BNF ASSIGNMENT

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Abstract:

An assignment to better understand and work with BNF grammers, as well as parse trees and to explain BNF in a straightforward compelling manor

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Problem 1 - Laughter

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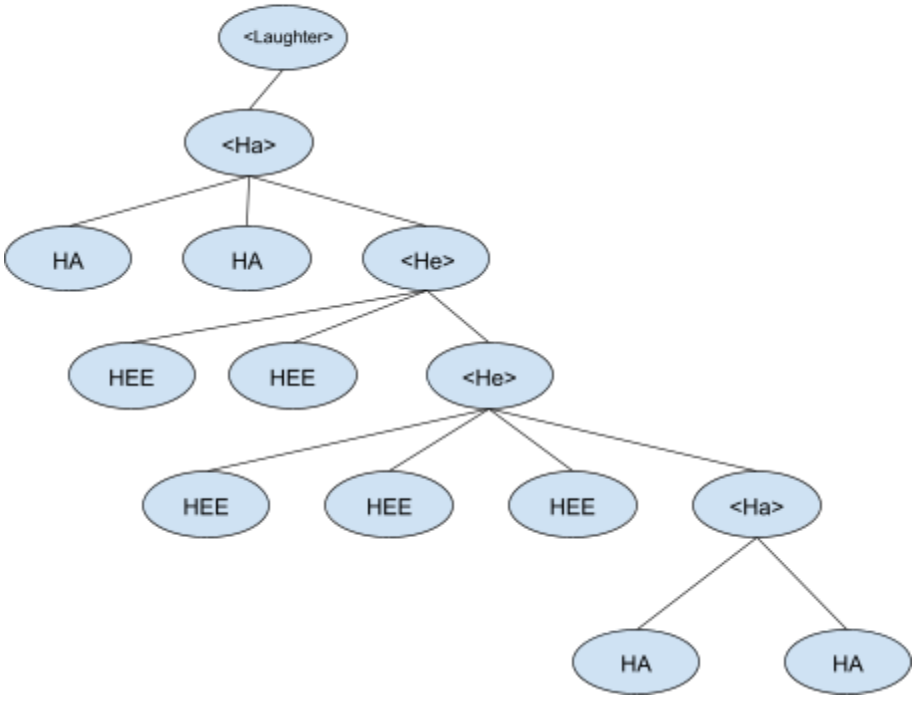
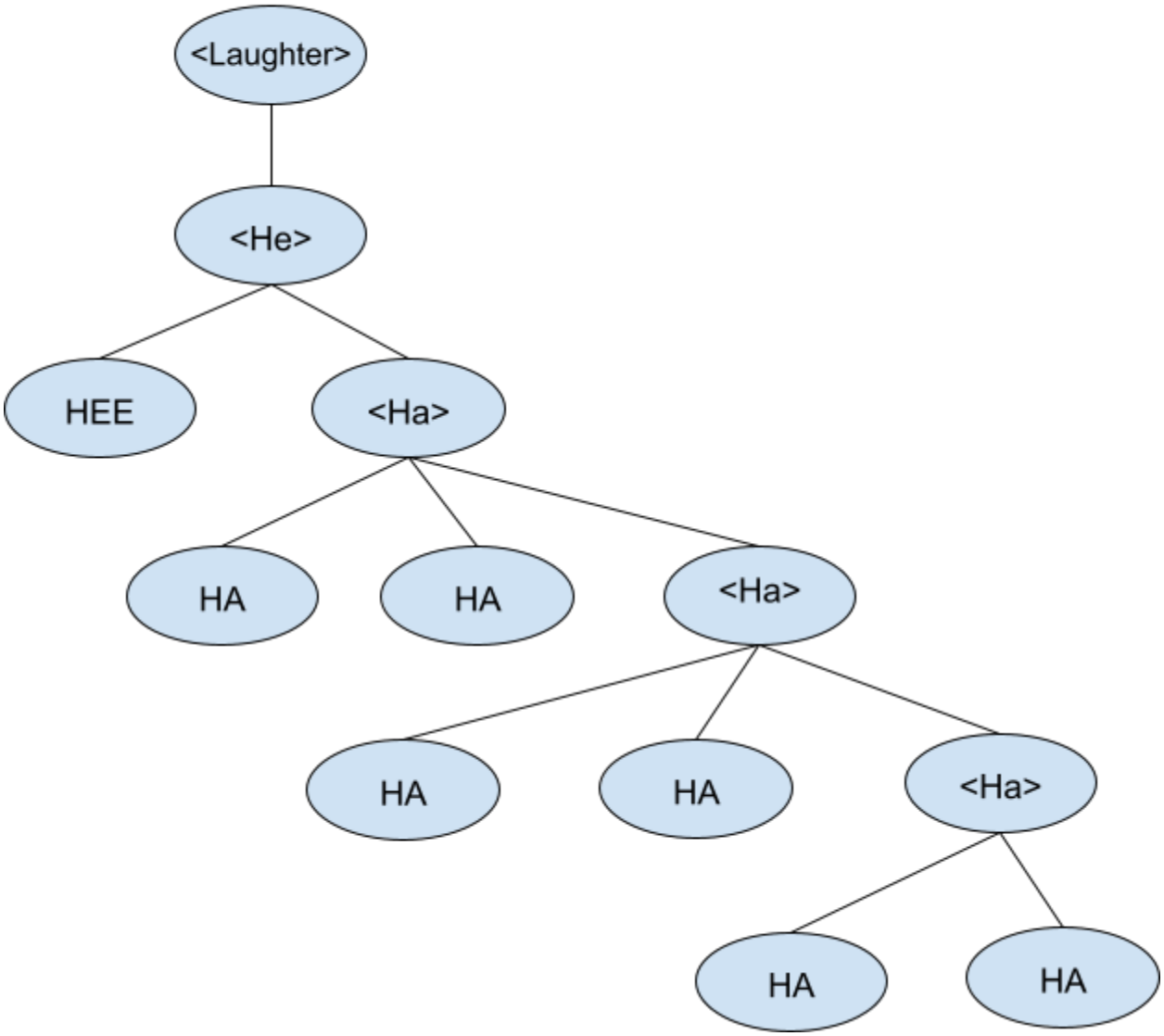
<Laughter> ::= <Ha> | <He>
<Ha> ::= HA HA | HA HA <He> | HA HA <Ha>
<He> ::= HEE | HEE HEE HEE | <He><Ha> | HEE HEE <He>
```

PARSE LINE FOR: HA HA HEE HEE HEE HEE HEE HA HA



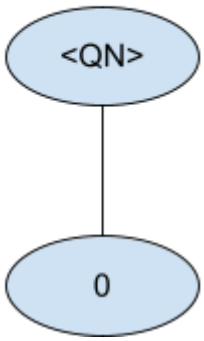
PARSE TREE FOR: HEE HA HA HA HA HA HA



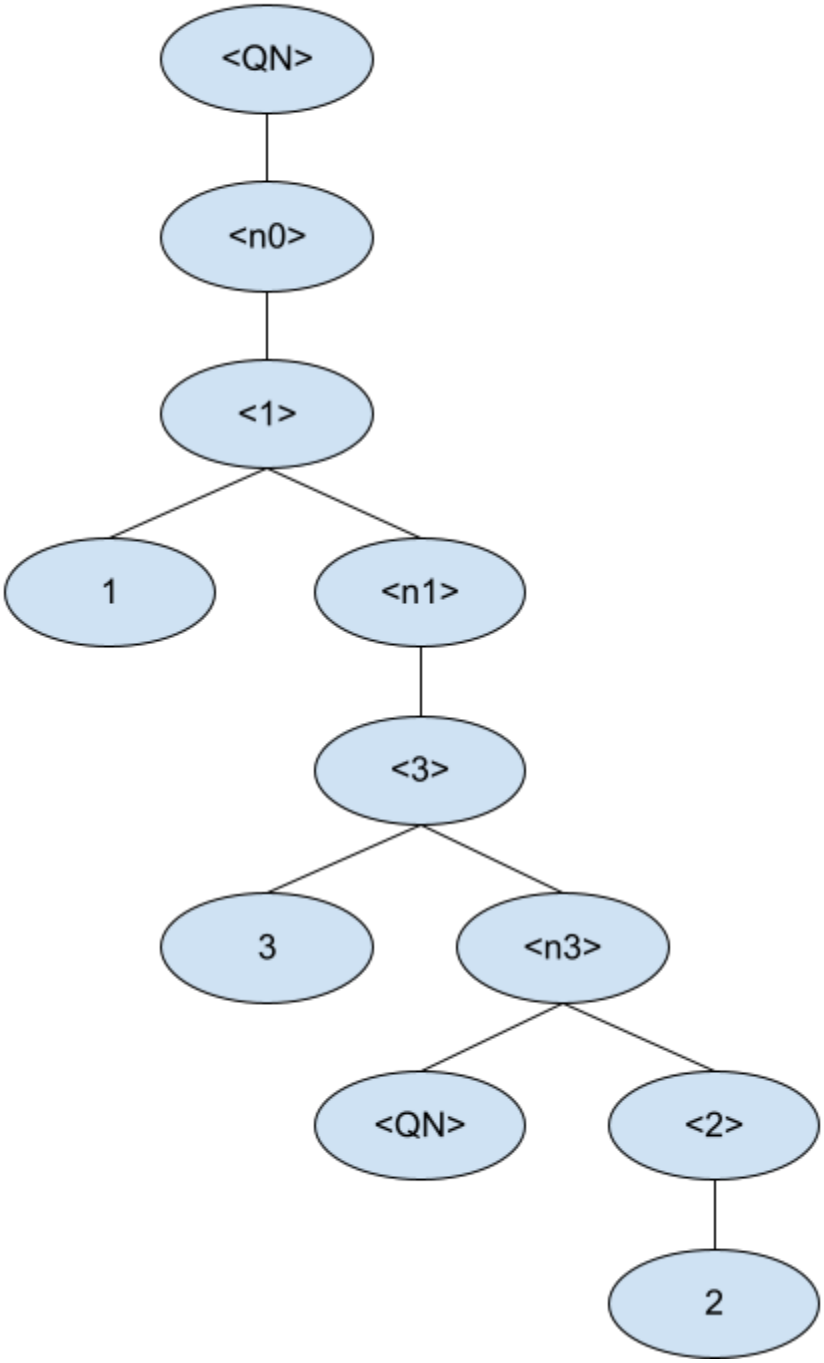
Problem 2 -SQN

<QN> ::= 0 | <n0>
<0> ::= 0 | 0 <n0>
<1> ::= 1 | 1 <n1>
<2> ::= 2 | 2 <n2>
<3> ::= 3 | 3 <n3>
<n0> ::= <1> | <2> | <3>
<n1> ::= <0> | <2> | <3>
<n2> ::= <0> | <1> | <3>
<n3> ::= <0> | <1> | <2>

PARSE TREE FOR: 0



PARSE TREE FOR: 132

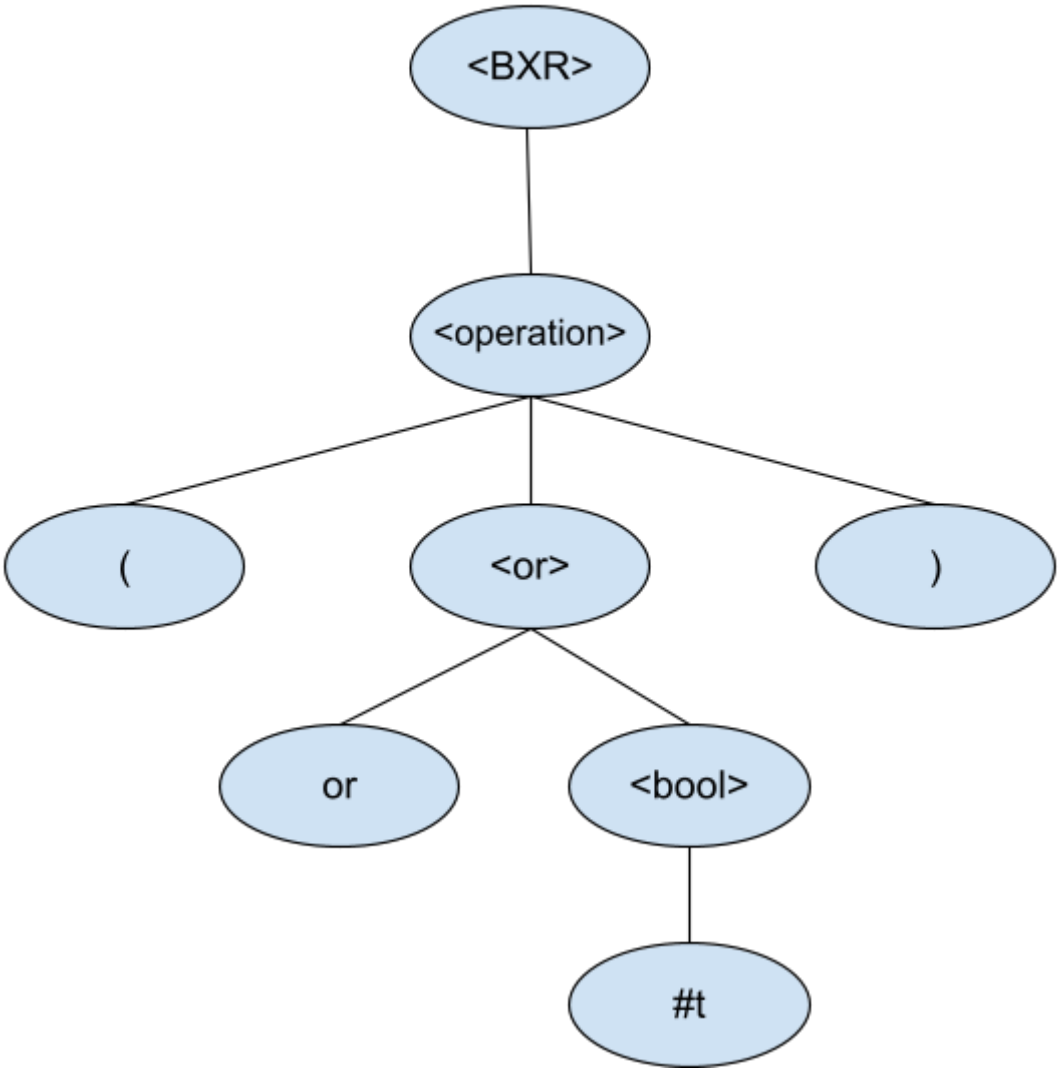


1223 would not be consistent with the BNF grammar. It would travel through <n0><1><2> and would be stopped at <2> due to the requirements of <2> being that either it would be just 2 or 2 accompanied by a non 2 number represented by <n2>

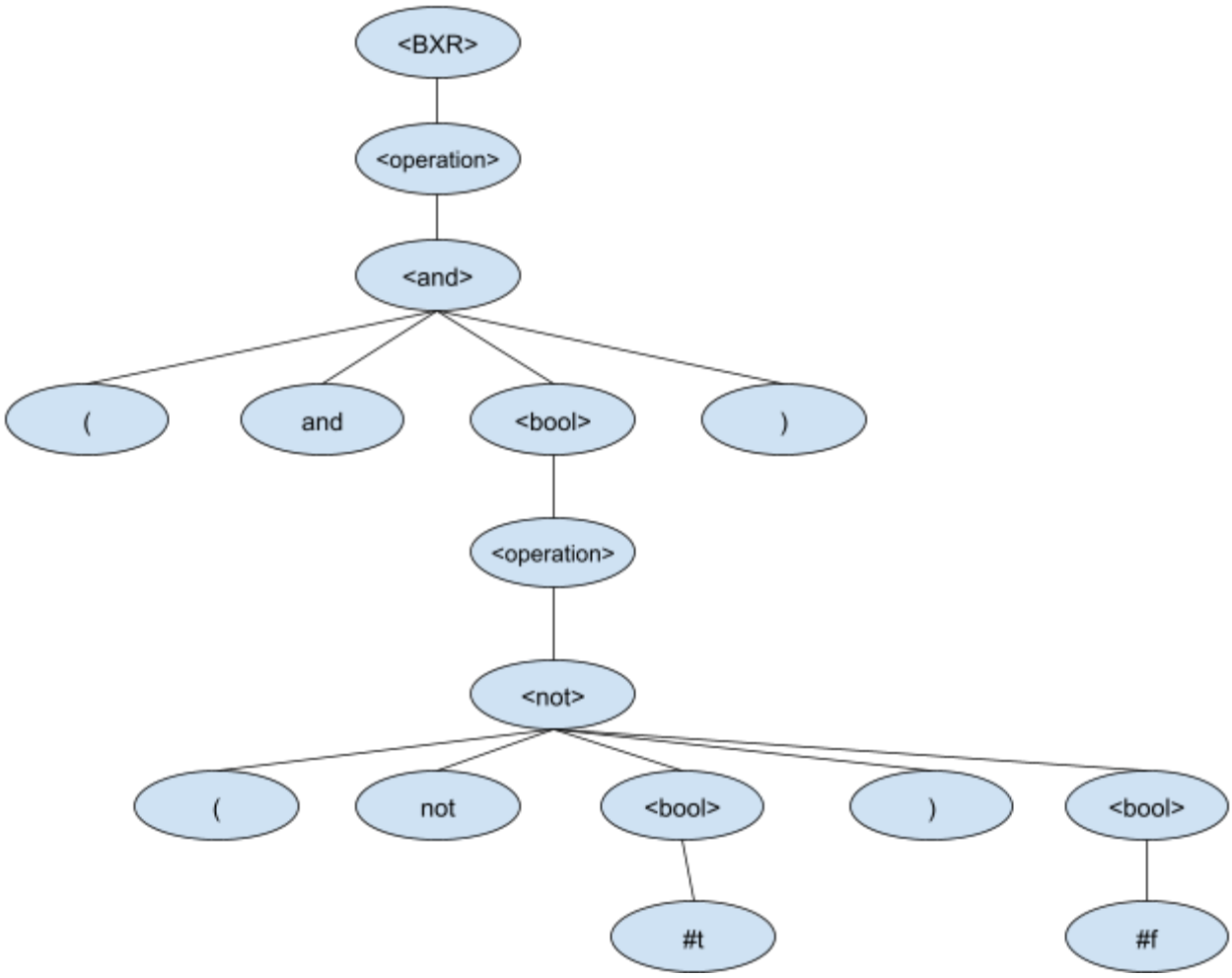
Problem 3 -BXR

<BXR> ::= <operation> | #t | #f
<operation> ::= <and> | <or> | <not>
<and> ::= (and <bool>) | (and)
<or> ::= (or <bool>) | (or)
<not> ::= (not <bool>) | (not <bool>) <bool>
<bool> ::= #t | #f | <operation>

PARSE TREE FOR: (or #t)



PARSE TREE FOR: (and (not #t) #f)

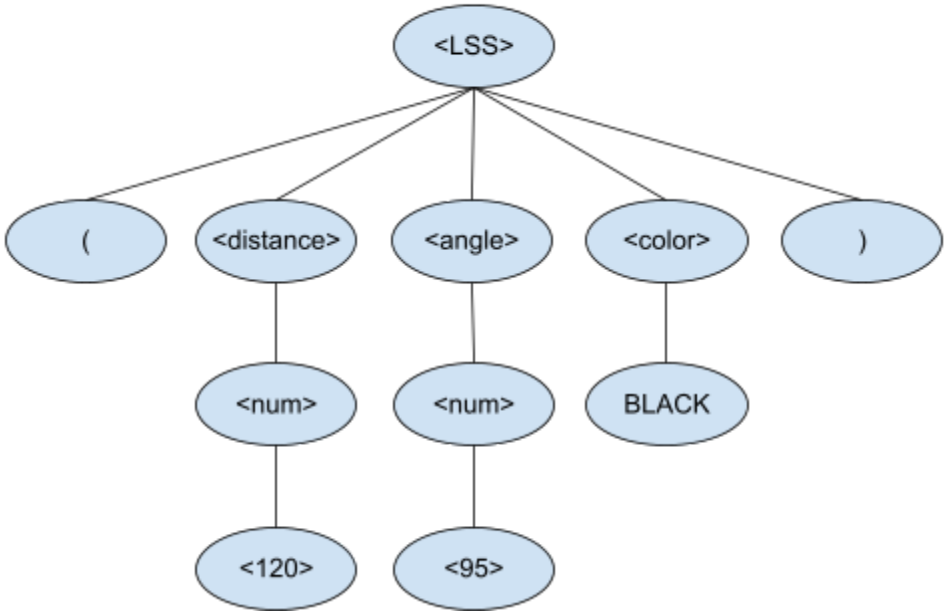


Problem 4 -LSS

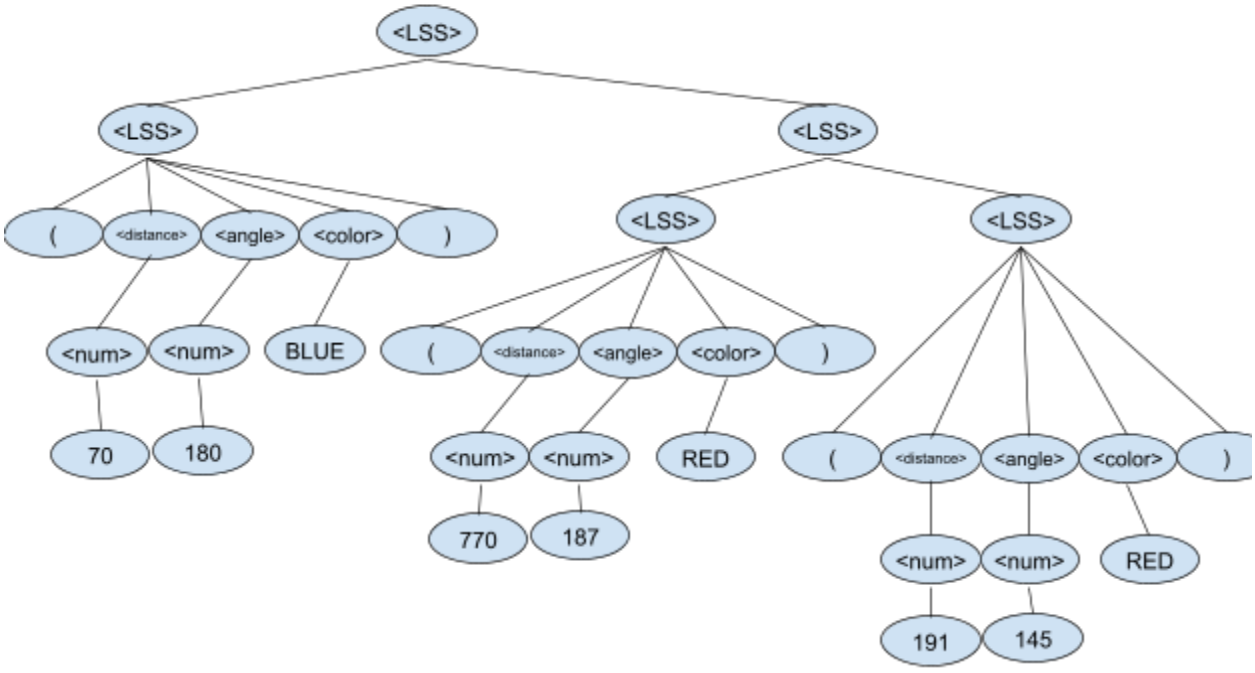
<LSS> ::= (<distance> <angle> <color>) | <LSS> <LSS>
<distance> ::= <num>
<angle> ::= <num>

<color> ::= RED | BLUE | BLACK

PARSE TREE FOR: (120 95 BLACK)



PARSE TREE FOR: (70 180 BLUE) (770 187 RED) (191 145 RED)

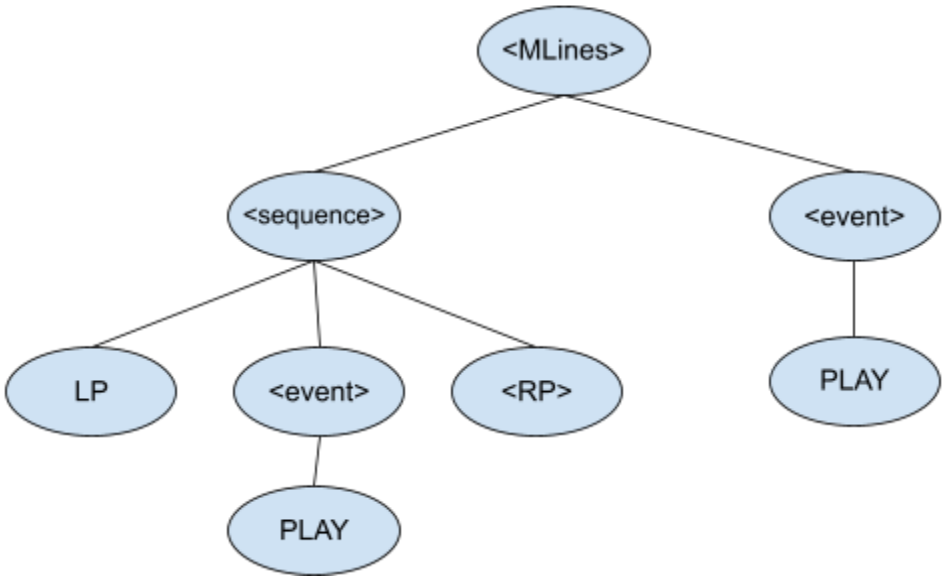


Problem 5 -M-Lines

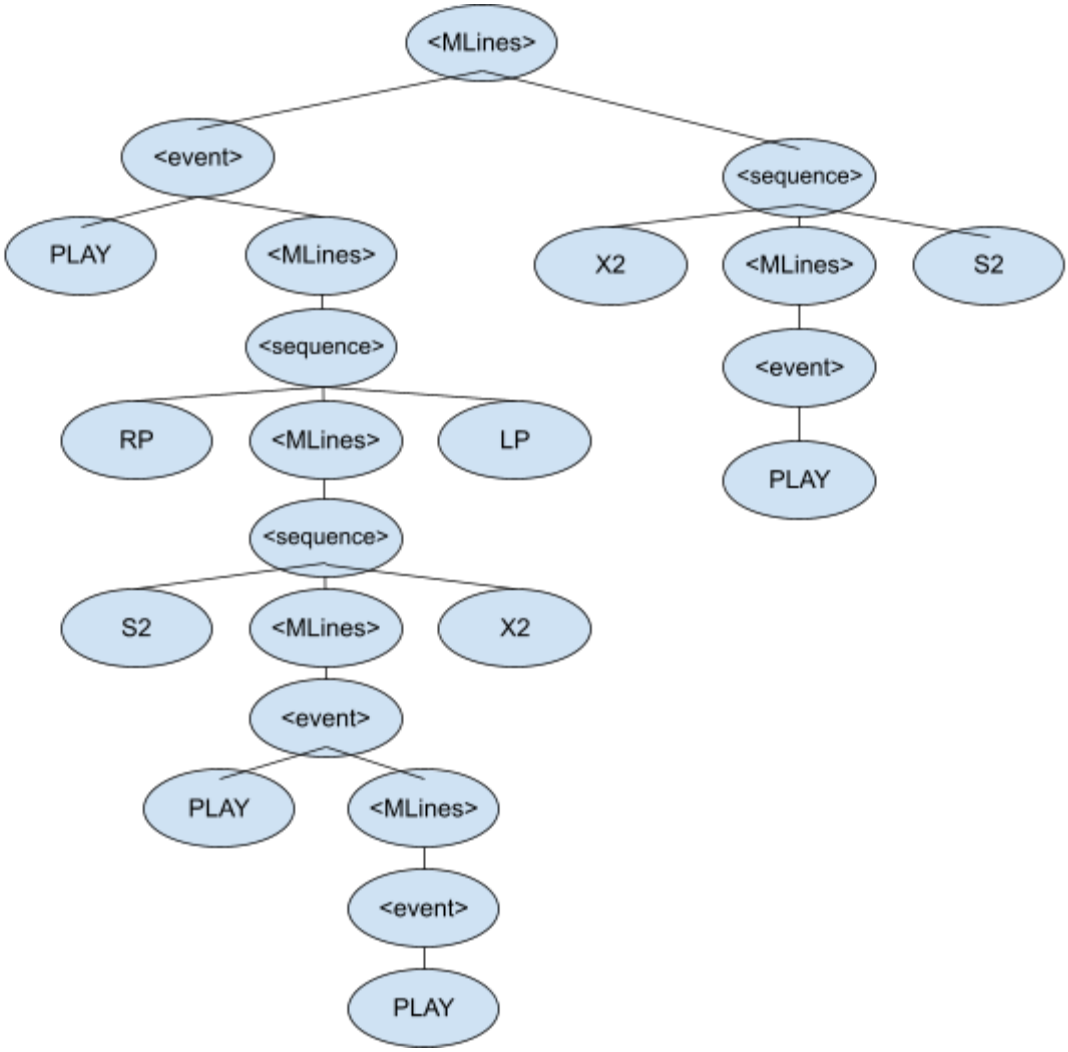
<MLines> ::= <ES> | <empty>

<ES> ::= <event> | <sequence> | <event><sequence> | <sequence><event> | <empty>
<event> ::= PLAY <ES> | REST <ES> | <ES> PLAY | <ES> REST | <empty>
<sequence> ::= RP <ES> LP | LP <ES> RP | S2 <ES> X2 | X2 <ES> S2 | S3 <ES> X3
| X3 <ES> S3 | <empty>

PARSE TREE FOR: LP PLAY RP PLAY



PARSE TREE FOR:
PLAY RP
S2 PLAY
PLAY X2
LP X2
PLAY S2



Problem 6 - BNF?

BNF is a way to produce a grammar to define a language. Many languages are very large, producing a grammar is a way specify characteristics of a language. The things representing BNF are tokens, nonterminal symbols, productions, and a start symbol.