

FM is a small language designed for expressing the content of flip movies. It uses objects of externally defined types, allows calls to methods on those objects, and understands simple expressions and the “if” control statement.

1. $program \rightarrow \mathbf{movie\ name\ \{ movieBody \}\ EOF}$
2. $movieBody \rightarrow prologBlock\ pageBlocks\ | pageBlocks$
3. $prologBlock \rightarrow \mathbf{prolog\ \{ prologStatements \}}$
4. $prologStatements \rightarrow prologStatement\ | prologStatements\ prologStatement$
5. $prologStatement \rightarrow variableDeclaration$
11. $variableDeclaration \rightarrow id\ : type();\ | id\ : type(exprList);$
12. $pageBlocks \rightarrow pageBlock\ / pageBlocks\ pageBlock$
13. $pageBlock \rightarrow \mathbf{show\ (int)\ \{ pageStatements \}}$
14. $pageStatements \rightarrow pageStatement\ | pageStatements\ pageStatement$
15. $pageStatement \rightarrow$
 $\quad \{ pageStatements \}$
 $\quad | methodCall;$
 $\quad | id = expr;$
 $\quad | \mathbf{if\ (boolExpr)\ pageStatement}$
 $\quad | \mathbf{if\ (boolExpr)\ pageStatement\ else\ pageStatement}$
16. $expr \rightarrow term\ | expr + term\ | expr - term$
17. $term \rightarrow factor\ | term * factor\ | term / factor$
18. $factor \rightarrow integer\ | real\ | (expr)\ | id\ | methodCall$
19. $methodCall \rightarrow id()\ | id(exprList)\ | id.id()\ | id.id(exprList)$
20. $exprList \rightarrow expr\ | exprList , expr$
21. $boolExpr \rightarrow relExpr\ | !(relExpr)$
22. $relExpr \rightarrow expr == expr\ | expr > expr\ | expr < expr$
23. $type \rightarrow id$

- 4. $prologStatements \rightarrow prologStatement \mid prologStatements prologStatement$
- 4.1 $prologStatements \rightarrow prologStatement prologTail$
- 4.2 $prologTail \rightarrow prologStatement prologTail \mid \epsilon$

- 12. $pageBlocks \rightarrow pageBlock \mid pageBlocks pageBlock$
- 12.1 $pageBlocks \rightarrow pageBlock pageBlocksTail$
- 12.2 $pageBlocksTail \rightarrow pageBlock pageBlocksTail \mid \epsilon$

- 14. $pageStatements \rightarrow pageStatement \mid pageStatements pageStatement$
- 14.1 $pageStatements \rightarrow pageStatement pageTail$
- 14.2 $pageTail \rightarrow pageStatement pageTail \mid \epsilon$

- 16. $expr \rightarrow term \mid expr + term \mid expr - term$
- 16.1 $expr \rightarrow term exprTail$
- 16.2 $exprTail \rightarrow + term exprTail \mid - term exprTail \mid \epsilon$

- 17. $term \rightarrow factor \mid term * factor \mid term / factor$
- 17.1 $term \rightarrow factor termTail$
- 17.2 $termTail \rightarrow * factor termTail \mid \epsilon$

- 19. $methodCall \rightarrow id() \mid id(exprList) \mid id.id () \mid id.id(exprList)$
- 19.1 $methodCall \rightarrow id callEnd$
- 19.2 $callEnd \rightarrow () \mid (exprList) \mid .id() \mid .id(exprList)$

- 20. $exprList \rightarrow expr \mid exprList , expr$
- 20.1 $exprList \rightarrow expr exprListTail$
- 20.2 $exprListTail \rightarrow , expr exprListTail \mid \epsilon$