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DATATYPES IN ORACLE

numeric

int /integer

float

number

number(p,s)

Note: Precision-number of digits in the number | scale digits after decimal point

Character/text

CHAR

CHAR(limit)

Nchar

Nvarchar2(limit)

Varchar(limit)

Date and time

Date -- (date without time)

Timestamp -- (date with time)

Binary data

Blob

Raw

Large character set

Clob

Nclob

long

Datatypes in Oracle

Oracle, like many relational databases, offers a wide range of datatypes to store different kinds of data. To ensure the accuracy and efficiency of your queries, it is important to have a good understanding of the different datatypes in Oracle and

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to select the most suitable one for each column. The datatypes offered by Oracle are as follows:

1. Numerical Datatypes

Oracle offers several numerical datatypes, including `NUMBER`, `INTEGER/INT`, and `FLOAT`. `NUMBER` is used to store numeric values with high precision, `INTEGER` is used to store whole numbers, and `FLOAT` is used to store approximate numeric values.

2. Character Datatypes

Oracle has 8 character datatypes `CHAR`, `NCHAR`, `VARCHAR`, `VARCHAR2`, and `NVARCHAR`, `CLOB`, `NCLOB`, and `LONG`. `CHAR` and `VARCHAR2` are more important. `VARCHAR2` is used to store variable-length character strings, while `CHAR` is used to store fixed-length character strings.

3. Date and Time Datatypes

Oracle provides two datatypes for date and time information: `DATE` and `TIMESTAMP`. `DATE` is used to store date and time information, and `TIMESTAMP` is used to store more precise date and time information.

4. Large Object Datatypes

Oracle has two datatypes for large objects, `BLOB` and `CLOB`. `BLOB` is used to store binary data, while `CLOB` is used to store character data.

DATATYPES IN ORACLE

Data Type	Category	Description
NUMBER	Numeric	Used to store numeric values with high precision
INTEGER or INT	Numeric	Used to store whole number
FLOAT	Numeric	Used to store approximate numeric values
CHAR	Character	Used to store fixed-length character strings
NCHAR	Character	Used to store fixed-length national character set strings
VARCHAR2	Character	Used to store variable-length character strings
NVARCHAR2	Character	Used to store variable-length national character set strings
CLOB	Large Object	Used to store large character data
NCLOB	Large Object	Used to store large national character set data
LONG	Large Object	Used to store variable-length character data
BLOB	Large Object	Used to store binary data
DATE	Date and Time	Used to store date and time information
TIMESTAMP	Date and Time	Used to store more precise date and time information
RAW	Other	Used to store variable-length binary data

Example 1

SQL> create table T1(id integer);
Table created.

SQL> create table T2(id int);
Table created.

SQL> create table T3(id number);
Table created.

SQL> create table T4(id number(5));
Table created.

SQL> create table T5(id number(5,3));
Table created.

SQL> create table T6(name char);
Table created.

SQL> create table T7(name nchar);
Table created.

SQL> create table T10(name varchar(15));
Table created.

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```
SQL> create table T11(name varchar2(10) );
```

Table created.

```
SQL> create table T12(name nvarchar2(10) );
```

Table created.

```
SQL> create table T13(marks float );
```

Table created.

```
SQL> create table T14(examdate date );
```

Table created.

```
SQL> insert into T14 values('12/jan/12');
```

1 row created.

```
SQL> insert into T14 values('12-jan-12');
```

1 row created.

```
SQL> select to_char(examdate,'yyyy-mm-dd') from t14;
```

```
TO_CHAR(EX
```

```
-----
```

```
2012-01-12
```

```
2012-01-12
```

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```
SQL> create table t15(startdate timestamp);
```

Table created.

```
SQL> insert into T15 values('12-jan-12');
```

1 row created.

```
SQL> select * from t15;
```

STARTDATE

12-JAN-12 12.00.00.000000 AM

```
SQL> insert into T15 values('12-jan-12 5:45:56');
```

1 row created.

```
SQL> select * from t15;
```

STARTDATE

12-JAN-12 12.00.00.000000 AM

12-JAN-12 05.45.56.000000 AM

```
SQL> insert into T15 values('12-jan-12 12:45:56 PM');
```

1 row created.

```
SQL> select * from t15;
```

STARTDATE

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12-JAN-12 12.00.00.000000 AM

12-JAN-12 05.45.56.000000 AM

12-JAN-12 12.45.56.000000 PM

Example 2

```
SQL> create table s_1(id integer,name char);
```

Table created.

```
SQL> create table s_2(id int,name varchar(10));
```

Table created.

```
SQL> create table s_3(id integer,name char(10));
```

Table created.

```
SQL> create table s_4(id integer,name varchar);
```

```
create table s_4(id integer,name varchar)
```

*

ERROR at line 1:

ORA-00906: missing left parenthesis

INSERTING DATA IN CREATED TABLES

```
SQL> insert into s_1 values (12345,'Ram');
```

```
insert into s_1 values (12345,'Ram')
```

*

ERROR at line 1:

ORA-12899: value too large for column "USER_H1"."S_1"."NAME" (actual: 3, maximum: 1)

```
SQL> insert into s_1 values (12345,'R');
```

1 row created.

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```
SQL> insert into s_2 values (12345,'Rameshwari');
```

1 row created.

```
SQL> insert into s_2 values (12345,'Rameshwari rao');
insert into s_2 values (12345,'Rameshwari rao')
```

*

ERROR at line 1:

ORA-12899: value too large for column "USER_H1"."S_2"."NAME" (actual: 14,
maximum: 10)

```
SQL> desc S_3;
```

Name	Null?	Type
------	-------	------

ID		NUMBER(38)
NAME		CHAR(10)

```
SQL> insert into s_3 values (12345,'Rameshwari');
```

1 row created.

```
SQL> create table s_4(id float,name varchar(10));
```

Table created.

```
SQL> create table s_5(id number,name varchar(10));
```

Table created.

```
SQL> insert into s_4 values (12345,'Rameshwari');
```

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1 row created.

```
SQL> insert into s_4 values (12345.87987,'Rameshwari');
```

1 row created.

```
SQL> insert into s_5 values (12345,'Rameshwari');
```

1 row created.

```
SQL> insert into s_5 values (12345.9887987,'Rameshwari')
```

1 row created.

```
SQL> create table s_6(id number(5,4),name varchar(10));
```

Table created.

```
SQL> insert into s_6 values (12345.9887987,'Rameshwari');
```

```
insert into s_6 values (12345.9887987,'Rameshwari')
```

*

ERROR at line 1:

ORA-01438: value larger than specified precision allowed for this column

```
SQL> insert into s_6 values (123.9987,'Rameshwari');
```

```
insert into s_6 values (123.9987,'Rameshwari')
```

*

ERROR at line 1:

ORA-01438: value larger than specified precision allowed for this column

```
SQL> insert into s_6 values (12.9987,'Rameshwari');
```

```
insert into s_6 values (12.9987,'Rameshwari')
```

ERROR at line 1:

ORA-01438: value larger than specified precision allowed for this column

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```
SQL> insert into s_6 values (1.9987,'Rameshwari');
```

```
1 row created.
```

```
SQL> create table s7(name varchar2(15),examdate date);
```

```
Table created.
```

```
SQL> create table s8(name nvarchar2(15),examdate date);
```

```
Table created.
```

```
SQL> insert into s7 values ('rama agarwal','12-Jan-2005');
```

```
1 row created.
```

```
SQL> insert into s7 values ('rama agarwal','12/Feb/2025');
```

```
1 row created.
```

```
SQL> select * from s7;
```

NAME	EXAMDATE
rama agarwal	12-JAN-05
rama agarwal	12-FEB-25

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```
SQL> create table s9(name nvarchar2(15),examdate
timestamp);
```

Table created.

```
SQL> insert into s9 values ('rama agarwal','12/Feb/2025');
```

1 row created.

```
SQL> select * from s9;
```

NAME

EXAMDATE

rama agarwal

12-FEB-25 12.00.00.000000 AM

```
SQL> insert into s9 values ('rama agarwal','12/Feb/2025 5:25:15
AM');
```

1 row created.

```
SQL> select * from s9;
```

NAME

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EXAMDATE

rama agarwal

12-FEB-25 12.00.00.000000 AM

rama agarwal

12-FEB-25 05.25.15.000000 AM

```
SQL> insert into s9 values ('rama agarwal','12/Feb/2025
15:25:15 ');
```

```
insert into s9 values ('rama agarwal','12/Feb/2025 15:25:15 ')
*
```

ERROR at line 1:

ORA-01849: hour must be between 1 and 12

```
SQL> insert into s9 values ('rama agarwal','12/Feb/2025
11:25:15 PM');
```

1 row created.

```
SQL> select * from s9;
```

NAME

EXAMDATE

rama agarwal

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12-FEB-25 12.00.00.000000 AM

rama agarwal

12-FEB-25 05.25.15.000000 AM

rama agarwal

12-FEB-25 11.25.15.000000 PM

SQL> select to_char(examdate,'yyyy-mm-dd') from s9;

TO_CHAR(EX

2025-02-12

2025-02-12

2025-02-12

SQL> select to_char(examdate,'yyyy-mm-dd') from s7;

TO_CHAR(EX

2005-01-12

2025-02-12