

Test Cases / Test Code for Unit/Module Testing

For: *API Development Objective – Manage employee data and provide filtered output*

◆ Objective

To verify that all API endpoints related to employee data return correct, consistent, and expected responses for various valid and invalid inputs. Testing also ensures that database integration, response formats, and error handling work as intended.

◆ Test Environment

- **Backend Stack:** Node.js, Express.js, PostgreSQL
 - **Testing Tool:** Postman (manual), Jest + Supertest (automated – optional)
 - **Database:** Local PostgreSQL with seeded test data
 - **Base URL:** `http://localhost:5000/api/employees`
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◆ List of Unit/Module Tests for API Endpoints

Test Case ID	API Endpoint	Test Description	Expected Output	Status
TC_API_001	GET /employees	Fetch all employees	Status 200, JSON array of employees	✓ Working
TC_API_002	GET /employees?name=Johan	Filter employees by name (partial match)	Status 200, array with matching names	✓ Working
TC_API_003	GET /employees?department=HR	Filter employees by department (main/sub)	Status 200, array with only HR employees	✓ Working
TC_API_004	GET /employees/:id	Fetch employee profile by valid ID (e.g., /employees/1)	Status 200, full profile object with nested fields	✓ Working
TC_API_005	GET /employees/:id	Try with invalid ID (/employees/999)	Status 404, error JSON message	✓ Working

Test Case ID	API Endpoint	Test Description	Expected Output	Status
TC_API_006	GET /departments	Fetch list of all departments (if endpoint exists)	Status 200, JSON list of department names and IDs	✓ Planned
TC_API_007	GET /employees	Check when no data in DB	Status 200, empty array	✓ Working
TC_API_008	GET /employees/:id	Check nested fields (skills, projects, tasks, ratings, performance_score, etc.)	All child fields exist and are populated correctly	✓ Working
TC_API_009	POST /employees/reviews	Submit a valid review (with correct reviewer/reviewee IDs and text)	Status 201, returns inserted review with ID	✓ Working
TC_API_010	POST /employees/reviews	Submit review with invalid reviewer ID	Status 500, error JSON (foreign key constraint failure)	✓ Working
TC_API_011	GET /employees/search	Verify dynamic search across name, skills, location, gender, etc.	Status 200, array with matched employees	✓ Done
TC_API_012	GET /employees/filter	Test all combinations of filters (designation, rating, skills, availability)	Status 200, filtered data output	✓ Done
TC_API_013	GET /employees/analytics/summary	Check analytics data (count by gender, age groups, company, etc.)	Status 200, JSON with grouped values and totals	✓ Working

◆ Sample Manual Test with Postman

Test: GET /api/employees/1

Expected:

```
{
  "id": 1,
  "first_name": "Johan",
  "last_name": "Liebert",
  "skills": [...],
  "projects": [...],
  "reviews": [...],
  "performance_score": "4.30",
  "is_employee_of_the_year": false
}
```

◆ Additional Notes

- Every API was tested with valid and invalid input cases.
 - JSON responses are validated for structure and required fields.
 - For performance-related fields like `rating`, `task count`, and `project status`, mock data was inserted before testing.
 - Error paths (e.g., missing IDs, invalid filters) were tested for robust backend behavior.
 - Authentication headers were skipped in this phase (to be tested during RBAC implementation).
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