Python Grammar

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Start -> file_input

file_input
      : %empty
      | T_newline file_input
      | stmt file_input
      | T_eof

stmt
      : simple_stmt
      | compound_stmt

simple_stmt
      : small_stmt next_simple_stmt

next_simple_stmt
      : end_simple_stmt
      | T_semi_colon small_stmt next_simple_stmt

end_simple_stmt
      : T_newline
      | T_semi_colon T_newline
      | %empty

small_stmt
      : expr_stmt
      | del_stmt
      | pass_stmt
      | flow_stmt
      | import_stmt

expr_stmt
      : testlist_star_expr next_expr_stmt

next_expr_stmt
      : augassign testlist
      | last_expr_stmt

last_expr_stmt
      : %empty
      | T_eq testlist_star_expr last_expr_stmt

testlist_star_expr
      : first_testlist_star_expr last_testlist_star_expr

first_testlist_star_expr
      : test
      | star_expr

last_testlist_star_expr
      : %empty

```
            | T_comma end_testlist_star_expr

end_testlist_star_expr
        : %empty
        | test last_testlist_star_expr
        | star_expr last_testlist_star_expr

augassign
        : T_plus_eq
        | T_minus_eq
        | T_star_eq
        | T_div_eq
        | T_mod_eq
        | T_or_eq
        | T_xor_eq

del_stmt
        : T_del  exprlist

pass_stmt
        : T_pass

flow_stmt
        : break_stmt
        | continue_stmt
        | return_stmt

break_stmt
        : T_break

continue_stmt
        : T_continue

return_stmt
        : T_return optional_return

optional_return
        : %empty
        | testlist

import_stmt
        : import_name
        | import_from

import_name
        : T_import dotted_as_names

import_from
        : T_from dotted_name T_import end_import_from

end_import_from
        : T_star
        | T_Lparan import_as_names T_Rparan
        | import_as_names

import_as_name
        : T_name optional_t_name

optional_t_name
        : %empty
        | T_as T_name
```

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dotted_as_name
        : dotted_name optional_t_name

import_as_names
        : import_as_name end_import_as_names

end_import_as_names
        : %empty
        | T_comma import_as_name end_import_as_names

dotted_as_names
        : dotted_as_name end_dotted_as_names

end_dotted_as_names
        : %empty
        | T_comma dotted_as_name end_dotted_as_names

dotted_name
        : T_name optional_dotted_name

optional_dotted_name
        : %empty
        | T_dot dotted_name

compound_stmt
        : if_stmt
        | for_stmt
        | funcdef

funcdef
        : T_def T_name parameters T_colon suite

parameters
        : T_Lparan optional_typedargslist T_Rparan

optional_typedargslist
        : %empty
        | typedargslist

typedargslist
        : T_name optional_eq_test repeat_optional_eq_test

optional_eq_test
        : %empty
        | T_eq test

repeat_optional_eq_test
        : %empty
        | T_comma T_name optional_eq_test repeat_optional_eq_test

if_stmt
        : T_if test T_colon suite elif_stmt optional_else

elif_stmt
        : %empty
        | T_elif test T_colon suite elif_stmt

for_stmt
        : T_for exprlist T_in testlist T_colon suite optional_else
```

```
optional_else
        : %empty
        | T_else T_colon suite

suite
        : simple_stmt
        | T_newline T_indent stmt repeat_stmt T_dedent

repeat_stmt
        : %empty
        | stmt repeat_stmt

test
        : or_test optional_if_else

optional_if_else
        : %empty
        | T_if or_test T_else test

or_test
        : and_test repeat_or_test

repeat_or_test
        : %empty
        | T_or and_test repeat_or_test

and_test
        : not_test repeat_and_test

repeat_and_test
        : %empty
        | T_and not_test repeat_and_test

not_test
        : T_not not_test
        | comparison

comparison
        : expr repeat_comp_expr

repeat_comp_expr
        : %empty
        | comp_op expr repeat_comp_expr

comp_op
        : T_lt
        | T_gt
        | T_deq
        | T_ge
        | T_le
        | T_noteq
        | T_in
        | T_notin
        | T_is
        | T_isnot

star_expr
        : T_star expr

expr
        : xor_expr repeat_expr
```

```
repeat_expr
        : %empty
        | T_bitwiseor xor_expr repeat_expr

xor_expr
        : and_expr repeat_xor_expr

repeat_xor_expr
        : %empty
        | T_bitwisexor and_expr repeat_xor_expr

and_expr
        : shift_expr repeat_and_expr

repeat_and_expr
        : %empty
        | T_bitwiseand shift_expr repeat_and_expr

shift_expr
        : arith_expr repeat_shift_expr

repeat_shift_expr
        : %empty
        | T_leftshift arith_expr repeat_shift_expr
        | T_rightshift arith_expr repeat_shift_expr

arith_expr
        : term last_arith_expr

last_arith_expr
        : %empty
        | T_plus term last_arith_expr
        | T_minus term last_arith_expr

term
        : factor last_term

last_term
        : %empty
        | T_star factor last_term
        | T_divide factor last_term
        | T_mod factor last_term
        | T_double_divide factor last_term

factor
        : power
        | T_plus factor
        | T_minus factor
        | T_tilde factor


power
        : atom_expr optional_factor

optional_factor
        : %empty
        | T_double_star factor

atom_expr
        : atom repeat_trailer
```

```
repeat_trailer
        : %empty
        | trailer repeat_trailer

atom
        : T_Lparan optional_testlist_comp T_Rparan
        | T_squarebleft optional_testlist_comp T_squarebright
        | T_name
        | T_number
        | T_string repeat_string
        | T_ellipsis
        | T_none
        | T_true
        | T_false

optional_testlist_comp
        : %empty
        | testlist_comp

repeat_string
        : %empty
        | T_string repeat_string

testlist_comp
        : first_testlist_comp last_testlist_comp

first_testlist_comp
        : test
        | star_expr

last_testlist_comp
        : repeat_testlist_comp optional_comma

repeat_testlist_comp
        : %empty
        | T_comma end_testlist_comp

end_testlist_comp
        : test repeat_testlist_comp
        | star_expr repeat_testlist_comp

trailer
        : T_Lparan optional_arglist T_Rparan
        | T_Lparan optional_typedargslist T_Rparan
        | T_squarebleft subscriptlist T_squarebright
        | T_dot T_name

optional_arglist
        : %empty
        | arglist

subscriptlist
        : subscript repeat_subscript optional_comma

repeat_subscript
        : %empty
        | T_comma subscript repeat_subscript

subscript
        : test
```

```
          | optional_test T_colon optional_test optional_sliceop

optional_test
          : %empty
          | test

optional_sliceop
          : %empty
          | sliceop

sliceop
          : T_colon optional_test

exprlist
          : first_exprlist last_exprlist optional_comma

first_exprlist
          : expr
          | star_expr

last_exprlist
          : %empty
          | T_comma first_exprlist last_exprlist

optional_comma
          : %empty
          | T_comma

testlist
          : test repeat_test optional_comma

repeat_test
          : %empty
          | T_comma test repeat_test

arglist
          : argument repeat_argument optional_comma

repeat_argument
          : %empty
          | T_comma argument repeat_argument

argument
          : test T_eq test
          | T_double_star test
          | T_star test
```