

## Soluzione

```
CREATE TABLE AUTO
(A_IDAuto NUMBER(5,0),
A_IDCat NUMBER(5,0),
A_Garage NUMBER(5,0),
PRIMARY KEY (A_IDAuto),
FOREIGN KEY (A_IDCat) REFERENCES CATEGORIA (C_IDCat)
);
```

```
CREATE TABLE CATEGORIA
(C_IDCat NUMBER(5,0),
C_Descr NUMBER(1,0),
C_Costo NUMBER(5,0),
PRIMARY KEY (C_IDCat)
);
```

```
CREATE TABLE NOLEGGIO
(N_IDAuto NUMBER(5,0),
N_DataI DATE,
N_DataF DATE,
PRIMARY KEY (N_IDAuto,N_DataI),
FOREIGN KEY (N_IDAuto) REFERENCES AUTO (A_IDAuto)
);
```

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```
create or replace procedure Preventivo(vGarage number,vDataI date,vDataF date)
as

cursor curDisp is
SELECT C_IDCat, C_Descr, C_Costo *(vDataF-vDataI) as Prezzo FROM CATEGORIA
WHERE C_IDCat IN
(SELECT A_IDCat FROM AUTO
where A_Garage=vGarage AND A_IDAuto NOT IN
(SELECT N_IDAuto FROM NOLEGGIO where (N_DataI >= vDataI and N_DataI <vDataF) or
(N_DataF > vDataI and N_DataF <= vDataF)))
ORDER BY 2 DESC;

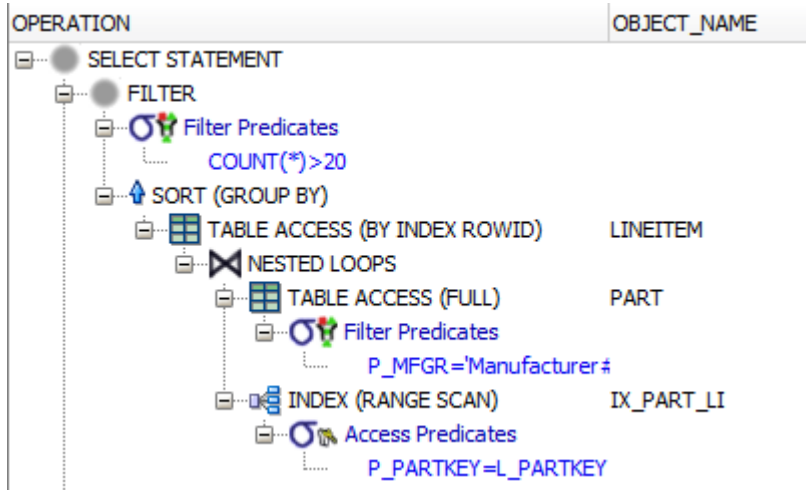
begin
--scorro le macchine disponibili
for vDisp in curDisp loop
    dbms_output.put_line('Categoria:' || vDisp.C_IDCat ' Descrizione:'
|| vDisp.C_Descr || ' Prezzo:' || vDisp.Prezzo);
end loop;
dbms_output.put_line('Costo Totale:' ||vCosto);

end;
```

```

select L_SUPPKEY,P_TYPE, count(*)
from TPCD.PART, TPCD.LINEITEM
where P_PARTKEY=L_PARTKEY and P_MFGR='Manufacturer#3'
group by L_SUPPKEY,P_TYPE
HAVING Count(*)>20;

```



$$NP_{PART} = \lceil 200.000 \times 131 / (4096 \times 0,69) \rceil = 9.271$$

$$NP_{LINEITEM} = \lceil 6.001.215 \times 113 / (4096 \times 0,69) \rceil = 239.944$$

$$Sel (P\_MFGR='Manufacturer\#3') = 1/5$$

$$NL_{L\_PARTKEY} = \lceil (6.001.215 \times 4 + 200.000 \times 4) / (4096 \times 0,69) \rceil = 8.777$$

$$\text{Costo di accesso con indice unordered a LINEITEM} = 2 + \lceil 1/200.000 * 8.777 \rceil + \Phi(6001215/200000, 239.944) = 2+1+\Phi(30,239.944)=33$$

$$\text{Costo jon L-O} = 9.271 + 200.000 \times 1/5 \times 33 = \mathbf{1.329.271}$$

$$NT_{LI-P} = \lceil 6.001.215 \times 1/5 \rceil = 1.200.243$$

$$NP_{LI-P} = \lceil 1.200.243 \times (113+131) / (4096 \times 0,69) \rceil = 103.622$$

$$\text{Costo del group by} = 2 \times 103.622 \times (\lceil \log_{100} 103.622 \rceil + 1) = \mathbf{828.976}$$

$$NP_{GB} = \Phi(1.200.243, 10.000 \times 150) = \mathbf{826.116}$$

Il costo della clausola HAVING è pari al costo della scansione della tabella derivante dal Group By

$$\mathbf{\text{Costo Totale} = 1.329.271 + 828.976 + 826.116 = 2.984.363}$$