

LØSNINGSFORSLAG

Løsningsforslagene bygger på den til en hver tid gjennomgåtte teoribit.

OPPGAVE 1

a) select *
from ansatt
where funksjon = 'SELGER';

b) select *
from ansatt
where funksjon like '%SJEF' and lonn > 20000;

c) select *
from ansatt
order by enavn;

d) Select *
from ansatt
where (funksjon='SELGER' or funksjon='ASSISTENT') and LONN > 12000;

e) Select *
from ansatt
where funksjon='SELGER' or (funksjon='ASSISTENT' and lonn > 12000);

OPPGAVE 2

a) insert into ansatt

```
(ansnr, enavn, funksjon,sjefnr,lonn)
values
(7903, 'EVENSEN', 'SELGER', 7698,19000);
```

b) update ansatt

```
set lonn = lonn*1.08;
```

c) delete from ansatt

```
where enavn = 'TURNIPS';
```

d) commit;

```
delete from ansatt;
```

14 rows deleted.

```
select *
from ansatt;
```

no rows selected

```
rollback;
```

```
select *
from ansatt;
```

14 rows selected

e) update ansatt

```
set lonn = lonn*2
where enavn='DONALD';
```

```
select *  
from ansatt  
where enavn='DONALD';
```

```
rollback;
```

```
select *  
from ansatt  
where enavn='DONALD';
```

OPPGAVE 3

a) create table vare

```
(varenr char(4) not null,  
varenavn varchar2(20) not null,  
enhet char(4) ,  
beskrivelse varchar2(40));
```

create table vare_lev

```
(levnr char(4) not null,  
varenr char(4) not null,  
pris number(9,2) not null);
```

create table lev

```
(levnr char(4) not null,  
navn varchar2(20) not null,  
adresse varchar2(30),  
postsed varchar2(20),  
land varchar2(10),  
telefon varchar2(18));
```

create table bestilling

```
(bestnr char(6) not null,  
levnr char(4) not null,  
dato date,  
status char(1));
```

create table bestlinje

```
(bestnr char(6) not null,  
linjenr number(2) not null,  
levnr char(4) not null,  
varenr char(4) not null,  
antall number(9,2) not null,  
enhetspris number(9,2) not null);
```

b) select *
from user_tables;

select object_name,
object_type
from user_objects;

c) insert into vare
values(1001,'Superbensin','1','98 oktan');

insert into vare
values(1104,'Diesel','1','');

OPPGAVE 4

```
drop table bestlinje;  
drop table bestilling;  
drop table vare_lev;  
drop table vare;  
drop table lev;
```

```
create table vare  
  (varenr char(4) not null,  
   vareavn varchar2(20) not null,  
   enhet char(4) not null,  
   beskrivelse varchar2(40),  
   primary key(varenr),  
   unique(vareavn));
```

```
create table lev (levnr char(4) not null,  
  navn varchar2(20) not null,  
  adresse varchar2(30),  
  poststed varchar2(20),  
  land varchar2(10),  
  telefon varchar2(18),  
  primary key(levnr),  
  unique (navn,adresse) );
```

```
create table vare_lev  
  (levnr char(4) not null,  
   varenr char(4) not null,  
   pris number(9,2),  
   primary key (levnr,varenr),  
   foreign key (varenr) references vare(varenr),  
   foreign key (levnr) references lev(levnr));
```

```
create table bestilling
  (bestnr char(6) not null ,
  levnr char(4) not null,
  dato date,
  status char(1) ,
  primary key(bestnr),
  foreign key (levnr) references lev(levnr),
  unique (bestnr,levnr),
  check (status in ('A','B','C')));
```

```
create table bestlinje
  (bestnr char(6) not null,
  levnr char(4) not null,
  linjenr number(2) not null,
  varenr char(4) not null,
  antall number(9,2) not null,
  enhetspris number(9,2) not null,
  primary key (bestnr,linjenr),
  foreign key (bestnr,levnr) references bestilling(bestnr,levnr),
  foreign key (levnr,varenr) references vare_lev(levnr,varenr),
  check (antall > 0 and enhetspris < 9999.99));
```


OPPGAVE 5

a) select vare_lev.*,
 pris*0.22 moms,
 pris*1.22 brutto
from vare_lev;

b) select levnr,
 varenr,
 pris,
 round(pris/varenr*100,2) prosent
from vare_lev;

c) select varenr,
 nvl(beskrivelse,varenavn) beskrivelse
from vare;

d) select varenr,
 ltrim(beskrivsel||' '||varenavn, ' ') varenavn
from vare;

e) select levnr,
 navn,
 adresse,
 poststed,
 land,
 decode(substr(telefon,1,2),'22',
 '-')||substr(telefon,3),telefon) telefon
from lev;

f) select to_char(sysdate,
 " 'I dag er det' Day dd/mm/yy "og klokken er nå" hh24:mi:ss".")
 "Dagen I dag"
from dual;

OPPGAVE 6

a) select min(pris)
from vare_lev
where varenr = '1001';

b) select varenr,
avg(pris)
from vare_lev
group by varenr
order by avg(pris);

c) select varenr,
avg(pris)
from vare_lev
group by varenr
having avg(pris) <= 4.00
order by avg(pris);

d) select varenr,
max(pris)
from vare_lev
group by varenr
having max(pris) < 4.10;

e) select varenr,
max(pris) - min(pris) forskjell,
stddev(pris) stdavvik
from vare_lev
group by varenr;

```
f) select varenr,  
       count(levnr) lev,  
       count(distinct pris) priser  
from vare_lev  
group by varenr;
```

OPPGAVE 7

a) select vl.levnr,
 l.navn,
 vl.varenr,
 v.varenavn,
 vl.pris
from vare_lev vl,
 vare v,
 lev l
where l.levnr = vl.levnr
and v.varenr = vl.varenr
order by varenavn;

b) select ansatt.ansnr,
 ansatt.enavn,
 ansatt.lonn,
 ansatt.sjefnr,
 sjef.enavn,
 sjef.lonn
from ansatt ansatt,
 ansatt sjef
where ansatt.sjefnr = sjef.ansnr
and ansatt.lonn > sjef.lonn;

c) select varenr
from vare
 intersect
select varenr
from gml_vare;

d) select varenr
from vare
 minus
select varenr
from gml_vare;

```
e) select varenr
from gml_vare
      minus
select varenr
from vare;
```

```
f) select varenr
from vare
      union
select varenr
from gml_vare;
```

OPPGAVE 8

a) select varenr,
 varenavn
from vare
where varenr not in
 (select varenr
 from vare_lev);

b) select varenr,
 varenavn
from vare
where varenr in
 (select varenr
 from vare_lev
 where levnr in
 (select levnr
 from lev
 where poststed like 'Oslo%')));

c) select *
from vare_lev
where pris >
 (select avg(pris)
 from vare_lev);

d) select *
from vare_lev hoved
where pris >
 (select avg(pris)
 from vare_lev sub
 where hoved.varenr = sub.varenr);

```
e) select l.levnr,  
       l.navn,  
       vl.varenr,  
       v.varenavn,  
       vl.pris  
from   vare_lev vl,  
       vare v,  
       lev l  
where  l.levnr = vl.levnr  
and    v.varenr = vl.varenr  
and    pris =  
       (select min(pris)  
        from vare_lev sub  
        where sub.varenr = vl.varenr);
```

OPPGAVE 9

a) create view gjsnitt as
select varenr,
avg(pris) gjsnpris
from vare_lev
group by varenr;

```
select *  
from gjsnitt  
where gjsnpris > 5;
```

b) create view grandtot as
select sum(antall*enhetspris) totsum
from bestlinje;

c) create view besttot as
select bestnr,
sum(antall*enhetspris) bestsum
from bestlinje
group by bestnr;

d) select vl.levnr,
vl.varenr,
vl.pris,
vl.pris - g.gjsnpris
from vare_lev vl,
gjsnitt g
where vl.varenr = g.varenr;

OPPGAVE 10

a) alter user SQL_n
identified by SQL_n;

b) insert into vare
(varenr, varenavn, enhet, beskrivelse)
values
(‘9999’, ‘Tyrkisk Pepper’, ‘pose’, ‘SQL_0’);

c) grant select on vare to public;

d) grant update on vare to SQL_m with grant option;

e) update SQL_k.vare set beskrivelse=‘SQL_n har oppdatert --’;

select * from user_tab_privs_made;

select * from user_tab_privs_recd;

f) revoke select on vare from public;

select *
from user_tab_privs_made;

OPPGAVE 11

a)

```
set pages 999
delete from plan_table
where STATEMENT_ID = 'query1'
/
commit
/
EXPLAIN PLAN
SET STATEMENT_ID = 'query1'
INTO PLAN_TABLE
FOR
select count(*) from big_emp
/
```

```
SELECT SUBSTR(LPAD(' ',2*(LEVEL -1))||OPERATION,1,30) "Operation",
SUBSTR(OPTIONS,1,20) "Option",
SUBSTR(OBJECT_NAME,1,20) "Object name"
FROM PLAN_TABLE WHERE STATEMENT_ID='query1'
CONNECT BY PRIOR ID = PARENT_ID
and STATEMENT_ID = 'query1'
START WITH ID = 1
and STATEMENT_ID = 'query1'
ORDER BY ID;
```

Operation	Option	Object name
SORT TABLE ACCESS FULL	GROUP BY	BIG_EMP

b)

Operation	Option	Object name
SORT INDEX	GROUP BY RANGE SCAN	BIG_EMP_PRIME

(Slipper "TABLE ACCESS BY ROWID" fordi indeksen BIG_EMP_PRIME inneholder like mange forekomster som det er rader i tabellen)

c)

Operation	Option	Object name
SORT INDEX	GROUP BY RANGE SCAN	BIG_EMP_PRIME

d)

Operation	Option	Object name
SORT TABLE ACCESS	GROUP BY FULL	BIG_EMP

e)

Operation	Option	Object name
SORT TABLE ACCESS	GROUP BY FULL	BIG_EMP

f)

Operation	Option	Object name
SORT TABLE ACCESS INDEX	GROUP BY BY ROWID RANGE SCAN	BIG_EMP BIG_EMP_PRIME

(Trenger "TABLE ACCESS BY ROWID" fordi SAL kan være NULL)

g)

Operation	Option	Object name
SORT TABLE ACCESS	GROUP BY FULL	BIG_EMP

OPPGAVE 12

a) Regelbasert optimaliserer setning 1:

Operation	Option	Object name
SORT	AGGREGATE	
NESTED LOOPS		
TABLE ACCESS	FULL	DEPT
TABLE ACCESS	BY ROWID	BIG_EMP
INDEX	RANGE SCAN	BIG_EMP_DEPTNO

Regelbasert optimaliserer setning 2:

Operation	Option	Object name
SORT	AGGREGATE	
NESTED LOOPS	OUTER	
TABLE ACCESS	FULL	DEPT
TABLE ACCESS	BY ROWID	BIG_EMP
INDEX	RANGE SCAN	BIG_EMP_DEPTNO

b) Kostbasert optimaliserer setning 1:

Operation	Option	Object name
SORT	AGGREGATE	
NESTED LOOPS		
TABLE ACCESS	FULL	BIG_EMP
INDEX	UNIQUE SCAN	DEPT_PRIMARY_KEY

Kostbasert optimaliserer setning 2:

Operation	Option	Object name
SORT	AGGREGATE	
NESTED LOOPS	OUTER	
TABLE ACCESS	FULL	DEPT
TABLE ACCESS	FULL	BIG_EMP

OPPGAVE 13

Mulige select-setninger for å skrive ut DEPTNO og DENAME fra DEPT for de avdelingene der det ikke er ansatte (i EMP):

a) select dept.deptno,
 dname
from dept
where not exists
 (select 'x' from emp where deptno=dept.deptno)

b) select dept.deptno,
 dname
from dept
where deptno not in
 (select deptno
 from emp)

c) select dept.deptno,
 dname
from dept,
 emp
where dept.deptno = emp.deptno(+) and ename is null

d) select dept.deptno
from dept
 minus
select distinct deptno
from emp

Første er mest effektiv. Den andre og den fjerde har to fulle tabell-gjennomløpninger. Den tredje må gjøre oppslag i tabell i tillegg til indeks-oppslag

OPPGAVE 14

a) set pagesize 24
break on report on bestnr page
compute sum of pris on report
compute sum of pris on bestnr

```
select bestnr,  
       linjenr,  
       varenr,  
       antall,  
       enhetspris,  
       antall*enhetspris pris  
from bestlinje  
order by bestnr, linjenr;
```

b) select bestnr,
 linjenr,
 varenr,
 antall,
 enhetspris,
 antall*enhetspris pris
from bestlinje
where bestnr = &bestillingsnummer
order by bestnr, linjenr;

c) pagesize 24
break on report on navn on bestnr page
compute sum of pris on report
compute sum of pris on bestnr
column bestnr format a7
column enhetspris format 99G999D99
column pris format 99G999D99
column linjenr heading LNR format 999 newline

```
select bl.bestnr,  
       l.navn,  
       bl.linjenr,  
       bl.varenr,  
       v.varenavn,  
       bl.antall,  
       bl.enhetspris,  
       bl.antall*bl.enhetspris pris  
from   bestlinje bl,  
       vare v,  
       lev l  
where  bl.levnr = l.levnr and bl.varenr = v.varenr  
order by bl.bestnr,bl.linjenr;
```

```
clear compute  
clear break
```

d) break on report on navn on bestnr page
compute sum of pris "% av total" on report
compute sum of pris "% av best" "% av total" on bestnr;
column enhetspris format 99G999D99
column pris format 99G999D99
column varenavn format A16 trunc
column linjenr heading "LNR" format 999 newline
column "% av best" format 999D99
column "% av total" format 999D99

```
select bl.bestnr,  
       l.navn,  
       bl.linjenr,  
       bl.varenr,  
       v.varenavn,  
       bl.antall,  
       bl.enhetspris,  
       (bl.antall*bl.enhetspris) pris,  
       (bl.antall*bl.enhetspris*100/bt.bestsum) "%av best",  
       (bl.antall*bl.enhetspris*100/gt.totsum) "% av total"
```

```
from bestlinje bl,  
     vare v,  
     lev l,  
     besttot bt,  
     grandtot gt  
where bl.bestnr = bt.bestnr  
and bl.levnr = l.levnr and bl.varenr = v.varenr  
order by bl.bestnr, bl.linjenr;
```

```
clear computes  
clear breaks  
bclear columns
```