mid \text{'z' } \mid \text{'A' } \mid \dots \mid \text{'Z'}) \{ \text{'a' } \mid \dots \mid \text{'z' } \mid \text{'A' } \mid \dots \mid \text{'Z' } \mid \text{'0' } \mid \dots \mid \text{'9' } \}$
 $\langle nameList \rangle ::= \langle name \rangle \{ \text{' , ' } \langle name \rangle \}$
 $\langle number \rangle ::= (\text{'0' } \mid \dots \mid \text{'9'}) +$
 $\langle winCondition \rangle ::= [\text{'team'}] \text{'reach' } \langle name \rangle \text{'of' } \langle number \rangle \mid [\text{'team'}] \text{'competition' } \mid [\text{'team'}] (\text{'highest' } \mid \text{'lowest' } \mid \text{'most' } \mid \text{'least'}) \langle name \rangle \mid \langle number \rangle \text{'member jury vote' } \mid \text{'survive'}$

$\langle winConditionList \rangle ::= \langle winCondition \rangle \{', ' \langle winCondition \rangle\}$

Notes:

- make grammar unambiguous
- should allocate be a decision and progression or just progression? Both, but decision will automatically also do the progression. The progression exists for non-decision related resource updates, such as awarding a player more of a resource for winning a competition.