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Parsing of the Select Statement

Query:

select temperature, vegetation into dt from ds order by year desc;

Grammer:

1. **S → select CL INTO from ds WHERE GROUP ORDER;**
2. **CL → C CL'**
3. **CL → ***
4. **CL' → , C CL'**
5. **CL' → ε**
6. **C → year | temperature | vegetation | wind_speed**
7. **INTO → into dt | ε**
8. **WHERE → where C OP EXP | ε**
9. **OP → = | > | < | >= | <= | !=**
10. **EXP → SIGN NUM FRAC**
11. **SIGN → - | ε**
12. **FRAC → . NUM | ε**
13. **NUM → D D'**
14. **D' → D D' | ε**
15. **D → [0-9]**
16. **GROUP → group by CL | ε**
17. **ORDER → order by CL DIR | ε**
18. **DIR → asc | desc | ε**

FIRST & FOLLOW Table:

Non-Terminal	FIRST	FOLLOW
S	{select}	{$}
CL	{*, year, temperature, vegetation, wind_speed}	{into dt, from ds, asc, desc, order by, ;}
CL'	{',', ε}	{into dt, from ds, asc, desc, order by, ;}
C	{year, temperature, vegetation, wind_speed}	{into dt, from ds, asc, desc, order by, ,, =, >, <, >=, <=, !=, ;}
INTO	{into dt, ε}	{from ds}
WHERE	{where, ε}	{group by, order by, ;}
OP	{=, >, <, >=, <=, !=}	{-, [0-9]}
EXP	{-, [0-9]}	{group by, order by, ;}
SIGN	{-, ε}	{[0-9]}
FRAC	{., ε}	{group by, order by, ;}
NUM	{[0-9]}	{., group by, order by, ;}
D	{[0-9]}	{., group by, order by, [0-9], ;}
D'	{[0-9], ε}	{., group by, order by, [0-9], ;}
GROUP	{group by, ε}	{order by, ;}
ORDER	{order by, ε}	{;}
DIR	{asc, desc, ε}	{;}

Parsing Stack:

Parser Stack	Input	Action
S	select temperature, vegetation into dt from ds order by year desc;$	Use Rule (1)
select CL INTO from ds WHERE GROUP ORDER;	select temperature, vegetation into dt from ds order by year desc;$	Match select
CL INTO from ds WHERE GROUP ORDER;	temperature, vegetation into dt from ds order by year desc;$	Use Rule (2) → CL → C CL'
C CL' INTO from ds WHERE GROUP ORDER;	temperature, vegetation into dt from ds order by year desc;$	Use Rule (6) → C → temperature
temperature CL' INTO from ds WHERE GROUP ORDER;	temperature, vegetation into dt from ds order by year desc;$	Match temperature
CL' INTO from ds WHERE GROUP ORDER;	, vegetation into dt from ds order by year desc;$	Use Rule (4) → CL' → , C CL'
, C CL' INTO from ds WHERE GROUP ORDER;	, vegetation into dt from ds order by year desc;$	Match ,
C CL' INTO from ds WHERE GROUP ORDER;	vegetation into dt from ds order by year desc;$	Use Rule (6) → C → vegetation
vegetation CL' INTO from ds WHERE GROUP ORDER;	vegetation into dt from ds order by year desc;$	Match vegetation
CL' INTO from ds WHERE GROUP ORDER;	into dt from ds order by year desc;$	Use Rule (5) → CL' → ε
INTO from ds WHERE GROUP ORDER;	into dt from ds order by year desc;$	Use Rule (7) → INTO → into dt
into dt from ds WHERE GROUP ORDER;	into dt from ds order by year desc;$	Match into dt
from ds WHERE GROUP ORDER;	from ds order by year desc;$	Match from ds
WHERE GROUP ORDER;	order by year desc;$	Use Rule (10) → WHERE → ε
GROUP ORDER;	order by year desc;$	Use Rule (16) → GROUP → ε
ORDER;	order by year desc;$	Use Rule (17) → ORDER → order by CL DIR
order by CL DIR;	order by year desc;$	Match order by
CL DIR;	year desc;$	Use Rule (2) → CL → C CL'
C CL' DIR;	year desc;$	Use Rule (6) → C → year
year CL' DIR;	year desc;$	Match year
CL' DIR;	desc;$	Use Rule (5) → CL' → ε
DIR;	desc;$	Use Rule (18) → DIR → desc
desc;	desc;$	Match desc
;	;$	Match ;
ε	$	Accept