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/* Representations of FL programs after the parser. */
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Def AppNum      == ~1      Def EqApp      == (id = AppNum)
Def SeqNum      == ~2      Def EqSeq      == (id = SeqNum)
Def NameNum     == ~3      Def EqName     == (id = NameNum)
Def PrimNameNum == ~4      Def EqPrimName == (id = PrimNameNum)
Def PatNameNum  == ~5      Def EqPatName  == (id = PatNameNum)
Def WhereNum    == ~6      Def EqWhere    == (id = WhereNum)
Def PatNum      == ~7      Def EqPat      == (id = DotNum)
Def LambNum     == ~8      Def EqLamb     == (id = LambNum)
Def PFNum       == ~9      Def EqPF       == (id = PFNum)
Def HideNum     == ~10     Def EqHide  == (id = HideNum)
Def ExportNum   == ~11     Def EqExport == (id = ExportNum)
Def CommentNum  == ~12     Def EqComment == (id = CommentNum)

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Def IsParseRep ==
  isatom
  √ {! EqApp , IsParseRep , IsParseRep !}
  √ EqSeq !-> seqof:IsParseRep
  √ {! EqName , IsFuncName !}
  √ {! EqPatName , IsFuncName !}
  √ {! EqPrimName , IsPrimName !}
  √ {! EqWhere , IsParseRep , IsNestDef !}
  √ {! EqPat , IsParseRep , seqof:IsDefElt !}
  √ {! EqLamb , seqof:IsDefElt , IsParseRep !}
  √ IsFuncName !-> seqof:IsParseRep
  √ {! EqComment , isval !}

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Def IsFuncName == (id gt' ~100) ∧ isint
Def IsPrimName == (id le' ~1000) ∧ (id gt' ~100) ∧ isint
Def IsPF       == {! EqPF !}
Def IsNestDef  == seqof:IsDefList
Def IsDefList  == {! isbool , seqof:IsDefElt !}
Def IsDefElt   == {! EqFuncName , IsFuncName , IsParseRep √ IsPF !}
                {! EqPatName , IsFuncName , IsParseRep √ IsPF !}
                √ {! EqHide , seqof:IsDefElt !}
                √ {! EqExport , seqof:IsDefElt !}

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/* Representations of FL programs after the simplification algorithm. */
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Def IsSimpRep == {! EqWhere , IsSimpExpr , IsSimpNestDef !}
Def IsSimpNestDef == {! {! (id=TT) , seqof:IsSimpDefElt !} !}
Def IsSimpDefElt == {! IsFuncName , IsFuncName , IsSimpExpr √ IsPF !}

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Def IsSimpExpr ==
  isatom
  √  {! EqApp , IsSimpExpr , IsSimpExpr !}
  √  EqSeq !-> seqof:IsSimpExpr
  √  IsFuncName !-> seqof:IsSimpExpr
  √  {! EqName , IsFuncName !}
  √  {! EqPrimName , IsPrimName !}
```