

# Assignment 1/12/2026

## SQL:

### 1. Explain Referential Integrity in RDBMS/SQL with sample queries.

- a. Referential Integrity means that a student.dept\_id can only be: a value that exists in department.dept\_id, OR NULL
- b. For example, if we want to deleting a department to delete its students, we could do:
  - i. FOREIGN KEY (dept\_id) REFERENCES department(dept\_id) ON DELETE CASCADE
- c. But if we want deleting a department to keep students but “detach” them, we could:
  - i. FOREIGN KEY (dept\_id) REFERENCES department(dept\_id) ON DELETE SET NULL

### 2. Explain Join in RDBMS/SQL with sample queries.

- a. INNER JOIN:

```
SELECT s.student_name, d.dept_name
FROM student s
JOIN department d ON s.dept_id = d.dept_id;
```

- b. LEFT JOIN:

```
SELECT s.student_name, d.dept_name
FROM student s
LEFT JOIN department d ON s.dept_id = d.dept_id;
```

- c. RIGHT JOIN:

```
SELECT s.student_name, d.dept_name
FROM student s
RIGHT JOIN department d ON s.dept_id = d.dept_id;
```

- d. Join 3 tables:

```
SELECT s.student_name, d.dept_name, sc.school_name
FROM student s
JOIN department d ON s.dept_id = d.dept_id
JOIN school sc ON d.school_id = sc.school_id;
```

## Short questions:

### 1. Compare Developer API vs User API

- a. Developer API:
  - i. APIs designed for developers like programming/tools SDKs
  - ii. APIs for data fetching, like RestAPI, GraphQL, SOAP
- b. User API:
  - i. APIs for user interface of data fetching, like RestAPI, GraphQL, SOAP

### 2. Explain components of REST API?

- a. url
- b. Request method
- c. Request header
- d. Request body (optional)
- e. Response

### 3. Compare each type of HTTP Method

- a. GET: read data, no body included
- b. POST: read and create data, has body. Will get different response with same request but different body.
- c. PUT: replace data, has body
- d. PATCH: partial update, has body
- e. DELETE: delete data

### 4. Explain authentication field in http header?

- a. Basic Auth: *Authorization: Basic base64(username:password)*
- b. Bearer Token: *Authorization: Bearer eyJhbGciOiJIUzI1NiIsInR5cCI6I...*
- c. API Key: *Authorization: ApiKey abc123* or *x-api-key: abc123*

### 5. Explain cookies field in http header?

- a. Cookies store **client-side state** and are automatically sent with requests
- b. Cookies are used for Session management, Authentication, User preferences, and Tracking

### 6. Explain the purpose of http response headers? Why it is necessary?

- a. HTTP response headers provide metadata about the response, not the data itself.
- b. It's necessary because:
  - i. Control browser behavior
  - ii. Security protections
  - iii. Authentication
  - iv. Control caching would be controlled
  - v. Cross-domain APIs