DATABASE DESIGN & IMPLEMENTATION

ICT Skills

Objectives

- Create a table using the data types available in Oracle databases.

- Number, date, character, timestamp and timestamp with time zone.

Purpose

■ Different types of data have different types of characteristics, the purpose of which is to efficiently store data.

Data Types

- Each value manipulated by Oracle has a data type.

- A value's data type associates a fixed set of properties with the value.

- These properties cause the database to treat values of one data type differently from values of another data type.

- Columns of a single data type produce consistent results.

- A DATE columns always produces date values.

- You cannot insert the wrong type of data into a column.

- Each column can only hold one data type.

Data Types

- The most commonly used column data types for character and number values:

- For Character values:
  – *CHAR (fixed size, maximum 2000 characters)*
  – *VARCHAR2 (variable size, maximum 4000 characters)*
  – *CLOB (variable size, maximum 128 terabytes)*

- For number values:
  – *NUMBER (variable size, maximum precision 38 digits)*

Data Types

- Most commonly used data types for date, time and binary values:

- For date and time values:
  - *DATE*
  - *TIMESTAMP*
  - *INTERVAL*

- For binary values (eg. Multimedia, JPG, WAV, MP3, etc)
  - *RAW (variable size, maximum 2000 bytes)*
  - *BLOB (variable size, maximum 128 terabtyes)*

Data Types

■ For character values it is usually better to use VARCHAR2 or CLOB than CHAR, because it saves space.

■ For example an employees last name is 'Chang'

 – *In a VARCHAR2(30) column only 5 characters are stored.*

 – *In a CHAR(30) column, 25 trailing spaces are also stored.*

■ Number values can be negative and positive.

 – *NUMBER(6,2) can store any value from +9999.99 down to -9999.99*

Data Types

- The DATE data type stores a value of century down to whole seconds.

- '21/Aug/2003 17:25:30' is valid

- The TIMESTAMP data type is an extension of DATE which allows for fractions of a second.

- TIMESTAMP(3) allows for 3 digits after the whole seconds.

- TIMESTAMP WITH TIME ZONE stores a time zone value as a displacement from Universal Coordinated Time or UCT (previously GMT).

- '21/Aug/2003 08:00:00 -5:00' means 8:00 am 5 hours behind UTC.

- TIMESTAMP WITH LOCAL TIME ZONE works slightly different that it will automatically convert the time to the USERS time zone when the date value is viewed.

Data Types

- INTERVAL data types store the elapsed time, or interval of time between two date time values.

- INTERVAL YEAR TO MONTH stores a period of time measured in years and months.

- INTERVAL DAY TO SECOND stores a period of time measured in days, hours, minutes and seconds.