

(1)

(a) DDL

```

Connected.
SQL> create table murli(roll_no number(5),division char(5),address char(15),clas
char(5));
Table created.
SQL> alter table murli add surname char(10);
Table altered.
SQL> desc murli;
Name                                     Null?      Type
-----
ROLL_NO                                NUMBER(5)
DIVISION                               CHAR(5)
ADDRESS                                CHAR(15)
CLAS                                    CHAR(5)
SURNAME                                CHAR(10)
SQL> drop table murli;
Table dropped.
SQL>

```

(b) DML

```

SQL> insert into murli values(5,'a','kandivali','sybsc');
1 row created.
SQL> select * from murli;
  ROLL_NO  DIVIS  ADDRESS  CLASS
-----
      5  a      kandivali  sybsc

SQL> update murli set mob_no=95654 where roll_no=5;
update murli set mob_no=95654 where roll_no=5
*
ERROR at line 1:
ORA-00904: "MOB_NO": invalid identifier

SQL> update murli set roll_no=10 where roll_no=5;
1 row updated.
SQL> delete from murli;
1 row deleted.

```

(c) Constraints.

```
SQL*Plus: Release 11.2.0.2.0 Production on Tue Jun 2/ 16:14:01 2017
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SQL> connect system
Enter password:
Connected.
SQL> create table product(pid number(3),pname char(20),address char(10));
Table created.

SQL> insert into product values(101,'jeans','kandivli');
1 row created.

SQL> insert into product values(102,'phone','anderi');
1 row created.

SQL> create table order1(oid number(3),oname char(20),pid number(3));
Table created.

SQL> insert into product values(201,'order1',101);
1 row created.

SQL> insert into product values(202,'order2',102);
1 row created.

SQL> delete from product ;
4 rows deleted.

SQL> insert into product values(101,'jeans','kandivli');
1 row created.

SQL> insert into product values(102,'phone','anderi');
1 row created.

SQL> insert into order1 values(201,'order1',101);
1 row created.

SQL> insert into order1 values(202,'order2',102);
1 row created.

SQL> select * from product;

      PID PNAME          ADDRESS
-----
      101 jeans          kandivli
      102 phone          anderi

SQL> select * from order1;

      OID ONAME          PID
-----
      201 order1          101
      202 order2          102

SQL> ALTER table product add PRIMARY KEY (pid);
Table altered.

SQL> ALTER table Order1 add FOREIGN KEY (pid) REFERENCES product(pid);
Table altered.

SQL>
```

(2)

(a) Select order by

```

Table created.
SQL> insert into employee values(201,'suraj','5000');
1 row created.
SQL> insert into employee values(202,'dhiraj','6000');
1 row created.
SQL> insert into employee values(203,'sachin','7000');
1 row created.
SQL> select * from employee order by salary desc;

```

E_ID	E_NAME	SALARY
203	sachin	7000
202	dhiraj	6000
201	suraj	5000

```
SQL> select * from employee order by salary asc;
```

E_ID	E_NAME	SALARY
201	suraj	5000
202	dhiraj	6000
203	sachin	7000

```
SQL> select * from employee where e_id=201;
```

E_ID	E_NAME	SALARY
201	suraj	5000

(b) Select group by

Table altered.

```
SQL> insert into employee2('s01','manish',10000,'it');
insert into employee2('s01','manish',10000,'it')
*
```

```
ERROR at line 1:
ORA-00928: missing SELECT keyword
```

```
SQL> insert into employee2 values('s01','manish',10000,'it');
```

1 row created.

```
SQL> insert into employee2 values('s02','rakesh',15000,'commercial');
```

1 row created.

```
SQL> insert into employee2 values('s02','mishra',5000,'farmer');
```

1 row created.

```
SQL> insert into employee2 values('s03','ranjan',25000,'teacher');
```

1 row created.

```
SQL> select dept,sum(salary) from employee2 group by dept;
```

DEPT	SUM(SALARY)
farmer	5000
it	10000
commercial	15000
teacher	25000

(c) Aggregate function.

```

SQL> create table employee(e_id char(5),e_name char(10),dept char(10),salary number(15));
Table created.
SQL> insert into employee values('s01','manish','it',15000);
1 row created.
SQL> insert into employee values('s02','ajay','commercial',10000);
1 row created.
SQL> insert into employee values('s03','satish','farmer',2000);
1 row created.
SQL> insert into employee values('s04','risabh','business',20000);
1 row created.
SQL> select sum(salry) from employee;
select sum(salry) from employee
          *
ERROR at line 1:
ORA-00904: "SALRY": invalid identifier

SQL> select sum(salary) from employee;
SUM(SALARY)
-----
      47000
SQL> select avg(salary) from employee;
AVG(SALARY)
-----
      11750
SQL> select min(salary) from employee;
MIN(SALARY)
-----
       2000
SQL> select max(salary) from employee;
MAX(SALARY)
-----
     20000
SQL> _

```

(3)**(a) Sql join.**

```
SELECT * FROM student OUTER JOIN fees on (student.sid=fees.fid)
```

```
ERROR at line 1:
ORA-00904: "STUDENT"."SID": invalid identifier
```

```
SQL> SELECT * FROM student left JOIN fees on (student.sid=fees.fid);
```

SID	SNAME	ROLL_NO	ADDRESS	FID	TOTALFEE
103	sachin	17	kandivli		
102	murli	16	kandivli		
101	Dhiraj kumar sinha	25	Anderi		
104	ajay	18	kandivli		

```
SQL> SELECT * FROM student inner JOIN fees on (student.sid=fees.fid);
```

```
no rows selected
```

```
SQL> SELECT * FROM student inner JOIN fees where (student.sid=fees.fid);
SELECT * FROM student inner JOIN fees where (student.sid=fees.fid)
```

```
ERROR at line 1:
ORA-00905: missing keyword
```

```
SQL> SELECT * FROM student FULL OUTER JOIN fees on (student.sid=fees.fid);
```

SID	SNAME	ROLL_NO	ADDRESS	FID	TOTALFEE
				201	10000
				202	8000
				203	12000
				204	15000
103	sachin	17	kandivli		
102	murli	16	kandivli		
101	Dhiraj kumar sinha	25	Anderi		
104	ajay	18	kandivli		

```
8 rows selected.
```

(b) Sub-query.

```
SQL> select * from product1;
```

P_ID	P_NAME	COMPANY	UNIT_PRICE
p1	shampoo	lux	50
p2	shoes	nike	5000
p3	book	classmate	100
p3	shirt	addidas	1000

```
SQL> create table order2(o_id char(10),p_id char(3),c_name char(20),total_unit number(5));
create table order2(o_id char(10),p_id char(3),c_name char(20),total_unit number(5))
```

```
ERROR at line 1:
ORA-00955: name is already used by an existing object
```

```
SQL> create table order3(o_id char(10),p_id char(3),c_name char(20),total_unit number(5));
```

```
Table created.
```

```
SQL> insert into order3 values('o1','p1','dhiraj',500);
```

```
1 row created.
```

```
SQL> insert into order3 values('o2','p2','murli',550);
```

```
1 row created.
```

```
SQL> insert into order3 values('o3','p3','richa',555);
```

```
1 row created.
```

```
SQL> insert into order3 values('o4','p3','rahu1',556);
1 row created.

SQL> select c_name from order3
2 where p_id in (select p_id from product1 where unit_price>100);

C_NAME
-----
murli
rahu1
richa

SQL> select * from product1 where unit_price >(select avg(unit_price) from produ
ct1);

P_ID  P_NAME  COMPANY  UNIT_PRICE
-----
p2    shoes   nike     5000

SQL>
```

(4)

(a) Creating view

```
SQL> select * from student;

SID  DOB      SNAME      SALARY      AGE
-----
1 10-SEP-98 sinha      10000       12
2 01-OCT-99 dhiraj     8000        15
3 01-OCT-99 kumar     8000        18
4 10-SEP-79 murli     12000       20

SQL> create view raj as select sid,sname,salary from student where sid=1;
View created.

SQL> select * from raj;

SID  SNAME      SALARY
-----
1 sinha      10000
```

(b) Create index, sequence and synonym.

```
SQL> select * from product;
```

PID	PNAME	PRICE	CNAME
101	oil	50	mukesh
102	sampo	110	suresh
103	soap	120	mahesh
104	deo	120	ramu

```
SQL> create index ind_first on product(cname);
```

Index created.

```
SQL> create sequence sinha
```

```
2 start with 105
```

```
3 increment by 1
```

```
4 maxvalue 1000
```

```
5 cycle;
```

Sequence created.

```
SQL> insert into product values(sinha.nextval,'oil',220,'rakesh');
```

1 row created.

```
SQL> select * from product;
```

PID	PNAME	PRICE	CNAME
101	oil	50	mukesh
102	sampo	110	suresh
103	soap	120	mahesh
104	deo	120	ramu
105	oil	220	rakesh

```
SQL> create synonym syn for product;
```

Synonym created.

```
SQL> select * from syn product;
```

PID	PNAME	PRICE	CNAME
101	oil	50	mukesh
102	sampo	110	suresh
103	soap	120	mahesh
104	deo	120	ramu
105	oil	220	rakesh

(5).

(a) Grant revoke privileges.

```
SQL> create user sinha identified by sinha;

User created.

SQL> grant create session to sinha;

Grant succeeded.

SQL> connect sinha
Enter password:
Connected.
SQL> connect system
Enter password:
Connected.
SQL> grant create table to sinha;

Grant succeeded.

SQL> alter user sinha default tablespace users temporary tablespace temp quota
2 unlimited on users;

User altered.

SQL> connect sinha
Enter password:
Connected.
SQL> create table stud(sid number(3),sname char(10));

Table created.

SQL> connect system
Enter password:
Connected.
SQL> revoke create session from sinha;

Revoke succeeded.

SQL> drop user sinha cascade;

User dropped.

SQL> connect sinha
Enter password:
ERROR:
ORA-01017: invalid username/password; logon denied

Warning: You are no longer connected to ORACLE.
SQL>
```

Activate Windows
Go to Settings to activate Windows.

(b) Role by

```
SQL> select * from product;

      PID PNAME      PRICE CNAME
-----
      101 oil         50 mukesh
      102 sampo       110 suresh
      103 soap       120 mahesh
      104 deo         120 ramu
      105 oil        220 rakesh

SQL> create role sy;

Role created.

SQL> grant create session to sy;

Grant succeeded.

SQL> grant create table to sy;

Grant succeeded.

SQL> create user sinha identified by sinha;

User created.
```



```

SQL> create user kumar identified by kumar;

User created.

SQL> connect sinha
Enter password:
ERROR:
ORA-01045: user SINHA lacks CREATE SESSION privilege; logon denied

Warning: You are no longer connected to ORACLE.
SQL> connect system
Enter password:
Connected.
SQL> grant sy to sinha,kumar;

Grant succeeded.

SQL> connect sinha
Enter password:
Connected.
SQL> create table stud(sid number(3),sname char(10));
create table stud(sid number(3),sname char(10))
*
ERROR at line 1:
ORA-01950: no privileges on tablespace 'SYSTEM'

```

Activate Windows

(6)**(a) Set operation.**

```

SQL> select * from journey;
  J_ID J_DATE      TRAIN_NO
-----
  1001 10-SEP-17    1244
  1002 14-SEP-17    1247
  1003 10-SEP-17    1249
  1004 14-SEP-17    1259

SQL> select * from train;

  TRAIN_NO TRAIN_NAME SRC      DES
-----
    1244  rajdhani   mumbai  delhi
    1247   godan   mumbai  pnbe
    1249 superfast  mumbai  cpr
    1259 superfast  delhi   mumbai

SQL> select * from passenger;

  P_ID P_NAME      AGE
-----
    101 rahul        18
    102 raj          20
    103 raj          30
    104 dhiraj       19

```

```
SQL> select * from ticket;
```

T_I	J_ID	CLA	COA	BIRTH_NO	P_ID	FARE
t1	1001	s1	s1	20	101	750
t2	1002	ac	s2	22	102	1000
t3	1003	ac	a2	24	103	2000
t4	1004	s1	s8	28	104	1200

```
SQL> select * from passenger where age<20
2 union
3 select * from passenger where p_id in
4 (select p_id from ticket where j_id in
5 (select j_id from journey where train_no in
6 (select train_no from train where src='mumbai')));
P_ID P_NAME      AGE
-----
101 rahul        18
102 raj         20
103 raj         30
104 dhiraj      19
```

```
SQL>
```

(b) Date time function.

```
SQL> select * from journey;
```

J_ID	J_DATE	TRAIN_NO
1001	10-SEP-17	1244
1002	14-SEP-17	1247
1003	10-SEP-17	1249
1004	14-SEP-17	1259

```
SQL> select sysdate from journey;
```

```
SYSDATE
-----
26-SEP-17
26-SEP-17
26-SEP-17
26-SEP-17
```

```
SQL> select last_day(sysdate)from journey;
```

```
LAST_DAY(
-----
30-SEP-17
30-SEP-17
30-SEP-17
30-SEP-17
```

```
SQL> select round(sysdate,'year')from journey;
```

```

ROUND(SYS
-----
01-JAN-18
01-JAN-18
01-JAN-18
01-JAN-18

SQL> select localtimestamp from journey;

LOCALTIMESTAMP
-----
26-SEP-17 10.43.09.353000 PM
26-SEP-17 10.43.09.353000 PM
26-SEP-17 10.43.09.353000 PM
26-SEP-17 10.43.09.353000 PM

SQL> alter session set time_zone='+5:30';

Session altered.

SQL> select j_id,j_date+2 "newdate" from journey;

   J_ID newdate
-----
1001 12-SEP-17
1002 16-SEP-17
1003 12-SEP-17
1004 16-SEP-17

SQL>

```

Activate Windows
Go to Settings to activate Windows.

(7) PL/SQL Basics

(a) declare variable.

add two number in pl/sql.

```

SQL> set serveroutput on;
SQL> declare
  2  n1 number(5);
  3  n2 number(5);
  4  nsum number(5);
  5  begin
  6  n1:=10;
  7  n2:=10;
  8  nsum:=n1+n2;
  9  dbms_output.put_line('sum of'||n1||'and'||n2||'='||nsum);
 10  end;
 11  /
sum of10and10=20

```

PL/SQL procedure successfully completed.

(b) writing excutable statement.

Add two number in pl/sql taken by user.

```
SQL> set serveroutput on;
SQL> declare
  2  n1 number(5);
  3  n2 number(5);
  4  nsum number(5);
  5  begin
  6  n1:=&number1;
  7  n2:=&number2;
  8  nsum:=n1+n2;
  9  dbms_output.put_line('sum of ' ||n1|| 'and' ||n2|| '=' ||nsum);
 10  end;
 11  /
Enter value for number1: 12
old  6: n1:=&number1;
new  6: n1:=12;
Enter value for number2: 23
old  7: n2:=&number2;
new  7: n2:=23;
sum of12and23=35

PL/SQL procedure successfully completed.
```

(c) Interacting with the Oracle Server.

```
SQL> select * from mobile;
```

MID	MODEL	COMPANY	DESCRIPTION	PRICE
m1	6+	apple	4gbRAM64GB	70000
m2	s4	samsung	3gbRAM32GB	12000
m3	3s	redmi	3gbRAM32GB	10000
m3	z10	blackberry	3gbRAM64GB	10000

```
SQL> declare
2  m mobile.model%type;
3  c mobile.company%type;
4  p mobile.price%type;
5  begin
6  select model,company,price into m,c,p
7  from mobile where price=(select max(price)from mobile);
8  dbms_output.put_line('model no ='||m);
9  dbms_output.put_line('company name ='||c);
10 dbms_output.put_line('price ='||p);
11 end;
12 /
model no =6+
company name =apple
price =70000
```

PL/SQL procedure successfully completed.

(d). Writing Control Structures

```
SQL> select * from mobile;
```

MID	COMPANY	MODEL	DISC	PRICE
m101	samsung	s1	3gb32gb	12000
m102	apple	4s	2gb64gb	22000
m103	htc	526	2gb16gb	10000

```
SQL> set serveroutput on;
SQL> variable modelbind char(5);
SQL> declare
2  x mobile.model%type;
3  y mobile.company%type;
4  z mobile.price%type;
5  begin
6  :modelbind:=&modelname;
7  select model,company,price into x,y,z from mobile where
8  model=:modelbind;
9  dbms_output.put_line('model no :'||x);
10 dbms_output.put_line('company :'||y);
11 dbms_output.put_line('price :'||z);
12 end;
13 /
Enter value for modelname: 's1'
old 6: :modelbind:=&modelname;
new 6: :modelbind:='s1';
model no :s1
company :samsung
price :12000
```

PL/SQL procedure successfully completed.

```

SQL> declare
2  x mobile.company%type;
3  begin
4  select company into x from mobile where model=&modelname;
5  if sql%found=true then
6  dbms_output.put_line('record found:');
7  dbms_output.put_line('company name:'||x);
8  else
9  dbms_output.put_line('record not found');
10 end if;
11 end;
12 /
Enter value for modelname: 's1'
old 4: select company into x from mobile where model=&modelname;
new 4: select company into x from mobile where model='s1';
record found:
company name:samsung

PL/SQL procedure successfully completed.

```

(8).

(a) Writing Explicit Cursors

```

SQL> select * from emp;

```

EID	ENAME	SALARY	DESG
101	dhiraj	12000	manag
102	raju	22000	it
103	ramesh	24000	iit
104	manish	34000	iiit

```

SQL> set serveroutput on;

```

```

SQL> declare
2  a emp.eid%type;
3  b emp.ename%type;
4  c emp.salary%type;
5  d emp.desg%type;
6  cursor c_emp is
7  select eid ,ename,salary,desg from emp;
8  begin
9  open c_emp;
10 loop
11 fetch c_emp into a,b,c,d;
12 exit when c_emp%notfound;
13 c:=c+5000;
14 update emp set salary=c where eid=a;
15 end loop;
16 close c_emp;
17 end;
18 /

```

PL/SQL procedure successfully completed.

```

SQL> select * from emp;

```

EID	ENAME	SALARY	DESG
101	dhiraj	17000	manag
102	raju	27000	it
103	ramesh	29000	iit
104	manish	39000	iiit

(b) Handling Exceptions.

```

DECLARE
    c_id customers.id%type := 8;
    c_name customers.No.ame%type;
    c_addr customers.address%type;
BEGIN
    SELECT name, address INTO c_name, c_addr
    FROM customers
    WHERE id = c_id;
    DBMS_OUTPUT.PUT_LINE ('Name: ' || c_name);
    DBMS_OUTPUT.PUT_LINE ('Address: ' || c_addr);

EXCEPTION
    WHEN no_data_found THEN
        dbms_output.put_line('No such customer!');
    WHEN others THEN
        dbms_output.put_line('Error!');
END;
/

```

No such customer!

PL/SQL procedure successfully completed.

(9).

(a) Creating Procedures and package

```

SQL> set serveroutput on;
SQL> declare
2  grade char(1);
3  begin
4  grade:='A';
5  case grade
6  when 'O' then dbms_output.put_line('Outstanding');
7  when 'A' then dbms_output.put_line('Excellent');
8  else dbms_output.put_line('Invalid grade');
9  end case;
10 end;
11 /
Excellent
PL/SQL procedure successfully completed.

```

```
SQL> create table Account (acno number(5),name char(10),balance number(5));
Table created.

SQL> insert into Account values(1001,'Sammer',10000);
1 row created.

SQL> commit;
Commit complete.

SQL> create or replace package pkg_bank as
2 procedure acc_open(a number,b char,c number);
3 procedure deposit(x number,y number);
4 procedure withdraw(x number,y number);
5 procedure dispacc(a number);
6 end pkg_bank;
7 /
Package created.
```

```
SQL> create or replace package body pkg_bank as
2 procedure acc_open(a number,b char,c number)
3 as
4 begin
5 insert into Account values(a,b,c);
6 commit;
7 end;
8 procedure deposit(x number,y number)
9 as begin
10 update account set balance=balance+x where acno=y;
11 exception when no_data_found then
12 dbms_output.put_line('Account number does not exist');
13 end;
14 procedure withdraw(x number,y number)
15 as begin
16 update account set balance=balance-x where acno=y;
17 exception when no_data_found then
18 dbms_output.put_line('Account number does not exist');
19 end;
20 procedure dispacc(a number)
21 as
22 acrew account%rowtype;
23 begin
```

```
24 select * into acrew from account where acno=a;
25 dbms_output.put_line('acc no : '||acrew.acno);
26 dbms_output.put_line('name : '||acrew.name);
27 dbms_output.put_line('balance : '||acrew.balance);
28 end;
29 end;
30 /
Package body created.
```

```
SQL> begin
2 pkg_bank.acc_open(1002,'Niraj',5000);
3 pkg_bank.acc_open(1003,'Suraj',6000);
4 end;
5 /
/SQL procedure successfully completed.
```

```
SQL> begin
2 pkg_bank.dispacc(1002);
3 pkg_bank.dispacc(1003);
4 end;
5 /
ac no :1002
name :Niraj
```



```
alance :5000
c no :1003
me :Suraj
alance :6000

/SQL procedure successfully completed.

SQL> begin
2  pkg_bank.diposit(1000,1002);
3  end;
4  /
pkg_bank.diposit(1000,1002);
*
ERROR at line 2:
ORA-06550: line 2, column 10:
PLS-00302: component 'DIPOSIT' must be declared
ORA-06550: line 2, column 1:
/SQL: Statement ignored

SQL> begin
2  pkg_bank.deposit(1000,1002);
3  end;
4  /
```

```
/SQL procedure successfully completed.

SQL> begin
2  pkg_bank.dispacc(1002);
3  end;
4  /
c no :1002
me :Niraj
alance :6000

/SQL procedure successfully completed.
```

(b) Creating Functions

```
Select * from customers;
```

```

+-----+-----+-----+-----+-----+
| ID | NAME      | AGE | ADDRESS  | SALARY |
+-----+-----+-----+-----+-----+
| 1  | Ramesh    | 32  | Ahmedabad | 2000.00 |
| 2  | Khilan    | 25  | Delhi     | 1500.00 |
| 3  | kaushik   | 23  | Kota      | 2000.00 |
| 4  | Chaitali  | 25  | Mumbai    | 6500.00 |
| 5  | Hardik    | 27  | Bhopal    | 8500.00 |
| 6  | Komal     | 22  | MP        | 4500.00 |
+-----+-----+-----+-----+-----+

```

```

CREATE OR REPLACE FUNCTION totalCustomers
RETURN number IS
    total number(2) := 0;
BEGIN
    SELECT count(*) into total
    FROM customers;

    RETURN total;
END;
/

```

Function created.

(10) Creating Database Triggers

```

SQL> create or replace trigger tri_s
2  after insert on student
3  for each row
4  begin
5  dbms_output.put_line('trigger is called');
6  dbms_output.put_line('new row inserted');
7  dbms_output.put_line('kjdfiu78du');
8  end;
9  /

```

Trigger created.

```

SQL> insert into student values(101,'dhiraj',5000);
trigger is called
new row inserted
kjdfiu78du

1 row created.

```

```
SQL> create or replace trigger tri_s
  2 before update of salary on student
  3 for each row
  4 begin
  5 if :new.salary<:old.salary then
  6 raise_application_error(-20001,'salary can not be reduced');
  7 end if;
  8 end;
  9 /
```

Trigger created.

```
SQL> update student set salary=salary-1000 where sid=101;
update student set salary=salary-1000 where sid=101
*
```

ERROR at line 1:

ORA-20001: salary can not be reduced

ORA-06512: at "SYSTEM.TRI_S", line 3

ORA-04088: error during execution of trigger 'SYSTEM.TRI_S'

```
SQL> update student set salary=salary+1000 where sid=101;
```

1 row updated.

```
SQL> select * from student;
```

SID	SNAME	SALARY
101	dhiraj	6000
102	raj	4000

```
SQL> update student set salary=5000 where sid=101;
update student set salary=5000 where sid=101
*
```

ERROR at line 1:

ORA-20001: salary can not be reduced

ORA-06512: at "SYSTEM.TRI_S", line 3

ORA-04088: error during execution of trigger 'SYSTEM.TRI_S'

```
SQL> update student set salary=5000 where sid=102;
```

1 row updated.

```
SQL> select * from student;
```

SID	SNAME	SALARY
101	dhiraj	6000
102	raj	5000