



## **IT314: Software Engineering**

**G17: StaffGrid**

**UNIT - TESTING - BACKEND**

# **UNIT TESTING**

Unit testing checks small parts of your code, like a single function, to make sure they give the right results when called with different inputs.

## **Tool Used:**

- **CHAI:** Helps you check if things are correct in code.
- **Chai-HTTP:** Helps you send HTTP requests.
- **Mocha:** is the tool that runs your tests.

## ☰ unit-test-backend

⌚ 4.8s

⌚ 7

⌚ 50

✓ 45

✗ 5

### Admin Routes

\test\admin\_unit\_test.spec.js

⌚ 722ms 📈 4 ✓ 3 ✗ 1

✓ [Admin] Login

230ms ⌚

✓ [Admin] should retrieve all employee details with profiles

133ms ⌚

✓ [Admin] should delete an employee and all associated data successfully

280ms ⌚

```
if (!authTokenAdmin) {
  return done(new Error('Auth token is missing. Admin login test may have failed.'));
}
request.execute(baseUrl)
  .delete(`/api/login/delete/${testEmployeeId}`)
  .set('cookie', `jwt=${authTokenAdmin}`)
  .end((err, res) => {
    if (res._body.message=='Employee not found') {
      return done(res._body.message);
    }
    //console.log(res)
    done();
});
```

✗ [Admin] should return an error if employee to delete is not found

79ms ⌚

Error: done() invoked with non-Error: Employee not found

```
Error: done() invoked with non-Error: Employee not found
at file:///F:/SE7/G17_StaffGrid/Documents/testing-documents/unit-test-backend/test/admin_unit_test.spec.js:837:12
at Request.callback (node_modules\superagent\lib\node\index.js:837:12)
at F:\SE7\G17_StaffGrid\Documents\testing-documents\unit-test-backend\node_modules\superagent\lib\node\index.js:837:12
at IncomingMessage.<anonymous> (node_modules\superagent\lib\node\parsers\json.js:21:7)
at IncomingMessage.emit (node:events:526:35)
at endReadableNT (node:internal/streams/readable:1359:12)
at process.processTicksAndRejections (node:internal/process/task_queues:82:21)
```

```
if (!authTokenAdmin) {
  return done(new Error('Auth token is missing. Admin login test may have failed.'));
}
const nonExistentEmployeeId = '9999999999';
request.execute(baseUrl)
  .delete(`/api/login/delete/${nonExistentEmployeeId}`)
```

## unit-test-backend

⌚ 4.8s

⌚ 7

⌚ 50



### Announcement API Tests

\test\announcement\_unit\_test.spec.js

⌚ 768ms 📄 9 ✓ 9

✓ [Admin] should log in successfully and get auth token	161ms ⌚
✓ [Employee] should log in successfully and get auth token	174ms ⌚
✓ [Admin] should post an announcement successfully	88ms ⌚
✓ [Employee] should view announcements addressed to them	81ms ⌚
✓ [Admin] should fetch the last counters for roles	147ms ⌚
✓ [Employee] should view announcements sent by them	53ms ⌚
✓ [Admin] should fail to post an announcement with missing message	54ms ⌚
✓ [Employee] should fail to fetch announcements without authentication	5ms ⌚
✓ [Admin] should fail to fetch last counters without authentication	5ms ⌚

### Attendance System Tests

\test\attendance\_unit\_test.spec.js

⌚ 419ms 📄 5 ✓ 3 ✗ 2

✓ [Employee] should login successfully and get auth token	153ms ⌚
✗ [Attendance] Should return If Attendance Done	85ms ⌚
Error: done() invoked with non-Error: Your attendance has already been marked.	
✓ [Attendance] Should fetch attendance records for an employee	55ms ⌚

## unit-test-backend

⌚ 4.8s

📋 7

⌚ 50



```
Error: done() invoked with non-Error: Employee with this ID not found.
at file:///F:/SE7/G17_StaffGrid/Documents/testing-documents/unit-test-backend/test/attendance_unit_test.spec.js:10:13
at Request.callback (node_modules\superagent\lib\node\index.js:837:12)
at F:\SE7\G17_StaffGrid\Documents\testing-documents\unit-test-backend\node_modules\superagent\lib\node\index.js:837:12
at IncomingMessage.<anonymous> (node_modules\superagent\lib\node\parsers\json.js:21:7)
at IncomingMessage.emit (node:events:526:35)
at endReadableNT (node:internal/streams/readable:1359:12)
at process.processTicksAndRejections (node:internal/process/task_queues:82:21)
```



```
request.execute(baseUrl)
  .post('/api/attendance')
  .set('cookie', `jwt=${authTokenEmployee}`)
  .send({
    id: '111',
    latitude: 23.1902117,
    longitude: 72.6280792,
  })
  .end((err, res) => {
    // console.log(res)
    if (res._body.message=='Employee with this ID not found.') {
      return done(res._body.message);
    } else{
      done();
    }
  });
});
```

## Auth Tests

\test\auth\_unit\_test.spec.js

⌚ 1.1s 📋 10 ✓ 9 ✘ 1

✓ [Admin] should login successfully and get auth token	151ms ⓘ
✓ [Manager] should login successfully and get auth token	147ms ⓘ
✓ [HR] should login successfully and get auth token	150ms ⓘ
✓ [Employee] should login successfully and get auth token	152ms ⓘ
✓ [Admin] should register a new employee successfully	146ms ⓘ

```
if (!authTokenAdmin) {
  return done(new Error('Auth token is missing. Login test may have failed.'));
```

## unit-test-backend

⌚ 4.8s

📋 7

📝 50

✓

✗

```
})
.end((err, res) => {
  if (res.body.error) {
    return done(res.body.error);
  }
  done();
});
```

✓ [Admin] should successfully logout with valid token 95ms ⓘ

✓ [Manager] should successfully logout with valid token 57ms ⓘ

✓ [HR] should successfully logout with valid token 56ms ⓘ

✓ [Employee] should successfully logout with valid token 56ms ⓘ

✗ [Admin] should fail to register an employee with invalid email 139ms ⓘ

Error: Expected error due to invalid email.

## Leave Management System Tests

\test\leave\_unit\_test.spec.js

⌚ 813ms 📋 9 ✓ 8 ✗ 1

✓ [Employee] should login successfully and get auth token 169ms ⓘ

✓ [Admin] should login successfully and get auth token 149ms ⓘ

✓ [Leave] Should apply for a leave successfully 80ms ⓘ

```
request.execute(baseUrl)
  .post('/api/leave/apply')
  .set('cookie', `jwt=${authTokenEmployee}`)
  .send({
    senderId: '202403001',
    leaveType: 'Sick Leave',
    fromDate: '2024-12-01',
    toDate: '2024-12-05',
    totalDays: 5,
  })
  .end((err, res) => {
    if (err) return done(err);
```

## unit-test-backend

⌚ 4.8s

⌚ 7

⌚ 50



### Leave] Should fetch leave records for a specific sender

- ✓ [Leave] Should update a leave record

93ms ⏱

```
request.execute(baseUrl)
  .patch('/api/leave/update/L6')
  .set('cookie', `jwt=${authTokenAdmin}`)
  .send({ leaveStatus: 'Approved' })
  .end((err, res) => {
    if (err) return done(err);
    // console.log(res)
    if (res._body.message=="Leave not found"){
      return done(res._body.message);
    }
    done();
 });
```

- ✓ [Leave] Should delete a leave record

59ms ⏱

- ✓ [Leave] Should fetch approved leave dates

56ms ⏱

- ✗ [Leave] Should return error for applying leave without mandatory details

56ms ⏱

Error: done() invoked with non-Error: Please provide additional details for 'Other' leave type.

## Profile Management Tests

\test\profile\_unit\_test.spec.js

⌚ 83ms ⏱ 4 ✓ 4

- ✓ [Employee] should login successfully and get auth token

39ms ⏱

- ✓ [Profile] Should save user profile successfully

35ms ⏱

- ✓ [Profile] Should retrieve user profile by ID

6ms ⏱

- ✓ [Profile] Should return error for non-existing profile on detailed check

3ms ⏱

## Project Management Tests

\test\project\_unit\_test.spec.js

⌚ 852ms ⏱ 9 ✓ 9

## unit-test-backend

⌚ 4.8s

⌚ 7

⌚ 50



- ✓ [Admin] should successfully upload a project

82ms ⓘ

```
if (!authTokenAdmin) return done(new Error('Admin token is missing.'));  
  
const projectData = {  
  title: 'NewProject',  
  description: 'NEW---Project-----:>',  
  teamMembers: [{ id: '2024030001' }],  
  status: 'Active',  
  tasks: [  
    { taskTitle: 'Task 1', taskDescription: 'Description for Task 1', assignedTo: { id: '2024030001' }, dueDate: '2024-11-30' },  
    { taskTitle: 'Task 2', taskDescription: 'Description for Task 2', assignedTo: { id: '2024030002' }, dueDate: '2024-12-30' }  
  ],  
  startDate: '2024-11-30',  
  endDate: '2024-12-30'  
};  
request.execute(baseUrl)  
  .post('/api/project/upload')  
  .set('cookie', `jwt=${authTokenAdmin}`)  
  .send(projectData)  
  .end((err, res) => {  
    if (err) return done(err);  
    done();  
  });
```

- ✓ [Manager] should retrieve all projects for manager

82ms ⓘ

- ✓ [Admin] should retrieve a specific project by ID

78ms ⓘ

- ✓ [Admin] should successfully update a project

81ms ⓘ

- ✓ [Admin] should successfully delete a project

73ms ⓘ

- ✓ [Employee] should retrieve projects assigned to them

53ms ⓘ