Group Woolly Mammoth

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Contents

1 Namespace Index **1**

1.1 Namespace List . . . 1

2 Hierarchical Index **3**

2.1 Class Hierarchy . . . 3

3 Class Index **5**

3.1 Class List . . . 5

4 File Index **7**

4.1 File List . . . 7

5 Namespace Documentation **9**

5.1 fcal Namespace Reference . . . 9

5.2 fcal::ast Namespace Reference . . . 9

5.3 fcal::parser Namespace Reference . . . 10

5.4 fcal::scanner Namespace Reference . . . 10

5.4.1 Typedef Documentation . . . 12

5.4.1.1 TokenType . . . 12

5.4.2 Enumeration Type Documentation . . . 12

5.4.2.1 kTokenEnumType . . . 12

5.4.2.2 kTokenEnumType . . . 14

5.4.3 Function Documentation . . . 16

5.4.3.1 make_regex(const char *pattern) . . . 16

5.4.3.2 match_regex(regex_t *re, const char *text) . . . 16

5.4.3.3 ReadInput(int argc, char **argv) . . . 16

5.4.3.4 ReadInputFromFile(const char *filename) . . . 16

5.4.4 Variable Documentation . . . 16

5.4.4.1 kRegexNSub . . . 16

6 Class Documentation **17**

6.1 fcal::ast::AddExpr Class Reference . . . 17

6.1.1 Constructor & Destructor Documentation . . . 18

6.1.1.1 AddExpr(Expr *e1, Expr *e2) . . . 18

6.1.1.2 ~AddExpr() . . . 18

6.1.2 Member Function Documentation . . . 18

6.1.2.1 unparse() . . . 18

6.2 fcal::ast::AssignStmt Class Reference . . . 19

6.2.1 Constructor & Destructor Documentation . . . 20

6.2.1.1 AssignStmt(std::string v, Expr *e) . . . 20

6.2.1.2 ~AssignStmt() . . . 20

6.2.2 Member Function Documentation . . . 20

6.2.2.1 unparse() . . . 20

6.3 fcal::ast::BooleanConstExpr Class Reference . . . 21

6.3.1 Constructor & Destructor Documentation . . . 22

6.3.1.1 BooleanConstExpr(std::string b) . . . 22

6.3.1.2 ~BooleanConstExpr() . . . 22

6.3.2 Member Function Documentation . . . 22

6.3.2.1 unparse() . . . 22

6.4 fcal::ast::BooleanDecl Class Reference . . . 23

6.4.1 Constructor & Destructor Documentation . . . 24

6.4.1.1 BooleanDecl(std::string s) . . . 24

6.4.1.2 ~BooleanDecl() . . . 24

6.4.2 Member Function Documentation . . . 24

6.4.2.1 unparse() . . . 24

6.5 fcal::ast::BracketsStmt Class Reference . . . 25

6.5.1 Constructor & Destructor Documentation . . . 26

6.5.1.1 BracketsStmt(Stmts *s) . . . 26

6.5.1.2 ~BracketsStmt() . . . 26

6.5.2 Member Function Documentation . . . 26

6.5.2.1 unparse() . . . 26
6.6 fcal::scanner::CharConstToken Class Reference . . . 27
6.6.1 Constructor & Destructor Documentation . . . 28
6.6.1.1 CharConstToken(parser::Parser ∗p, Token ∗t) . . . 28
6.6.2 Member Function Documentation . . . 28
6.6.2.1 description() . . . 28
6.6.2.2 nud() . . . 29
6.7 fcal::scanner::DashToken Class Reference . . . 29
6.7.1 Constructor & Destructor Documentation . . . 30
6.7.1.1 DashToken(parser::Parser ∗p, Token ∗t) . . . 30
6.7.2 Member Function Documentation . . . 30
6.7.2.1 description() . . . 30
6.7.2.2 lbp() . . . 31
6.7.2.3 led(parser::ParseResult left) . . . 31
6.8 fcal::ast::Decl Class Reference . . . 31
6.8.1 Constructor & Destructor Documentation . . . 32
6.8.1.1 ∼Decl() . . . 32
6.8.2 Member Function Documentation . . . 32
6.8.2.1 unparse()=0 . . . 32
6.9 fcal::ast::DeclStmt Class Reference . . . 32
6.9.1 Detailed Description . . . 34
6.9.2 Constructor & Destructor Documentation . . . 34
6.9.2.1 DeclStmt(Decl ∗d) . . . 34
6.9.2.2 ∼DeclStmt() . . . 34
6.9.3 Member Function Documentation . . . 35
6.9.3.1 unparse() . . . 35
6.10 fcal::ast::DivideExpr Class Reference . . . 35
6.10.1 Constructor & Destructor Documentation . . . 36
6.10.1.1 DivideExpr(Expr ∗e1, Expr ∗e2) . . . 36
6.10.1.2 ∼DivideExpr() . . . 36

6.10.2 Member Function Documentation . . . 36
6.10.2.1 unparse() . . . 36
6.11 fcal::ast::EmptyStmts Class Reference . . . 37
6.11.1 Detailed Description . . . 38
6.11.2 Constructor & Destructor Documentation . . . 38
6.11.2.1 EmptyStmts() . . . 38
6.11.2.2 ∼EmptyStmts() . . . 38
6.11.3 Member Function Documentation . . . 39
6.11.3.1 unparse() . . . 39
6.12 fcal::scanner::EndOfFileToken Class Reference . . . 39
6.12.1 Constructor & Destructor Documentation . . . 40
6.12.1.1 EndOfFileToken(parser::Parser ∗p, Token ∗t) . . . 40
6.12.2 Member Function Documentation . . . 40
6.12.2.1 description() . . . 40
6.13 fcal::ast::EqualsEqualsExpr Class Reference . . . 41
6.13.1 Constructor & Destructor Documentation . . . 42
6.13.1.1 EqualsEqualsExpr(Expr ∗e1, Expr ∗e2) . . . 42
6.13.1.2 ∼EqualsEqualsExpr() . . . 42
6.13.2 Member Function Documentation . . . 42
6.13.2.1 unparse() . . . 42
6.14 fcal::ast::Expr Class Reference . . . 43
6.14.1 Constructor & Destructor Documentation . . . 43
6.14.1.1 ∼Expr() . . . 43
6.14.2 Member Function Documentation . . . 43
6.14.2.1 unparse()=0 . . . 43
6.15 fcal::scanner::ExtToken Class Reference . . . 44
6.15.1 Constructor & Destructor Documentation . . . 45
6.15.1.1 ExtToken(parser::Parser ∗p, Token ∗t) . . . 45
6.15.1.2 ExtToken(parser::Parser ∗p, Token ∗t, std::string d) . . . 45
6.15.1.3 ∼ExtToken() . . . 45

6.15.2 Member Function Documentation . . . 45
6.15.2.1 description() . . . 45
6.15.2.2 ExtendToken(parser::Parser *p, Token *tokens) . . . 45
6.15.2.3 ExtendTokenList(parser::Parser *p, Token *tokens) . . . 45
6.15.2.4 lbp() . . . 45
6.15.2.5 led(parser::ParseResult left) . . . 46
6.15.2.6 lexeme(void) const . . . 46
6.15.2.7 next(void) const . . . 46
6.15.2.8 nud(void) . . . 46
6.15.2.9 parser(void) . . . 46
6.15.2.10 terminal(void) const . . . 46
6.16 fcal::scanner::FalseKwdToken Class Reference . . . 46
6.16.1 Constructor & Destructor Documentation . . . 48
6.16.1.1 FalseKwdToken(parser::Parser *p, Token *t) . . . 48
6.16.2 Member Function Documentation . . . 48
6.16.2.1 description() . . . 48
6.16.2.2 nud() . . . 49
6.17 fcal::ast::FloatConstExpr Class Reference . . . 49
6.17.1 Constructor & Destructor Documentation . . . 50
6.17.1.1 FloatConstExpr(std::string f) . . . 50
6.17.1.2 ~FloatConstExpr() . . . 50
6.17.2 Member Function Documentation . . . 50
6.17.2.1 unparse() . . . 50
6.18 fcal::scanner::FloatConstToken Class Reference . . . 51
6.18.1 Constructor & Destructor Documentation . . . 52
6.18.1.1 FloatConstToken(parser::Parser *p, Token *t) . . . 52
6.18.2 Member Function Documentation . . . 52
6.18.2.1 description() . . . 52
6.18.2.2 nud() . . . 53
6.19 fcal::ast::FloatDecl Class Reference . . . 53

6.19.1 Constructor & Destructor Documentation . . . 54
6.19.1.1 FloatDecl(std::string s) . . . 54
6.19.1.2 ~FloatDecl() . . . 54
6.19.2 Member Function Documentation . . . 54
6.19.2.1 unparse() . . . 54
6.20 fcal::scanner::ForwardSlashToken Class Reference . . . 55
6.20.1 Constructor & Destructor Documentation . . . 56
6.20.1.1 ForwardSlashToken(parser::Parser *p, Token *t) . . . 56
6.20.2 Member Function Documentation . . . 56
6.20.2.1 description() . . . 56
6.20.2.2 lbp() . . . 57
6.20.2.3 led(parser::ParseResult left) . . . 57
6.21 fcal::ast::GreaterEqualExpr Class Reference . . . 57
6.21.1 Constructor & Destructor Documentation . . . 58
6.21.1.1 GreaterEqualExpr(Expr *e1, Expr *e2) . . . 58
6.21.1.2 ~GreaterEqualExpr() . . . 58
6.21.2 Member Function Documentation . . . 58
6.21.2.1 unparse() . . . 58
6.22 fcal::ast::GreaterExpr Class Reference . . . 59
6.22.1 Constructor & Destructor Documentation . . . 60
6.22.1.1 GreaterExpr(Expr *e1, Expr *e2) . . . 60
6.22.1.2 ~GreaterExpr() . . . 60
6.22.2 Member Function Documentation . . . 60
6.22.2.1 unparse() . . . 60
6.23 fcal::ast::IfElseStmt Class Reference . . . 61
6.23.1 Constructor & Destructor Documentation . . . 62
6.23.1.1 IfElseStmt(Expr *e, Stmt *s1, Stmt *s2) . . . 62
6.23.1.2 ~IfElseStmt() . . . 62
6.23.2 Member Function Documentation . . . 62
6.23.2.1 unparse() . . . 62

6.24 fcal::ast::IfExpr Class Reference . . . 63
6.24.1 Constructor & Destructor Documentation . . . 64
6.24.1.1 IfExpr(Expr *e1, Expr *e2, Expr *e3) . . . 64
6.24.1.2 ~IfExpr() . . . 64
6.24.2 Member Function Documentation . . . 64
6.24.2.1 unparse() . . . 64
6.25 fcal::ast::IfStmt Class Reference . . . 65
6.25.1 Constructor & Destructor Documentation . . . 66
6.25.1.1 IfStmt(Expr *e, Stmt *s) . . . 66
6.25.1.2 ~IfStmt() . . . 66
6.25.2 Member Function Documentation . . . 66
6.25.2.1 unparse() . . . 66
6.26 fcal::scanner::IfToken Class Reference . . . 67
6.26.1 Constructor & Destructor Documentation . . . 68
6.26.1.1 IfToken(parser::Parser *p, Token *t) . . . 68
6.26.2 Member Function Documentation . . . 68
6.26.2.1 description() . . . 68
6.26.2.2 lbp() . . . 69
6.26.2.3 nud() . . . 69
6.27 fcal::scanner::IntConstToken Class Reference . . . 69
6.27.1 Constructor & Destructor Documentation . . . 70
6.27.1.1 IntConstToken(parser::Parser *p, Token *t) . . . 70
6.27.2 Member Function Documentation . . . 70
6.27.2.1 description() . . . 70
6.27.2.2 nud() . . . 71
6.28 fcal::ast::IntDecl Class Reference . . . 71
6.28.1 Detailed Description . . . 72
6.28.2 Constructor & Destructor Documentation . . . 72
6.28.2.1 IntDecl(std::string s) . . . 72
6.28.2.2 ~IntDecl() . . . 72

6.28.3 Member Function Documentation . . . 73
6.28.3.1 unparse() . . . 73
6.29 fcal::ast::IntegerConstExpr Class Reference . . . 73
6.29.1 Constructor & Destructor Documentation . . . 74
6.29.1.1 IntegerConstExpr(std::string i) . . . 74
6.29.1.2 ∼IntegerConstExpr() . . . 74
6.29.2 Member Function Documentation . . . 74
6.29.2.1 unparse() . . . 74
6.30 fcal::scanner::LeftParenToken Class Reference . . . 75
6.30.1 Constructor & Destructor Documentation . . . 76
6.30.1.1 LeftParenToken(parser::Parser ∗p, Token ∗t) . . . 76
6.30.2 Member Function Documentation . . . 76
6.30.2.1 description() . . . 76
6.30.2.2 lbp() . . . 77
6.30.2.3 nud() . . . 77
6.31 fcal::ast::LessEqualExpr Class Reference . . . 77
6.31.1 Constructor & Destructor Documentation . . . 78
6.31.1.1 LessEqualExpr(Expr ∗e1, Expr ∗e2) . . . 78
6.31.1.2 ∼LessEqualExpr() . . . 78
6.31.2 Member Function Documentation . . . 78
6.31.2.1 unparse() . . . 78
6.32 fcal::ast::LessExpr Class Reference . . . 79
6.32.1 Constructor & Destructor Documentation . . . 80
6.32.1.1 LessExpr(Expr ∗e1, Expr ∗e2) . . . 80
6.32.1.2 ∼LessExpr() . . . 80
6.32.2 Member Function Documentation . . . 80
6.32.2.1 unparse() . . . 80
6.33 fcal::ast::LetExpr Class Reference . . . 81
6.33.1 Constructor & Destructor Documentation . . . 82
6.33.1.1 LetExpr(Stmts ∗s, Expr ∗e) . . . 82

6.33.1.2 ~LetExpr() . . . 82
6.33.2 Member Function Documentation . . . 82
6.33.2.1 unparse() . . . 82
6.34 fcal::scanner::LetToken Class Reference . . . 83
6.34.1 Constructor & Destructor Documentation . . . 84
6.34.1.1 LetToken(parser::Parser *p, Token *t) . . . 84
6.34.2 Member Function Documentation . . . 84
6.34.2.1 description() . . . 84
6.34.2.2 lbp() . . . 85
6.34.2.3 nud() . . . 85
6.35 fcal::ast::LogicalAndExpr Class Reference . . . 85
6.35.1 Constructor & Destructor Documentation . . . 86
6.35.1.1 LogicalAndExpr(Expr *e1, Expr *e2) . . . 86
6.35.1.2 ~LogicalAndExpr() . . . 86
6.35.2 Member Function Documentation . . . 86
6.35.2.1 unparse() . . . 86
6.36 fcal::ast::LogicalOrExpr Class Reference . . . 87
6.36.1 Constructor & Destructor Documentation . . . 88
6.36.1.1 LogicalOrExpr(Expr *e1, Expr *e2) . . . 88
6.36.1.2 ~LogicalOrExpr() . . . 88
6.36.2 Member Function Documentation . . . 88
6.36.2.1 unparse() . . . 88
6.37 fcal::ast::MatrixAssignStmt Class Reference . . . 89
6.37.1 Constructor & Destructor Documentation . . . 90
6.37.1.1 MatrixAssignStmt(std::string v, Expr *e1, Expr *e2, Expr *e3) . . . 90
6.37.1.2 ~MatrixAssignStmt() . . . 90
6.37.2 Member Function Documentation . . . 90
6.37.2.1 unparse() . . . 90
6.38 fcal::ast::MatrixMultiExprDecl Class Reference . . . 91
6.38.1 Constructor & Destructor Documentation . . . 92

6.38.1.1 MatrixMultiExprDecl(std::string s1, std::string s2, std::string s3, Expr *e1, Expr *e2, Expr *e3) . . . 92
6.38.1.2 ~MatrixMultiExprDecl() . . . 92
6.38.2 Member Function Documentation . . . 92
6.38.2.1 unparse() . . . 92
6.39 fcal::ast::MatrixREFExpr Class Reference . . . 93
6.39.1 Constructor & Destructor Documentation . . . 94
6.39.1.1 MatrixREFExpr(std::string v, Expr *e1, Expr *e2) . . . 94
6.39.1.2 ~MatrixREFExpr() . . . 94
6.39.2 Member Function Documentation . . . 94
6.39.2.1 unparse() . . . 94
6.40 fcal::ast::MatrixSingleExprDecl Class Reference . . . 95
6.40.1 Constructor & Destructor Documentation . . . 96
6.40.1.1 MatrixSingleExprDecl(std::string s1, Expr *e1) . . . 96
6.40.1.2 ~MatrixSingleExprDecl() . . . 96
6.40.2 Member Function Documentation . . . 96
6.40.2.1 unparse() . . . 96
6.41 fcal::ast::MultiplyExpr Class Reference . . . 97
6.41.1 Constructor & Destructor Documentation . . . 98
6.41.1.1 MultiplyExpr(Expr *e1, Expr *e2) . . . 98
6.41.1.2 ~MultiplyExpr() . . . 98
6.41.2 Member Function Documentation . . . 98
6.41.2.1 unparse() . . . 98
6.42 MySequence< T, N > Class Template Reference . . . 99
6.42.1 Constructor & Destructor Documentation . . . 99
6.42.1.1 MySequence(void) . . . 99
6.42.2 Member Function Documentation . . . 99
6.42.2.1 get_member(int x) . . . 99
6.42.2.2 set_member(int x, T value) . . . 99
6.43 fcal::ast::NestedOrFunctionCallExpr Class Reference . . . 100
6.43.1 Constructor & Destructor Documentation . . . 101

6.43.1.1 NestedOrFunctionCallExpr(std::string v, Expr *e) . . . 101
6.43.1.2 ~NestedOrFunctionCallExpr() . . . 101
6.43.2 Member Function Documentation . . . 101
6.43.2.1 unparse() . . . 101
6.44 fcal::ast::Node Class Reference . . . 102
6.44.1 Detailed Description . . . 102
6.44.2 Constructor & Destructor Documentation . . . 102
6.44.2.1 ~Node() . . . 102
6.44.3 Member Function Documentation . . . 102
6.44.3.1 unparse()=0 . . . 102
6.45 fcal::ast::NotEqualsExpr Class Reference . . . 103
6.45.1 Constructor & Destructor Documentation . . . 104
6.45.1.1 NotEqualsExpr(Expr *e1, Expr *e2) . . . 104
6.45.1.2 ~NotEqualsExpr() . . . 104
6.45.2 Member Function Documentation . . . 104
6.45.2.1 unparse() . . . 104
6.46 fcal::ast::NotExpr Class Reference . . . 105
6.46.1 Constructor & Destructor Documentation . . . 106
6.46.1.1 NotExpr(Expr *e) . . . 106
6.46.1.2 ~NotExpr() . . . 106
6.46.2 Member Function Documentation . . . 106
6.46.2.1 unparse() . . . 106
6.47 fcal::scanner::NotOpToken Class Reference . . . 107
6.47.1 Constructor & Destructor Documentation . . . 108
6.47.1.1 NotOpToken(parser::Parser *p, Token *t) . . . 108
6.47.2 Member Function Documentation . . . 108
6.47.2.1 description() . . . 108
6.47.2.2 nud() . . . 109
6.48 fcal::ast::ParenthesesExpr Class Reference . . . 109
6.48.1 Constructor & Destructor Documentation . . . 110

6.48.1.1 ParenthesesExpr(Expr *e) . . . 110
6.48.1.2 ~ParenthesesExpr() . . . 110
6.48.2 Member Function Documentation . . . 110
6.48.2.1 unparse() . . . 110
6.49 fcal::parser::Parser Class Reference . . . 111
6.49.1 Detailed Description . . . 112
6.49.2 Constructor & Destructor Documentation . . . 112
6.49.2.1 Parser(void) . . . 112
6.49.2.2 ~Parser(void) . . . 112
6.49.3 Member Function Documentation . . . 112
6.49.3.1 attempt_match(const scanner::TokenType &tt) . . . 112
6.49.3.2 match(const scanner::TokenType &tt) . . . 112
6.49.3.3 next_is(const scanner::TokenType &tt) . . . 112
6.49.3.4 next_token(void) . . . 112
6.49.3.5 Parse(const char *text) . . . 112
6.49.3.6 parse_addition(ParseResult left) . . . 112
6.49.3.7 parse_char_const() . . . 112
6.49.3.8 parse_decl() . . . 112
6.49.3.9 parse_division(ParseResult left) . . . 112
6.49.3.10 parse_expr(int rbp) . . . 112
6.49.3.11 parse_false_kwd() . . . 112
6.49.3.12 parse_float_const() . . . 112
6.49.3.13 parse_if_expr() . . . 113
6.49.3.14 parse_int_const() . . . 113
6.49.3.15 parse_let_expr() . . . 113
6.49.3.16 parse_matrix_decl() . . . 113
6.49.3.17 parse_multiplication(ParseResult left) . . . 113
6.49.3.18 parse_nested_expr() . . . 113
6.49.3.19 parse_not_expr() . . . 113
6.49.3.20 parse_relational_expr(ParseResult left) . . . 113

6.49.3.21 parse_standard_decl() . . . 113
6.49.3.22 parse_stmt() . . . 113
6.49.3.23 parse_stmts() . . . 113
6.49.3.24 parse_string_const() . . . 113
6.49.3.25 parse_subtraction(ParseResult left) . . . 113
6.49.3.26 parse_true_kwd() . . . 113
6.49.3.27 parse_variable_name() . . . 113
6.49.3.28 ParseProgram() . . . 113
6.50 fcal::parser::ParseResult Class Reference . . . 114
6.50.1 Constructor & Destructor Documentation . . . 114
6.50.1.1 ParseResult(void) . . . 114
6.50.2 Member Function Documentation . . . 114
6.50.2.1 ast(void) . . . 114
6.50.2.2 ast(ast::Node *Node_ptr) . . . 114
6.50.2.3 errors(void) const . . . 114
6.50.2.4 errors(const std::string str_in) . . . 114
6.50.2.5 ok(void) const . . . 114
6.50.2.6 ok(bool result_in) . . . 114
6.51 fcal::scanner::PlusSignToken Class Reference . . . 115
6.51.1 Constructor & Destructor Documentation . . . 116
6.51.1.1 PlusSignToken(parser::Parser *p, Token *t) . . . 116
6.51.2 Member Function Documentation . . . 116
6.51.2.1 description() . . . 116
6.51.2.2 lbp() . . . 117
6.51.2.3 led(parser::ParseResult left) . . . 117
6.52 fcal::ast::PrintStmt Class Reference . . . 117
6.52.1 Constructor & Destructor Documentation . . . 118
6.52.1.1 PrintStmt(Expr *e) . . . 118
6.52.1.2 ~PrintStmt() . . . 118
6.52.2 Member Function Documentation . . . 118

6.52.2.1 unparse() . . . 118
6.53 fcal::ast::Program Class Reference . . . 119
6.53.1 Detailed Description . . . 120
6.53.2 Constructor & Destructor Documentation . . . 120
6.53.2.1 Program(std::string v, Stmts *s) . . . 120
6.53.2.2 ~Program() . . . 120
6.53.3 Member Function Documentation . . . 120
6.53.3.1 unparse() . . . 120
6.54 fcal::scanner::RelationalOpToken Class Reference . . . 120
6.54.1 Constructor & Destructor Documentation . . . 122
6.54.1.1 RelationalOpToken(parser::Parser *p, Token *t, std::string d) . . . 122
6.54.2 Member Function Documentation . . . 122
6.54.2.1 lbp() . . . 122
6.54.2.2 led(parser::ParseResult left) . . . 123
6.55 fcal::ast::RepeatStmt Class Reference . . . 123
6.55.1 Constructor & Destructor Documentation . . . 124
6.55.1.1 RepeatStmt(std::string v, Expr *e1, Expr *e2, Stmt *s) . . . 124
6.55.1.2 ~RepeatStmt() . . . 124
6.55.2 Member Function Documentation . . . 124
6.55.2.1 unparse() . . . 124
6.56 fcal::scanner::Scanner Class Reference . . . 125
6.56.1 Detailed Description . . . 125
6.56.2 Constructor & Destructor Documentation . . . 125
6.56.2.1 Scanner() . . . 125
6.56.2.2 ~Scanner() . . . 125
6.56.3 Member Function Documentation . . . 125
6.56.3.1 ConsumeWhitespaceAndComments(const char *text, regex_t *white_space, regex_t *block_comment, regex_t *line_comment) . . . 125
6.56.3.2 Scan(const char *text) . . . 125
6.57 fcal::ast::SemiColonStmt Class Reference . . . 126
6.57.1 Constructor & Destructor Documentation . . . 127

6.57.1.1 SemiColonStmt() . . . 127
6.57.1.2 ∼SemiColonStmt() . . . 127
6.57.2 Member Function Documentation . . . 127
6.57.2.1 unparse() . . . 127
6.58 fcal::ast::SeqStmts Class Reference . . . 128
6.58.1 Constructor & Destructor Documentation . . . 129
6.58.1.1 SeqStmts(Stmt ∗s1, Stmts ∗s2) . . . 129
6.58.1.2 ∼SeqStmts() . . . 129
6.58.2 Member Function Documentation . . . 129
6.58.2.1 unparse() . . . 129
6.59 fcal::scanner::StarToken Class Reference . . . 130
6.59.1 Constructor & Destructor Documentation . . . 131
6.59.1.1 StarToken(parser::Parser ∗p, Token ∗t) . . . 131
6.59.2 Member Function Documentation . . . 131
6.59.2.1 description() . . . 131
6.59.2.2 lbp() . . . 132
6.59.2.3 led(parser::ParseResult left) . . . 132
6.60 fcal::ast::Stmt Class Reference . . . 132
6.60.1 Constructor & Destructor Documentation . . . 133
6.60.1.1 ∼Stmt() . . . 133
6.60.2 Member Function Documentation . . . 133
6.60.2.1 unparse()=0 . . . 133
6.61 fcal::ast::Stmts Class Reference . . . 133
6.61.1 Detailed Description . . . 135
6.61.2 Constructor & Destructor Documentation . . . 135
6.61.2.1 ∼Stmts() . . . 135
6.61.3 Member Function Documentation . . . 135
6.61.3.1 unparse()=0 . . . 135
6.62 fcal::ast::StringConstExpr Class Reference . . . 136
6.62.1 Constructor & Destructor Documentation . . . 137

6.62.1.1 StringConstExpr(std::string s) . . . 137
6.62.1.2 ∼StringConstExpr() . . . 137
6.62.2 Member Function Documentation . . . 137
6.62.2.1 unparse() . . . 137
6.63 fcal::scanner::StringConstToken Class Reference . . . 138
6.63.1 Constructor & Destructor Documentation . . . 139
6.63.1.1 StringConstToken(parser::Parser ∗p, Token ∗t) . . . 139
6.63.2 Member Function Documentation . . . 139
6.63.2.1 description() . . . 139
6.63.2.2 nud() . . . 140
6.64 fcal::ast::StringDecl Class Reference . . . 140
6.64.1 Constructor & Destructor Documentation . . . 141
6.64.1.1 StringDecl(std::string s) . . . 141
6.64.1.2 ∼StringDecl() . . . 141
6.64.2 Member Function Documentation . . . 141
6.64.2.1 unparse() . . . 141
6.65 fcal::ast::SubtractExpr Class Reference . . . 142
6.65.1 Constructor & Destructor Documentation . . . 143
6.65.1.1 SubtractExpr(Expr ∗e1, Expr ∗e2) . . . 143
6.65.1.2 ∼SubtractExpr() . . . 143
6.65.2 Member Function Documentation . . . 143
6.65.2.1 unparse() . . . 143
6.66 fcal::scanner::Token Class Reference . . . 144
6.66.1 Detailed Description . . . 144
6.66.2 Constructor & Destructor Documentation . . . 145
6.66.2.1 Token() . . . 145
6.66.2.2 Token(std::string s, TokenType t, Token ∗n) . . . 145
6.66.2.3 ∼Token() . . . 145
6.66.3 Member Function Documentation . . . 145
6.66.3.1 lexeme() const . . . 145

6.66.3.2 next() const . . . 145
6.66.3.3 set_lexeme(std::string s) . . . 145
6.66.3.4 set_next(Token *n) . . . 145
6.66.3.5 set_terminal(TokenType t) . . . 145
6.66.3.6 terminal() const . . . 145
6.67 fcal::scanner::TrueKwdToken Class Reference . . . 145
6.67.1 Constructor & Destructor Documentation . . . 147
6.67.1.1 TrueKwdToken(parser::Parser *p, Token *t) . . . 147
6.67.2 Member Function Documentation . . . 147
6.67.2.1 description() . . . 147
6.67.2.2 nud() . . . 148
6.68 fcal::scanner::VariableNameToken Class Reference . . . 148
6.68.1 Constructor & Destructor Documentation . . . 149
6.68.1.1 VariableNameToken(parser::Parser *p, Token *t) . . . 149
6.68.2 Member Function Documentation . . . 149
6.68.2.1 description() . . . 149
6.68.2.2 nud() . . . 150
6.69 fcal::ast::VarNameExpr Class Reference . . . 150
6.69.1 Detailed Description . . . 151
6.69.2 Constructor & Destructor Documentation . . . 151
6.69.2.1 VarNameExpr(std::string v) . . . 151
6.69.2.2 ~VarNameExpr() . . . 151
6.69.3 Member Function Documentation . . . 152
6.69.3.1 unparse() . . . 152
6.70 fcal::ast::WhileStmt Class Reference . . . 152
6.70.1 Constructor & Destructor Documentation . . . 153
6.70.1.1 WhileStmt(Expr *e, Stmt *s) . . . 153
6.70.1.2 ~WhileStmt() . . . 153
6.70.2 Member Function Documentation . . . 153
6.70.2.1 unparse() . . . 153

7 File Documentation **155**

7.1 include/ast.h File Reference . . . 155

7.2 include/ext_token.h File Reference . . . 157

7.3 include/iter2scanner.h File Reference . . . 159

7.4 include/parse_result.h File Reference . . . 160

7.5 include/parser.h File Reference . . . 161

7.6 include/read_input.h File Reference . . . 163

7.7 include/regex.h File Reference . . . 163

7.8 include/scanner.h File Reference . . . 165

7.9 src/ext_token.cc File Reference . . . 166

7.10 src/parser.cc File Reference . . . 167

7.11 src/read_input.cc File Reference . . . 168

7.12 src/regex.cc File Reference . . . 169

7.13 src/scanner.cc File Reference . . . 170

7.14 src/templates.cc File Reference . . . 170

7.14.1 Function Documentation . . . 171

7.14.1.1 main() . . . 171

Index **173**

Chapter 1

Namespace Index

1.1 Namespace List

Here is a list of all namespaces with brief descriptions:

fcal 9
fcal::ast 9
fcal::parser 10
fcal::scanner 10

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

fcal::scanner::ExtToken . . . 44
- fcal::scanner::CharConstToken . . . 27
- fcal::scanner::DashToken . . . 29
- fcal::scanner::EndOfFileToken . . . 39
- fcal::scanner::FalseKwdToken . . . 46
- fcal::scanner::FloatConstToken . . . 51
- fcal::scanner::ForwardSlashToken . . . 55
- fcal::scanner::IfToken . . . 67
- fcal::scanner::IntConstToken . . . 69
- fcal::scanner::LeftParenToken . . . 75
- fcal::scanner::LetToken . . . 83
- fcal::scanner::NotOpToken . . . 107
- fcal::scanner::PlusSignToken . . . 115
- fcal::scanner::RelationalOpToken . . . 120
- fcal::scanner::StarToken . . . 130
- fcal::scanner::StringConstToken . . . 138
- fcal::scanner::TrueKwdToken . . . 145
- fcal::scanner::VariableNameToken . . . 148

MySequence< T, N > . . . 99

fcal::ast::Node . . . 102
- fcal::ast::Decl . . . 31
  - fcal::ast::BooleanDecl . . . 23
  - fcal::ast::FloatDecl . . . 53
  - fcal::ast::IntDecl . . . 71
  - fcal::ast::MatrixMultiExprDecl . . . 91
  - fcal::ast::MatrixSingleExprDecl . . . 95
  - fcal::ast::StringDecl . . . 140
- fcal::ast::Expr . . . 43
  - fcal::ast::AddExpr . . . 17
  - fcal::ast::BooleanConstExpr . . . 21
  - fcal::ast::DivideExpr . . . 35
  - fcal::ast::EqualsEqualsExpr . . . 41
  - fcal::ast::FloatConstExpr . . . 49
  - fcal::ast::GreaterEqualExpr . . . 57
  - fcal::ast::GreaterExpr . . . 59

fcal::ast::IfExpr . . . 63
fcal::ast::IntegerConstExpr . . . 73
fcal::ast::LessEqualExpr . . . 77
fcal::ast::LessExpr . . . 79
fcal::ast::LetExpr . . . 81
fcal::ast::LogicalAndExpr . . . 85
fcal::ast::LogicalOrExpr . . . 87
fcal::ast::MatrixREFExpr . . . 93
fcal::ast::MultiplyExpr . . . 97
fcal::ast::NestedOrFunctionCallExpr . . . 100
fcal::ast::NotEqualsExpr . . . 103
fcal::ast::NotExpr . . . 105
fcal::ast::ParenthesesExpr . . . 109
fcal::ast::StringConstExpr . . . 136
fcal::ast::SubtractExpr . . . 142
fcal::ast::VarNameExpr . . . 150
fcal::ast::Program . . . 119
fcal::ast::Stmt . . . 132
fcal::ast::AssignStmt . . . 19
fcal::ast::BracketsStmt . . . 25
fcal::ast::DeclStmt . . . 32
fcal::ast::IfElseStmt . . . 61
fcal::ast::IfStmt . . . 65
fcal::ast::MatrixAssignStmt . . . 89
fcal::ast::PrintStmt . . . 117
fcal::ast::RepeatStmt . . . 123
fcal::ast::SemiColonStmt . . . 126
fcal::ast::WhileStmt . . . 152
fcal::ast::Stmts . . . 133
fcal::ast::EmptyStmts . . . 37
fcal::ast::SeqStmts . . . 128
fcal::parser::Parser . . . 111
fcal::parser::ParseResult . . . 114
fcal::scanner::Scanner . . . 125
fcal::scanner::Token . . . 144

Chapter 3

Class Index

3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

fcal::ast::AddExpr . . . 17
fcal::ast::AssignStmt . . . 19
fcal::ast::BooleanConstExpr . . . 21
fcal::ast::BooleanDecl . . . 23
fcal::ast::BracketsStmt . . . 25
fcal::scanner::CharConstToken . . . 27
fcal::scanner::DashToken . . . 29
fcal::ast::Decl . . . 31
fcal::ast::DeclStmt . . . 32
fcal::ast::DivideExpr . . . 35
fcal::ast::EmptyStmts . . . 37
fcal::scanner::EndOfFileToken . . . 39
fcal::ast::EqualsEqualsExpr . . . 41
fcal::ast::Expr . . . 43
fcal::scanner::ExtToken . . . 44
fcal::scanner::FalseKwdToken . . . 46
fcal::ast::FloatConstExpr . . . 49
fcal::scanner::FloatConstToken . . . 51
fcal::ast::FloatDecl . . . 53
fcal::scanner::ForwardSlashToken . . . 55
fcal::ast::GreaterEqualExpr . . . 57
fcal::ast::GreaterExpr . . . 59
fcal::ast::IfElseStmt . . . 61
fcal::ast::IfExpr . . . 63
fcal::ast::IfStmt . . . 65
fcal::scanner::IfToken . . . 67
fcal::scanner::IntConstToken . . . 69
fcal::ast::IntDecl . . . 71
fcal::ast::IntegerConstExpr . . . 73
fcal::scanner::LeftParenToken . . . 75
fcal::ast::LessEqualExpr . . . 77
fcal::ast::LessExpr . . . 79
fcal::ast::LetExpr . . . 81
fcal::scanner::LetToken . . . 83
fcal::ast::LogicalAndExpr . . . 85

fcal::ast::LogicalOrExpr . . . 87
fcal::ast::MatrixAssignStmt . . . 89
fcal::ast::MatrixMultiExprDecl . . . 91
fcal::ast::MatrixREFExpr . . . 93
fcal::ast::MatrixSingleExprDecl . . . 95
fcal::ast::MultiplyExpr . . . 97
MySequence< T, N > . . . 99
fcal::ast::NestedOrFunctionCallExpr . . . 100
fcal::ast::Node . . . 102
fcal::ast::NotEqualsExpr . . . 103
fcal::ast::NotExpr . . . 105
fcal::scanner::NotOpToken . . . 107
fcal::ast::ParenthesesExpr . . . 109
fcal::parser::Parser . . . 111
fcal::parser::ParseResult . . . 114
fcal::scanner::PlusSignToken . . . 115
fcal::ast::PrintStmt . . . 117
fcal::ast::Program . . . 119
fcal::scanner::RelationalOpToken . . . 120
fcal::ast::RepeatStmt . . . 123
fcal::scanner::Scanner . . . 125
fcal::ast::SemiColonStmt . . . 126
fcal::ast::SeqStmts . . . 128
fcal::scanner::StarToken . . . 130
fcal::ast::Stmt . . . 132
fcal::ast::Stmts . . . 133
fcal::ast::StringConstExpr . . . 136
fcal::scanner::StringConstToken . . . 138
fcal::ast::StringDecl . . . 140
fcal::ast::SubtractExpr . . . 142
fcal::scanner::Token . . . 144
fcal::scanner::TrueKwdToken . . . 145
fcal::scanner::VariableNameToken . . . 148
fcal::ast::VarNameExpr . . . 150
fcal::ast::WhileStmt . . . 152

Chapter 4

File Index

4.1 File List

Here is a list of all files with brief descriptions:

include/ast.h . . . 155
include/ext_token.h . . . 157
include/iter2scanner.h . . . 159
include/parse_result.h . . . 160
include/parser.h . . . 161
include/read_input.h . . . 163
include/regex.h . . . 163
include/scanner.h . . . 165
src/ext_token.cc . . . 166
src/parser.cc . . . 167
src/read_input.cc . . . 168
src/regex.cc . . . 169
src/scanner.cc . . . 170
src/templates.cc . . . 170

Chapter 5

Namespace Documentation

5.1 fcal Namespace Reference

Namespaces

- ast
- parser
- scanner

5.2 fcal::ast Namespace Reference

Classes

- class AddExpr
- class AssignStmt
- class BooleanConstExpr
- class BooleanDecl
- class BracketsStmt
- class Decl
- class DeclStmt
- class DivideExpr
- class EmptyStmts
- class EqualsEqualsExpr
- class Expr
- class FloatConstExpr
- class FloatDecl
- class GreaterEqualExpr
- class GreaterExpr
- class IfElseStmt
- class IfExpr
- class IfStmt
- class IntDecl
- class IntegerConstExpr
- class LessEqualExpr
- class LessExpr
- class LetExpr

- class LogicalAndExpr
- class LogicalOrExpr
- class MatrixAssignStmt
- class MatrixMultiExprDecl
- class MatrixREFExpr
- class MatrixSingleExprDecl
- class MultiplyExpr
- class NestedOrFunctionCallExpr
- class Node
- class NotEqualsExpr
- class NotExpr
- class ParenthesesExpr
- class PrintStmt
- class Program
- class RepeatStmt
- class SemiColonStmt
- class SeqStmts
- class Stmt
- class Stmts
- class StringConstExpr
- class StringDecl
- class SubtractExpr
- class VarNameExpr
- class WhileStmt

5.3 fcal::parser Namespace Reference

Classes

- class Parser
- class ParseResult

5.4 fcal::scanner Namespace Reference

Classes

- class CharConstToken
- class DashToken
- class EndOfFileToken
- class ExtToken
- class FalseKwdToken
- class FloatConstToken
- class ForwardSlashToken
- class IfToken
- class IntConstToken
- class LeftParenToken
- class LetToken
- class NotOpToken
- class PlusSignToken
- class RelationalOpToken
- class Scanner
- class StarToken
- class StringConstToken
- class Token
- class TrueKwdToken
- class VariableNameToken

Typedefs

- typedef enum kTokenEnumType TokenType

Enumerations

- enum kTokenEnumType {
  kIntKwd, kFloatKwd, kBoolKwd, kTrueKwd,
  kFalseKwd, kStringKwd, kMatrixKwd, kLetKwd,
  kInKwd, kEndKwd, kIfKwd, kThenKwd,
  kElseKwd, kRepeatKwd, kWhileKwd, kPrintKwd,
  kToKwd, kIntConst, kFloatConst, kStringConst,
  kVariableName, kLeftParen, kRightParen, kLeftCurly,
  kRightCurly, kLeftSquare, kRightSquare, kSemiColon,
  kColon, kAssign, kPlusSign, kStar,
  kDash, kForwardSlash, kLessThan, kLessThanEqual,
  kGreaterThan, kGreaterThanEqual, kEqualsEquals, kNotEquals,
  kAndOp, kOrOp, kNotOp, kEndOfFile,
  kLexicalError, kIntKwd, kFloatKwd, kBoolKwd,
  kTrueKwd, kFalseKwd, kStringKwd, kMatrixKwd,
  kLetKwd, kInKwd, kEndKwd, kIfKwd,
  kThenKwd, kElseKwd, kRepeatKwd, kWhileKwd,
  kPrintKwd, kToKwd, kIntConst, kFloatConst,
  kStringConst, kVariableName, kLeftParen, kRightParen,
  kLeftCurly, kRightCurly, kLeftSquare, kRightSquare,
  kSemiColon, kColon, kAssign, kPlusSign,
  kStar, kDash, kForwardSlash, kLessThan,
  kLessThanEqual, kGreaterThan, kGreaterThanEqual, kEqualsEquals,
  kNotEquals, kAndOp, kOrOp, kNotOp,
  kEndOfFile, kLexicalError }
- enum kTokenEnumType {
  kIntKwd, kFloatKwd, kBoolKwd, kTrueKwd,
  kFalseKwd, kStringKwd, kMatrixKwd, kLetKwd,
  kInKwd, kEndKwd, kIfKwd, kThenKwd,
  kElseKwd, kRepeatKwd, kWhileKwd, kPrintKwd,
  kToKwd, kIntConst, kFloatConst, kStringConst,
  kVariableName, kLeftParen, kRightParen, kLeftCurly,
  kRightCurly, kLeftSquare, kRightSquare, kSemiColon,
  kColon, kAssign, kPlusSign, kStar,
  kDash, kForwardSlash, kLessThan, kLessThanEqual,
  kGreaterThan, kGreaterThanEqual, kEqualsEquals, kNotEquals,
  kAndOp, kOrOp, kNotOp, kEndOfFile,
  kLexicalError, kIntKwd, kFloatKwd, kBoolKwd,
  kTrueKwd, kFalseKwd, kStringKwd, kMatrixKwd,
  kLetKwd, kInKwd, kEndKwd, kIfKwd,
  kThenKwd, kElseKwd, kRepeatKwd, kWhileKwd,
  kPrintKwd, kToKwd, kIntConst, kFloatConst,
  kStringConst, kVariableName, kLeftParen, kRightParen,
  kLeftCurly, kRightCurly, kLeftSquare, kRightSquare,
  kSemiColon, kColon, kAssign, kPlusSign,
  kStar, kDash, kForwardSlash, kLessThan,
  kLessThanEqual, kGreaterThan, kGreaterThanEqual, kEqualsEquals,
  kNotEquals, kAndOp, kOrOp, kNotOp,
  kEndOfFile, kLexicalError }

Functions

- char * ReadInputFromFile (const char *filename)
- char * ReadInput (int argc, char **argv)
- regex_t * make_regex (const char *pattern)
- int match_regex (regex_t *re, const char *text)

Variables

- const int kRegexNSub = 1

5.4.1 Typedef Documentation

5.4.1.1 typedef enum kTokenEnumType fcal::scanner::TokenType

5.4.2 Enumeration Type Documentation

5.4.2.1 enum fcal::scanner::kTokenEnumType

Enumerator

kIntKwd

kFloatKwd

kBoolKwd

kTrueKwd

kFalseKwd

kStringKwd

kMatrixKwd

kLetKwd

kInKwd

kEndKwd

kIfKwd

kThenKwd

kElseKwd

kRepeatKwd

kWhileKwd

kPrintKwd

kToKwd

kIntConst

kFloatConst

kStringConst

kVariableName

kLeftParen

kRightParen

kLeftCurly

kRightCurly

kLeftSquare
kRightSquare
kSemiColon
kColon
kAssign
kPlusSign
kStar
kDash
kForwardSlash
kLessThan
kLessThanEqual
kGreaterThan
kGreaterThanEqual
kEqualsEquals
kNotEquals
kAndOp
kOrOp
kNotOp
kEndOfFile
kLexicalError
kIntKwd
kFloatKwd
kBoolKwd
kTrueKwd
kFalseKwd
kStringKwd
kMatrixKwd
kLetKwd
kInKwd
kEndKwd
kIfKwd
kThenKwd
kElseKwd
kRepeatKwd
kWhileKwd
kPrintKwd
kToKwd
kIntConst
kFloatConst
kStringConst
kVariableName
kLeftParen
kRightParen
kLeftCurly
kRightCurly

kLeftSquare
kRightSquare
kSemiColon
kColon
kAssign
kPlusSign
kStar
kDash
kForwardSlash
kLessThan
kLessThanEqual
kGreaterThan
kGreaterThanEqual
kEqualsEquals
kNotEquals
kAndOp
kOrOp
kNotOp
kEndOfFile
kLexicalError

5.4.2.2 enum fcal::scanner::kTokenEnumType

Enumerator

kIntKwd
kFloatKwd
kBoolKwd
kTrueKwd
kFalseKwd
kStringKwd
kMatrixKwd
kLetKwd
kInKwd
kEndKwd
kIfKwd
kThenKwd
kElseKwd
kRepeatKwd
kWhileKwd
kPrintKwd
kToKwd
kIntConst
kFloatConst
kStringConst

kVariableName
kLeftParen
kRightParen
kLeftCurly
kRightCurly
kLeftSquare
kRightSquare
kSemiColon
kColon
kAssign
kPlusSign
kStar
kDash
kForwardSlash
kLessThan
kLessThanEqual
kGreaterThan
kGreaterThanEqual
kEqualsEquals
kNotEquals
kAndOp
kOrOp
kNotOp
kEndOfFile
kLexicalError
kIntKwd
kFloatKwd
kBoolKwd
kTrueKwd
kFalseKwd
kStringKwd
kMatrixKwd
kLetKwd
kInKwd
kEndKwd
kIfKwd
kThenKwd
kElseKwd
kRepeatKwd
kWhileKwd
kPrintKwd
kToKwd
kIntConst
kFloatConst
kStringConst

kVariableName
kLeftParen
kRightParen
kLeftCurly
kRightCurly
kLeftSquare
kRightSquare
kSemiColon
kColon
kAssign
kPlusSign
kStar
kDash
kForwardSlash
kLessThan
kLessThanEqual
kGreaterThan
kGreaterThanEqual
kEqualsEquals
kNotEquals
kAndOp
kOrOp
kNotOp
kEndOfFile
kLexicalError

5.4.3 Function Documentation

5.4.3.1 regex_t * fcal::scanner::make_regex (const char * *pattern*)

5.4.3.2 int fcal::scanner::match_regex (regex_t * *re,* const char * *text*)

5.4.3.3 char * fcal::scanner::ReadInput (int *argc,* char ** *argv*)

ReadInput() - Read a file into a char buffer. The calling function is responsible for disposing of the return memory.

RETURN: char* - The buffer, or NULL if an error occurred.

5.4.3.4 char * fcal::scanner::ReadInputFromFile (const char * *filename*)

ReadInputFromFile() - Do the actual reading of the file into the buffer

RETURN: char* - The buffer, or NULL if an error occurred.

5.4.4 Variable Documentation

5.4.4.1 const int fcal::scanner::kRegexNSub = 1

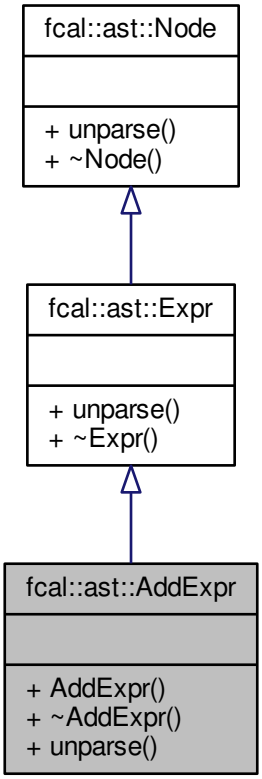
Chapter 6

Class Documentation

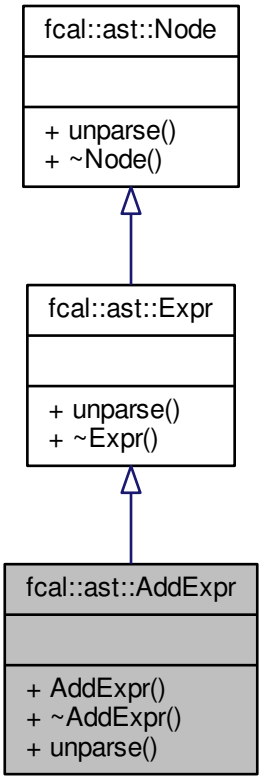
6.1 fcal::ast::AddExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::AddExpr:



Collaboration diagram for fcal::ast::AddExpr:



Public Member Functions

- AddExpr (Expr ∗e1, Expr ∗e2)
- ∼AddExpr ()
- std::string unparse ()

6.1.1 Constructor & Destructor Documentation

6.1.1.1 fcal::ast::AddExpr::AddExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.1.1.2 fcal::ast::AddExpr::∼AddExpr ( ) [inline]

6.1.2 Member Function Documentation

6.1.2.1 std::string fcal::ast::AddExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

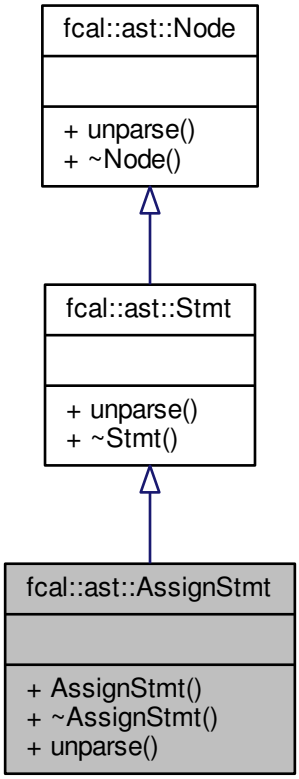
The documentation for this class was generated from the following file:

- include/ast.h

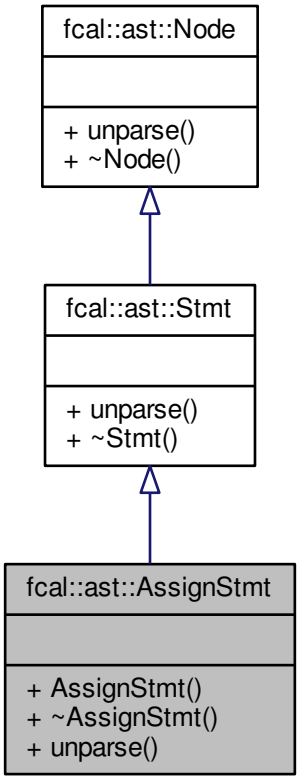
6.2 fcal::ast::AssignStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::AssignStmt:



Collaboration diagram for fcal::ast::AssignStmt:



Public Member Functions

- AssignStmt (std::string v, Expr ∗e)
- ∼AssignStmt ()
- std::string unparse ()

6.2.1 Constructor & Destructor Documentation

6.2.1.1 fcal::ast::AssignStmt::AssignStmt (std::string *v*, Expr ∗ *e*) [inline]

6.2.1.2 fcal::ast::AssignStmt::∼AssignStmt ( ) [inline]

6.2.2 Member Function Documentation

6.2.2.1 std::string fcal::ast::AssignStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

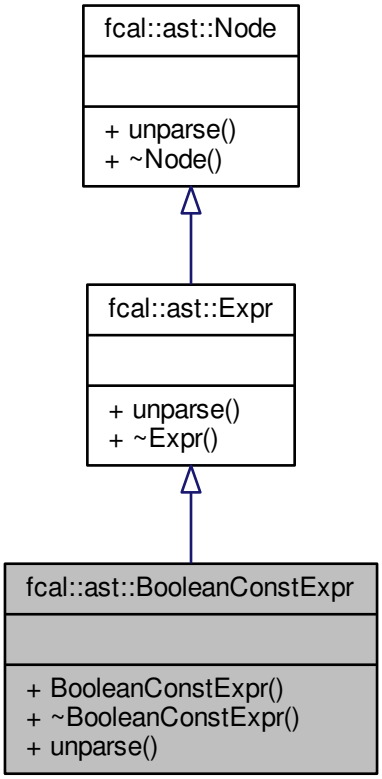
The documentation for this class was generated from the following file:

- include/ast.h

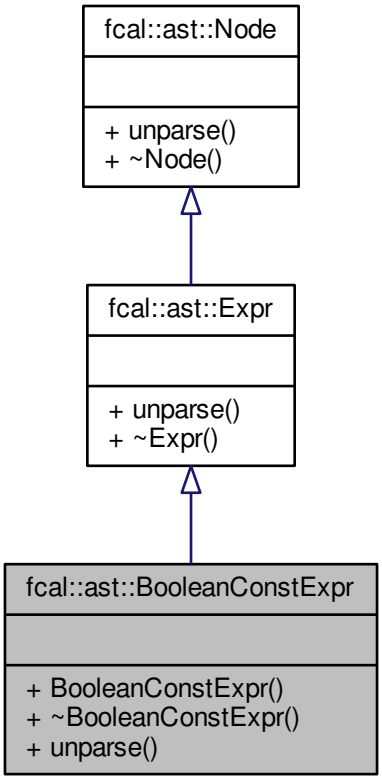
6.3 fcal::ast::BooleanConstExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::BooleanConstExpr:



Collaboration diagram for fcal::ast::BooleanConstExpr:



Public Member Functions

- BooleanConstExpr (std::string b)
- ~BooleanConstExpr ()
- std::string unparse ()

6.3.1 Constructor & Destructor Documentation

6.3.1.1 fcal::ast::BooleanConstExpr::BooleanConstExpr (std::string *b*) [inline], [explicit]

6.3.1.2 fcal::ast::BooleanConstExpr::~BooleanConstExpr ( ) [inline]

6.3.2 Member Function Documentation

6.3.2.1 std::string fcal::ast::BooleanConstExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

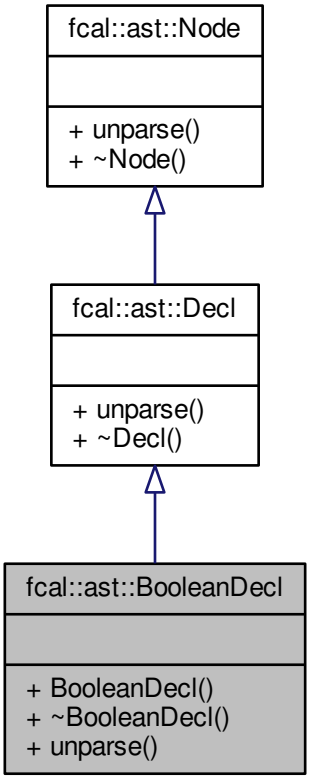
The documentation for this class was generated from the following file:

- include/ast.h

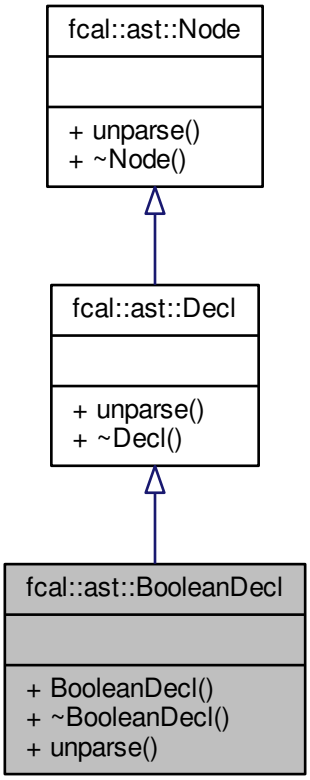
6.4 fcal::ast::BooleanDecl Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::BooleanDecl:



Collaboration diagram for fcal::ast::BooleanDecl:



Public Member Functions

- BooleanDecl (std::string s)
- ~BooleanDecl ()
- std::string unparse ()

6.4.1 Constructor & Destructor Documentation

6.4.1.1 fcal::ast::BooleanDecl::BooleanDecl (std::string *s*) [inline], [explicit]

6.4.1.2 fcal::ast::BooleanDecl::~BooleanDecl ( ) [inline]

6.4.2 Member Function Documentation

6.4.2.1 std::string fcal::ast::BooleanDecl::unparse ( ) [inline], [virtual]

Implements fcal::ast::Decl.

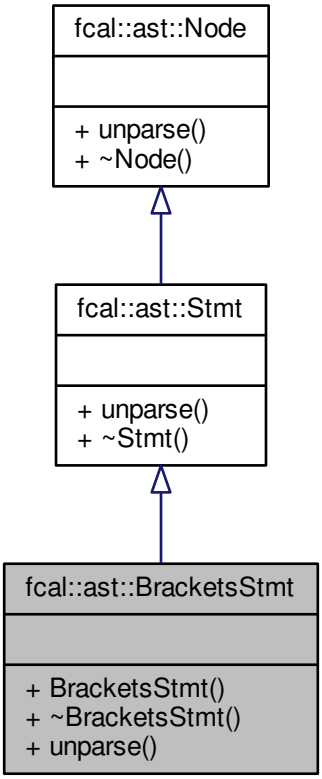
The documentation for this class was generated from the following file:

- include/ast.h

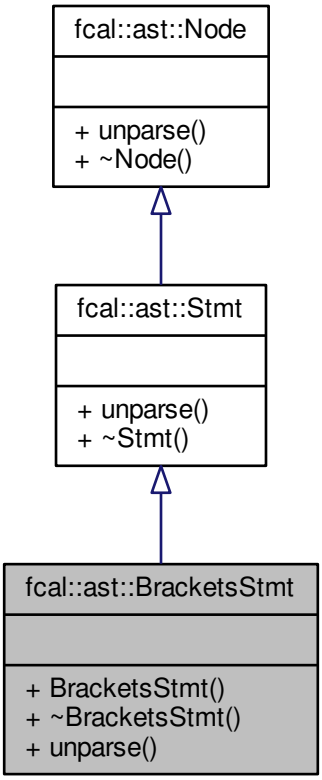
6.5 fcal::ast::BracketsStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::BracketsStmt:



Collaboration diagram for fcal::ast::BracketsStmt:



Public Member Functions

- BracketsStmt (Stmts ∗s)
- ∼BracketsStmt ()
- std::string unparse ()

6.5.1 Constructor & Destructor Documentation

6.5.1.1 fcal::ast::BracketsStmt::BracketsStmt (Stmts ∗ *s*) [inline], [explicit]

6.5.1.2 fcal::ast::BracketsStmt::∼BracketsStmt ( ) [inline]

6.5.2 Member Function Documentation

6.5.2.1 std::string fcal::ast::BracketsStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

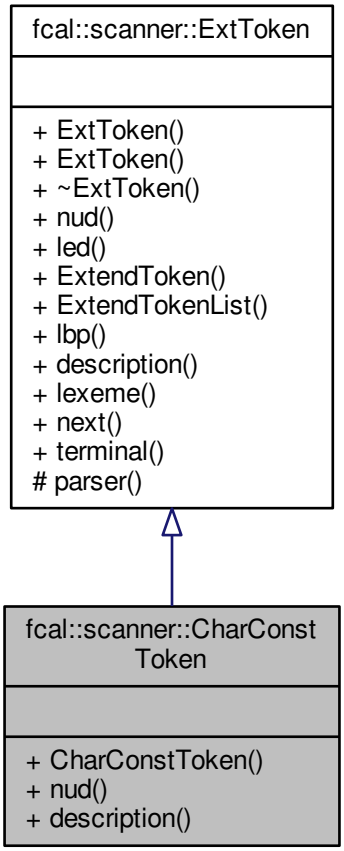
The documentation for this class was generated from the following file:

- include/ast.h

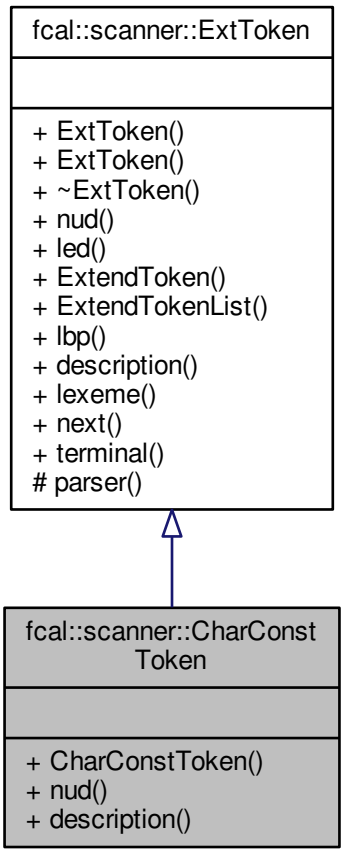
6.6 fcal::scanner::CharConstToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::CharConstToken:



Collaboration diagram for fcal::scanner::CharConstToken:



Public Member Functions

- CharConstToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()

Additional Inherited Members

6.6.1 Constructor & Destructor Documentation

6.6.1.1 fcal::scanner::CharConstToken::CharConstToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.6.2 Member Function Documentation

6.6.2.1 std::string fcal::scanner::CharConstToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.6.2.2 parser::ParseResult fcal::scanner::CharConstToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

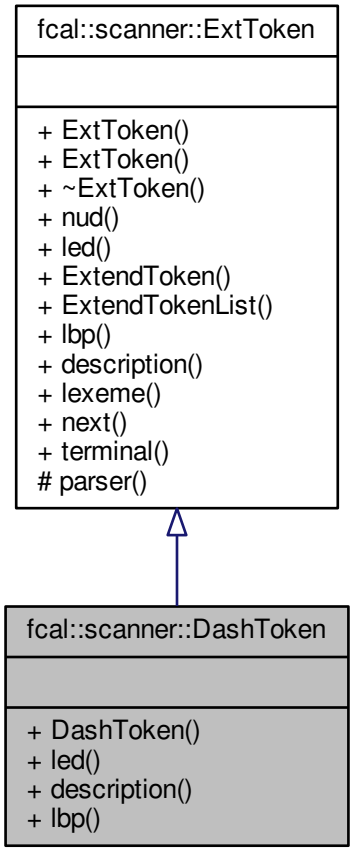
The documentation for this class was generated from the following file:

- include/ext_token.h

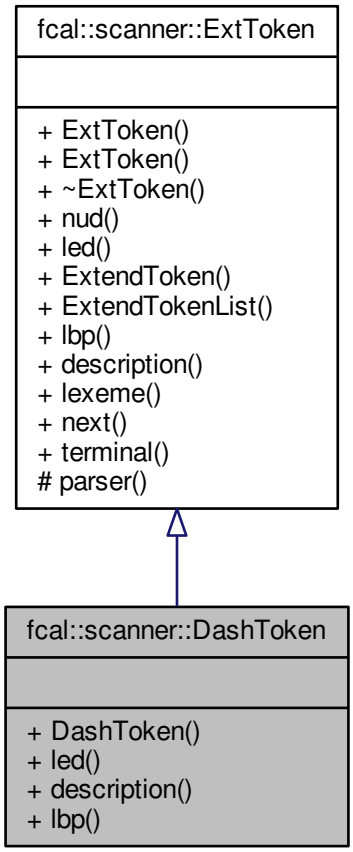
6.7 fcal::scanner::DashToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::DashToken:



Collaboration diagram for fcal::scanner::DashToken:



Public Member Functions

- DashToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult led (parser::ParseResult left)
- std::string description ()
- int lbp ()

Additional Inherited Members

6.7.1 Constructor & Destructor Documentation

6.7.1.1 fcal::scanner::DashToken::DashToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.7.2 Member Function Documentation

6.7.2.1 std::string fcal::scanner::DashToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.7.2.2 int fcal::scanner::DashToken::lbp ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.7.2.3 parser::ParseResult fcal::scanner::DashToken::led (parser::ParseResult *left*) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

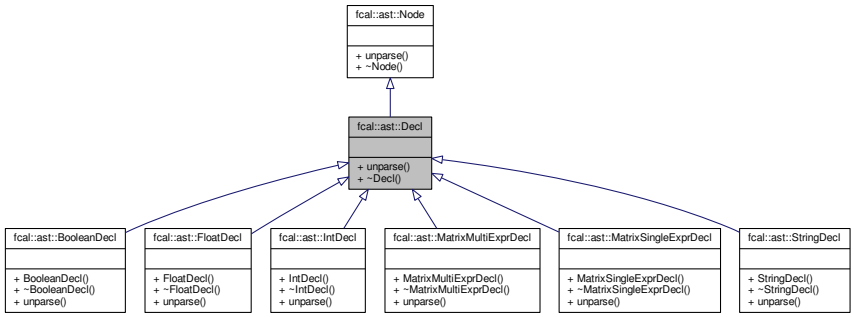
The documentation for this class was generated from the following file:

- include/ext_token.h

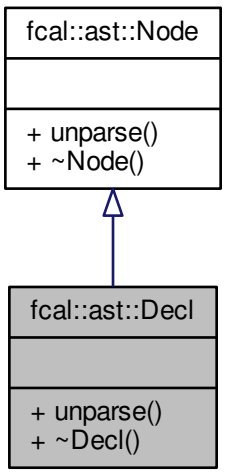
6.8 fcal::ast::Decl Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::Decl:



Collaboration diagram for fcal::ast::Decl:



Public Member Functions

- virtual std::string unparse ()=0
- virtual ~Decl ()

6.8.1 Constructor & Destructor Documentation

6.8.1.1 virtual fcal::ast::Decl::~Decl ( ) [inline], [virtual]

6.8.2 Member Function Documentation

6.8.2.1 virtual std::string fcal::ast::Decl::unparse ( ) [pure virtual]

Implements fcal::ast::Node.

Implemented in fcal::ast::MatrixSingleExprDecl, fcal::ast::MatrixMultiExprDecl, fcal::ast::BooleanDecl, fcal::ast::StringDecl, fcal::ast::FloatDecl, and fcal::ast::IntDecl.

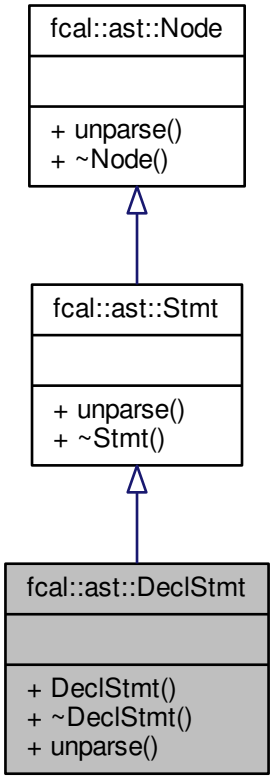
The documentation for this class was generated from the following file:

- include/ast.h

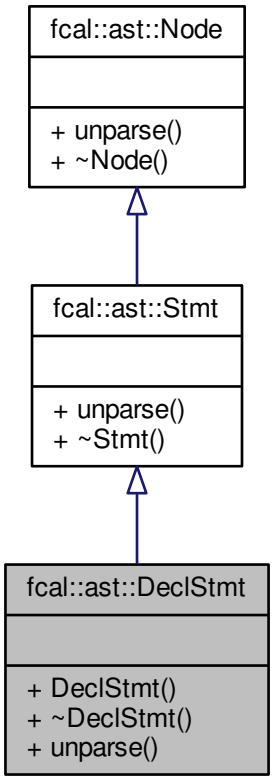
6.9 fcal::ast::DeclStmt Class Reference

```
#include <ast.h>
```

Inheritance diagram for fcal::ast::DeclStmt:



Collaboration diagram for fcal::ast::DeclStmt:



Public Member Functions

- DeclStmt (Decl ∗d)
- ∼DeclStmt ()
- std::string unparse ()

6.9.1 Detailed Description

The following classes directly inherit from the virtual Stmt class. These classes are used to construct the individual statements defined in the FCAL grammar.

6.9.2 Constructor & Destructor Documentation

6.9.2.1 fcal::ast::DeclStmt::DeclStmt (Decl ∗ *d*) [inline], [explicit]

6.9.2.2 fcal::ast::DeclStmt::∼DeclStmt ( ) [inline]

6.9.3 Member Function Documentation

6.9.3.1 std::string fcal::ast::DeclStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

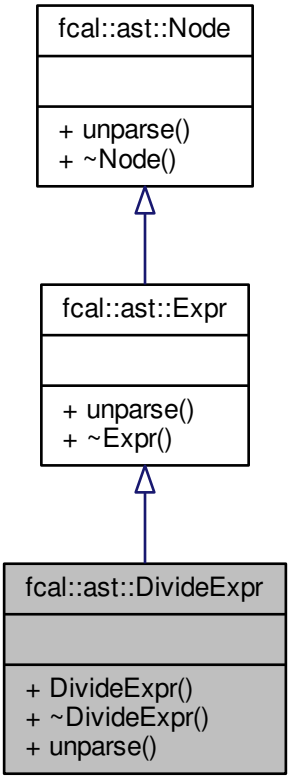
The documentation for this class was generated from the following file:

- include/ast.h

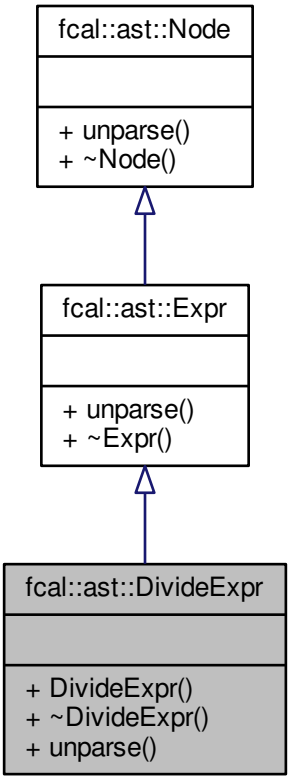
6.10 fcal::ast::DivideExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::DivideExpr:



Collaboration diagram for fcal::ast::DivideExpr:



Public Member Functions

- DivideExpr (Expr ∗e1, Expr ∗e2)
- ∼DivideExpr ()
- std::string unparse ()

6.10.1 Constructor & Destructor Documentation

6.10.1.1 fcal::ast::DivideExpr::DivideExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.10.1.2 fcal::ast::DivideExpr::∼DivideExpr ( ) [inline]

6.10.2 Member Function Documentation

6.10.2.1 std::string fcal::ast::DivideExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

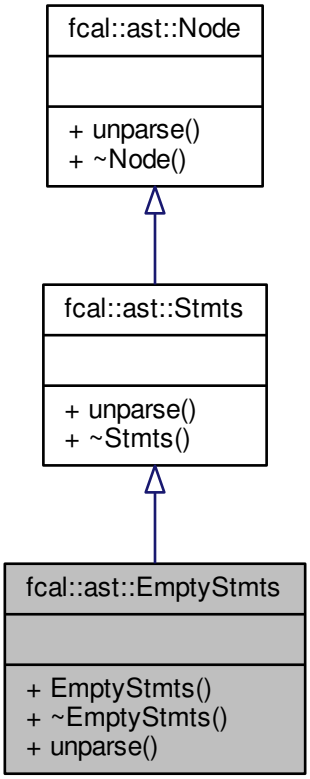
The documentation for this class was generated from the following file:

- include/ast.h

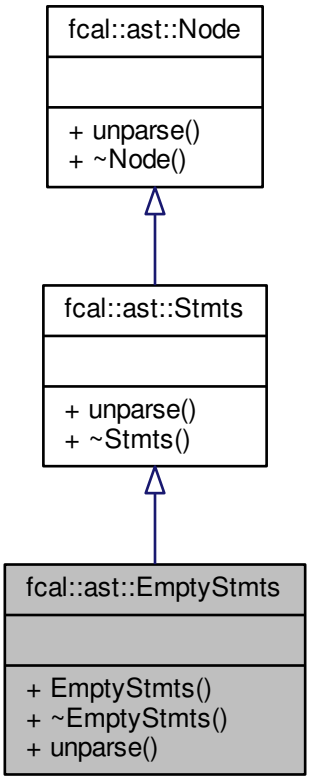
6.11 fcal::ast::EmptyStmts Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::EmptyStmts:



Collaboration diagram for fcal::ast::EmptyStmts:



Public Member Functions

- EmptyStmts ()
- ~EmptyStmts ()
- std::string unparse ()

6.11.1 Detailed Description

The following classes directly inherit from the Stmts virtual class. These classes offer means to deconstruct sequences of individual statements as defined in the FCAL grammar.

6.11.2 Constructor & Destructor Documentation

6.11.2.1 fcal::ast::EmptyStmts::EmptyStmts ( ) [inline]

6.11.2.2 fcal::ast::EmptyStmts::~EmptyStmts ( ) [inline]

6.11.3 Member Function Documentation

6.11.3.1 std::string fcal::ast::EmptyStmts::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmts.

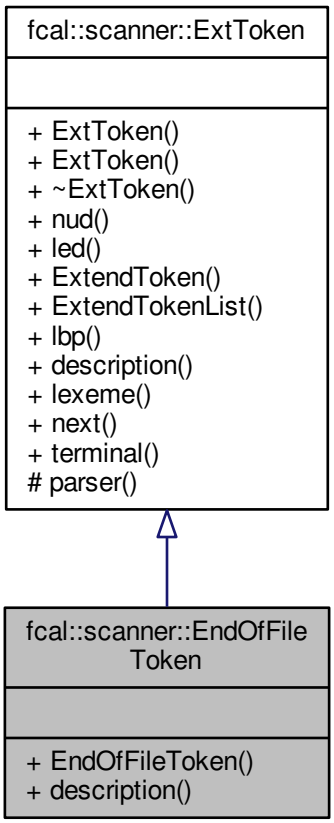
The documentation for this class was generated from the following file:

- include/ast.h

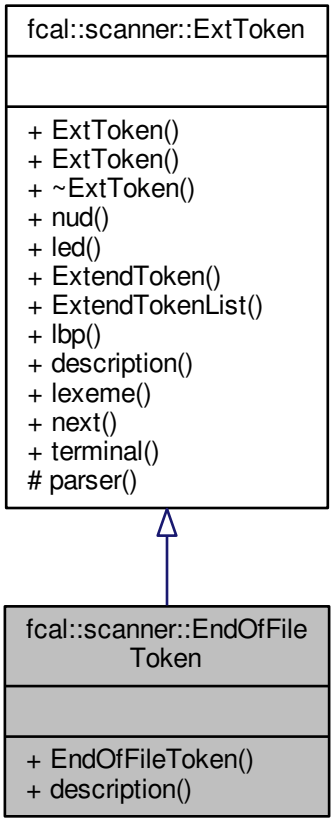
6.12 fcal::scanner::EndOfFileToken Class Reference

```
#include <ext_token.h>
```

Inheritance diagram for fcal::scanner::EndOfFileToken:



Collaboration diagram for fcal::scanner::EndOfFileToken:



Public Member Functions

- EndOfFileToken (parser::Parser ∗p, Token ∗t)
- std::string description ()

Additional Inherited Members

6.12.1 Constructor & Destructor Documentation

6.12.1.1 fcal::scanner::EndOfFileToken::EndOfFileToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.12.2 Member Function Documentation

6.12.2.1 std::string fcal::scanner::EndOfFileToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

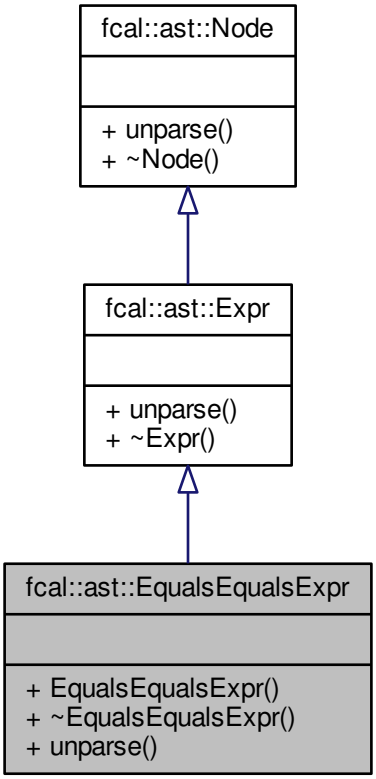
The documentation for this class was generated from the following file:

- include/ext_token.h

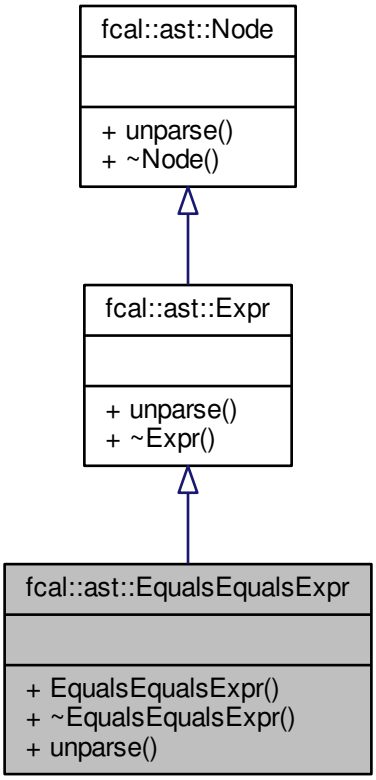
6.13 fcal::ast::EqualsEqualsExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::EqualsEqualsExpr:



Collaboration diagram for fcal::ast::EqualsEqualsExpr:



Public Member Functions

- EqualsEqualsExpr (Expr ∗e1, Expr ∗e2)
- ∼EqualsEqualsExpr ()
- std::string unparse ()

6.13.1 Constructor & Destructor Documentation

6.13.1.1 fcal::ast::EqualsEqualsExpr::EqualsEqualsExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.13.1.2 fcal::ast::EqualsEqualsExpr::∼EqualsEqualsExpr ( ) [inline]

6.13.2 Member Function Documentation

6.13.2.1 std::string fcal::ast::EqualsEqualsExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

The documentation for this class was generated from the following file:

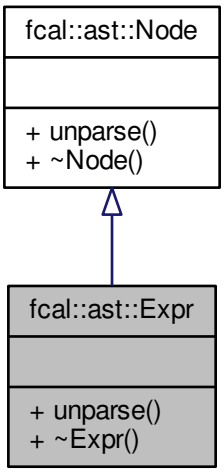
- include/ast.h

6.14 fcal::ast::Expr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::Expr:

Collaboration diagram for fcal::ast::Expr:



Public Member Functions

- virtual std::string unparse ()=0
- virtual ~Expr ()

6.14.1 Constructor & Destructor Documentation

6.14.1.1 virtual fcal::ast::Expr::~Expr ( ) [inline], [virtual]

6.14.2 Member Function Documentation

6.14.2.1 virtual std::string fcal::ast::Expr::unparse ( ) [pure virtual]

Implements fcal::ast::Node.

Implemented in fcal::ast::NotExpr, fcal::ast::IfExpr, fcal::ast::LetExpr, fcal::ast::ParenthesesExpr, fcal::ast::NestedOrFunctionCallExpr, fcal::ast::MatrixREFExpr, fcal::ast::LogicalOrExpr, fcal::ast::LogicalAndExpr, fcal::ast::NotEqualsExpr, fcal::ast::EqualsEqualsExpr, fcal::ast::LessEqualExpr, fcal::ast::LessExpr, fcal::ast::GreaterEqualExpr, fcal::ast::GreaterExpr, fcal::ast::SubtractExpr, fcal::ast::AddExpr, fcal::ast::DivideExpr, fcal::ast::MultiplyExpr, fcal::ast::BooleanConstExpr, fcal::ast::StringConstExpr, fcal::ast::FloatConstExpr, fcal::ast::IntegerConstExpr, and fcal::ast::VarNameExpr.

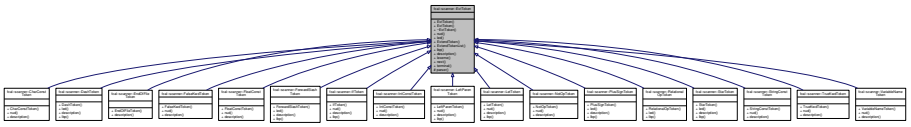
The documentation for this class was generated from the following file:

- include/ast.h

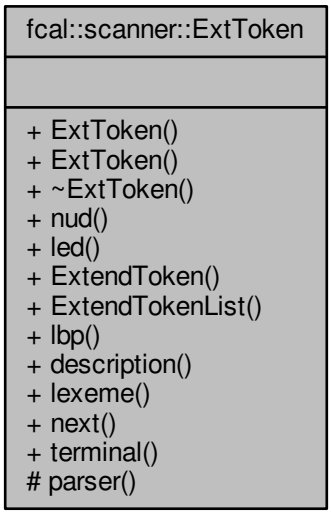
6.15 fcal::scanner::ExtToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::ExtToken:



Collaboration diagram for fcal::scanner::ExtToken:



Public Member Functions

- ExtToken (parser::Parser *p, Token *t)
- ExtToken (parser::Parser *p, Token *t, std::string d)
- virtual ~ExtToken ()
- virtual parser::ParseResult nud (void)
- virtual parser::ParseResult led (parser::ParseResult left)
- ExtToken * ExtendToken (parser::Parser *p, Token *tokens)
- ExtToken * ExtendTokenList (parser::Parser *p, Token *tokens)
- virtual int lbp ()
- virtual std::string description ()
- std::string lexeme (void) const
- ExtToken * next (void) const
- scanner::TokenType terminal (void) const

Protected Member Functions

- parser::Parser * parser (void)

6.15.1 Constructor & Destructor Documentation

6.15.1.1 fcal::scanner::ExtToken::ExtToken (parser::Parser * *p*, Token * *t*) [inline]

6.15.1.2 fcal::scanner::ExtToken::ExtToken (parser::Parser * *p*, Token * *t*, std::string *d*) [inline]

6.15.1.3 virtual fcal::scanner::ExtToken::~ExtToken ( ) [inline], [virtual]

6.15.2 Member Function Documentation

6.15.2.1 virtual std::string fcal::scanner::ExtToken::description ( ) [inline], [virtual]

Reimplemented in fcal::scanner::EndOfFileToken, fcal::scanner::ForwardSlashToken, fcal::scanner::DashToken, fcal::scanner::StarToken, fcal::scanner::PlusSignToken, fcal::scanner::LeftParenToken, fcal::scanner::LetToken, fcal::scanner::IfToken, fcal::scanner::VariableNameToken, fcal::scanner::CharConstToken, fcal::scanner::StringConstToken, fcal::scanner::FloatConstToken, fcal::scanner::IntConstToken, fcal::scanner::FalseKwdToken, fcal::scanner::TrueKwdToken, and fcal::scanner::NotOpToken.

6.15.2.2 ExtToken * fcal::scanner::ExtToken::ExtendToken (parser::Parser * *p*, Token * *tokens*)

6.15.2.3 ExtToken * fcal::scanner::ExtToken::ExtendTokenList (parser::Parser * *p*, Token * *tokens*)

6.15.2.4 virtual int fcal::scanner::ExtToken::lbp ( ) [inline], [virtual]

Reimplemented in fcal::scanner::RelationalOpToken, fcal::scanner::ForwardSlashToken, fcal::scanner::DashToken, fcal::scanner::StarToken, fcal::scanner::PlusSignToken, fcal::scanner::LeftParenToken, fcal::scanner::LetToken, and fcal::scanner::IfToken.

6.15.2.5 virtual parser::ParseResult fcal::scanner::ExtToken::led (parser::ParseResult *left*) [inline], [virtual]

Reimplemented in fcal::scanner::RelationalOpToken, fcal::scanner::ForwardSlashToken, fcal::scanner::DashToken, fcal::scanner::StarToken, and fcal::scanner::PlusSignToken.

6.15.2.6 std::string fcal::scanner::ExtToken::lexeme (void) const [inline]

6.15.2.7 ExtToken* fcal::scanner::ExtToken::next (void) const [inline]

6.15.2.8 virtual parser::ParseResult fcal::scanner::ExtToken::nud (void) [inline], [virtual]

Reimplemented in fcal::scanner::LeftParenToken, fcal::scanner::LetToken, fcal::scanner::IfToken, fcal::scanner::VariableNameToken, fcal::scanner::CharConstToken, fcal::scanner::StringConstToken, fcal::scanner::FloatConstToken, fcal::scanner::IntConstToken, fcal::scanner::FalseKwdToken, fcal::scanner::TrueKwdToken, and fcal::scanner::NotOpToken.

6.15.2.9 parser::Parser* fcal::scanner::ExtToken::parser (void) [inline], [protected]

6.15.2.10 scanner::TokenType fcal::scanner::ExtToken::terminal (void) const [inline]

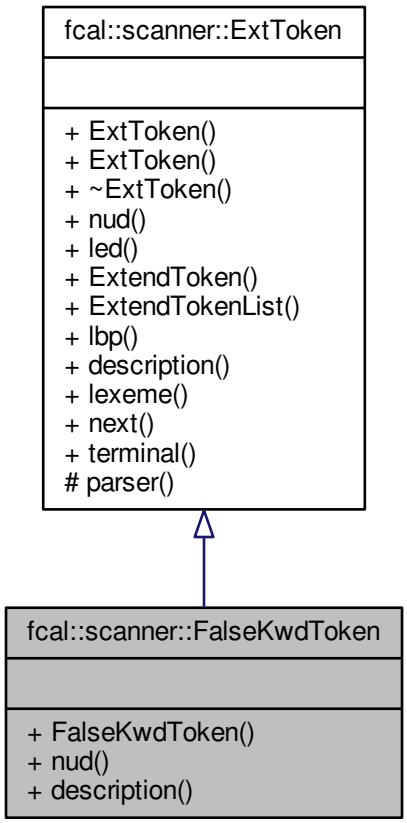
The documentation for this class was generated from the following files:

- include/ext_token.h
- src/ext_token.cc

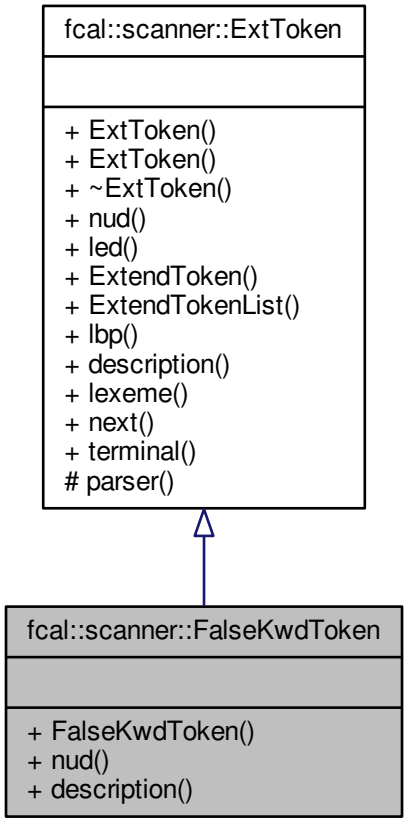
6.16 fcal::scanner::FalseKwdToken Class Reference

```
#include <ext_token.h>
```

Inheritance diagram for fcal::scanner::FalseKwdToken:



Collaboration diagram for fcal::scanner::FalseKwdToken:



Public Member Functions

- FalseKwdToken (parser::Parser *p, Token *t)
- parser::ParseResult nud ()
- std::string description ()

Additional Inherited Members

6.16.1 Constructor & Destructor Documentation

6.16.1.1 fcal::scanner::FalseKwdToken::FalseKwdToken (parser::Parser * *p*, Token * *t*) [inline]

6.16.2 Member Function Documentation

6.16.2.1 std::string fcal::scanner::FalseKwdToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.16.2.2 parser::ParseResult fcal::scanner::FalseKwdToken::nud (void) [inline],[virtual]

Reimplemented from fcal::scanner::ExtToken.

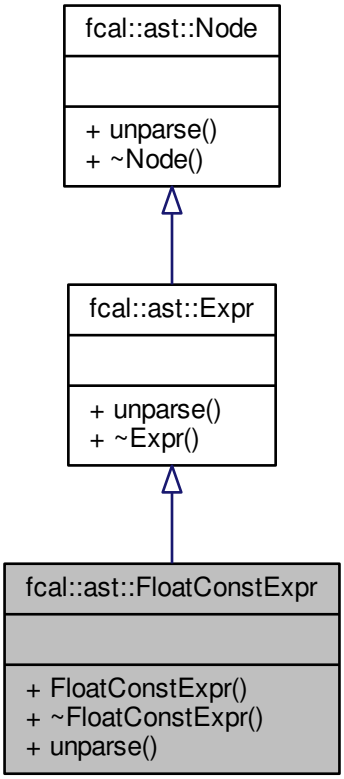
The documentation for this class was generated from the following file:

- include/ext_token.h

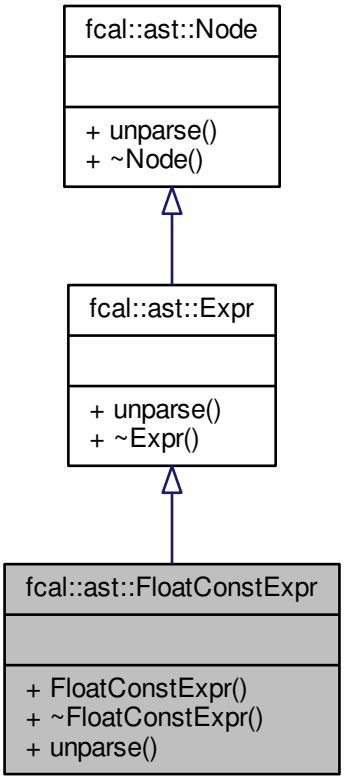
6.17 fcal::ast::FloatConstExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::FloatConstExpr:



Collaboration diagram for fcal::ast::FloatConstExpr:



Public Member Functions

- FloatConstExpr (std::string f)
- ~FloatConstExpr ()
- std::string unparse ()

6.17.1 Constructor & Destructor Documentation

6.17.1.1 fcal::ast::FloatConstExpr::FloatConstExpr (std::string *f*) [inline], [explicit]

6.17.1.2 fcal::ast::FloatConstExpr::~FloatConstExpr ( ) [inline]

6.17.2 Member Function Documentation

6.17.2.1 std::string fcal::ast::FloatConstExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

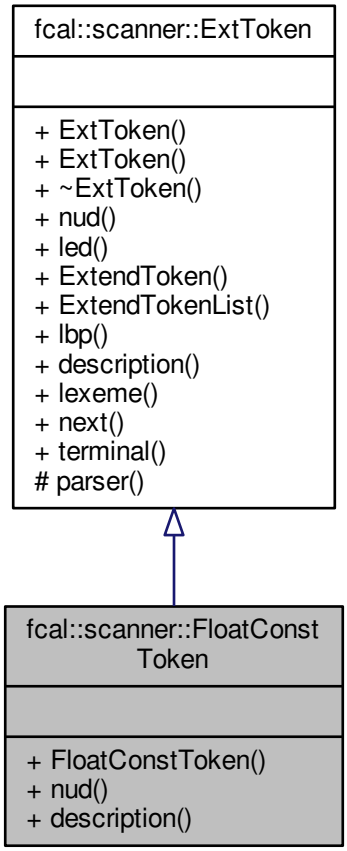
The documentation for this class was generated from the following file:

- include/ast.h

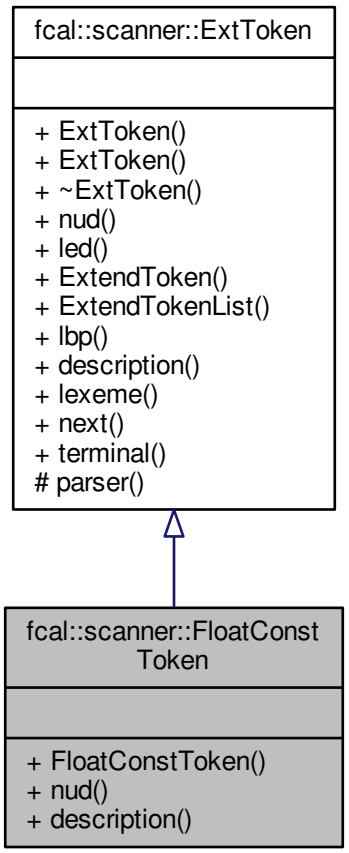
6.18 fcal::scanner::FloatConstToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::FloatConstToken:



Collaboration diagram for fcal::scanner::FloatConstToken:



Public Member Functions

- FloatConstToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()

Additional Inherited Members

6.18.1 Constructor & Destructor Documentation

6.18.1.1 fcal::scanner::FloatConstToken::FloatConstToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.18.2 Member Function Documentation

6.18.2.1 std::string fcal::scanner::FloatConstToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.18.2.2 parser::ParseResult fcal::scanner::FloatConstToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

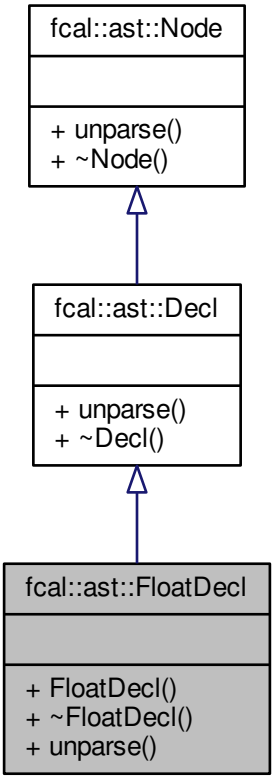
The documentation for this class was generated from the following file:

- include/ext_token.h

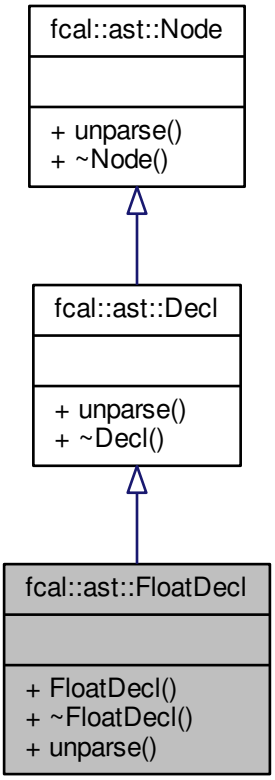
6.19 fcal::ast::FloatDecl Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::FloatDecl:



Collaboration diagram for fcal::ast::FloatDecl:



Public Member Functions

- FloatDecl (std::string s)
- ~FloatDecl ()
- std::string unparse ()

6.19.1 Constructor & Destructor Documentation

6.19.1.1 fcal::ast::FloatDecl::FloatDecl (std::string *s*) [inline], [explicit]

6.19.1.2 fcal::ast::FloatDecl::~FloatDecl ( ) [inline]

6.19.2 Member Function Documentation

6.19.2.1 std::string fcal::ast::FloatDecl::unparse ( ) [inline], [virtual]

Implements fcal::ast::Decl.

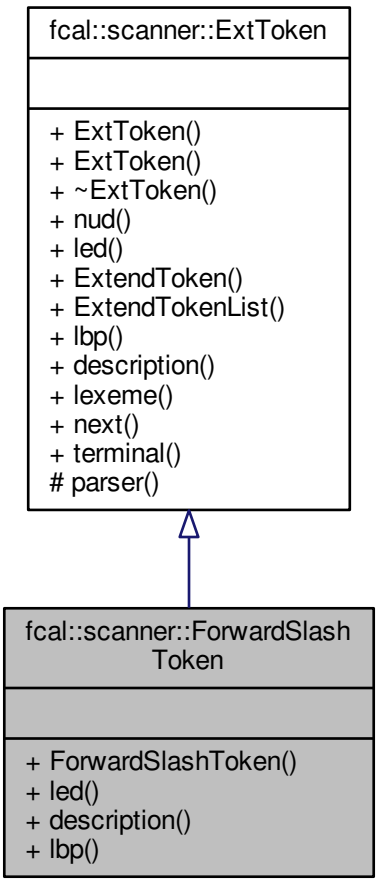
The documentation for this class was generated from the following file:

- include/ast.h

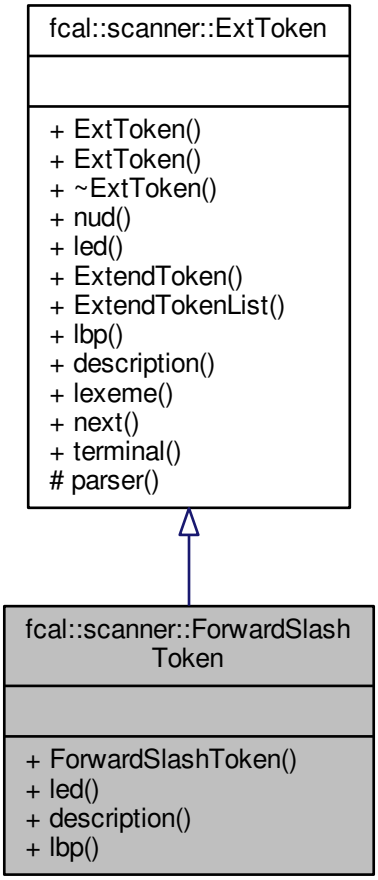
6.20 fcal::scanner::ForwardSlashToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::ForwardSlashToken:



Collaboration diagram for fcal::scanner::ForwardSlashToken:



Public Member Functions

- ForwardSlashToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult led (parser::ParseResult left)
- std::string description ()
- int lbp ()

Additional Inherited Members

6.20.1 Constructor & Destructor Documentation

6.20.1.1 fcal::scanner::ForwardSlashToken::ForwardSlashToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.20.2 Member Function Documentation

6.20.2.1 std::string fcal::scanner::ForwardSlashToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.20.2.2 int fcal::scanner::ForwardSlashToken::lbp ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.20.2.3 parser::ParseResult fcal::scanner::ForwardSlashToken::led (parser::ParseResult *left*) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

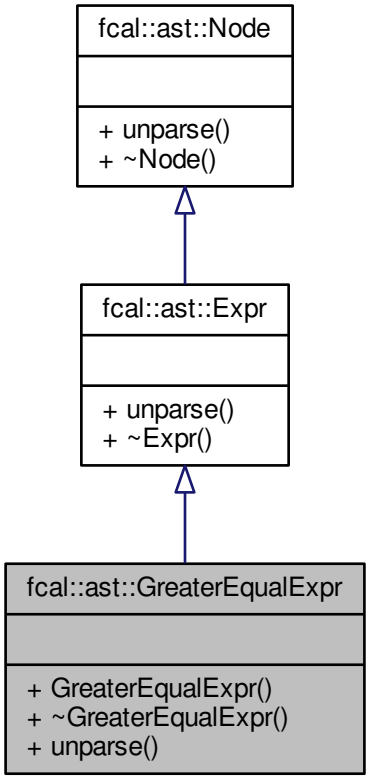
The documentation for this class was generated from the following file:

- include/ext_token.h

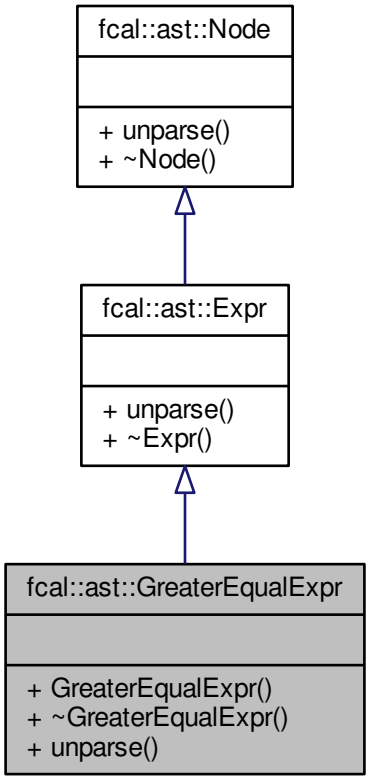
6.21 fcal::ast::GreaterEqualExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::GreaterEqualExpr:



Collaboration diagram for fcal::ast::GreaterEqualExpr:



Public Member Functions

- GreaterEqualExpr (Expr ∗e1, Expr ∗e2)
- ∼GreaterEqualExpr ()
- std::string unparse ()

6.21.1 Constructor & Destructor Documentation

6.21.1.1 fcal::ast::GreaterEqualExpr::GreaterEqualExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.21.1.2 fcal::ast::GreaterEqualExpr::∼GreaterEqualExpr ( ) [inline]

6.21.2 Member Function Documentation

6.21.2.1 std::string fcal::ast::GreaterEqualExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

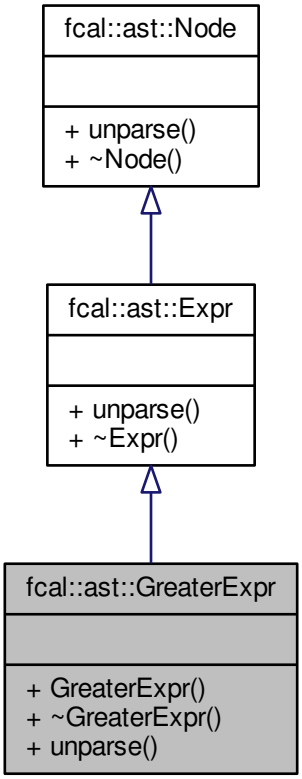
The documentation for this class was generated from the following file:

- include/ast.h

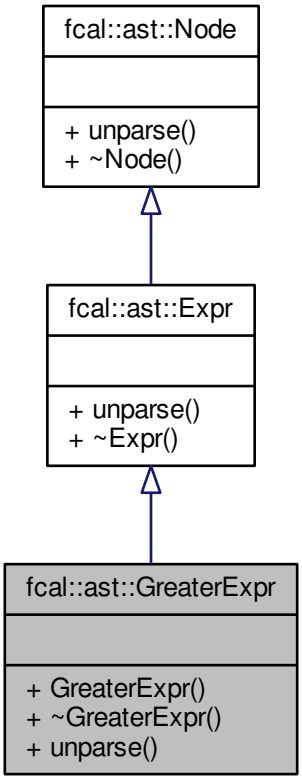
6.22 fcal::ast::GreaterExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::GreaterExpr:



Collaboration diagram for fcal::ast::GreaterExpr:



Public Member Functions

- GreaterExpr (Expr ∗e1, Expr ∗e2)
- ∼GreaterExpr ()
- std::string unparse ()

6.22.1 Constructor & Destructor Documentation

6.22.1.1 fcal::ast::GreaterExpr::GreaterExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.22.1.2 fcal::ast::GreaterExpr::∼GreaterExpr ( ) [inline]

6.22.2 Member Function Documentation

6.22.2.1 std::string fcal::ast::GreaterExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

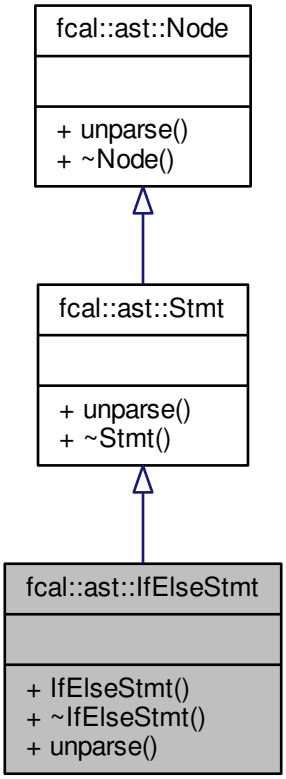
The documentation for this class was generated from the following file:

- include/ast.h

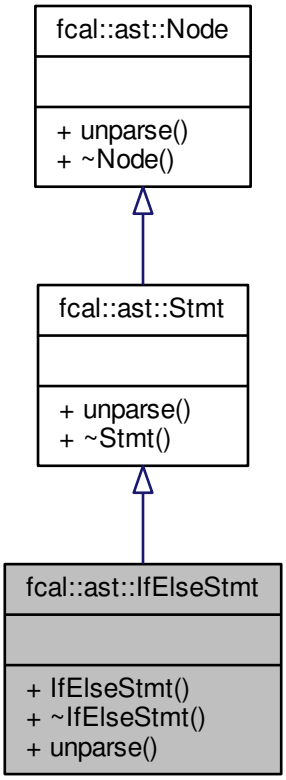
6.23 fcal::ast::IfElseStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::IfElseStmt:



Collaboration diagram for fcal::ast::IfElseStmt:



Public Member Functions

- IfElseStmt (Expr ∗e, Stmt ∗s1, Stmt ∗s2)
- ∼IfElseStmt ()
- std::string unparse ()

6.23.1 Constructor & Destructor Documentation

6.23.1.1 fcal::ast::IfElseStmt::IfElseStmt (Expr ∗ *e*, Stmt ∗ *s1*, Stmt ∗ *s2*) [inline]

6.23.1.2 fcal::ast::IfElseStmt::∼IfElseStmt ( ) [inline]

6.23.2 Member Function Documentation

6.23.2.1 std::string fcal::ast::IfElseStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

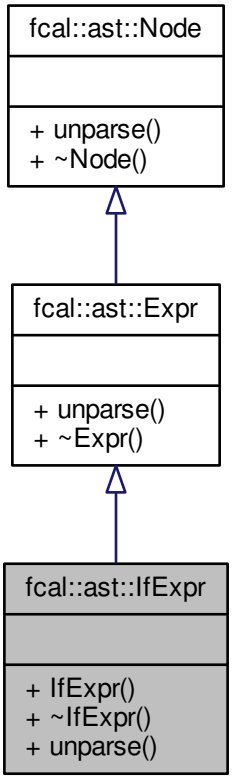
The documentation for this class was generated from the following file:

- include/ast.h

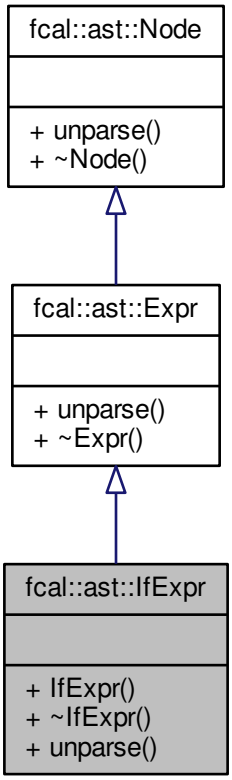
6.24 fcal::ast::IfExpr Class Reference

```
#include <ast.h>
```

Inheritance diagram for fcal::ast::IfExpr:



Collaboration diagram for fcal::ast::IfExpr:



Public Member Functions

- IfExpr (Expr ∗e1, Expr ∗e2, Expr ∗e3)
- ∼IfExpr ()
- std::string unparse ()

6.24.1 Constructor & Destructor Documentation

6.24.1.1 fcal::ast::IfExpr::IfExpr (Expr ∗ *e1*, Expr ∗ *e2*, Expr ∗ *e3*) [inline]

6.24.1.2 fcal::ast::IfExpr::∼IfExpr ( ) [inline]

6.24.2 Member Function Documentation

6.24.2.1 std::string fcal::ast::IfExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

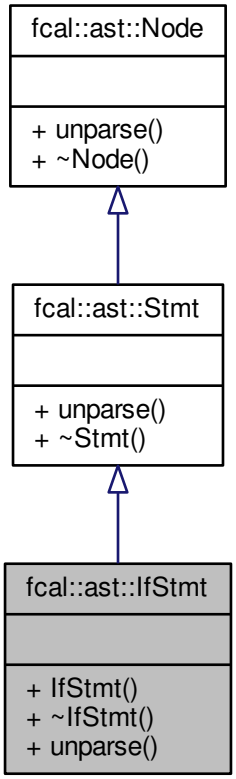
The documentation for this class was generated from the following file:

- include/ast.h

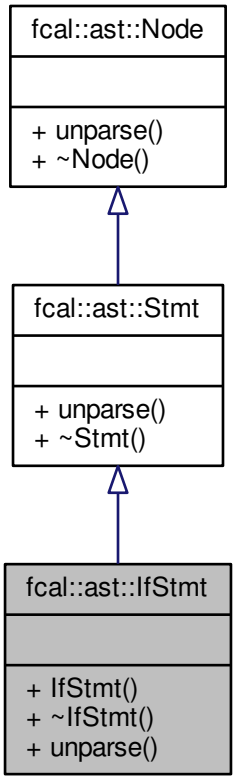
6.25 fcal::ast::IfStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::IfStmt:



Collaboration diagram for fcal::ast::IfStmt:



Public Member Functions

- IfStmt (Expr ∗e, Stmt ∗s)
- ∼IfStmt ()
- std::string unparse ()

6.25.1 Constructor & Destructor Documentation

6.25.1.1 fcal::ast::IfStmt::IfStmt (Expr ∗ *e*, Stmt ∗ *s*) [inline]

6.25.1.2 fcal::ast::IfStmt::∼IfStmt ( ) [inline]

6.25.2 Member Function Documentation

6.25.2.1 std::string fcal::ast::IfStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

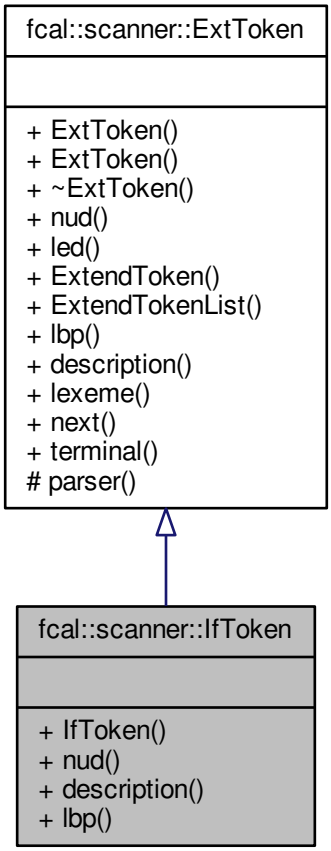
The documentation for this class was generated from the following file:

- include/ast.h

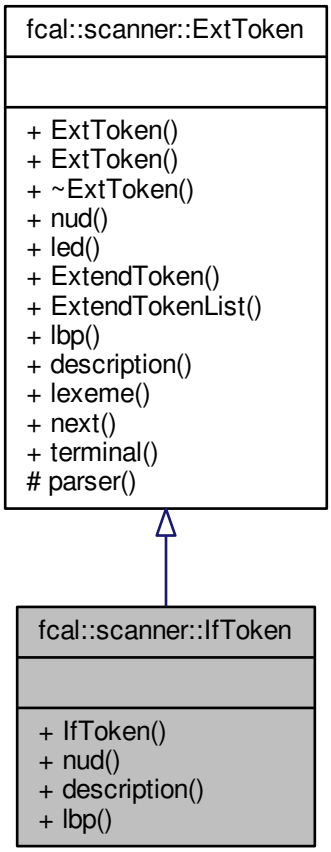
6.26 fcal::scanner::IfToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::IfToken:



Collaboration diagram for fcal::scanner::IfToken:



Public Member Functions

- IfToken (parser::Parser *p, Token *t)
- parser::ParseResult nud ()
- std::string description ()
- int lbp ()

Additional Inherited Members

6.26.1 Constructor & Destructor Documentation

6.26.1.1 fcal::scanner::IfToken::IfToken (parser::Parser * *p*, Token * *t*) [inline]

6.26.2 Member Function Documentation

6.26.2.1 std::string fcal::scanner::IfToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.26.2.2 int fcal::scanner::IfToken::lbp ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.26.2.3 parser::ParseResult fcal::scanner::IfToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

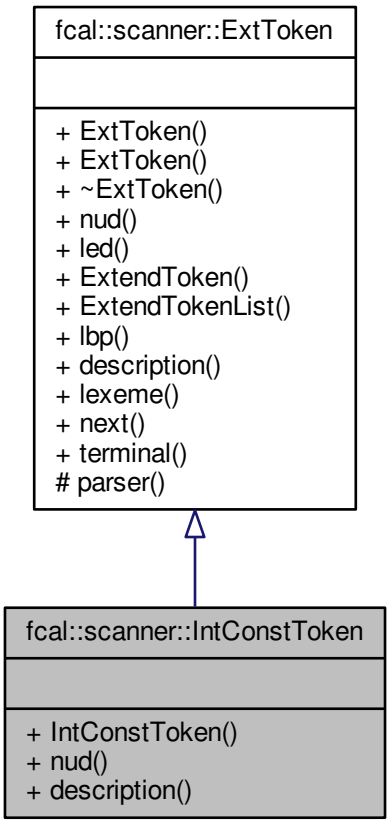
The documentation for this class was generated from the following file:

- include/ext_token.h

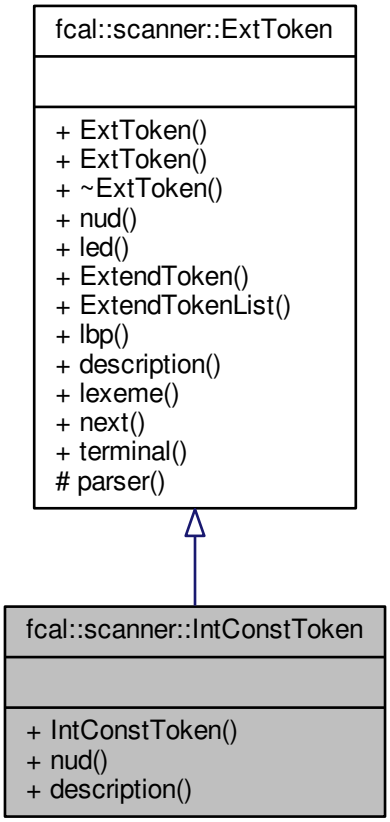
6.27 fcal::scanner::IntConstToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::IntConstToken:



Collaboration diagram for fcal::scanner::IntConstToken:



Public Member Functions

- IntConstToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()

Additional Inherited Members

6.27.1 Constructor & Destructor Documentation

6.27.1.1 fcal::scanner::IntConstToken::IntConstToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.27.2 Member Function Documentation

6.27.2.1 std::string fcal::scanner::IntConstToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.27.2.2 parser::ParseResult fcal::scanner::IntConstToken::nud (void) [inline],[virtual]

Reimplemented from fcal::scanner::ExtToken.

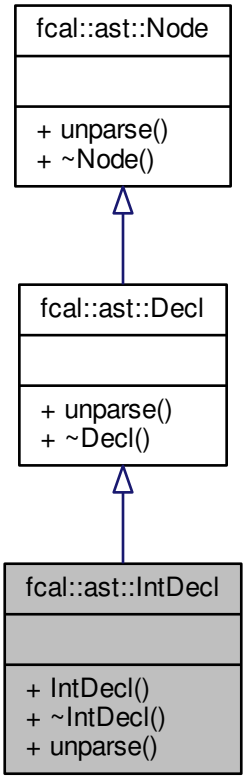
The documentation for this class was generated from the following file:

- include/ext_token.h

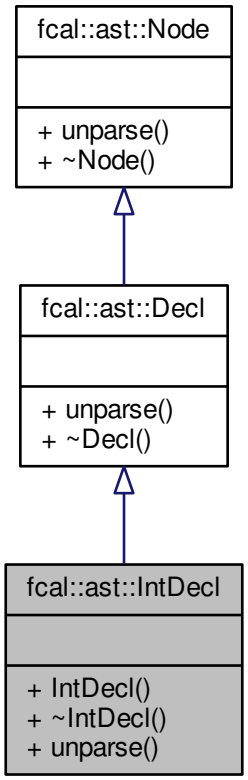
6.28 fcal::ast::IntDecl Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::IntDecl:



Collaboration diagram for fcal::ast::IntDecl:



Public Member Functions

- IntDecl (std::string s)
- ~IntDecl ()
- std::string unparse ()

6.28.1 Detailed Description

The following classes directly inherit from the virtual Decl class. These classes provide constructors for declarations based on the FCAL grammar.

6.28.2 Constructor & Destructor Documentation

6.28.2.1 fcal::ast::IntDecl::IntDecl (std::string *s*) [inline], [explicit]

6.28.2.2 fcal::ast::IntDecl::~IntDecl ( ) [inline]

6.28.3 Member Function Documentation

6.28.3.1 std::string fcal::ast::IntDecl::unparse ( ) [inline], [virtual]

Implements fcal::ast::Decl.

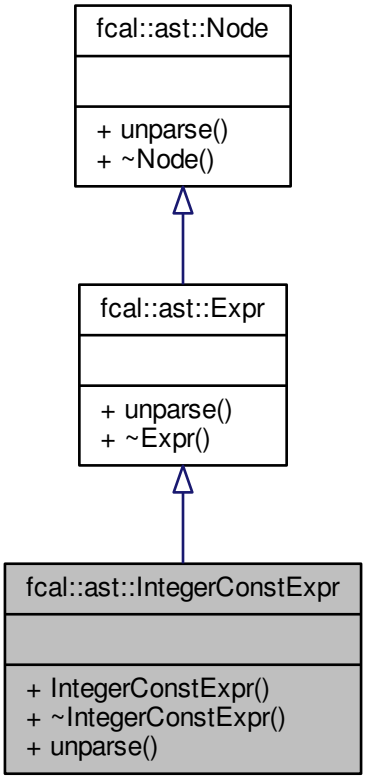
The documentation for this class was generated from the following file:

- include/ast.h

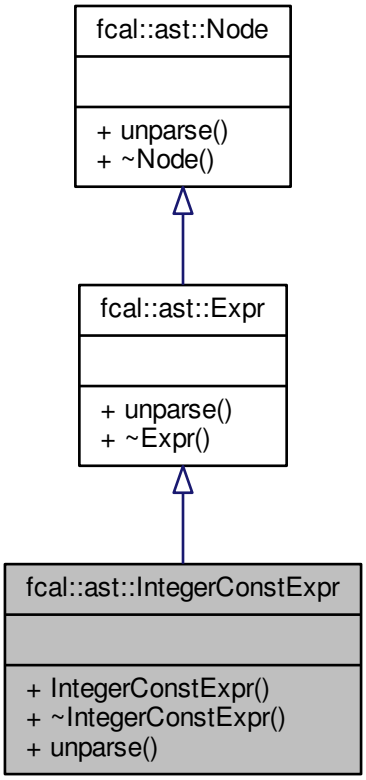
6.29 fcal::ast::IntegerConstExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::IntegerConstExpr:



Collaboration diagram for fcal::ast::IntegerConstExpr:



Public Member Functions

- IntegerConstExpr (std::string i)
- ~IntegerConstExpr ()
- std::string unparse ()

6.29.1 Constructor & Destructor Documentation

6.29.1.1 fcal::ast::IntegerConstExpr::IntegerConstExpr (std::string *i*) [inline], [explicit]

6.29.1.2 fcal::ast::IntegerConstExpr::~IntegerConstExpr ( ) [inline]

6.29.2 Member Function Documentation

6.29.2.1 std::string fcal::ast::IntegerConstExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

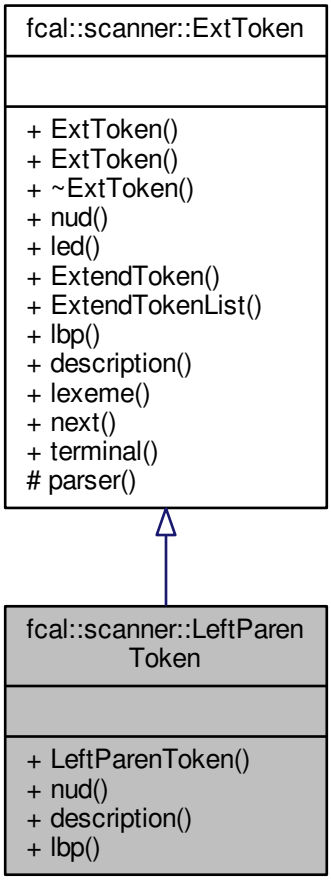
The documentation for this class was generated from the following file:

- include/ast.h

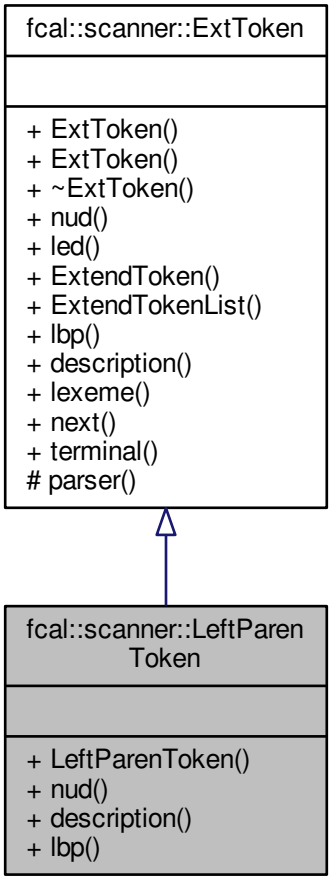
6.30 fcal::scanner::LeftParenToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::LeftParenToken:



Collaboration diagram for fcal::scanner::LeftParenToken:



Public Member Functions

- LeftParenToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()
- int lbp ()

Additional Inherited Members

6.30.1 Constructor & Destructor Documentation

6.30.1.1 fcal::scanner::LeftParenToken::LeftParenToken (parser::Parser ∗ *p,* Token ∗ *t*) [inline]

6.30.2 Member Function Documentation

6.30.2.1 std::string fcal::scanner::LeftParenToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.30.2.2 int fcal::scanner::LeftParenToken::lbp ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.30.2.3 parser::ParseResult fcal::scanner::LeftParenToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

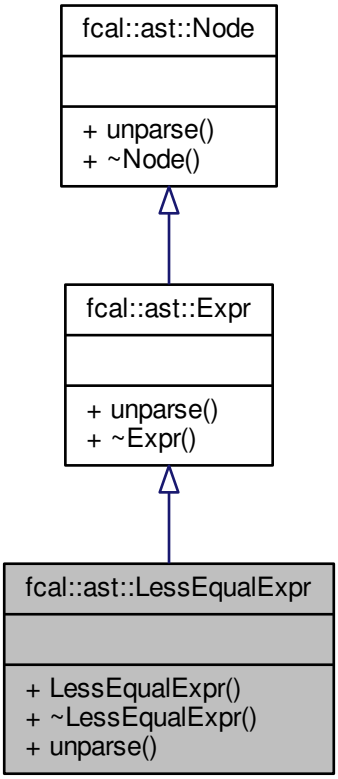
The documentation for this class was generated from the following file:

- include/ext_token.h

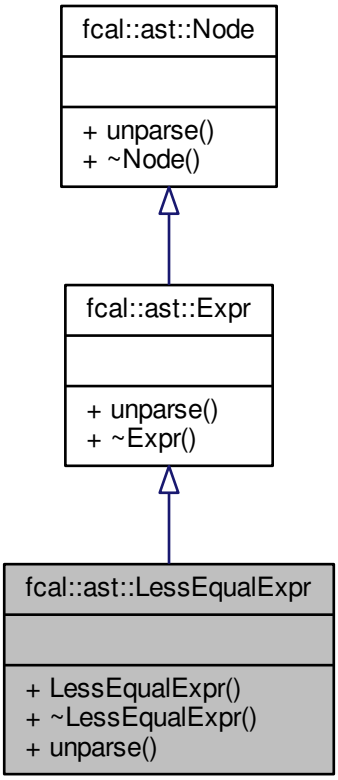
6.31 fcal::ast::LessEqualExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::LessEqualExpr:



Collaboration diagram for fcal::ast::LessEqualExpr:



Public Member Functions

- LessEqualExpr (Expr ∗e1, Expr ∗e2)
- ∼LessEqualExpr ()
- std::string unparse ()

6.31.1 Constructor & Destructor Documentation

6.31.1.1 fcal::ast::LessEqualExpr::LessEqualExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.31.1.2 fcal::ast::LessEqualExpr::∼LessEqualExpr ( ) [inline]

6.31.2 Member Function Documentation

6.31.2.1 std::string fcal::ast::LessEqualExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

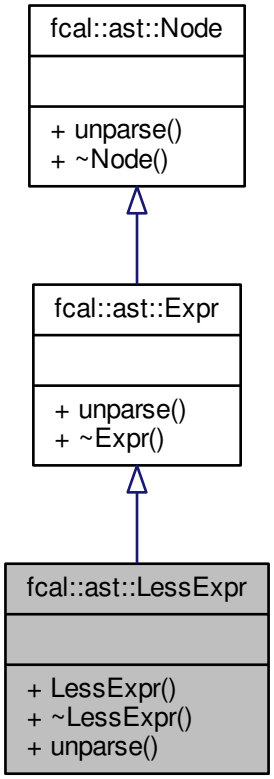
The documentation for this class was generated from the following file:

- include/ast.h

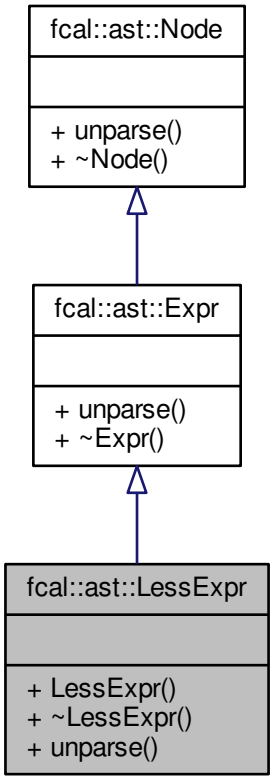
6.32 fcal::ast::LessExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::LessExpr:



Collaboration diagram for fcal::ast::LessExpr:



Public Member Functions

- LessExpr (Expr ∗e1, Expr ∗e2)
- ∼LessExpr ()
- std::string unparse ()

6.32.1 Constructor & Destructor Documentation

6.32.1.1 fcal::ast::LessExpr::LessExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.32.1.2 fcal::ast::LessExpr::∼LessExpr ( ) [inline]

6.32.2 Member Function Documentation

6.32.2.1 std::string fcal::ast::LessExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

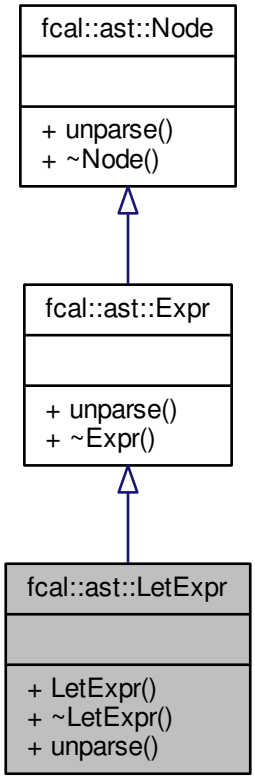
The documentation for this class was generated from the following file:

- include/ast.h

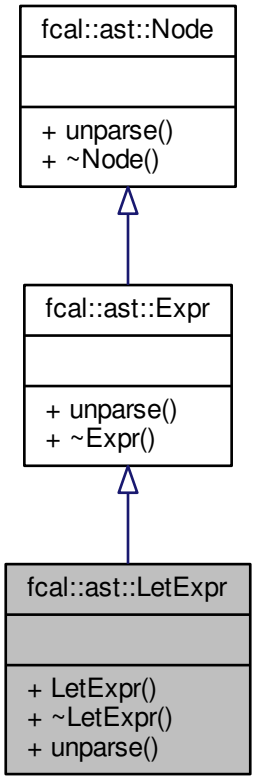
6.33 fcal::ast::LetExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::LetExpr:



Collaboration diagram for fcal::ast::LetExpr:



Public Member Functions

- LetExpr (Stmts ∗s, Expr ∗e)
- ∼LetExpr ()
- std::string unparse ()

6.33.1 Constructor & Destructor Documentation

6.33.1.1 fcal::ast::LetExpr::LetExpr (Stmts ∗ *s*, Expr ∗ *e*) [inline]

6.33.1.2 fcal::ast::LetExpr::∼LetExpr ( ) [inline]

6.33.2 Member Function Documentation

6.33.2.1 std::string fcal::ast::LetExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

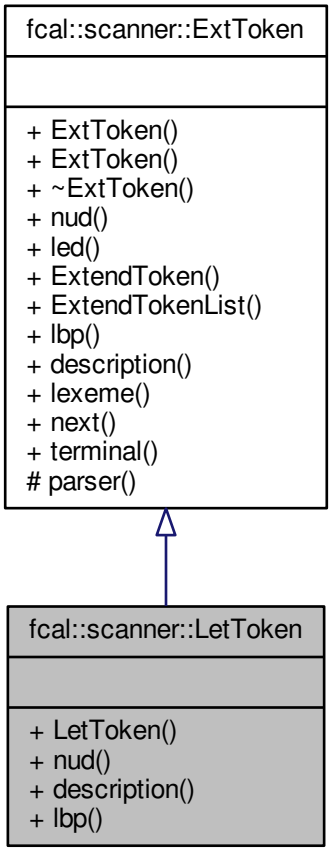
The documentation for this class was generated from the following file:

- include/ast.h

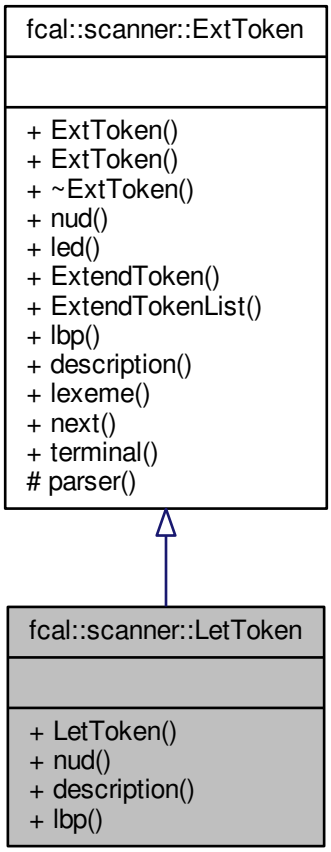
6.34 fcal::scanner::LetToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::LetToken:



Collaboration diagram for fcal::scanner::LetToken:



Public Member Functions

- LetToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()
- int lbp ()

Additional Inherited Members

6.34.1 Constructor & Destructor Documentation

6.34.1.1 fcal::scanner::LetToken::LetToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.34.2 Member Function Documentation

6.34.2.1 std::string fcal::scanner::LetToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.34.2.2 int fcal::scanner::LetToken::lbp ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.34.2.3 parser::ParseResult fcal::scanner::LetToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

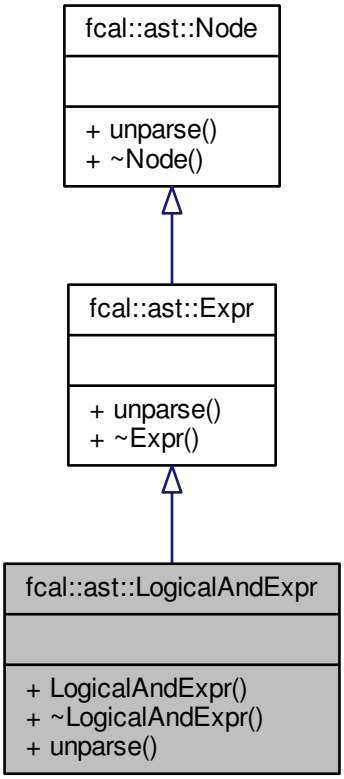
The documentation for this class was generated from the following file:

- include/ext_token.h

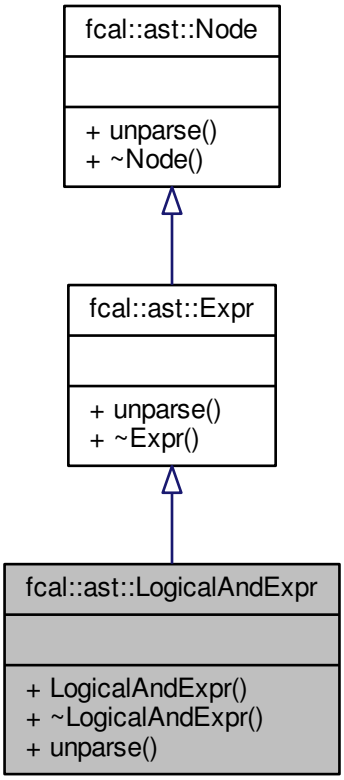
6.35 fcal::ast::LogicalAndExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::LogicalAndExpr:



Collaboration diagram for fcal::ast::LogicalAndExpr:



Public Member Functions

- LogicalAndExpr (Expr ∗e1, Expr ∗e2)
- ∼LogicalAndExpr ()
- std::string unparse ()

6.35.1 Constructor & Destructor Documentation

6.35.1.1 fcal::ast::LogicalAndExpr::LogicalAndExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.35.1.2 fcal::ast::LogicalAndExpr::∼LogicalAndExpr ( ) [inline]

6.35.2 Member Function Documentation

6.35.2.1 std::string fcal::ast::LogicalAndExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

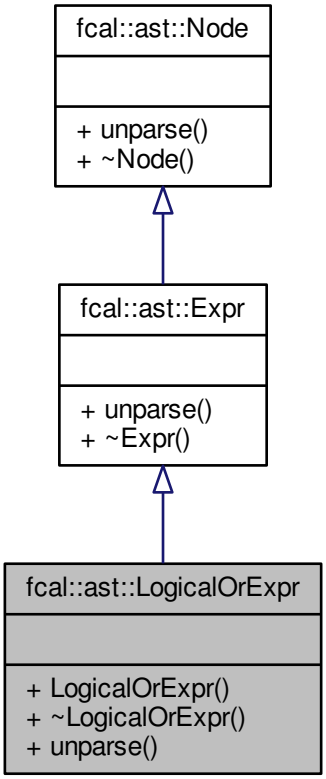
The documentation for this class was generated from the following file:

- include/ast.h

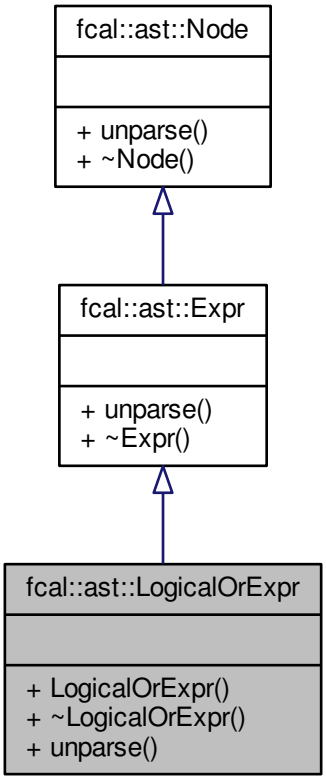
6.36 fcal::ast::LogicalOrExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::LogicalOrExpr:



Collaboration diagram for fcal::ast::LogicalOrExpr:



Public Member Functions

- LogicalOrExpr (Expr ∗e1, Expr ∗e2)
- ∼LogicalOrExpr ()
- std::string unparse ()

6.36.1 Constructor & Destructor Documentation

6.36.1.1 fcal::ast::LogicalOrExpr::LogicalOrExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.36.1.2 fcal::ast::LogicalOrExpr::∼LogicalOrExpr ( ) [inline]

6.36.2 Member Function Documentation

6.36.2.1 std::string fcal::ast::LogicalOrExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

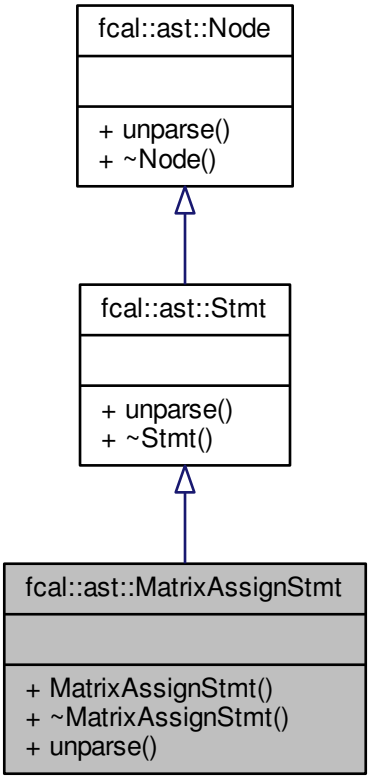
The documentation for this class was generated from the following file:

- include/ast.h

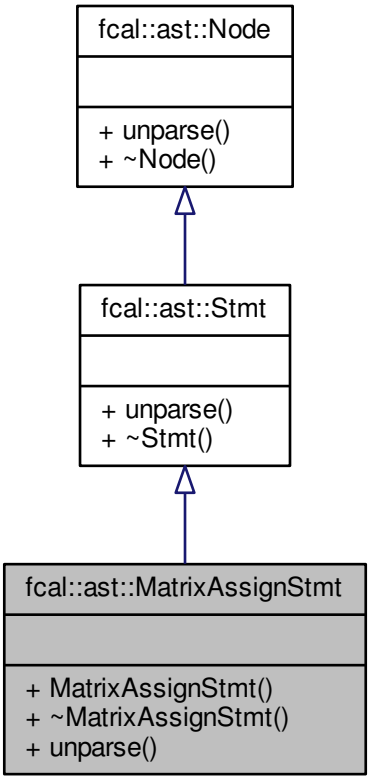
6.37 fcal::ast::MatrixAssignStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::MatrixAssignStmt:



Collaboration diagram for fcal::ast::MatrixAssignStmt:



Public Member Functions

- MatrixAssignStmt (std::string v, Expr ∗e1, Expr ∗e2, Expr ∗e3)
- ∼MatrixAssignStmt ()
- std::string unparse ()

6.37.1 Constructor & Destructor Documentation

6.37.1.1 fcal::ast::MatrixAssignStmt::MatrixAssignStmt (std::string *v,* Expr ∗ *e1,* Expr ∗ *e2,* Expr ∗ *e3*) [inline]

6.37.1.2 fcal::ast::MatrixAssignStmt::∼MatrixAssignStmt ( ) [inline]

6.37.2 Member Function Documentation

6.37.2.1 std::string fcal::ast::MatrixAssignStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

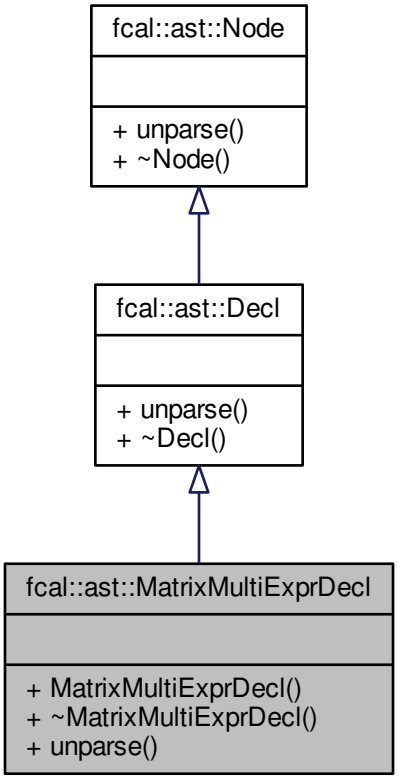
The documentation for this class was generated from the following file:

- include/ast.h

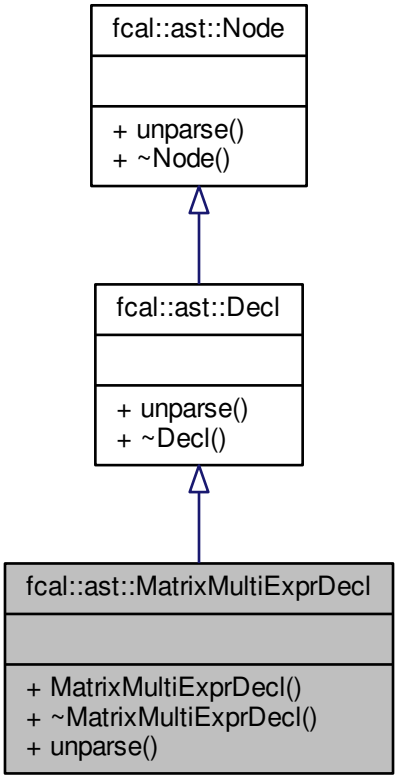
6.38 fcal::ast::MatrixMultiExprDecl Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::MatrixMultiExprDecl:



Collaboration diagram for fcal::ast::MatrixMultiExprDecl:



Public Member Functions

- MatrixMultiExprDecl (std::string s1, std::string s2, std::string s3, Expr ∗e1, Expr ∗e2, Expr ∗e3)
- ∼MatrixMultiExprDecl ()
- std::string unparse ()

6.38.1 Constructor & Destructor Documentation

6.38.1.1 fcal::ast::MatrixMultiExprDecl::MatrixMultiExprDecl (std::string *s1*, std::string *s2*, std::string *s3*, Expr ∗ *e1*, Expr ∗ *e2*, Expr ∗ *e3*) [inline]

6.38.1.2 fcal::ast::MatrixMultiExprDecl::∼MatrixMultiExprDecl ( ) [inline]

6.38.2 Member Function Documentation

6.38.2.1 std::string fcal::ast::MatrixMultiExprDecl::unparse ( ) [inline], [virtual]

Implements fcal::ast::Decl.

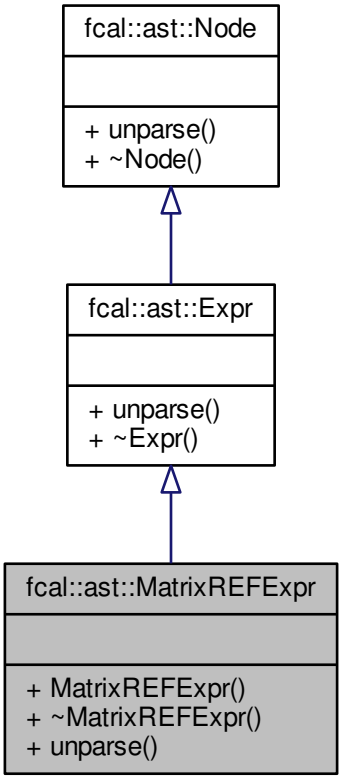
The documentation for this class was generated from the following file:

- include/ast.h

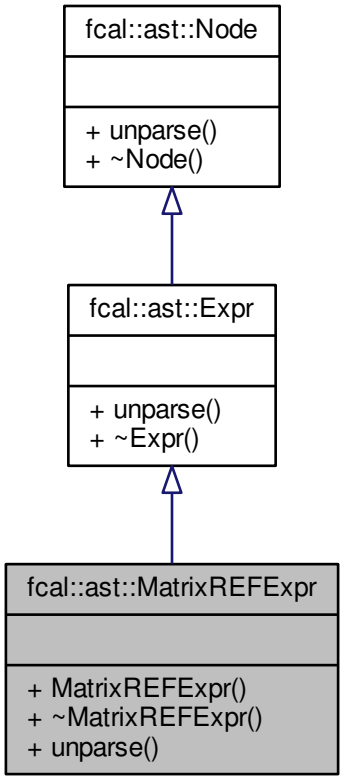
6.39 fcal::ast::MatrixREFExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::MatrixREFExpr:



Collaboration diagram for fcal::ast::MatrixREFExpr:



Public Member Functions

- MatrixREFExpr (std::string v, Expr ∗e1, Expr ∗e2)
- ∼MatrixREFExpr ()
- std::string unparse ()

6.39.1 Constructor & Destructor Documentation

6.39.1.1 fcal::ast::MatrixREFExpr::MatrixREFExpr (std::string *v*, Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.39.1.2 fcal::ast::MatrixREFExpr::∼MatrixREFExpr ( ) [inline]

6.39.2 Member Function Documentation

6.39.2.1 std::string fcal::ast::MatrixREFExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

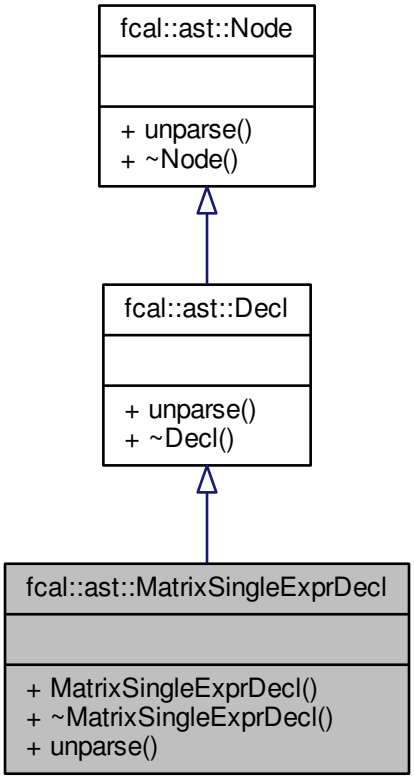
The documentation for this class was generated from the following file:

- include/ast.h

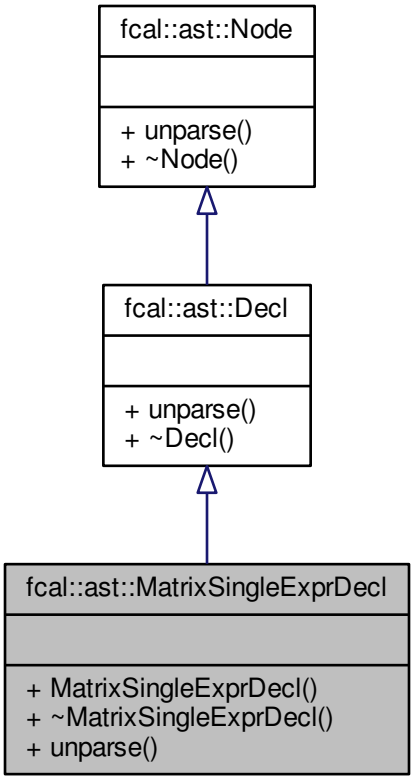
6.40 fcal::ast::MatrixSingleExprDecl Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::MatrixSingleExprDecl:



Collaboration diagram for fcal::ast::MatrixSingleExprDecl:



Public Member Functions

- MatrixSingleExprDecl (std::string s1, Expr *e1)
- ~MatrixSingleExprDecl ()
- std::string unparse ()

6.40.1 Constructor & Destructor Documentation

6.40.1.1 fcal::ast::MatrixSingleExprDecl::MatrixSingleExprDecl (std::string *s1*, Expr * *e1*) [inline]

6.40.1.2 fcal::ast::MatrixSingleExprDecl::~MatrixSingleExprDecl ( ) [inline]

6.40.2 Member Function Documentation

6.40.2.1 std::string fcal::ast::MatrixSingleExprDecl::unparse ( ) [inline], [virtual]

Implements fcal::ast::Decl.

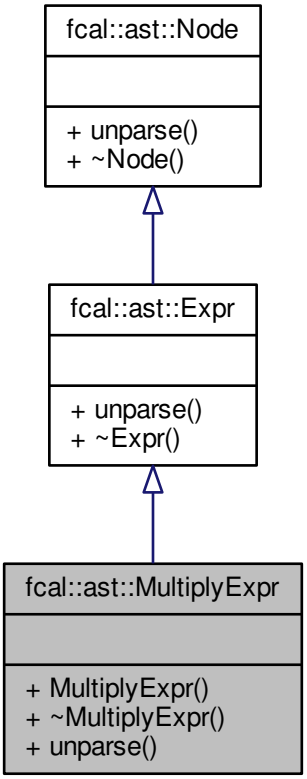
The documentation for this class was generated from the following file:

- include/ast.h

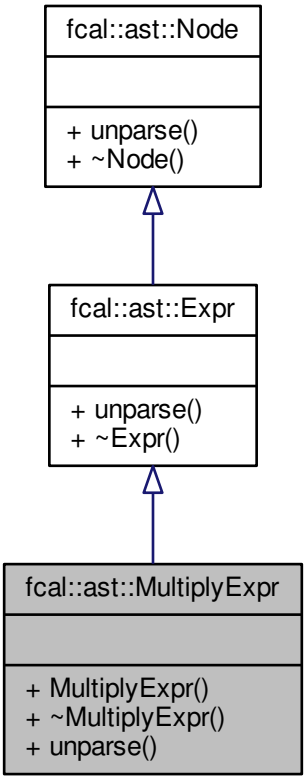
6.41 fcal::ast::MultiplyExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::MultiplyExpr:



Collaboration diagram for fcal::ast::MultiplyExpr:



Public Member Functions

- MultiplyExpr (Expr ∗e1, Expr ∗e2)
- ∼MultiplyExpr ()
- std::string unparse ()

6.41.1 Constructor & Destructor Documentation

6.41.1.1 fcal::ast::MultiplyExpr::MultiplyExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.41.1.2 fcal::ast::MultiplyExpr::∼MultiplyExpr ( ) [inline]

6.41.2 Member Function Documentation

6.41.2.1 std::string fcal::ast::MultiplyExpr::unparse ( ) [inline], [virtual]

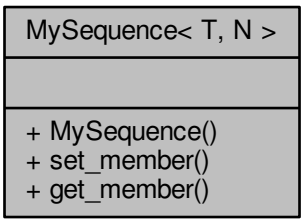
Implements fcal::ast::Expr.

The documentation for this class was generated from the following file:

- include/ast.h

6.42 MySequence< T, N > Class Template Reference

Collaboration diagram for MySequence< T, N >:



Public Member Functions

- MySequence (void)
- void set_member (int x, T value)
- T get_member (int x)

6.42.1 Constructor & Destructor Documentation

6.42.1.1 template<class T , int N> MySequence< T, N >::MySequence (void) [inline]

6.42.2 Member Function Documentation

6.42.2.1 template<class T , int N> T MySequence< T, N >::get_member (int *x*) [inline]

6.42.2.2 template<class T , int N> void MySequence< T, N >::set_member (int *x*, T *value*) [inline]

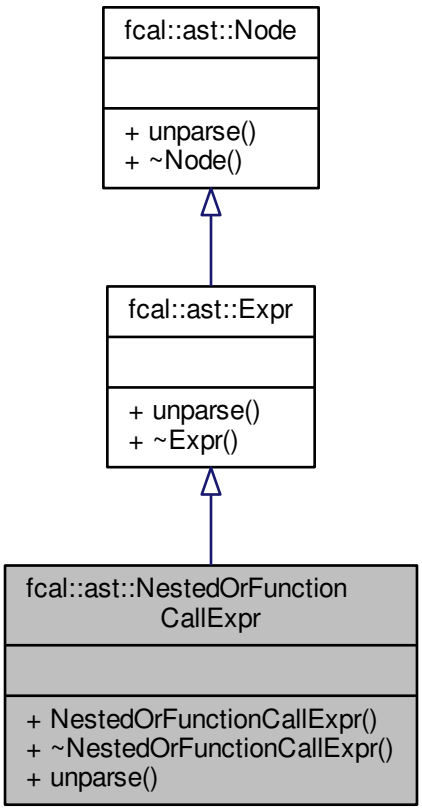
The documentation for this class was generated from the following file:

- src/templates.cc

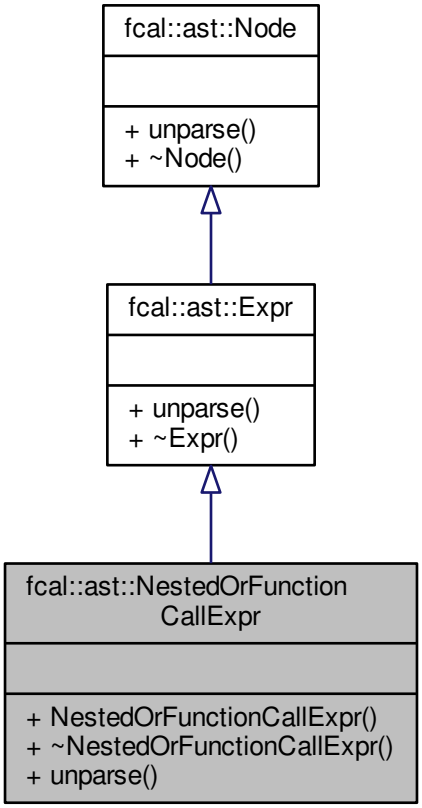
6.43 fcal::ast::NestedOrFunctionCallExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::NestedOrFunctionCallExpr:



Collaboration diagram for fcal::ast::NestedOrFunctionCallExpr:



Public Member Functions

- NestedOrFunctionCallExpr (std::string v, Expr ∗e)
- ∼NestedOrFunctionCallExpr ()
- std::string unparse ()

6.43.1 Constructor & Destructor Documentation

6.43.1.1 fcal::ast::NestedOrFunctionCallExpr::NestedOrFunctionCallExpr (std::string *v*, Expr ∗ *e*) [inline]

6.43.1.2 fcal::ast::NestedOrFunctionCallExpr::∼NestedOrFunctionCallExpr ( ) [inline]

6.43.2 Member Function Documentation

6.43.2.1 std::string fcal::ast::NestedOrFunctionCallExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

The documentation for this class was generated from the following file:

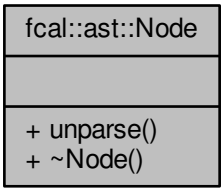
- include/ast.h

6.44 fcal::ast::Node Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::Node:

Collaboration diagram for fcal::ast::Node:



Public Member Functions

- virtual std::string unparse ()=0
- virtual ~Node ()

6.44.1 Detailed Description

This is the base class for the Stmts, Stmt, Decl, and Expr classes. This class is purely virtual.

6.44.2 Constructor & Destructor Documentation

6.44.2.1 virtual fcal::ast::Node::~Node ( ) [inline], [virtual]

6.44.3 Member Function Documentation

6.44.3.1 virtual std::string fcal::ast::Node::unparse ( ) [pure virtual]

Implemented in fcal::ast::NotExpr, fcal::ast::IfExpr, fcal::ast::LetExpr, fcal::ast::ParenthesesExpr, fcal::ast::NestedOrFunctionCallExpr, fcal::ast::MatrixREFExpr, fcal::ast::LogicalOrExpr, fcal::ast::LogicalAndExpr, fcal::ast::NotEqualsExpr, fcal::ast::EqualsEqualsExpr, fcal::ast::LessEqualExpr, fcal::ast::LessExpr, fcal::ast::GreaterEqualExpr, fcal::ast::GreaterExpr, fcal::ast::SubtractExpr, fcal::ast::AddExpr, fcal::ast::DivideExpr, fcal::ast::MultiplyExpr, fcal::ast::BooleanConstExpr, fcal::ast::StringConstExpr, fcal::ast::FloatConstExpr, fcal::ast::IntegerConstExpr, fcal::ast::VarNameExpr, fcal::ast::MatrixSingleExprDecl, fcal::ast::MatrixMultiExprDecl, fcal::ast::BooleanDecl, fcal::ast::StringDecl, fcal::ast::FloatDecl, fcal::ast::IntDecl, fcal::ast::SemiColonStmt, fcal::ast::WhileStmt, fcal::ast::RepeatStmt, fcal::ast::PrintStmt, fcal::ast::MatrixAssignStmt, fcal::ast::AssignStmt, fcal::ast::IfElseStmt, fcal::ast::IfStmt, fcal::ast::BracketsStmt, fcal::ast::DeclStmt, fcal::ast::SeqStmts, fcal::ast::EmptyStmts, fcal::ast::Program, fcal::ast::Expr, fcal::ast::Decl, fcal::ast::Stmt, and fcal::ast::Stmts.

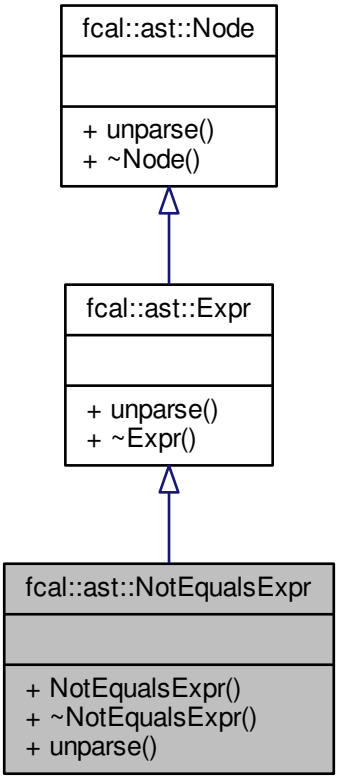
The documentation for this class was generated from the following file:

- include/ast.h

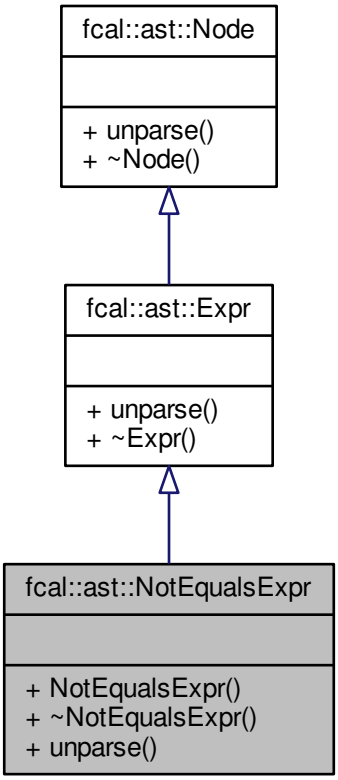
6.45 fcal::ast::NotEqualsExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::NotEqualsExpr:



Collaboration diagram for fcal::ast::NotEqualsExpr:



Public Member Functions

- NotEqualsExpr (Expr ∗e1, Expr ∗e2)
- ∼NotEqualsExpr ()
- std::string unparse ()

6.45.1 Constructor & Destructor Documentation

6.45.1.1 fcal::ast::NotEqualsExpr::NotEqualsExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.45.1.2 fcal::ast::NotEqualsExpr::∼NotEqualsExpr ( ) [inline]

6.45.2 Member Function Documentation

6.45.2.1 std::string fcal::ast::NotEqualsExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

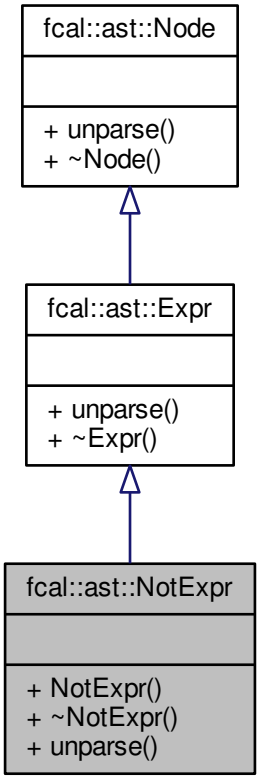
The documentation for this class was generated from the following file:

- include/ast.h

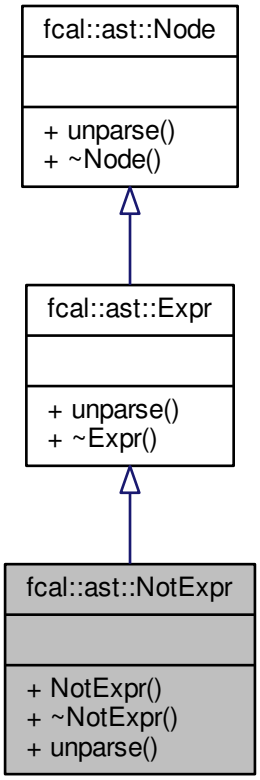
6.46 fcal::ast::NotExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::NotExpr:



Collaboration diagram for fcal::ast::NotExpr:



Public Member Functions

- NotExpr (Expr ∗e)
- ∼NotExpr ()
- std::string unparse ()

6.46.1 Constructor & Destructor Documentation

6.46.1.1 fcal::ast::NotExpr::NotExpr (Expr ∗ *e*) [inline], [explicit]

6.46.1.2 fcal::ast::NotExpr::∼NotExpr ( ) [inline]

6.46.2 Member Function Documentation

6.46.2.1 std::string fcal::ast::NotExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

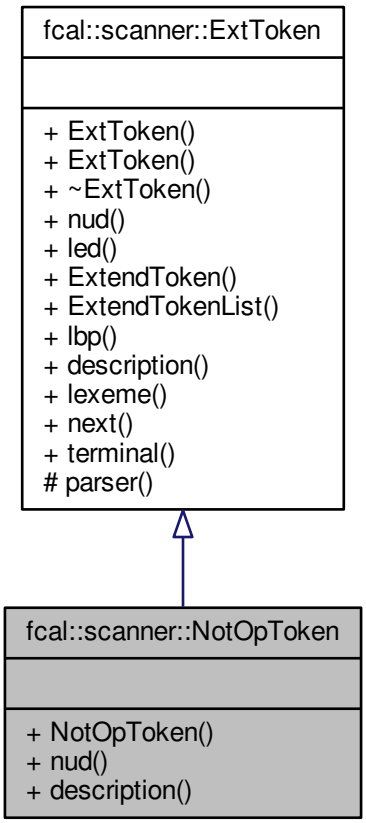
The documentation for this class was generated from the following file:

- include/ast.h

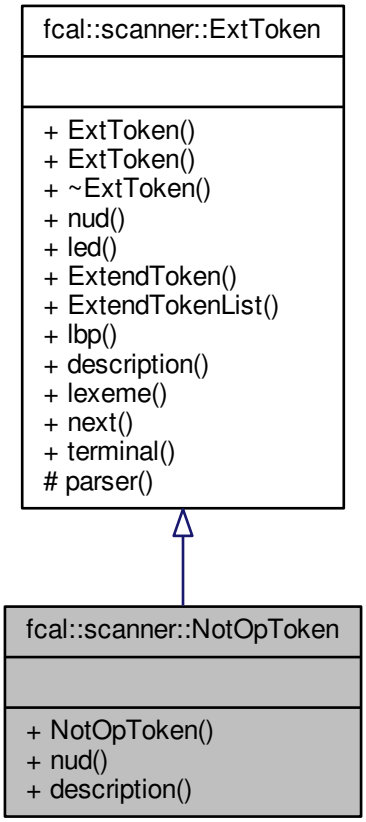
6.47 fcal::scanner::NotOpToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::NotOpToken:



Collaboration diagram for fcal::scanner::NotOpToken:



Public Member Functions

- NotOpToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()

Additional Inherited Members

6.47.1 Constructor & Destructor Documentation

6.47.1.1 fcal::scanner::NotOpToken::NotOpToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.47.2 Member Function Documentation

6.47.2.1 std::string fcal::scanner::NotOpToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.47.2.2 parser::ParseResult fcal::scanner::NotOpToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

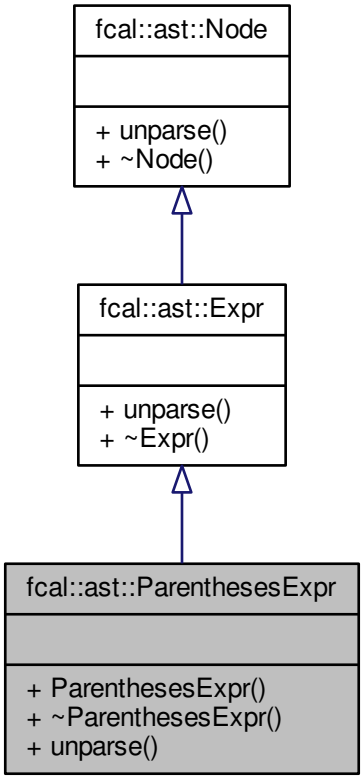
The documentation for this class was generated from the following file:

- include/ext_token.h

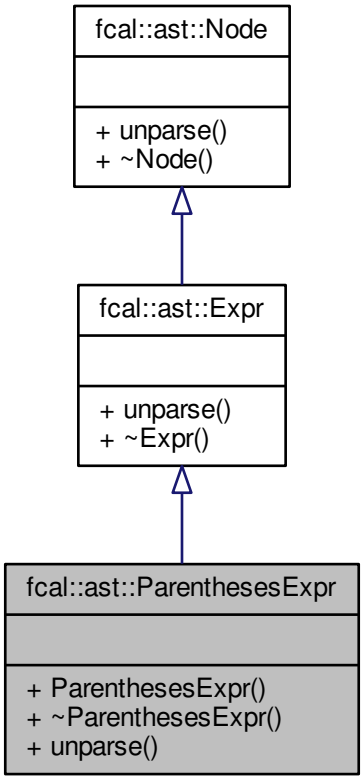
6.48 fcal::ast::ParenthesesExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::ParenthesesExpr:



Collaboration diagram for fcal::ast::ParenthesesExpr:



Public Member Functions

- ParenthesesExpr (Expr *e)
- ~ParenthesesExpr ()
- std::string unparse ()

6.48.1 Constructor & Destructor Documentation

6.48.1.1 fcal::ast::ParenthesesExpr::ParenthesesExpr (Expr * e) [inline], [explicit]

6.48.1.2 fcal::ast::ParenthesesExpr::~ParenthesesExpr ( ) [inline]

6.48.2 Member Function Documentation

6.48.2.1 std::string fcal::ast::ParenthesesExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

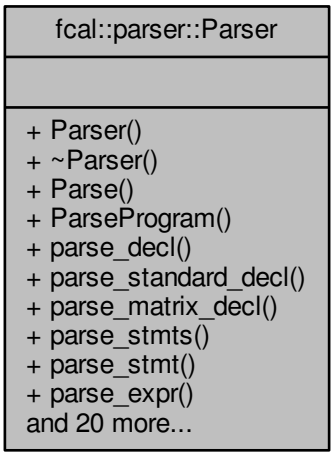
The documentation for this class was generated from the following file:

- include/ast.h

6.49 fcal::parser::Parser Class Reference

`#include <parser.h>`

Collaboration diagram for fcal::parser::Parser:



Public Member Functions

- Parser (void)
- ~Parser (void)
- ParseResult Parse (const char *text)
- ParseResult ParseProgram ()
- ParseResult parse_decl ()
- ParseResult parse_standard_decl ()
- ParseResult parse_matrix_decl ()
- ParseResult parse_stmts ()
- ParseResult parse_stmt ()
- ParseResult parse_expr (int rbp)
- ParseResult parse_true_kwd ()
- ParseResult parse_false_kwd ()
- ParseResult parse_int_const ()
- ParseResult parse_float_const ()
- ParseResult parse_string_const ()
- ParseResult parse_char_const ()
- ParseResult parse_variable_name ()
- ParseResult parse_nested_expr ()
- ParseResult parse_not_expr ()
- ParseResult parse_let_expr ()
- ParseResult parse_if_expr ()
- ParseResult parse_addition (ParseResult left)
- ParseResult parse_multiplication (ParseResult left)
- ParseResult parse_subtraction (ParseResult left)

- ParseResult parse_division (ParseResult left)
- ParseResult parse_relational_expr (ParseResult left)
- void match (const scanner::TokenType &tt)
- bool attempt_match (const scanner::TokenType &tt)
- bool next_is (const scanner::TokenType &tt)
- void next_token (void)

6.49.1 Detailed Description

The Parser class is used to parse a Token list generated by the scanner into an AST that represents the syntax of the productions in the FCAL language. Most of the parse functions are split up by production type (Program, Stmts, Stmt, Decl, and Expr) and use sequential token matching and the classes from ast.h to build the AST and make sure it is grammatically correct. The code that we changed in iteration 3 involved updating the code to produce the AST using the newly created ast.h classes.

6.49.2 Constructor & Destructor Documentation

6.49.2.1 fcal::parser::Parser::Parser (void) [inline]

6.49.2.2 fcal::parser::Parser::~Parser (void)

6.49.3 Member Function Documentation

6.49.3.1 bool fcal::parser::Parser::attempt_match (const scanner::TokenType & *tt*)

6.49.3.2 void fcal::parser::Parser::match (const scanner::TokenType & *tt*)

6.49.3.3 bool fcal::parser::Parser::next_is (const scanner::TokenType & *tt*)

6.49.3.4 void fcal::parser::Parser::next_token (void)

6.49.3.5 ParseResult fcal::parser::Parser::Parse (const char * *text*)

6.49.3.6 ParseResult fcal::parser::Parser::parse_addition (ParseResult *left*)

6.49.3.7 ParseResult fcal::parser::Parser::parse_char_const ( )

6.49.3.8 ParseResult fcal::parser::Parser::parse_decl ( )

6.49.3.9 ParseResult fcal::parser::Parser::parse_division (ParseResult *left*)

6.49.3.10 ParseResult fcal::parser::Parser::parse_expr (int *rbp*)

6.49.3.11 ParseResult fcal::parser::Parser::parse_false_kwd ( )

6.49.3.12 ParseResult fcal::parser::Parser::parse_float_const ( )

6.49.3.13 ParseResult fcal::parser::Parser::parse_if_expr ( )

6.49.3.14 ParseResult fcal::parser::Parser::parse_int_const ( )

6.49.3.15 ParseResult fcal::parser::Parser::parse_let_expr ( )

6.49.3.16 ParseResult fcal::parser::Parser::parse_matrix_decl ( )

6.49.3.17 ParseResult fcal::parser::Parser::parse_multiplication (ParseResult *left*)

6.49.3.18 ParseResult fcal::parser::Parser::parse_nested_expr ( )

6.49.3.19 ParseResult fcal::parser::Parser::parse_not_expr ( )

6.49.3.20 ParseResult fcal::parser::Parser::parse_relational_expr (ParseResult *left*)

6.49.3.21 ParseResult fcal::parser::Parser::parse_standard_decl ( )

6.49.3.22 ParseResult fcal::parser::Parser::parse_stmt ( )

6.49.3.23 ParseResult fcal::parser::Parser::parse_stmts ( )

6.49.3.24 ParseResult fcal::parser::Parser::parse_string_const ( )

6.49.3.25 ParseResult fcal::parser::Parser::parse_subtraction (ParseResult *left*)

6.49.3.26 ParseResult fcal::parser::Parser::parse_true_kwd ( )

6.49.3.27 ParseResult fcal::parser::Parser::parse_variable_name ( )

6.49.3.28 ParseResult fcal::parser::Parser::ParseProgram ( )

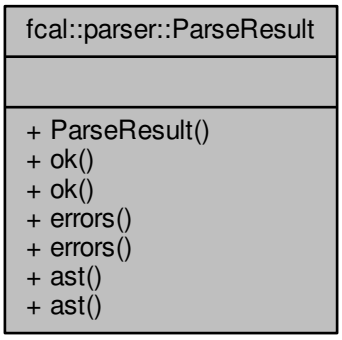
The documentation for this class was generated from the following files:

- include/parser.h
- src/parser.cc

6.50 fcal::parser::ParseResult Class Reference

`#include <parse_result.h>`

Collaboration diagram for fcal::parser::ParseResult:



Public Member Functions

- ParseResult (void)
- bool ok (void) const
- void ok (bool result_in)
- std::string errors (void) const
- void errors (const std::string str_in)
- ast::Node * ast (void)
- void ast (ast::Node *Node_ptr)

6.50.1 Constructor & Destructor Documentation

6.50.1.1 fcal::parser::ParseResult::ParseResult (void) [inline]

6.50.2 Member Function Documentation

6.50.2.1 ast::Node* fcal::parser::ParseResult::ast (void) [inline]

6.50.2.2 void fcal::parser::ParseResult::ast (ast::Node * *Node_ptr*) [inline]

6.50.2.3 std::string fcal::parser::ParseResult::errors (void) const [inline]

6.50.2.4 void fcal::parser::ParseResult::errors (const std::string *str_in*) [inline]

6.50.2.5 bool fcal::parser::ParseResult::ok (void) const [inline]

6.50.2.6 void fcal::parser::ParseResult::ok (bool *result_in*) [inline]

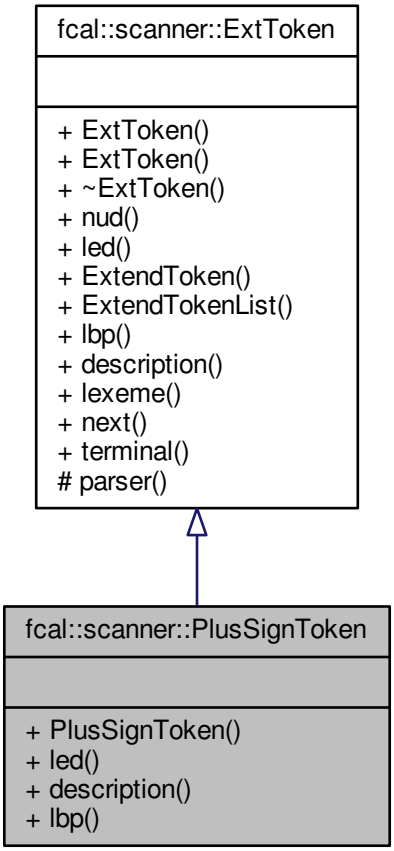
The documentation for this class was generated from the following file:

- include/parse_result.h

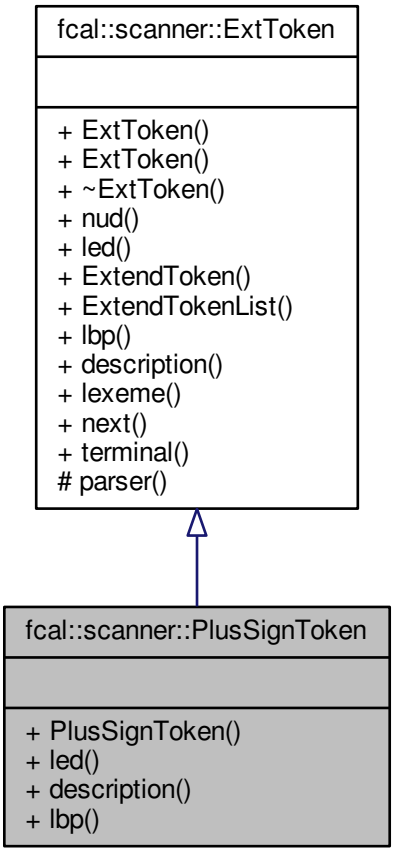
6.51 fcal::scanner::PlusSignToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::PlusSignToken:



Collaboration diagram for fcal::scanner::PlusSignToken:



Public Member Functions

- PlusSignToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult led (parser::ParseResult left)
- std::string description ()
- int lbp ()

Additional Inherited Members

6.51.1 Constructor & Destructor Documentation

6.51.1.1 fcal::scanner::PlusSignToken::PlusSignToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.51.2 Member Function Documentation

6.51.2.1 std::string fcal::scanner::PlusSignToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.51.2.2 int fcal::scanner::PlusSignToken::lbp ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.51.2.3 parser::ParseResult fcal::scanner::PlusSignToken::led (parser::ParseResult *left*) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

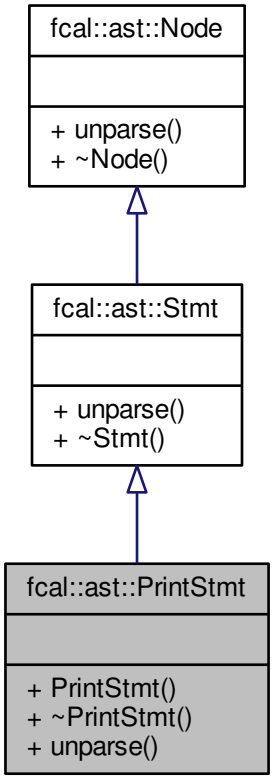
The documentation for this class was generated from the following file:

- include/ext_token.h

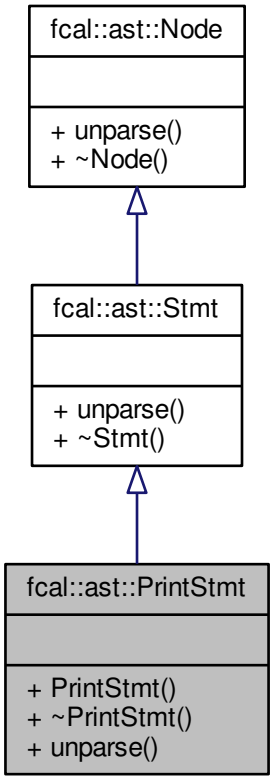
6.52 fcal::ast::PrintStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::PrintStmt:



Collaboration diagram for fcal::ast::PrintStmt:



Public Member Functions

- PrintStmt (Expr ∗e)
- ∼PrintStmt ()
- std::string unparse ()

6.52.1 Constructor & Destructor Documentation

6.52.1.1 fcal::ast::PrintStmt::PrintStmt (Expr ∗ *e*) [inline], [explicit]

6.52.1.2 fcal::ast::PrintStmt::∼PrintStmt ( ) [inline]

6.52.2 Member Function Documentation

6.52.2.1 std::string fcal::ast::PrintStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

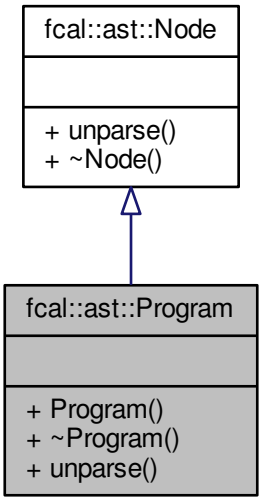
The documentation for this class was generated from the following file:

- include/ast.h

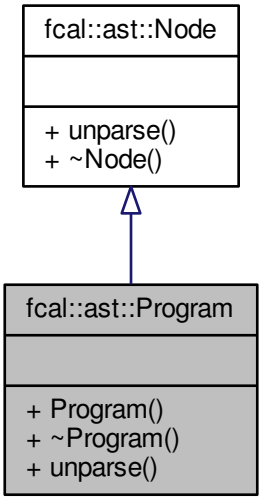
6.53 fcal::ast::Program Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::Program:



Collaboration diagram for fcal::ast::Program:



Public Member Functions

- Program (std::string v, Stmts *s)
- ~Program ()
- std::string unparse ()

6.53.1 Detailed Description

The following Program class provides a constructor for the Program syntax provided in the FCAL grammar. This is a concrete class.

6.53.2 Constructor & Destructor Documentation

6.53.2.1 fcal::ast::Program::Program (std::string *v*, Stmts * *s*) [inline]

6.53.2.2 fcal::ast::Program::~Program ( ) [inline]

6.53.3 Member Function Documentation

6.53.3.1 std::string fcal::ast::Program::unparse ( ) [inline], [virtual]

Implements fcal::ast::Node.

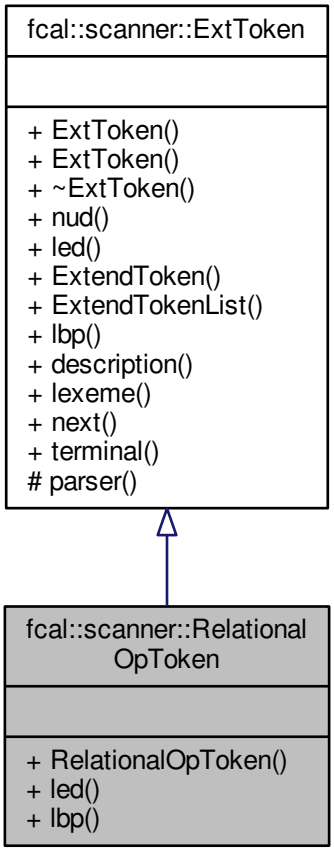
The documentation for this class was generated from the following file:

- include/ast.h

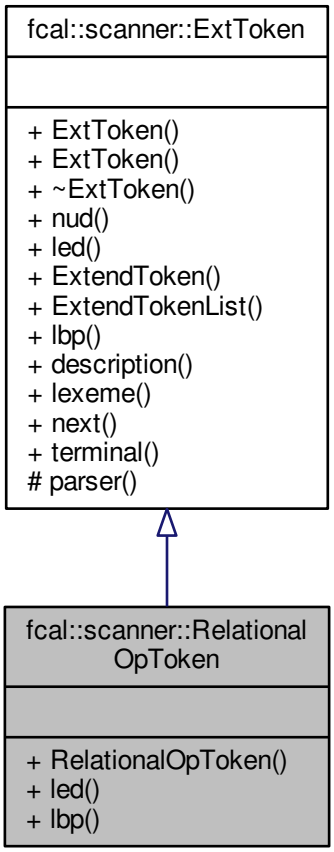
6.54 fcal::scanner::RelationalOpToken Class Reference

```
#include <ext_token.h>
```

Inheritance diagram for fcal::scanner::RelationalOpToken:



Collaboration diagram for fcal::scanner::RelationalOpToken:



Public Member Functions

- RelationalOpToken (parser::Parser ∗p, Token ∗t, std::string d)
- parser::ParseResult led (parser::ParseResult left)
- int lbp ()

Additional Inherited Members

6.54.1 Constructor & Destructor Documentation

6.54.1.1 fcal::scanner::RelationalOpToken::RelationalOpToken (parser::Parser ∗ *p*, Token ∗ *t*, std::string *d*) [inline]

6.54.2 Member Function Documentation

6.54.2.1 int fcal::scanner::RelationalOpToken::lbp ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.54.2.2 parser::ParseResult fcal::scanner::RelationalOpToken::led (parser::ParseResult *left*) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

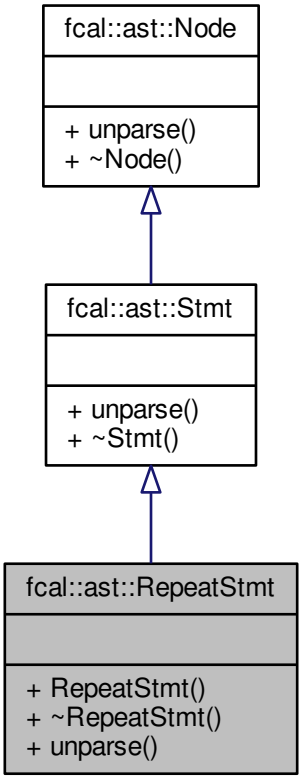
The documentation for this class was generated from the following file:

- include/ext_token.h

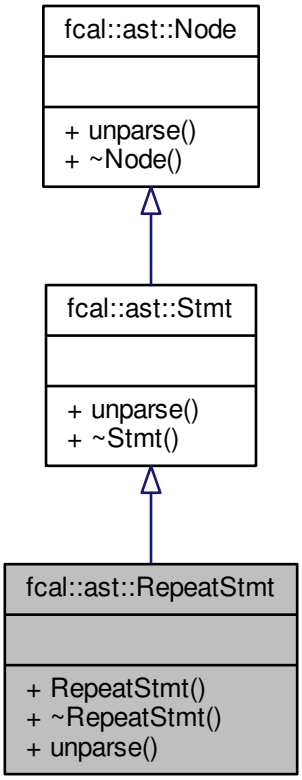
6.55 fcal::ast::RepeatStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::RepeatStmt:



Collaboration diagram for fcal::ast::RepeatStmt:



Public Member Functions

- RepeatStmt (std::string v, Expr ∗e1, Expr ∗e2, Stmt ∗s)
- ∼RepeatStmt ()
- std::string unparse ()

6.55.1 Constructor & Destructor Documentation

6.55.1.1 fcal::ast::RepeatStmt::RepeatStmt (std::string *v*, Expr ∗ *e1*, Expr ∗ *e2*, Stmt ∗ *s*) [inline]

6.55.1.2 fcal::ast::RepeatStmt::∼RepeatStmt ( ) [inline]

6.55.2 Member Function Documentation

6.55.2.1 std::string fcal::ast::RepeatStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

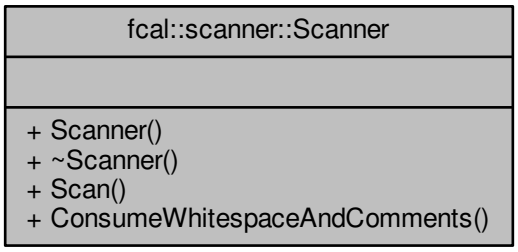
The documentation for this class was generated from the following file:

- include/ast.h

6.56 fcal::scanner::Scanner Class Reference

`#include <scanner.h>`

Collaboration diagram for fcal::scanner::Scanner:



Public Member Functions

- Scanner ()
- ~Scanner ()
- Token * Scan (const char *text)
- int ConsumeWhitespaceAndComments (const char *text, regex_t *white_space, regex_t *block_comment, regex_t *line_comment)

6.56.1 Detailed Description

The Scanner class is used to scan an FCAL program (inputted as a character string) for tokens and send them to a parser. The Scan function is the main component of this class; it does all of the regex matching to determine the next token in the program and creates a Token object list to be returned. This function uses an array of regex_t regular expressions (which correspond to FCAL language tokens) for token matching.

6.56.2 Constructor & Destructor Documentation

6.56.2.1 fcal::scanner::Scanner::Scanner ( )

6.56.2.2 fcal::scanner::Scanner::~Scanner ( )

6.56.3 Member Function Documentation

6.56.3.1 int fcal::scanner::Scanner::ConsumeWhitespaceAndComments (const char * *text*, regex_t * *white_space*, regex_t * *block_comment*, regex_t * *line_comment*)

6.56.3.2 Token * fcal::scanner::Scanner::Scan (const char * *text*)

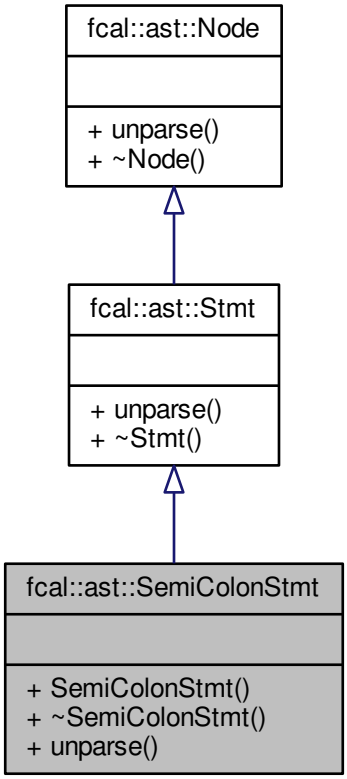
The documentation for this class was generated from the following files:

- include/scanner.h
- src/scanner.cc

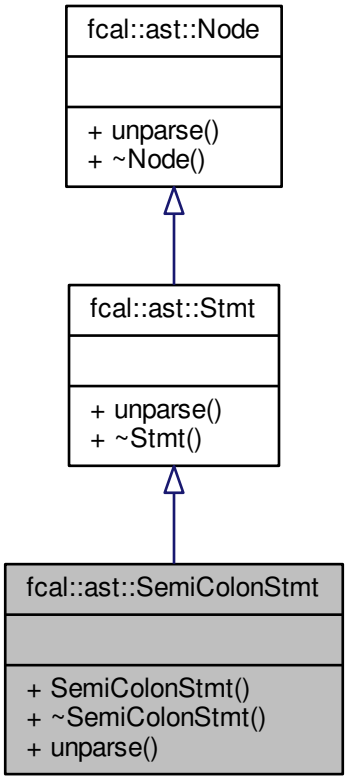
6.57 fcal::ast::SemiColonStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::SemiColonStmt:



Collaboration diagram for fcal::ast::SemiColonStmt:



Public Member Functions

- SemiColonStmt ()
- ~SemiColonStmt ()
- std::string unparse ()

6.57.1 Constructor & Destructor Documentation

6.57.1.1 fcal::ast::SemiColonStmt::SemiColonStmt ( ) [inline]

6.57.1.2 fcal::ast::SemiColonStmt::~SemiColonStmt ( ) [inline]

6.57.2 Member Function Documentation

6.57.2.1 std::string fcal::ast::SemiColonStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

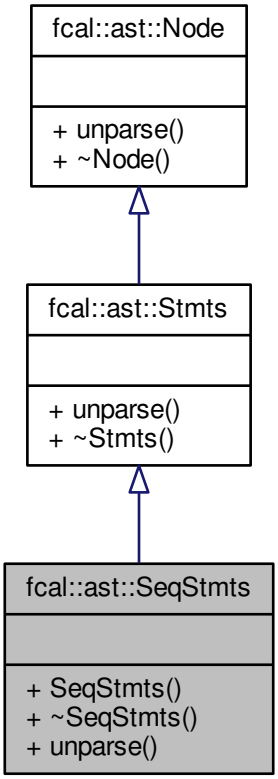
The documentation for this class was generated from the following file:

- include/ast.h

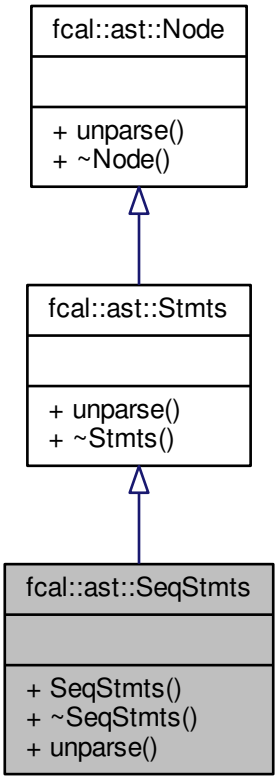
6.58 fcal::ast::SeqStmts Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::SeqStmts:



Collaboration diagram for fcal::ast::SeqStmts:



Public Member Functions

- SeqStmts (Stmt ∗s1, Stmts ∗s2)
- ∼SeqStmts ()
- std::string unparse ()

6.58.1 Constructor & Destructor Documentation

6.58.1.1 fcal::ast::SeqStmts::SeqStmts (Stmt ∗ *s1*, Stmts ∗ *s2*) [inline]

6.58.1.2 fcal::ast::SeqStmts::∼SeqStmts ( ) [inline]

6.58.2 Member Function Documentation

6.58.2.1 std::string fcal::ast::SeqStmts::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmts.

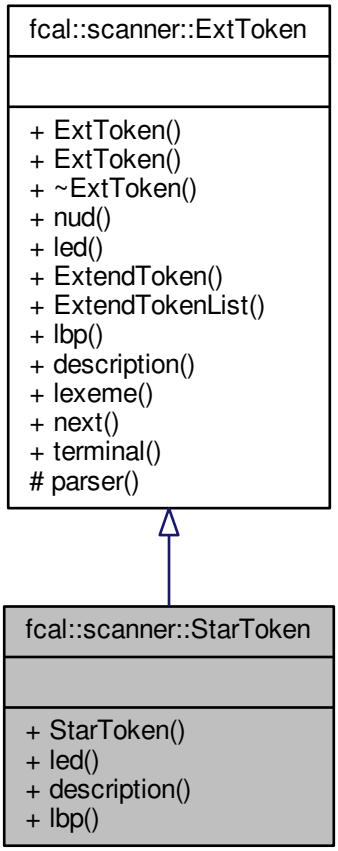
The documentation for this class was generated from the following file:

- include/ast.h

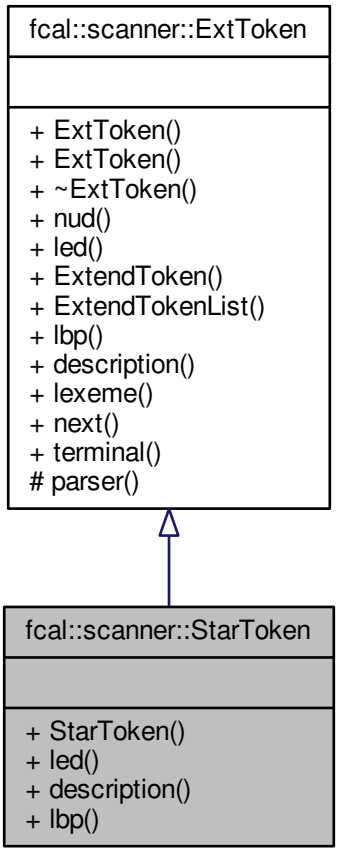
6.59 fcal::scanner::StarToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::StarToken:



Collaboration diagram for fcal::scanner::StarToken:



Public Member Functions

- StarToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult led (parser::ParseResult left)
- std::string description ()
- int lbp ()

Additional Inherited Members

6.59.1 Constructor & Destructor Documentation

6.59.1.1 fcal::scanner::StarToken::StarToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.59.2 Member Function Documentation

6.59.2.1 std::string fcal::scanner::StarToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.59.2.2 int fcal::scanner::StarToken::lbp ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.59.2.3 parser::ParseResult fcal::scanner::StarToken::led (parser::ParseResult *left*) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

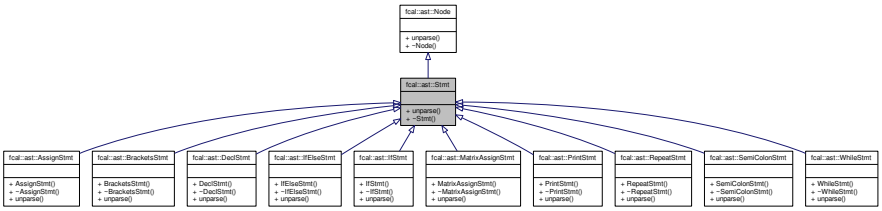
The documentation for this class was generated from the following file:

- include/ext_token.h

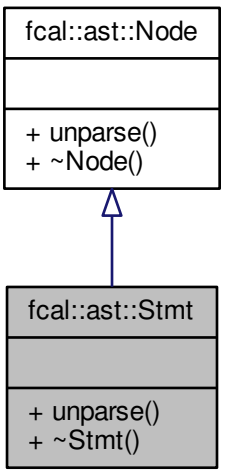
6.60 fcal::ast::Stmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::Stmt:



Collaboration diagram for fcal::ast::Stmt:



Public Member Functions

- virtual std::string unparse ()=0
- virtual ~Stmt ()

6.60.1 Constructor & Destructor Documentation

6.60.1.1 virtual fcal::ast::Stmt::~Stmt ( ) [inline], [virtual]

6.60.2 Member Function Documentation

6.60.2.1 virtual std::string fcal::ast::Stmt::unparse ( ) [pure virtual]

Implements fcal::ast::Node.

Implemented in fcal::ast::SemiColonStmt, fcal::ast::WhileStmt, fcal::ast::RepeatStmt, fcal::ast::PrintStmt, fcal::ast::MatrixAssignStmt, fcal::ast::AssignStmt, fcal::ast::IfElseStmt, fcal::ast::IfStmt, fcal::ast::BracketsStmt, and fcal::ast::DeclStmt.

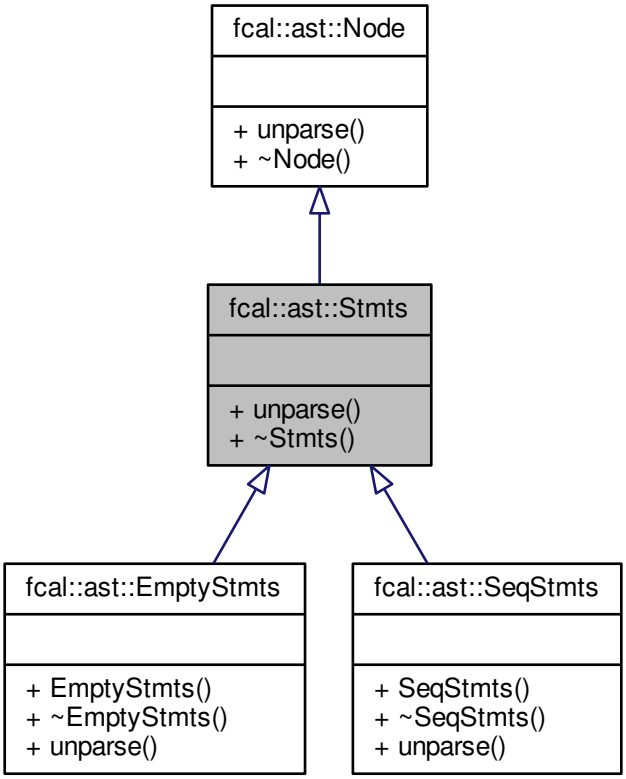
The documentation for this class was generated from the following file:

- include/ast.h

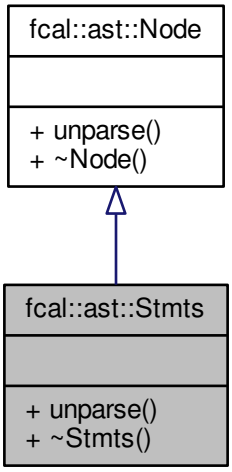
6.61 fcal::ast::Stmts Class Reference

```
#include <ast.h>
```

Inheritance diagram for fcal::ast::Stmts:



Collaboration diagram for fcal::ast::Stmts:



Public Member Functions

- virtual std::string unparse ()=0
- virtual ~Stmts ()

6.61.1 Detailed Description

The following classes represent the terminal types from the provided FCAL grammar. These classes are purely virtual.

6.61.2 Constructor & Destructor Documentation

6.61.2.1 virtual fcal::ast::Stmts::~Stmts ( ) [inline], [virtual]

6.61.3 Member Function Documentation

6.61.3.1 virtual std::string fcal::ast::Stmts::unparse ( ) [pure virtual]

Implements fcal::ast::Node.

Implemented in fcal::ast::SeqStmts, and fcal::ast::EmptyStmts.

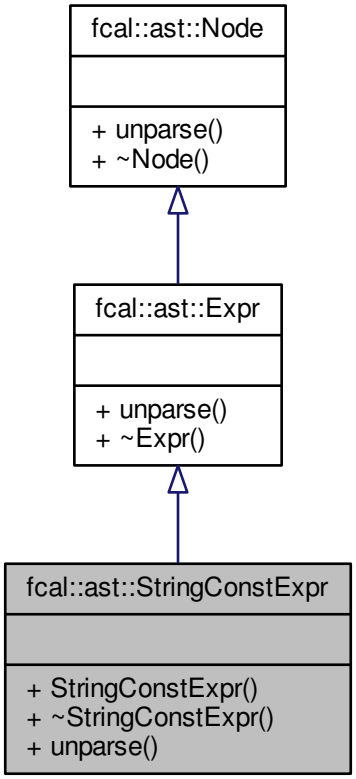
The documentation for this class was generated from the following file:

- include/ast.h

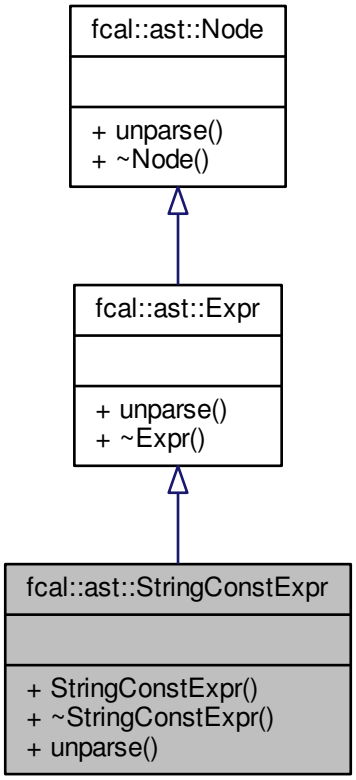
6.62 fcal::ast::StringConstExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::StringConstExpr:



Collaboration diagram for fcal::ast::StringConstExpr:



Public Member Functions

- StringConstExpr (std::string s)
- ~StringConstExpr ()
- std::string unparse ()

6.62.1 Constructor & Destructor Documentation

6.62.1.1 fcal::ast::StringConstExpr::StringConstExpr (std::string *s*) [inline], [explicit]

6.62.1.2 fcal::ast::StringConstExpr::~StringConstExpr ( ) [inline]

6.62.2 Member Function Documentation

6.62.2.1 std::string fcal::ast::StringConstExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

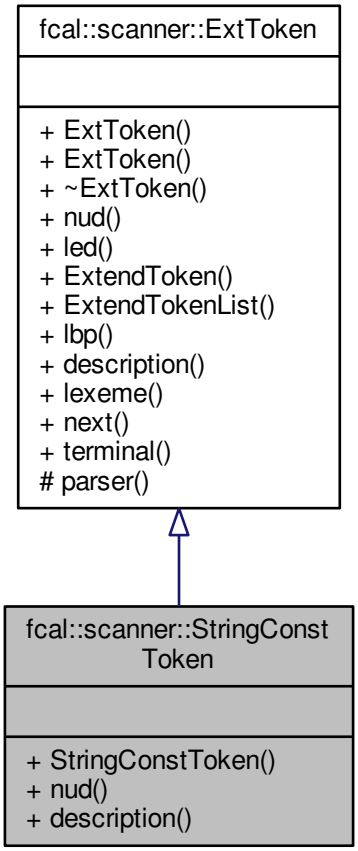
The documentation for this class was generated from the following file:

- include/ast.h

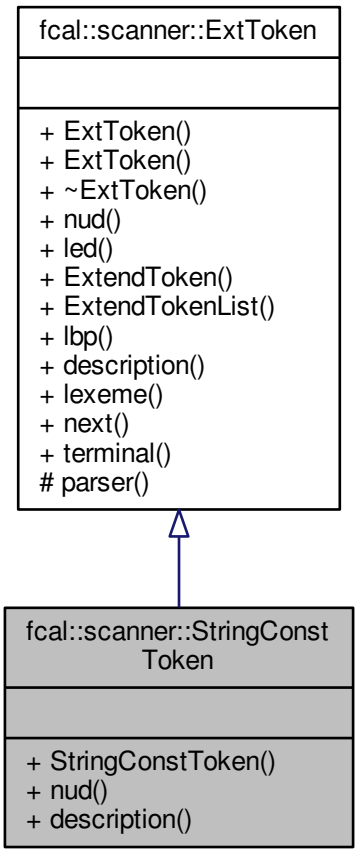
6.63 fcal::scanner::StringConstToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::StringConstToken:



Collaboration diagram for fcal::scanner::StringConstToken:



Public Member Functions

- StringConstToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()

Additional Inherited Members

6.63.1 Constructor & Destructor Documentation

6.63.1.1 fcal::scanner::StringConstToken::StringConstToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.63.2 Member Function Documentation

6.63.2.1 std::string fcal::scanner::StringConstToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.63.2.2 parser::ParseResult fcal::scanner::StringConstToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

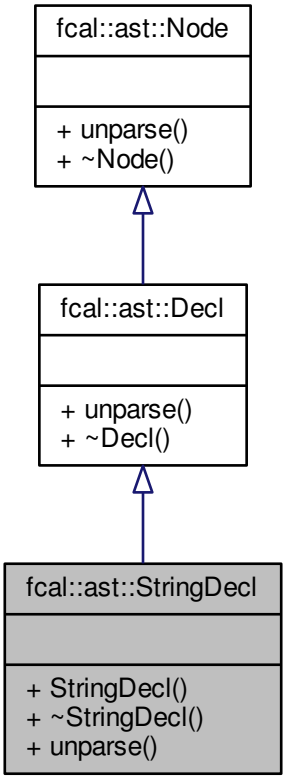
The documentation for this class was generated from the following file:

- include/ext_token.h

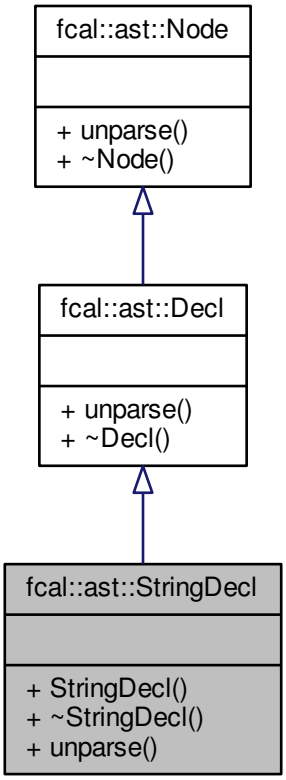
6.64 fcal::ast::StringDecl Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::StringDecl:



Collaboration diagram for fcal::ast::StringDecl:



Public Member Functions

- StringDecl (std::string s)
- ~StringDecl ()
- std::string unparse ()

6.64.1 Constructor & Destructor Documentation

6.64.1.1 fcal::ast::StringDecl::StringDecl (std::string *s*) [inline], [explicit]

6.64.1.2 fcal::ast::StringDecl::~StringDecl ( ) [inline]

6.64.2 Member Function Documentation

6.64.2.1 std::string fcal::ast::StringDecl::unparse ( ) [inline], [virtual]

Implements fcal::ast::Decl.

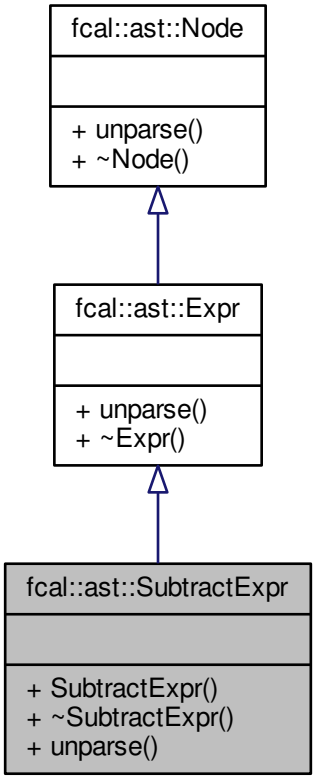
The documentation for this class was generated from the following file:

- include/ast.h

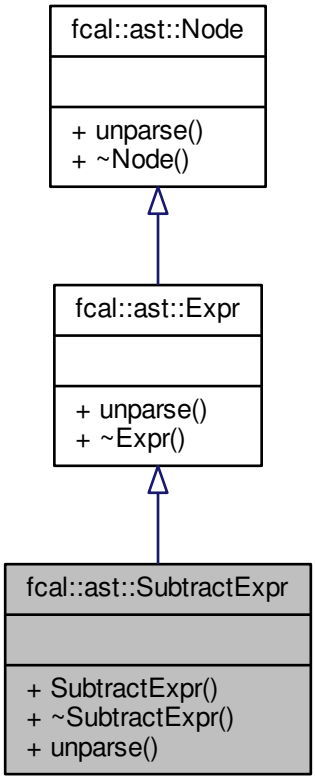
6.65 fcal::ast::SubtractExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::SubtractExpr:



Collaboration diagram for fcal::ast::SubtractExpr:



Public Member Functions

- SubtractExpr (Expr ∗e1, Expr ∗e2)
- ∼SubtractExpr ()
- std::string unparse ()

6.65.1 Constructor & Destructor Documentation

6.65.1.1 fcal::ast::SubtractExpr::SubtractExpr (Expr ∗ *e1*, Expr ∗ *e2*) [inline]

6.65.1.2 fcal::ast::SubtractExpr::∼SubtractExpr ( ) [inline]

6.65.2 Member Function Documentation

6.65.2.1 std::string fcal::ast::SubtractExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

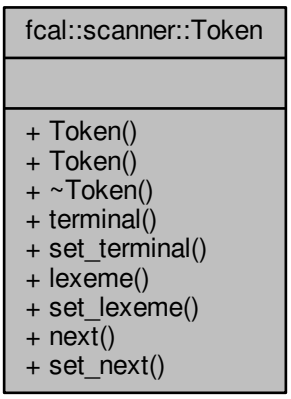
The documentation for this class was generated from the following file:

- include/ast.h

6.66 fcal::scanner::Token Class Reference

`#include <scanner.h>`

Collaboration diagram for fcal::scanner::Token:



Public Member Functions

- Token ()
- Token (std::string s, TokenType t, Token ∗n)
- ∼Token ()
- TokenType terminal () const
- void set_terminal (TokenType t)
- std::string lexeme () const
- void set_lexeme (std::string s)
- Token ∗ next () const
- void set_next (Token ∗n)

6.66.1 Detailed Description

The Token class maintains a singly linked list of Token objects. Each Token has a terminal of type TokenType (a previously defined enum that is used to identify the type of a token), a string lexeme that contains the actual text that was scanned for the token, and a pointer to the next Token in the list. Each of these parameters has a get and set funcition.

6.66.2 Constructor & Destructor Documentation

6.66.2.1 fcal::scanner::Token::Token ( )

6.66.2.2 fcal::scanner::Token::Token (std::string *s*, TokenType *t*, Token * *n*)

6.66.2.3 fcal::scanner::Token::~Token ( )

6.66.3 Member Function Documentation

6.66.3.1 std::string fcal::scanner::Token::lexeme (void) const

6.66.3.2 Token * fcal::scanner::Token::next (void) const

6.66.3.3 void fcal::scanner::Token::set_lexeme (std::string *s*)

6.66.3.4 void fcal::scanner::Token::set_next (Token * *n*)

6.66.3.5 void fcal::scanner::Token::set_terminal (TokenType *t*)

6.66.3.6 TokenType fcal::scanner::Token::terminal (void) const

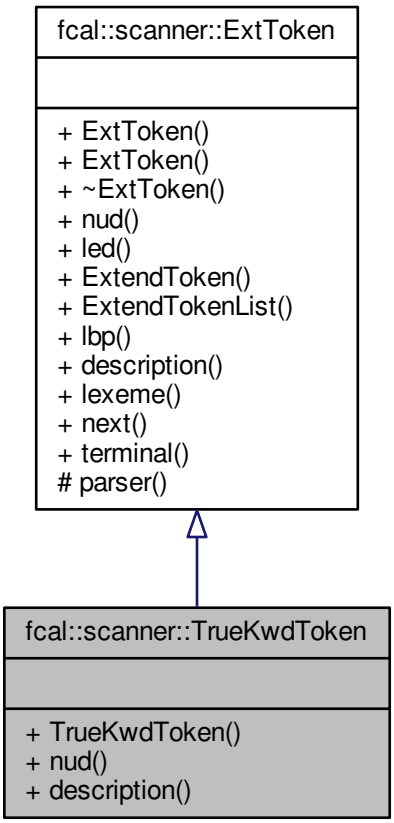
The documentation for this class was generated from the following files:

- include/scanner.h
- src/scanner.cc

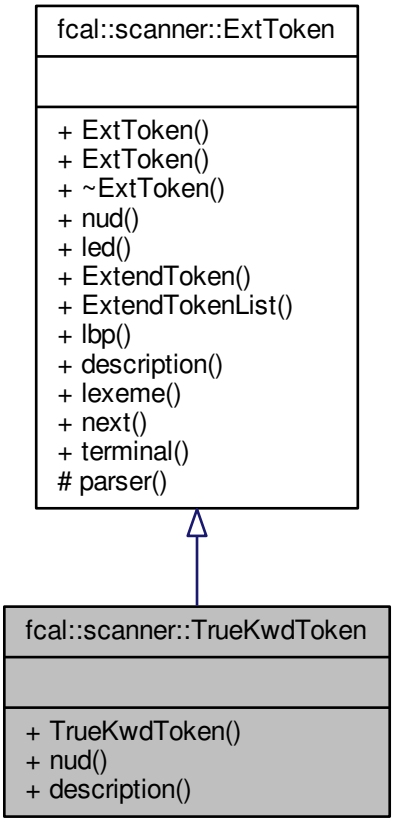
6.67 fcal::scanner::TrueKwdToken Class Reference

```
#include <ext_token.h>
```

Inheritance diagram for fcal::scanner::TrueKwdToken:



Collaboration diagram for fcal::scanner::TrueKwdToken:



Public Member Functions

- TrueKwdToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()

Additional Inherited Members

6.67.1 Constructor & Destructor Documentation

6.67.1.1 fcal::scanner::TrueKwdToken::TrueKwdToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.67.2 Member Function Documentation

6.67.2.1 std::string fcal::scanner::TrueKwdToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.67.2.2 parser::ParseResult fcal::scanner::TrueKwdToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

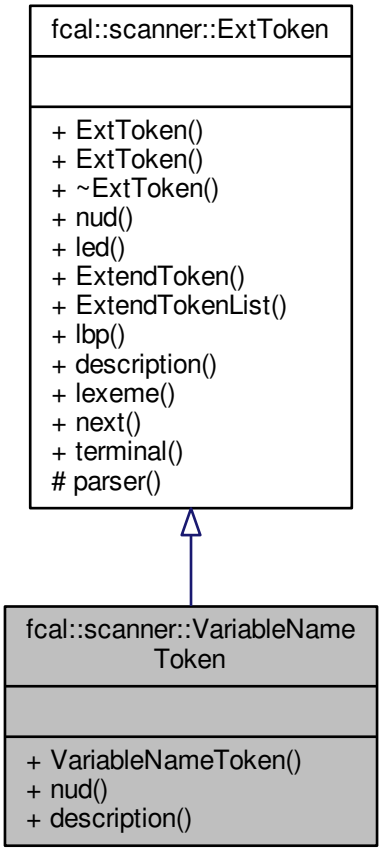
The documentation for this class was generated from the following file:

- include/ext_token.h

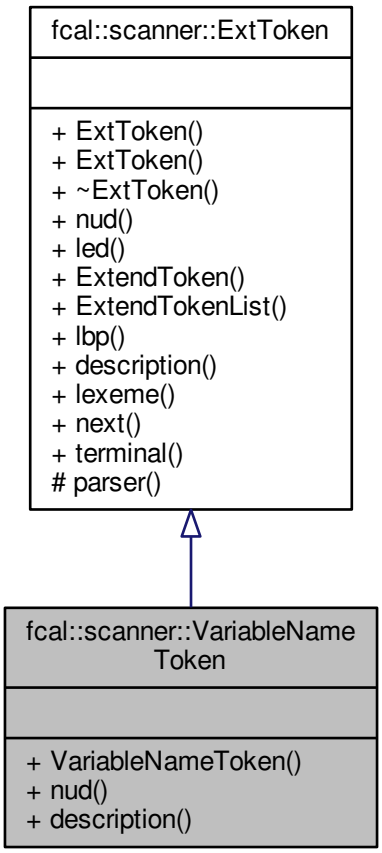
6.68 fcal::scanner::VariableNameToken Class Reference

`#include <ext_token.h>`

Inheritance diagram for fcal::scanner::VariableNameToken:



Collaboration diagram for fcal::scanner::VariableNameToken:



Public Member Functions

- VariableNameToken (parser::Parser ∗p, Token ∗t)
- parser::ParseResult nud ()
- std::string description ()

Additional Inherited Members

6.68.1 Constructor & Destructor Documentation

6.68.1.1 fcal::scanner::VariableNameToken::VariableNameToken (parser::Parser ∗ *p*, Token ∗ *t*) [inline]

6.68.2 Member Function Documentation

6.68.2.1 std::string fcal::scanner::VariableNameToken::description ( ) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

6.68.2.2 parser::ParseResult fcal::scanner::VariableNameToken::nud (void) [inline], [virtual]

Reimplemented from fcal::scanner::ExtToken.

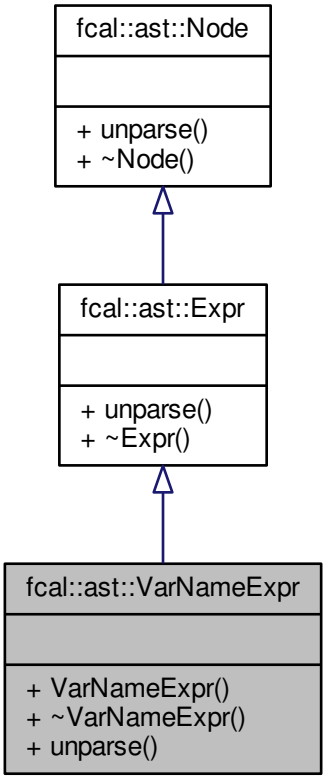
The documentation for this class was generated from the following file:

- include/ext_token.h

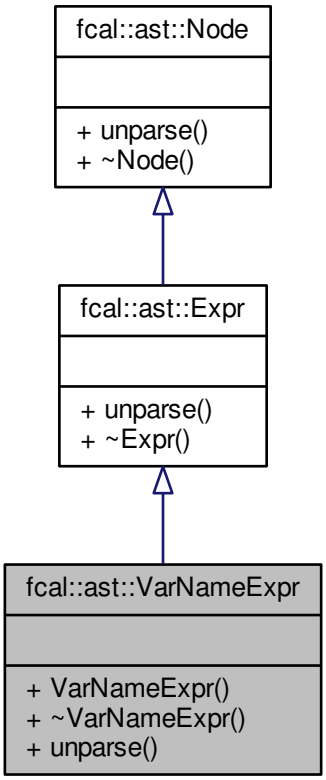
6.69 fcal::ast::VarNameExpr Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::VarNameExpr:



Collaboration diagram for fcal::ast::VarNameExpr:



Public Member Functions

- VarNameExpr (std::string v)
- ~VarNameExpr ()
- std::string unparse ()

6.69.1 Detailed Description

The following classes directly inherit from the virtual Expr class. These classes provide constructors for the expressions as defined in the FCAL grammar.

6.69.2 Constructor & Destructor Documentation

6.69.2.1 fcal::ast::VarNameExpr::VarNameExpr (std::string *v*) [inline], [explicit]

6.69.2.2 fcal::ast::VarNameExpr::~VarNameExpr ( ) [inline]

6.69.3 Member Function Documentation

6.69.3.1 std::string fcal::ast::VarNameExpr::unparse ( ) [inline], [virtual]

Implements fcal::ast::Expr.

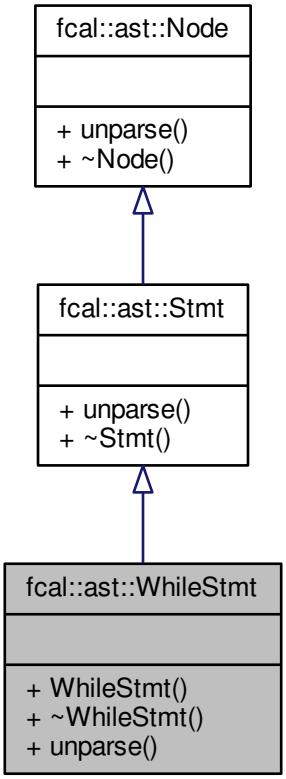
The documentation for this class was generated from the following file:

- include/ast.h

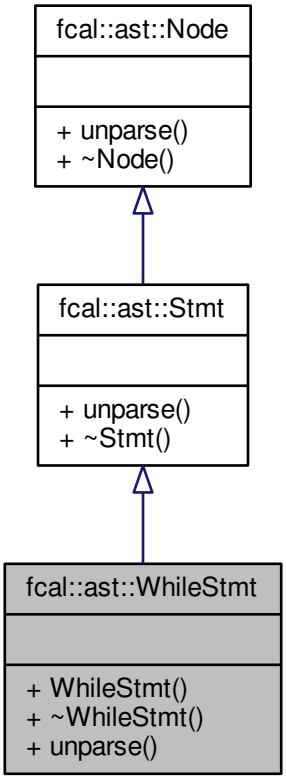
6.70 fcal::ast::WhileStmt Class Reference

`#include <ast.h>`

Inheritance diagram for fcal::ast::WhileStmt:



Collaboration diagram for fcal::ast::WhileStmt:



Public Member Functions

- WhileStmt (Expr ∗e, Stmt ∗s)
- ∼WhileStmt ()
- std::string unparse ()

6.70.1 Constructor & Destructor Documentation

6.70.1.1 fcal::ast::WhileStmt::WhileStmt (Expr ∗ *e*, Stmt ∗ *s*) [inline]

6.70.1.2 fcal::ast::WhileStmt::∼WhileStmt ( ) [inline]

6.70.2 Member Function Documentation

6.70.2.1 std::string fcal::ast::WhileStmt::unparse ( ) [inline], [virtual]

Implements fcal::ast::Stmt.

The documentation for this class was generated from the following file:

- include/ast.h

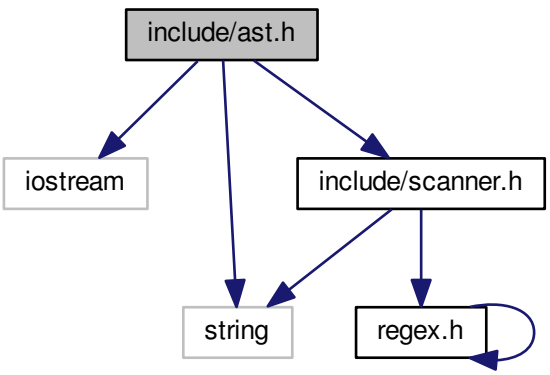
Chapter 7

File Documentation

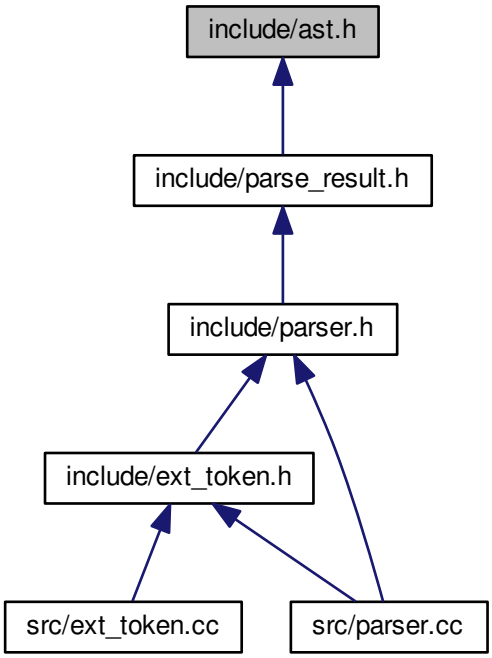
7.1 include/ast.h File Reference

```
#include <iostream>
#include <string>
#include "include/scanner.h"
```

Include dependency graph for ast.h:



This graph shows which files directly or indirectly include this file:



Classes

- class fcal::ast::Node
- class fcal::ast::Stmts
- class fcal::ast::Stmt
- class fcal::ast::Decl
- class fcal::ast::Expr
- class fcal::ast::Program
- class fcal::ast::EmptyStmts
- class fcal::ast::SeqStmts
- class fcal::ast::DeclStmt
- class fcal::ast::BracketsStmt
- class fcal::ast::IfStmt
- class fcal::ast::IfElseStmt
- class fcal::ast::AssignStmt
- class fcal::ast::MatrixAssignStmt
- class fcal::ast::PrintStmt
- class fcal::ast::RepeatStmt
- class fcal::ast::WhileStmt
- class fcal::ast::SemiColonStmt
- class fcal::ast::IntDecl
- class fcal::ast::FloatDecl
- class fcal::ast::StringDecl
- class fcal::ast::BooleanDecl

- class fcal::ast::MatrixMultiExprDecl
- class fcal::ast::MatrixSingleExprDecl
- class fcal::ast::VarNameExpr
- class fcal::ast::IntegerConstExpr
- class fcal::ast::FloatConstExpr
- class fcal::ast::StringConstExpr
- class fcal::ast::BooleanConstExpr
- class fcal::ast::MultiplyExpr
- class fcal::ast::DivideExpr
- class fcal::ast::AddExpr
- class fcal::ast::SubtractExpr
- class fcal::ast::GreaterExpr
- class fcal::ast::GreaterEqualExpr
- class fcal::ast::LessExpr
- class fcal::ast::LessEqualExpr
- class fcal::ast::EqualsEqualsExpr
- class fcal::ast::NotEqualsExpr
- class fcal::ast::LogicalAndExpr
- class fcal::ast::LogicalOrExpr
- class fcal::ast::MatrixREFExpr
- class fcal::ast::NestedOrFunctionCallExpr
- class fcal::ast::ParenthesesExpr
- class fcal::ast::LetExpr
- class fcal::ast::IfExpr
- class fcal::ast::NotExpr

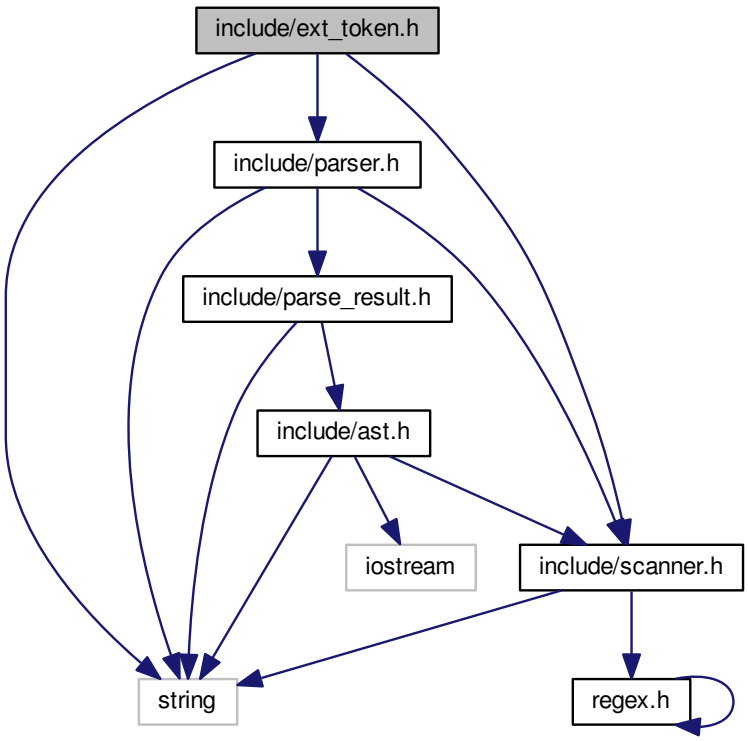
Namespaces

- fcal
- fcal::ast

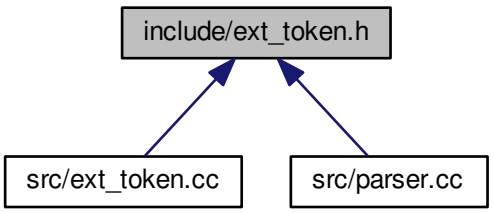
7.2 include/ext_token.h File Reference

```
#include <string>
#include "include/parser.h"
#include "include/scanner.h"
```

Include dependency graph for ext_token.h:



This graph shows which files directly or indirectly include this file:



Classes

- class fcal::scanner::ExtToken
- class fcal::scanner::NotOpToken
- class fcal::scanner::TrueKwdToken
- class fcal::scanner::FalseKwdToken

- class fcal::scanner::IntConstToken
- class fcal::scanner::FloatConstToken
- class fcal::scanner::StringConstToken
- class fcal::scanner::CharConstToken
- class fcal::scanner::VariableNameToken
- class fcal::scanner::IfToken
- class fcal::scanner::LetToken
- class fcal::scanner::LeftParenToken
- class fcal::scanner::PlusSignToken
- class fcal::scanner::StarToken
- class fcal::scanner::DashToken
- class fcal::scanner::ForwardSlashToken
- class fcal::scanner::RelationalOpToken
- class fcal::scanner::EndOfFileToken

Namespaces

- fcal
- fcal::scanner

7.3 include/iter2scanner.h File Reference

Namespaces

- fcal
- fcal::scanner

Typedefs

- typedef enum kTokenEnumType fcal::scanner::TokenType

Enumerations

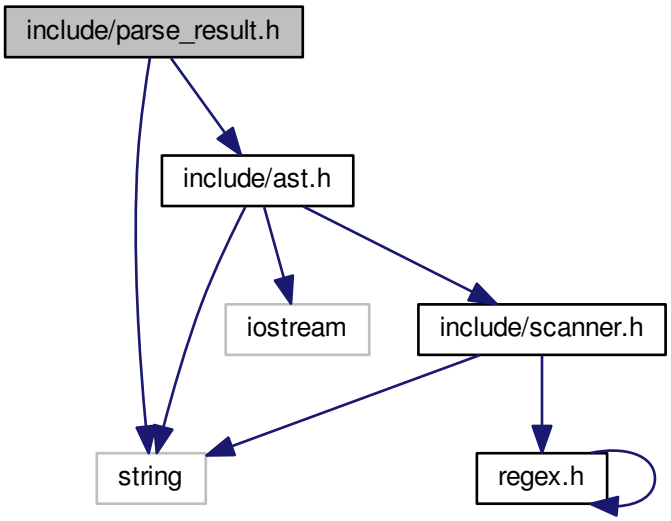
- enum fcal::scanner::kTokenEnumType {
  fcal::scanner::kIntKwd, fcal::scanner::kFloatKwd, fcal::scanner::kBoolKwd, fcal::scanner::kTrueKwd,
  fcal::scanner::kFalseKwd, fcal::scanner::kStringKwd, fcal::scanner::kMatrixKwd, fcal::scanner::kLetKwd,
  fcal::scanner::kInKwd, fcal::scanner::kEndKwd, fcal::scanner::kIfKwd, fcal::scanner::kThenKwd,
  fcal::scanner::kElseKwd, fcal::scanner::kRepeatKwd, fcal::scanner::kWhileKwd, fcal::scanner::kPrintKwd,
  fcal::scanner::kToKwd, fcal::scanner::kIntConst, fcal::scanner::kFloatConst, fcal::scanner::kStringConst,
  fcal::scanner::kVariableName, fcal::scanner::kLeftParen, fcal::scanner::kRightParen, fcal::scanner::kLeft↩
  Curly,
  fcal::scanner::kRightCurly, fcal::scanner::kLeftSquare, fcal::scanner::kRightSquare, fcal::scanner::kSemi↩
  Colon,
  fcal::scanner::kColon, fcal::scanner::kAssign, fcal::scanner::kPlusSign, fcal::scanner::kStar,
  fcal::scanner::kDash, fcal::scanner::kForwardSlash, fcal::scanner::kLessThan, fcal::scanner::kLessThan↩
  Equal,
  fcal::scanner::kGreaterThan, fcal::scanner::kGreaterThanEqual, fcal::scanner::kEqualsEquals, fcal↩

::scanner::kNotEquals,
fcal::scanner::kAndOp, fcal::scanner::kOrOp, fcal::scanner::kNotOp, fcal::scanner::kEndOfFile,
fcal::scanner::kLexicalError, fcal::scanner::kIntKwd, fcal::scanner::kFloatKwd, fcal::scanner::kBoolKwd,
fcal::scanner::kTrueKwd, fcal::scanner::kFalseKwd, fcal::scanner::kStringKwd, fcal::scanner::kMatrixKwd,
fcal::scanner::kLetKwd, fcal::scanner::kInKwd, fcal::scanner::kEndKwd, fcal::scanner::kIfKwd,
fcal::scanner::kThenKwd, fcal::scanner::kElseKwd, fcal::scanner::kRepeatKwd, fcal::scanner::kWhileKwd,
fcal::scanner::kPrintKwd, fcal::scanner::kToKwd, fcal::scanner::kIntConst, fcal::scanner::kFloatConst,
fcal::scanner::kStringConst, fcal::scanner::kVariableName, fcal::scanner::kLeftParen, fcal::scanner::kRight↩
Paren,
fcal::scanner::kLeftCurly, fcal::scanner::kRightCurly, fcal::scanner::kLeftSquare, fcal::scanner::kRight↩
Square,
fcal::scanner::kSemiColon, fcal::scanner::kColon, fcal::scanner::kAssign, fcal::scanner::kPlusSign,
fcal::scanner::kStar, fcal::scanner::kDash, fcal::scanner::kForwardSlash, fcal::scanner::kLessThan,
fcal::scanner::kLessThanEqual, fcal::scanner::kGreaterThan, fcal::scanner::kGreaterThanEqual, fcal↩
::scanner::kEqualsEquals,
fcal::scanner::kNotEquals, fcal::scanner::kAndOp, fcal::scanner::kOrOp, fcal::scanner::kNotOp,
fcal::scanner::kEndOfFile, fcal::scanner::kLexicalError }

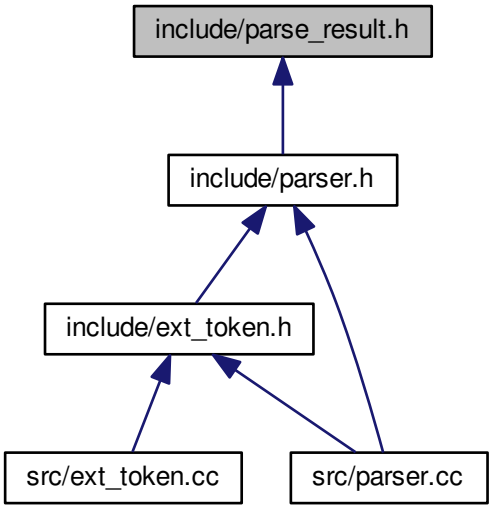
7.4 include/parse_result.h File Reference

```
#include <string>
#include "include/ast.h"
```

Include dependency graph for parse_result.h:



This graph shows which files directly or indirectly include this file:



Classes

- class fcal::parser::ParseResult

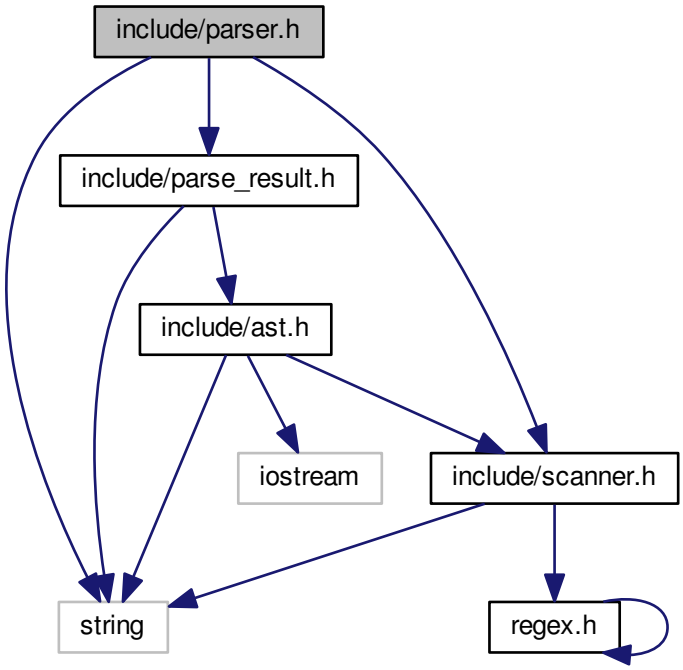
Namespaces

- fcal
- fcal::parser

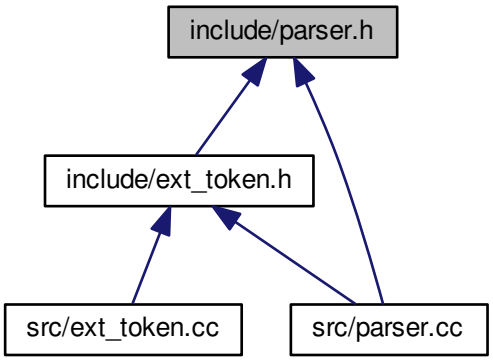
7.5 include/parser.h File Reference

```
#include <string>
#include "include/parse_result.h"
#include "include/scanner.h"
```

Include dependency graph for parser.h:



This graph shows which files directly or indirectly include this file:



Classes

- class fcal::parser::Parser

Namespaces

- fcal
- fcal::scanner
- fcal::parser

7.6 include/read_input.h File Reference

Namespaces

- fcal
- fcal::scanner

Functions

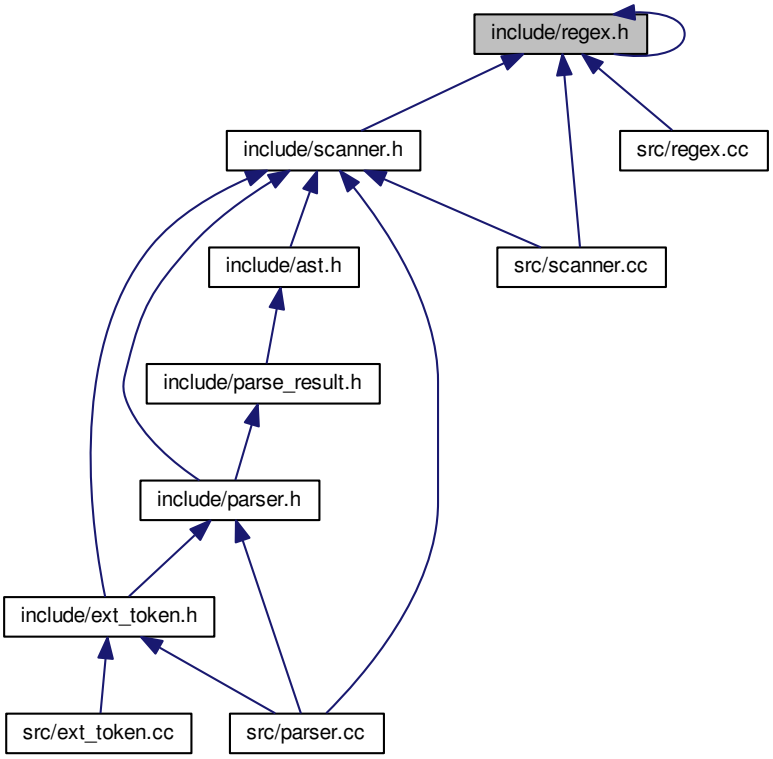
- char * fcal::scanner::ReadInput (int argc, char **argv)
- char * fcal::scanner::ReadInputFromFile (const char *filename)

7.7 include/regex.h File Reference

```
#include <regex.h>
```

Include dependency graph for regex.h:

This graph shows which files directly or indirectly include this file:



Namespaces

- fcal
- fcal::scanner

Functions

- regex_t * fcal::scanner::make_regex (const char *pattern)
- int fcal::scanner::match_regex (regex_t *re, const char *text)

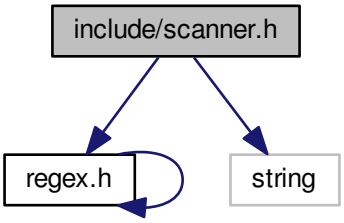
Variables

- const int fcal::scanner::kRegexNSub = 1

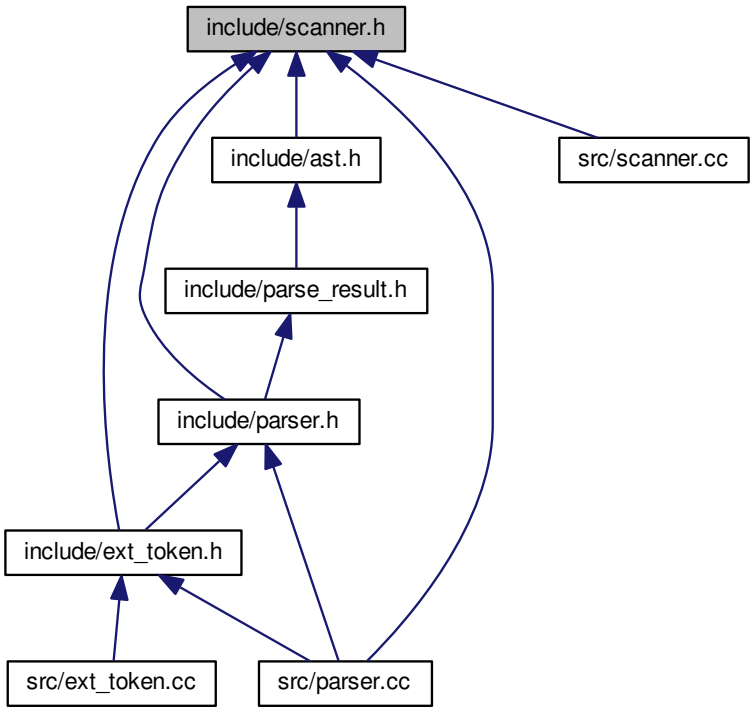
7.8 include/scanner.h File Reference

```
#include <regex.h>
#include <string>
```

Include dependency graph for scanner.h:



This graph shows which files directly or indirectly include this file:



Classes

- class fcal::scanner::Token
- class fcal::scanner::Scanner

Namespaces

- fcal
- fcal::scanner

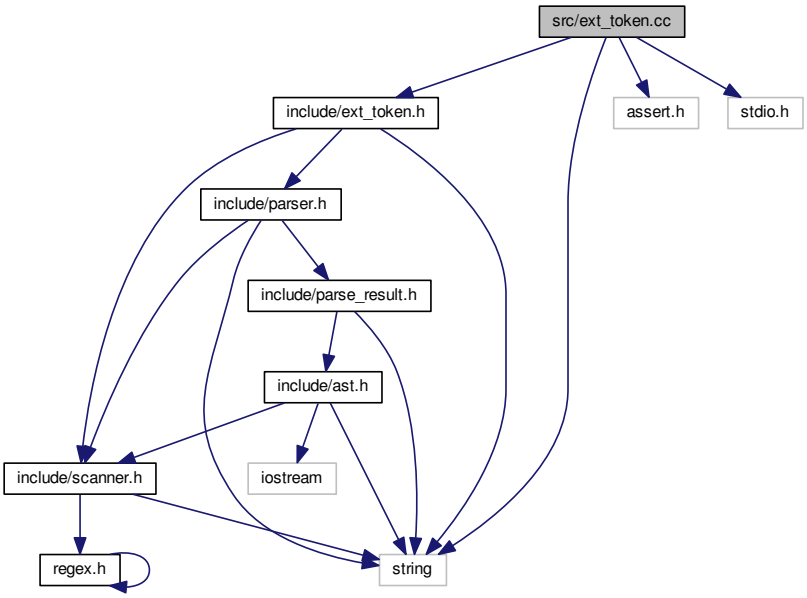
Enumerations

- enum fcal::scanner::kTokenEnumType {
  fcal::scanner::kIntKwd, fcal::scanner::kFloatKwd, fcal::scanner::kBoolKwd, fcal::scanner::kTrueKwd,
  fcal::scanner::kFalseKwd, fcal::scanner::kStringKwd, fcal::scanner::kMatrixKwd, fcal::scanner::kLetKwd,
  fcal::scanner::kInKwd, fcal::scanner::kEndKwd, fcal::scanner::kIfKwd, fcal::scanner::kThenKwd,
  fcal::scanner::kElseKwd, fcal::scanner::kRepeatKwd, fcal::scanner::kWhileKwd, fcal::scanner::kPrintKwd,
  fcal::scanner::kToKwd, fcal::scanner::kIntConst, fcal::scanner::kFloatConst, fcal::scanner::kStringConst,
  fcal::scanner::kVariableName, fcal::scanner::kLeftParen, fcal::scanner::kRightParen, fcal::scanner::kLeft↩
  Curly,
  fcal::scanner::kRightCurly, fcal::scanner::kLeftSquare, fcal::scanner::kRightSquare, fcal::scanner::kSemi↩
  Colon,
  fcal::scanner::kColon, fcal::scanner::kAssign, fcal::scanner::kPlusSign, fcal::scanner::kStar,
  fcal::scanner::kDash, fcal::scanner::kForwardSlash, fcal::scanner::kLessThan, fcal::scanner::kLessThan↩
  Equal,
  fcal::scanner::kGreaterThan, fcal::scanner::kGreaterThanEqual, fcal::scanner::kEqualsEquals, fcal↩
  ::scanner::kNotEquals,
  fcal::scanner::kAndOp, fcal::scanner::kOrOp, fcal::scanner::kNotOp, fcal::scanner::kEndOfFile,
  fcal::scanner::kLexicalError, fcal::scanner::kIntKwd, fcal::scanner::kFloatKwd, fcal::scanner::kBoolKwd,
  fcal::scanner::kTrueKwd, fcal::scanner::kFalseKwd, fcal::scanner::kStringKwd, fcal::scanner::kMatrixKwd,
  fcal::scanner::kLetKwd, fcal::scanner::kInKwd, fcal::scanner::kEndKwd, fcal::scanner::kIfKwd,
  fcal::scanner::kThenKwd, fcal::scanner::kElseKwd, fcal::scanner::kRepeatKwd, fcal::scanner::kWhileKwd,
  fcal::scanner::kPrintKwd, fcal::scanner::kToKwd, fcal::scanner::kIntConst, fcal::scanner::kFloatConst,
  fcal::scanner::kStringConst, fcal::scanner::kVariableName, fcal::scanner::kLeftParen, fcal::scanner::kRight↩
  Paren,
  fcal::scanner::kLeftCurly, fcal::scanner::kRightCurly, fcal::scanner::kLeftSquare, fcal::scanner::kRight↩
  Square,
  fcal::scanner::kSemiColon, fcal::scanner::kColon, fcal::scanner::kAssign, fcal::scanner::kPlusSign,
  fcal::scanner::kStar, fcal::scanner::kDash, fcal::scanner::kForwardSlash, fcal::scanner::kLessThan,
  fcal::scanner::kLessThanEqual, fcal::scanner::kGreaterThan, fcal::scanner::kGreaterThanEqual, fcal↩
  ::scanner::kEqualsEquals,
  fcal::scanner::kNotEquals, fcal::scanner::kAndOp, fcal::scanner::kOrOp, fcal::scanner::kNotOp,
  fcal::scanner::kEndOfFile, fcal::scanner::kLexicalError }

7.9 src/ext_token.cc File Reference

```
#include "include/ext_token.h"
#include <assert.h>
#include <stdio.h>
#include <string>
```

Include dependency graph for ext_token.cc:



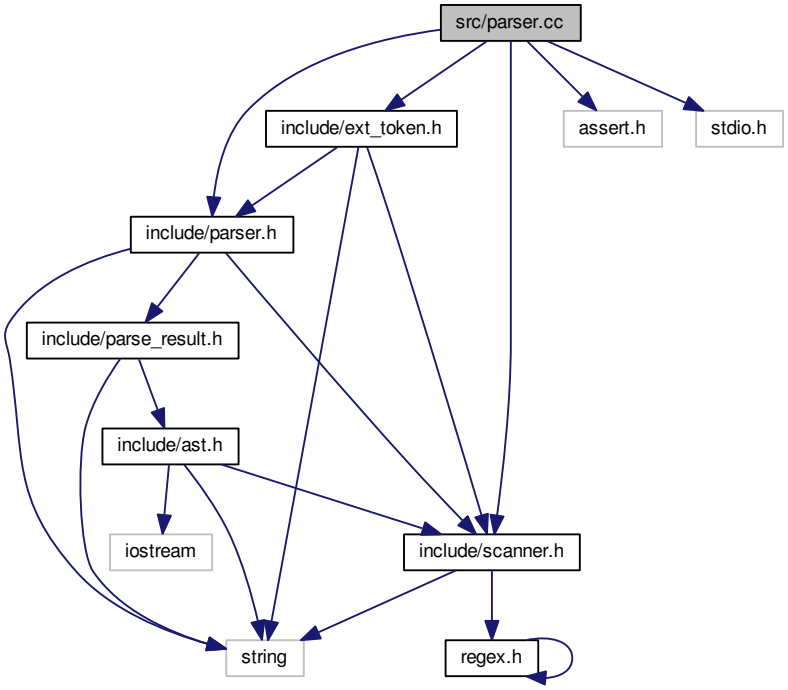
Namespaces

- fcal
- fcal::scanner

7.10 src/parser.cc File Reference

```
#include "include/parser.h"
#include <assert.h>
#include <stdio.h>
#include "include/ext_token.h"
#include "include/scanner.h"
```

Include dependency graph for parser.cc:



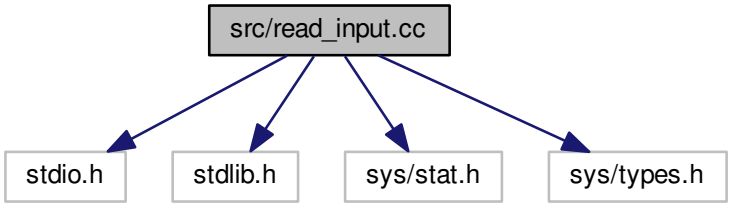
Namespaces

- fcal
- fcal::parser

7.11 src/read_input.cc File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <sys/stat.h>
#include <sys/types.h>
```

Include dependency graph for read_input.cc:



Namespaces

- fcal
- fcal::scanner

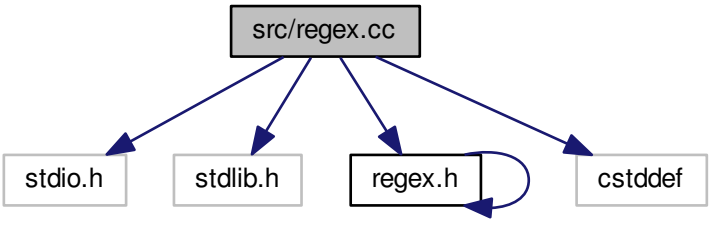
Functions

- char * fcal::scanner::ReadInputFromFile (const char *filename)
- char * fcal::scanner::ReadInput (int argc, char **argv)

7.12 src/regex.cc File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <regex.h>
#include <cstddef>
```

Include dependency graph for regex.cc:



Namespaces

- fcal
- fcal::scanner

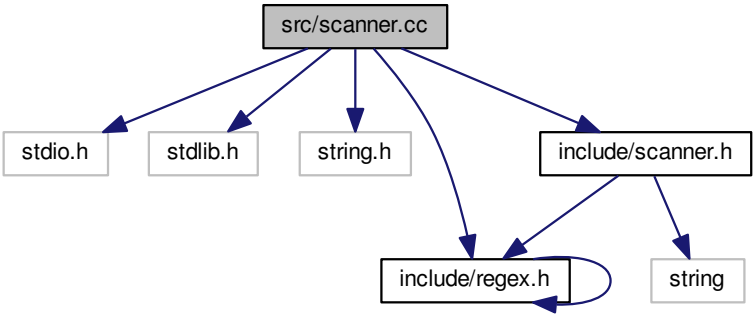
Functions

- regex_t * fcal::scanner::make_regex (const char *pattern)
- int fcal::scanner::match_regex (regex_t *re, const char *text)

7.13 src/scanner.cc File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <include/regex.h>
#include <include/scanner.h>
```

Include dependency graph for scanner.cc:



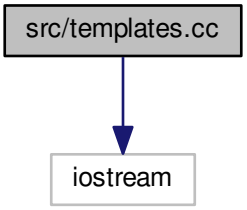
Namespaces

- fcal
- fcal::scanner

7.14 src/templates.cc File Reference

```
#include <iostream>
```

Include dependency graph for templates.cc:



Classes

- class MySequence< T, N >

Functions

- int main ()

7.14.1 Function Documentation

7.14.1.1 int main ( )

Index

~AddExpr
fcal::ast::AddExpr, 18
~AssignStmt
fcal::ast::AssignStmt, 20
~BooleanConstExpr
fcal::ast::BooleanConstExpr, 22
~BooleanDecl
fcal::ast::BooleanDecl, 24
~BracketsStmt
fcal::ast::BracketsStmt, 26
~Decl
fcal::ast::Decl, 32
~DeclStmt
fcal::ast::DeclStmt, 34
~DivideExpr
fcal::ast::DivideExpr, 36
~EmptyStmts
fcal::ast::EmptyStmts, 38
~EqualsEqualsExpr
fcal::ast::EqualsEqualsExpr, 42
~Expr
fcal::ast::Expr, 43
~ExtToken
fcal::scanner::ExtToken, 45
~FloatConstExpr
fcal::ast::FloatConstExpr, 50
~FloatDecl
fcal::ast::FloatDecl, 54
~GreaterEqualExpr
fcal::ast::GreaterEqualExpr, 58
~GreaterExpr
fcal::ast::GreaterExpr, 60
~IfElseStmt
fcal::ast::IfElseStmt, 62
~IfExpr
fcal::ast::IfExpr, 64
~IfStmt
fcal::ast::IfStmt, 66
~IntDecl
fcal::ast::IntDecl, 72
~IntegerConstExpr
fcal::ast::IntegerConstExpr, 74
~LessEqualExpr
fcal::ast::LessEqualExpr, 78
~LessExpr
fcal::ast::LessExpr, 80
~LetExpr
fcal::ast::LetExpr, 82
~LogicalAndExpr
fcal::ast::LogicalAndExpr, 86
~LogicalOrExpr
fcal::ast::LogicalOrExpr, 88
~MatrixAssignStmt
fcal::ast::MatrixAssignStmt, 90
~MatrixMultiExprDecl
fcal::ast::MatrixMultiExprDecl, 92
~MatrixREFExpr
fcal::ast::MatrixREFExpr, 94
~MatrixSingleExprDecl
fcal::ast::MatrixSingleExprDecl, 96
~MultiplyExpr
fcal::ast::MultiplyExpr, 98
~NestedOrFunctionCallExpr
fcal::ast::NestedOrFunctionCallExpr, 101
~Node
fcal::ast::Node, 102
~NotEqualsExpr
fcal::ast::NotEqualsExpr, 104
~NotExpr
fcal::ast::NotExpr, 106
~ParenthesesExpr
fcal::ast::ParenthesesExpr, 110
~Parser
fcal::parser::Parser, 112
~PrintStmt
fcal::ast::PrintStmt, 118
~Program
fcal::ast::Program, 120
~RepeatStmt
fcal::ast::RepeatStmt, 124
~Scanner
fcal::scanner::Scanner, 125
~SemiColonStmt
fcal::ast::SemiColonStmt, 127
~SeqStmts
fcal::ast::SeqStmts, 129
~Stmt
fcal::ast::Stmt, 133
~Stmts
fcal::ast::Stmts, 135
~StringConstExpr
fcal::ast::StringConstExpr, 137
~StringDecl
fcal::ast::StringDecl, 141
~SubtractExpr
fcal::ast::SubtractExpr, 143
~Token
fcal::scanner::Token, 145

~VarNameExpr
fcal::ast::VarNameExpr, 151
~WhileStmt
fcal::ast::WhileStmt, 153

AddExpr
fcal::ast::AddExpr, 18
AssignStmt
fcal::ast::AssignStmt, 20
ast
fcal::parser::ParseResult, 114
attempt_match
fcal::parser::Parser, 112

BooleanConstExpr
fcal::ast::BooleanConstExpr, 22
BooleanDecl
fcal::ast::BooleanDecl, 24
BracketsStmt
fcal::ast::BracketsStmt, 26

CharConstToken
fcal::scanner::CharConstToken, 28
ConsumeWhitespaceAndComments
fcal::scanner::Scanner, 125

DashToken
fcal::scanner::DashToken, 30
DeclStmt
fcal::ast::DeclStmt, 34
description
fcal::scanner::CharConstToken, 28
fcal::scanner::DashToken, 30
fcal::scanner::EndOfFileToken, 40
fcal::scanner::ExtToken, 45
fcal::scanner::FalseKwdToken, 48
fcal::scanner::FloatConstToken, 52
fcal::scanner::ForwardSlashToken, 56
fcal::scanner::IfToken, 68
fcal::scanner::IntConstToken, 70
fcal::scanner::LeftParenToken, 76
fcal::scanner::LetToken, 84
fcal::scanner::NotOpToken, 108
fcal::scanner::PlusSignToken, 116
fcal::scanner::StarToken, 131
fcal::scanner::StringConstToken, 139
fcal::scanner::TrueKwdToken, 147
fcal::scanner::VariableNameToken, 149
DivideExpr
fcal::ast::DivideExpr, 36

EmptyStmts
fcal::ast::EmptyStmts, 38
EndOfFileToken
fcal::scanner::EndOfFileToken, 40
EqualsEqualsExpr
fcal::ast::EqualsEqualsExpr, 42
errors
fcal::parser::ParseResult, 114

ExtToken
fcal::scanner::ExtToken, 45
ExtendToken
fcal::scanner::ExtToken, 45
ExtendTokenList
fcal::scanner::ExtToken, 45

FalseKwdToken
fcal::scanner::FalseKwdToken, 48
fcal, 9
fcal::ast, 9
fcal::ast::AddExpr, 17
~AddExpr, 18
AddExpr, 18
unparse, 18
fcal::ast::AssignStmt, 19
~AssignStmt, 20
AssignStmt, 20
unparse, 20
fcal::ast::BooleanConstExpr, 21
~BooleanConstExpr, 22
BooleanConstExpr, 22
unparse, 22
fcal::ast::BooleanDecl, 23
~BooleanDecl, 24
BooleanDecl, 24
unparse, 24
fcal::ast::BracketsStmt, 25
~BracketsStmt, 26
BracketsStmt, 26
unparse, 26
fcal::ast::Decl, 31
~Decl, 32
unparse, 32
fcal::ast::DeclStmt, 32
~DeclStmt, 34
DeclStmt, 34
unparse, 35
fcal::ast::DivideExpr, 35
~DivideExpr, 36
DivideExpr, 36
unparse, 36
fcal::ast::EmptyStmts, 37
~EmptyStmts, 38
EmptyStmts, 38
unparse, 39
fcal::ast::EqualsEqualsExpr, 41
~EqualsEqualsExpr, 42
EqualsEqualsExpr, 42
unparse, 42
fcal::ast::Expr, 43
~Expr, 43
unparse, 43
fcal::ast::FloatConstExpr, 49
~FloatConstExpr, 50
FloatConstExpr, 50
unparse, 50
fcal::ast::FloatDecl, 53
~FloatDecl, 54

FloatDecl, 54
unparse, 54
fcal::ast::GreaterEqualExpr, 57
~GreaterEqualExpr, 58
GreaterEqualExpr, 58
unparse, 58
fcal::ast::GreaterExpr, 59
~GreaterExpr, 60
GreaterExpr, 60
unparse, 60
fcal::ast::IfElseStmt, 61
~IfElseStmt, 62
IfElseStmt, 62
unparse, 62
fcal::ast::IfExpr, 63
~IfExpr, 64
IfExpr, 64
unparse, 64
fcal::ast::IfStmt, 65
~IfStmt, 66
IfStmt, 66
unparse, 66
fcal::ast::IntDecl, 71
~IntDecl, 72
IntDecl, 72
unparse, 73
fcal::ast::IntegerConstExpr, 73
~IntegerConstExpr, 74
IntegerConstExpr, 74
unparse, 74
fcal::ast::LessEqualExpr, 77
~LessEqualExpr, 78
LessEqualExpr, 78
unparse, 78
fcal::ast::LessExpr, 79
~LessExpr, 80
LessExpr, 80
unparse, 80
fcal::ast::LetExpr, 81
~LetExpr, 82
LetExpr, 82
unparse, 82
fcal::ast::LogicalAndExpr, 85
~LogicalAndExpr, 86
LogicalAndExpr, 86
unparse, 86
fcal::ast::LogicalOrExpr, 87
~LogicalOrExpr, 88
LogicalOrExpr, 88
unparse, 88
fcal::ast::MatrixAssignStmt, 89
~MatrixAssignStmt, 90
MatrixAssignStmt, 90
unparse, 90
fcal::ast::MatrixMultiExprDecl, 91
~MatrixMultiExprDecl, 92
MatrixMultiExprDecl, 92
unparse, 92
fcal::ast::MatrixREFExpr, 93
~MatrixREFExpr, 94
MatrixREFExpr, 94
unparse, 94
fcal::ast::MatrixSingleExprDecl, 95
~MatrixSingleExprDecl, 96
MatrixSingleExprDecl, 96
unparse, 96
fcal::ast::MultiplyExpr, 97
~MultiplyExpr, 98
MultiplyExpr, 98
unparse, 98
fcal::ast::NestedOrFunctionCallExpr, 100
~NestedOrFunctionCallExpr, 101
NestedOrFunctionCallExpr, 101
unparse, 101
fcal::ast::Node, 102
~Node, 102
unparse, 102
fcal::ast::NotEqualsExpr, 103
~NotEqualsExpr, 104
NotEqualsExpr, 104
unparse, 104
fcal::ast::NotExpr, 105
~NotExpr, 106
NotExpr, 106
unparse, 106
fcal::ast::ParenthesesExpr, 109
~ParenthesesExpr, 110
ParenthesesExpr, 110
unparse, 110
fcal::ast::PrintStmt, 117
~PrintStmt, 118
PrintStmt, 118
unparse, 118
fcal::ast::Program, 119
~Program, 120
Program, 120
unparse, 120
fcal::ast::RepeatStmt, 123
~RepeatStmt, 124
RepeatStmt, 124
unparse, 124
fcal::ast::SemiColonStmt, 126
~SemiColonStmt, 127
SemiColonStmt, 127
unparse, 127
fcal::ast::SeqStmts, 128
~SeqStmts, 129
SeqStmts, 129
unparse, 129
fcal::ast::Stmt, 132
~Stmt, 133
unparse, 133
fcal::ast::Stmts, 133
~Stmts, 135
unparse, 135
fcal::ast::StringConstExpr, 136

~StringConstExpr, 137
StringConstExpr, 137
unparse, 137
fcal::ast::StringDecl, 140
~StringDecl, 141
StringDecl, 141
unparse, 141
fcal::ast::SubtractExpr, 142
~SubtractExpr, 143
SubtractExpr, 143
unparse, 143
fcal::ast::VarNameExpr, 150
~VarNameExpr, 151
unparse, 152
VarNameExpr, 151
fcal::ast::WhileStmt, 152
~WhileStmt, 153
unparse, 153
WhileStmt, 153
fcal::parser, 10
fcal::parser::ParseResult, 114
ast, 114
errors, 114
ok, 114
ParseResult, 114
fcal::parser::Parser, 111
~Parser, 112
attempt_match, 112
match, 112
next_is, 112
next_token, 112
Parse, 112
parse_addition, 112
parse_char_const, 112
parse_decl, 112
parse_division, 112
parse_expr, 112
parse_false_kwd, 112
parse_float_const, 112
parse_if_expr, 112
parse_int_const, 113
parse_let_expr, 113
parse_matrix_decl, 113
parse_multiplication, 113
parse_nested_expr, 113
parse_not_expr, 113
parse_relational_expr, 113
parse_standard_decl, 113
parse_stmt, 113
parse_stmts, 113
parse_string_const, 113
parse_subtraction, 113
parse_true_kwd, 113
parse_variable_name, 113
ParseProgram, 113
Parser, 112
fcal::scanner, 10
kAndOp, 13–16
kAssign, 13–16
kBoolKwd, 12–15
kColon, 13–16
kDash, 13–16
kElseKwd, 12–15
kEndKwd, 12–15
kEndOfFile, 13–16
kEqualsEquals, 13–16
kFalseKwd, 12–15
kFloatConst, 12–15
kFloatKwd, 12–15
kForwardSlash, 13–16
kGreaterThan, 13–16
kGreaterThanEqual, 13–16
kIfKwd, 12–15
kInKwd, 12–15
kIntConst, 12–15
kIntKwd, 12–15
kLeftCurly, 12, 13, 15, 16
kLeftParen, 12, 13, 15, 16
kLeftSquare, 12, 13, 15, 16
kLessThan, 13–16
kLessThanEqual, 13–16
kLetKwd, 12–15
kLexicalError, 13–16
kMatrixKwd, 12–15
kNotEquals, 13–16
kNotOp, 13–16
kOrOp, 13–16
kPlusSign, 13–16
kPrintKwd, 12–15
kRegexNSub, 16
kRepeatKwd, 12–15
kRightCurly, 12, 13, 15, 16
kRightParen, 12, 13, 15, 16
kRightSquare, 13–16
kSemiColon, 13–16
kStar, 13–16
kStringConst, 12–15
kStringKwd, 12–15
kThenKwd, 12–15
kToKwd, 12–15
kTokenEnumType, 12, 14
kTrueKwd, 12–15
kVariableName, 12–15
kWhileKwd, 12–15
make_regex, 16
match_regex, 16
ReadInput, 16
ReadInputFromFile, 16
TokenType, 12
fcal::scanner::CharConstToken, 27
CharConstToken, 28
description, 28
nud, 28
fcal::scanner::DashToken, 29
DashToken, 30
description, 30

lbp, 30
led, 31
fcal::scanner::EndOfFileToken, 39
description, 40
EndOfFileToken, 40
fcal::scanner::ExtToken, 44
~ExtToken, 45
description, 45
ExtToken, 45
ExtendToken, 45
ExtendTokenList, 45
lbp, 45
led, 45
lexeme, 46
next, 46
nud, 46
parser, 46
terminal, 46
fcal::scanner::FalseKwdToken, 46
description, 48
FalseKwdToken, 48
nud, 48
fcal::scanner::FloatConstToken, 51
description, 52
FloatConstToken, 52
nud, 52
fcal::scanner::ForwardSlashToken, 55
description, 56
ForwardSlashToken, 56
lbp, 56
led, 57
fcal::scanner::IfToken, 67
description, 68
IfToken, 68
lbp, 68
nud, 69
fcal::scanner::IntConstToken, 69
description, 70
IntConstToken, 70
nud, 70
fcal::scanner::LeftParenToken, 75
description, 76
lbp, 76
LeftParenToken, 76
nud, 77
fcal::scanner::LetToken, 83
description, 84
lbp, 84
LetToken, 84
nud, 85
fcal::scanner::NotOpToken, 107
description, 108
NotOpToken, 108
nud, 108
fcal::scanner::PlusSignToken, 115
description, 116
lbp, 116
led, 117
PlusSignToken, 116
fcal::scanner::RelationalOpToken, 120
lbp, 122
led, 122
RelationalOpToken, 122
fcal::scanner::Scanner, 125
~Scanner, 125
ConsumeWhitespaceAndComments, 125
Scan, 125
Scanner, 125
fcal::scanner::StarToken, 130
description, 131
lbp, 131
led, 132
StarToken, 131
fcal::scanner::StringConstToken, 138
description, 139
nud, 139
StringConstToken, 139
fcal::scanner::Token, 144
~Token, 145
lexeme, 145
next, 145
set_lexeme, 145
set_next, 145
set_terminal, 145
terminal, 145
Token, 145
fcal::scanner::TrueKwdToken, 145
description, 147
nud, 147
TrueKwdToken, 147
fcal::scanner::VariableNameToken, 148
description, 149
nud, 149
VariableNameToken, 149
FloatConstExpr
fcal::ast::FloatConstExpr, 50
FloatConstToken
fcal::scanner::FloatConstToken, 52
FloatDecl
fcal::ast::FloatDecl, 54
ForwardSlashToken
fcal::scanner::ForwardSlashToken, 56

get_member
MySequence, 99
GreaterEqualExpr
fcal::ast::GreaterEqualExpr, 58
GreaterExpr
fcal::ast::GreaterExpr, 60

IfElseStmt
fcal::ast::IfElseStmt, 62
IfExpr
fcal::ast::IfExpr, 64
IfStmt
fcal::ast::IfStmt, 66
IfToken

fcal::scanner::IfToken, 68
include/ast.h, 155
include/ext_token.h, 157
include/iter2scanner.h, 159
include/parse_result.h, 160
include/parser.h, 161
include/read_input.h, 163
include/regex.h, 163
include/scanner.h, 165
IntConstToken
fcal::scanner::IntConstToken, 70
IntDecl
fcal::ast::IntDecl, 72
IntegerConstExpr
fcal::ast::IntegerConstExpr, 74

kAndOp
fcal::scanner, 13–16
kAssign
fcal::scanner, 13–16
kBoolKwd
fcal::scanner, 12–15
kColon
fcal::scanner, 13–16
kDash
fcal::scanner, 13–16
kElseKwd
fcal::scanner, 12–15
kEndKwd
fcal::scanner, 12–15
kEndOfFile
fcal::scanner, 13–16
kEqualsEquals
fcal::scanner, 13–16
kFalseKwd
fcal::scanner, 12–15
kFloatConst
fcal::scanner, 12–15
kFloatKwd
fcal::scanner, 12–15
kForwardSlash
fcal::scanner, 13–16
kGreaterThan
fcal::scanner, 13–16
kGreaterThanEqual
fcal::scanner, 13–16
kIfKwd
fcal::scanner, 12–15
kInKwd
fcal::scanner, 12–15
kIntConst
fcal::scanner, 12–15
kIntKwd
fcal::scanner, 12–15
kLeftCurly
fcal::scanner, 12, 13, 15, 16
kLeftParen
fcal::scanner, 12, 13, 15, 16
kLeftSquare
fcal::scanner, 12, 13, 15, 16
kLessThan
fcal::scanner, 13–16
kLessThanEqual
fcal::scanner, 13–16
kLetKwd
fcal::scanner, 12–15
kLexicalError
fcal::scanner, 13–16
kMatrixKwd
fcal::scanner, 12–15
kNotEquals
fcal::scanner, 13–16
kNotOp
fcal::scanner, 13–16
kOrOp
fcal::scanner, 13–16
kPlusSign
fcal::scanner, 13–16
kPrintKwd
fcal::scanner, 12–15
kRegexNSub
fcal::scanner, 16
kRepeatKwd
fcal::scanner, 12–15
kRightCurly
fcal::scanner, 12, 13, 15, 16
kRightParen
fcal::scanner, 12, 13, 15, 16
kRightSquare
fcal::scanner, 13–16
kSemiColon
fcal::scanner, 13–16
kStar
fcal::scanner, 13–16
kStringConst
fcal::scanner, 12–15
kStringKwd
fcal::scanner, 12–15
kThenKwd
fcal::scanner, 12–15
kToKwd
fcal::scanner, 12–15
kTokenEnumType
fcal::scanner, 12, 14
kTrueKwd
fcal::scanner, 12–15
kVariableName
fcal::scanner, 12–15
kWhileKwd
fcal::scanner, 12–15

lbp
fcal::scanner::DashToken, 30
fcal::scanner::ExtToken, 45
fcal::scanner::ForwardSlashToken, 56
fcal::scanner::IfToken, 68
fcal::scanner::LeftParenToken, 76
fcal::scanner::LetToken, 84

fcal::scanner::PlusSignToken, 116
fcal::scanner::RelationalOpToken, 122
fcal::scanner::StarToken, 131
led
fcal::scanner::DashToken, 31
fcal::scanner::ExtToken, 45
fcal::scanner::ForwardSlashToken, 57
fcal::scanner::PlusSignToken, 117
fcal::scanner::RelationalOpToken, 122
fcal::scanner::StarToken, 132
LeftParenToken
fcal::scanner::LeftParenToken, 76
LessEqualExpr
fcal::ast::LessEqualExpr, 78
LessExpr
fcal::ast::LessExpr, 80
LetExpr
fcal::ast::LetExpr, 82
LetToken
fcal::scanner::LetToken, 84
lexeme
fcal::scanner::ExtToken, 46
fcal::scanner::Token, 145
LogicalAndExpr
fcal::ast::LogicalAndExpr, 86
LogicalOrExpr
fcal::ast::LogicalOrExpr, 88

main
templates.cc, 171
make_regex
fcal::scanner, 16
match
fcal::parser::Parser, 112
match_regex
fcal::scanner, 16
MatrixAssignStmt
fcal::ast::MatrixAssignStmt, 90
MatrixMultiExprDecl
fcal::ast::MatrixMultiExprDecl, 92
MatrixREFExpr
fcal::ast::MatrixREFExpr, 94
MatrixSingleExprDecl
fcal::ast::MatrixSingleExprDecl, 96
MultiplyExpr
fcal::ast::MultiplyExpr, 98
MySequence
get_member, 99
MySequence, 99
set_member, 99
MySequence< T, N >, 99

NestedOrFunctionCallExpr
fcal::ast::NestedOrFunctionCallExpr, 101
next
fcal::scanner::ExtToken, 46
fcal::scanner::Token, 145
next_is
fcal::parser::Parser, 112
next_token
fcal::parser::Parser, 112
NotEqualsExpr
fcal::ast::NotEqualsExpr, 104
NotExpr
fcal::ast::NotExpr, 106
NotOpToken
fcal::scanner::NotOpToken, 108
nud
fcal::scanner::CharConstToken, 28
fcal::scanner::ExtToken, 46
fcal::scanner::FalseKwdToken, 48
fcal::scanner::FloatConstToken, 52
fcal::scanner::IfToken, 69
fcal::scanner::IntConstToken, 70
fcal::scanner::LeftParenToken, 77
fcal::scanner::LetToken, 85
fcal::scanner::NotOpToken, 108
fcal::scanner::StringConstToken, 139
fcal::scanner::TrueKwdToken, 147
fcal::scanner::VariableNameToken, 149

ok
fcal::parser::ParseResult, 114

ParenthesesExpr
fcal::ast::ParenthesesExpr, 110
Parse
fcal::parser::Parser, 112
parse_addition
fcal::parser::Parser, 112
parse_char_const
fcal::parser::Parser, 112
parse_decl
fcal::parser::Parser, 112
parse_division
fcal::parser::Parser, 112
parse_expr
fcal::parser::Parser, 112
parse_false_kwd
fcal::parser::Parser, 112
parse_float_const
fcal::parser::Parser, 112
parse_if_expr
fcal::parser::Parser, 112
parse_int_const
fcal::parser::Parser, 113
parse_let_expr
fcal::parser::Parser, 113
parse_matrix_decl
fcal::parser::Parser, 113
parse_multiplication
fcal::parser::Parser, 113
parse_nested_expr
fcal::parser::Parser, 113
parse_not_expr
fcal::parser::Parser, 113
parse_relational_expr
fcal::parser::Parser, 113

parse_standard_decl
fcal::parser::Parser, 113
parse_stmt
fcal::parser::Parser, 113
parse_stmts
fcal::parser::Parser, 113
parse_string_const
fcal::parser::Parser, 113
parse_subtraction
fcal::parser::Parser, 113
parse_true_kwd
fcal::parser::Parser, 113
parse_variable_name
fcal::parser::Parser, 113
ParseProgram
fcal::parser::Parser, 113
ParseResult
fcal::parser::ParseResult, 114
Parser
fcal::parser::Parser, 112
parser
fcal::scanner::ExtToken, 46
PlusSignToken
fcal::scanner::PlusSignToken, 116
PrintStmt
fcal::ast::PrintStmt, 118
Program
fcal::ast::Program, 120

ReadInput
fcal::scanner, 16
ReadInputFromFile
fcal::scanner, 16
RelationalOpToken
fcal::scanner::RelationalOpToken, 122
RepeatStmt
fcal::ast::RepeatStmt, 124

Scan
fcal::scanner::Scanner, 125
Scanner
fcal::scanner::Scanner, 125
SemiColonStmt
fcal::ast::SemiColonStmt, 127
SeqStmts
fcal::ast::SeqStmts, 129
set_lexeme
fcal::scanner::Token, 145
set_member
MySequence, 99
set_next
fcal::scanner::Token, 145
set_terminal
fcal::scanner::Token, 145
src/ext_token.cc, 166
src/parser.cc, 167
src/read_input.cc, 168
src/regex.cc, 169
src/scanner.cc, 170
src/templates.cc, 170
StarToken
fcal::scanner::StarToken, 131
StringConstExpr
fcal::ast::StringConstExpr, 137
StringConstToken
fcal::scanner::StringConstToken, 139
StringDecl
fcal::ast::StringDecl, 141
SubtractExpr
fcal::ast::SubtractExpr, 143

templates.cc
main, 171
terminal
fcal::scanner::ExtToken, 46
fcal::scanner::Token, 145
Token
fcal::scanner::Token, 145
TokenType
fcal::scanner, 12
TrueKwdToken
fcal::scanner::TrueKwdToken, 147

unparse
fcal::ast::AddExpr, 18
fcal::ast::AssignStmt, 20
fcal::ast::BooleanConstExpr, 22
fcal::ast::BooleanDecl, 24
fcal::ast::BracketsStmt, 26
fcal::ast::Decl, 32
fcal::ast::DeclStmt, 35
fcal::ast::DivideExpr, 36
fcal::ast::EmptyStmts, 39
fcal::ast::EqualsEqualsExpr, 42
fcal::ast::Expr, 43
fcal::ast::FloatConstExpr, 50
fcal::ast::FloatDecl, 54
fcal::ast::GreaterEqualExpr, 58
fcal::ast::GreaterExpr, 60
fcal::ast::IfElseStmt, 62
fcal::ast::IfExpr, 64
fcal::ast::IfStmt, 66
fcal::ast::IntDecl, 73
fcal::ast::IntegerConstExpr, 74
fcal::ast::LessEqualExpr, 78
fcal::ast::LessExpr, 80
fcal::ast::LetExpr, 82
fcal::ast::LogicalAndExpr, 86
fcal::ast::LogicalOrExpr, 88
fcal::ast::MatrixAssignStmt, 90
fcal::ast::MatrixMultiExprDecl, 92
fcal::ast::MatrixREFExpr, 94
fcal::ast::MatrixSingleExprDecl, 96
fcal::ast::MultiplyExpr, 98
fcal::ast::NestedOrFunctionCallExpr, 101
fcal::ast::Node, 102
fcal::ast::NotEqualsExpr, 104
fcal::ast::NotExpr, 106

fcal::ast::ParenthesesExpr, 110
fcal::ast::PrintStmt, 118
fcal::ast::Program, 120
fcal::ast::RepeatStmt, 124
fcal::ast::SemiColonStmt, 127
fcal::ast::SeqStmts, 129
fcal::ast::Stmt, 133
fcal::ast::Stmts, 135
fcal::ast::StringConstExpr, 137
fcal::ast::StringDecl, 141
fcal::ast::SubtractExpr, 143
fcal::ast::VarNameExpr, 152
fcal::ast::WhileStmt, 153

VarNameExpr
fcal::ast::VarNameExpr, 151
VariableNameToken
fcal::scanner::VariableNameToken, 149

WhileStmt
fcal::ast::WhileStmt, 153