Database Administration and Management – BITF21 (Morning)

Quiz 3

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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)

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

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