

Database Administration and Management – BITF21 (Morning)

Solution Key

Quiz 1

Chapters 11 to 15

1. Write the difference between following datatypes: (10)

- CHAR(N), VARCHAR2(N)
- CHAR(N), NCHAR(N)
- VARCHAR2(N), NVARCHAR2(N)

CHAR(N) vs. VARCHAR2(N)

- CHAR(N):
 - Fixed length
 - Padded with spaces
 - Suitable for codes, abbreviations
- VARCHAR2(N):
 - Variable length
 - Not padded
 - Suitable for names, descriptions

CHAR(N) vs. NCHAR(N)

- CHAR(N):
 - Uses database character set (ASCII)
 - Limited language support
- NCHAR(N):
 - Uses Unicode character set (UTF-8)
 - Supports multiple languages

VARCHAR2(N) vs. NVARCHAR2(N)

- VARCHAR2(N):
 - Uses database character set (ASCII)
 - Limited language support
- NVARCHAR2(N):
 - Uses Unicode character set (UTF-8)
 - Supports multiple languages

2. List the different types of indexes and their uses.**(10)**

- Logical
 - Single column
 - Concatenated
 - Unique
 - Non-unique
 - Function-based
 - Domain
 - Benefits: Improves query performance and reduces disk I/O.
- Physical
 - Partitioned or non-partitioned
 - B-tree
 - Normal or reverse key
 - Used to Speed up queries with equality and range conditions
 - Bitmap
 - Used to Improve query performance for low-cardinality columns

3. Describe Data Integrity. Explain various types of Data Integrity Constraints.**(10)**

Data integrity refers to the accuracy, consistency, and reliability of data stored in a database or information system. It ensures that data is:

1. **Accurate:** Free from errors and inconsistencies.
2. **Consistent:** Adheres to defined rules and formats.
3. **Reliable:** Trustworthy and dependable.
4. **Complete:** Not missing or incomplete.

Types of Constraints

Constraint	Description
NOT NULL	Specifies that a column cannot contain null values
UNIQUE	Designates a column or combination of columns as unique
PRIMARY KEY	Designates a column or combination of columns as the table's primary key
FOREIGN KEY	Designates a column or combination of columns as the foreign key in a referential integrity constraint
CHECK	Specifies a condition that each row of the table must satisfy

4. For what purpose these datatypes are used: ROWID, UROWID? Distinguish between an extended versus a restricted ROWID (10)

ROWID and UROWID are data types in Oracle databases:

ROWID:

- Uniquely identifies each row in a table.
- Stores Physical address of a row.
- Length 18 bytes (hexadecimal).

UROWID:

- Stores universal row IDs.
- Stores Logical address of a row.
- Variable Length (up to 4000 bytes).

Extended ROWID:

- 18 bytes long.
- Stores physical address of a row.
- Supports partitioned tables.

Restricted ROWID:

- 6 bytes long (limited address space).
- Not supported for partitioned tables.

Key differences:

- Length: Extended (18 bytes) vs Restricted (6 bytes).
- Partitioning support: Extended (yes) vs Restricted (no).
- Address space: Extended (larger) vs Restricted (limited).

5. How do you compute PCTFREE and PCTUSED. (10)

$$PCTFREE = \frac{(Average Row Size - Initial Row Size) \times 100}{Average Row Size}$$

$$100 - PCTUSED = \frac{Average Row Size \times 100}{Available Data Space}$$