

### Skenario Pengujian (Test Scenarios) — Wajib Dipenuhi

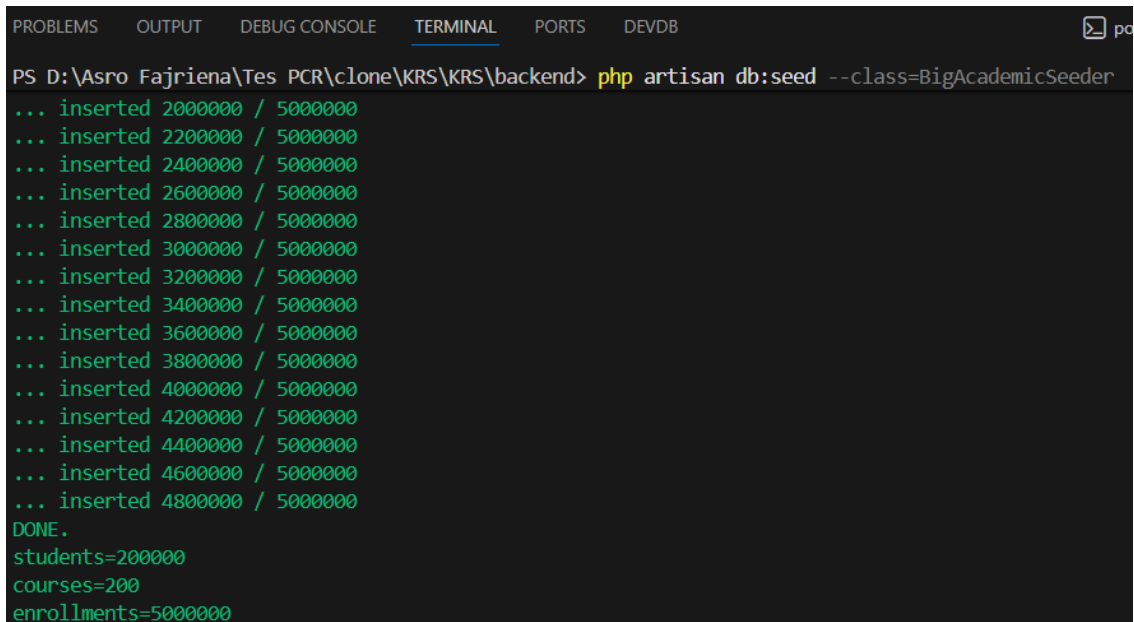
#### 1. TS-01: Setup & Seed 5 Juta Data

Langkah:

- Clone repo.
- Jalankan migrasi DB.
- Jalankan seeder untuk menghasilkan 5.000.000 baris enrollments.
- Jalankan query count.

Ekspektasi:

- Seeder selesai tanpa error.
- Jumlah data  $\geq 5.000.000$  (dibuktikan dengan COUNT(\*)).
- Aplikasi tetap bisa berjalan dan menampilkan data.



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS DEVDB
PS D:\Asro Fajriena\Tes PCR\clone\KRS\KRS\backend> php artisan db:seed --class=BigAcademicSeeder
... inserted 2000000 / 5000000
... inserted 2200000 / 5000000
... inserted 2400000 / 5000000
... inserted 2600000 / 5000000
... inserted 2800000 / 5000000
... inserted 3000000 / 5000000
... inserted 3200000 / 5000000
... inserted 3400000 / 5000000
... inserted 3600000 / 5000000
... inserted 3800000 / 5000000
... inserted 4000000 / 5000000
... inserted 4200000 / 5000000
... inserted 4400000 / 5000000
... inserted 4600000 / 5000000
... inserted 4800000 / 5000000
DONE.
students=200000
courses=200
enrollments=5000000
```

#### 2. TS-02: Create (Insert ke 3 Tabel dalam 1 Transaksi)

Langkah:

- Buka form Create KRS.
- Input data mahasiswa baru (nim, name, email).
- Input data mata kuliah baru (code, name, credits).
- Input data enrollment (academic\_year, semester, status).
- Submit.

Ekspektasi:

- Data tersimpan ke students, courses, enrollments.
- FK pada enrollments valid.
- Jika terjadi error pada salah satu insert, seluruh transaksi rollback (tidak ada data setengah masuk).
- UI menampilkan notifikasi sukses.

localhost:5173/enrollments

Contoh: Academic Year DESC, Semester ASC, Student NIM ASC

### Create Enrollment

Insert ke 3 tabel (students, courses, enrollments) dalam 1 transaksi (backend).

NIM: 2155301021 Student Name: asro fajriena

Email: asrofajriena31@gmail.com Academic Year: 2025/2026

Course Code: IF101

Course Name: Pemrograman Dasar

Credits: 3 Semester: GANJIL

Status: SUBMITTED

Save Enrollment

### Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED
<a href="#">Edit</a> <a href="#">Delete</a>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GANJIL	SUBMITTED

hasil

### Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED

### 3. TS-03: Validasi Ketat (Frontend)

Langkah:

- Isi NIM dengan huruf atau panjang < 8.
- Isi course code tidak sesuai pola.
- Kosongkan field wajib.
- Submit.

Ekspektasi:

- Submit ditolak di frontend.
- Pesan error per field muncul dan jelas.

localhost:5173/enrollments

Contoh: Academic Year DESC, Semester ASC, Student NIM ASC

### Create Enrollment

Insert ke 3 tabel (students, courses, enrollments) dalam 1 transaksi (backend).

NIM: 12345 Student Name: nina

Email: nina@gmail.com Academic Year: 2025/2026

Course Code: IF101

Course Name: Pemrograman Dasar

Credits: 1 Semester: GANJIL

Status: DRAFT

Save Enrollment

Create failed

```
{
  "message": "The nim field format is invalid.",
  "errors": {
    "nim": [
      "The nim field format is invalid."
    ]
  }
}
```

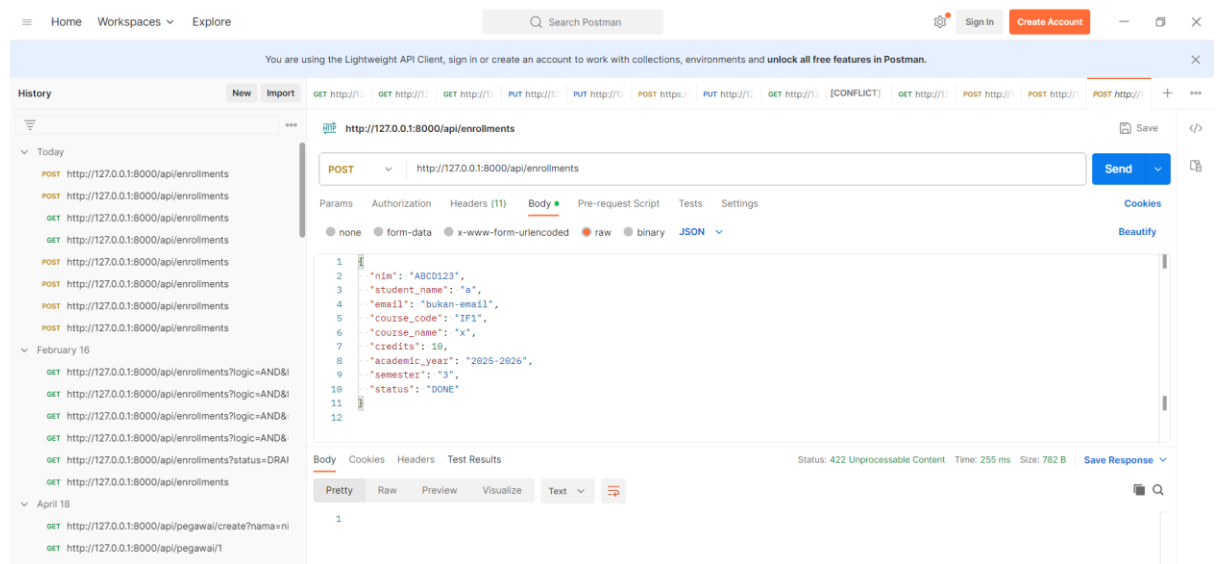
#### 4. TS-04: Validasi Ketat (Backend)

Langkah:

- Kirim request API Create dengan payload invalid (gunakan curl/postman).
- Coba duplikasi nim atau course code.
- Coba duplikasi enrollment unik (student, course, academic\_year, semester).

Ekspektasi:

- API mengembalikan error 4xx dengan pesan jelas.
- Tidak ada data invalid masuk DB.



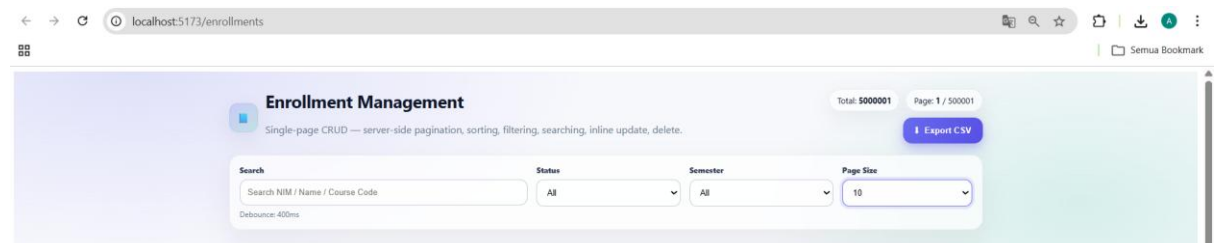
#### 5. TS-05: Read - Tabel + Server-Side Pagination

Langkah:

- Buka halaman tabel KRS.
- Ubah page dan page size.
- Pastikan request ke backend membawa parameter pagination.

Ekspektasi:

- Data berubah sesuai page.
- Backend hanya mengambil data sesuai page (bukan load semua).
- Total record ditampilkan (atau minimal total page).



Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199999	Student 199999	IF025	Course IF025	GANJIL	APPROVED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199998	Student 199998	IF025	Course IF025	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199997	Student 199997	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199996	Student 199996	IF025	Course IF025	GANJIL	REJECTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199995	Student 199995	IF025	Course IF025	GANJIL	APPROVED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199994	Student 199994	IF025	Course IF025	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199993	Student 199993	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199992	Student 199992	IF025	Course IF025	GANJIL	REJECTED

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## 6. TS-06: Sorting di Setiap Header Kolom (Server-Side)

Langkah:

- Klik header kolom (mis. NIM) untuk sort ASC.
- Klik lagi untuk sort DESC.
- Coba kolom lain.

Ekspektasi:

- Setiap kolom bisa di-sort.
- Query sorting dilakukan di backend.
- UI menunjukkan arah sort.

Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000001	Student 1	IF001	Course IF001	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000002	Student 2	IF001	Course IF001	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000003	Student 3	IF001	Course IF001	GANJIL	APPROVED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000004	Student 4	IF001	Course IF001	GANJIL	REJECTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000005	Student 5	IF001	Course IF001	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000006	Student 6	IF001	Course IF001	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000007	Student 7	IF001	Course IF001	GANJIL	APPROVED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000008	Student 8	IF001	Course IF001	GANJIL	REJECTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000009	Student 9	IF001	Course IF001	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000000010	Student 10	IF001	Course IF001	GANJIL	SUBMITTED

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## 7. TS-07: Quick Filter (Minimal 2)

Langkah:

- Aktifkan quick filter Status.
- Aktifkan quick filter Semester.
- Kombinasikan keduanya.

Ekspektasi:

- Tabel hanya menampilkan data yang sesuai filter.
- Filter dieksekusi server-side.

The screenshot shows the 'Enrollment Management' interface. At the top, there's a header with 'Total: 1250000' and 'Page: 1 / 125000'. Below the header is a search bar with the placeholder 'Search NIM / Name / Course Code' and a 'Debounce: 400ms' label. To the right of the search bar are two dropdown menus: 'Status' (set to 'DRAFT') and 'Semester' (set to 'GANJIL'). There is also a 'Page Size' dropdown set to '10'. A blue button labeled 'Export CSV' is visible. Below the filters is a table titled 'Enrollments' with columns: Actions, Academic Year, NIM, Name, Course Code, Course Name, Semester, and Status. The table contains 10 rows of data, all with 'DRAFT' status. At the bottom of the table, there are 'Prev', 'Page 1 / 125000', and 'Next' buttons.

## 8. TS-08: Live Searching (Minimal 3 Kolom)

Langkah:

- Ketik NIM (parsial) di search box.
- Ketik nama mahasiswa (parsial).
- Ketik kode MK (parsial).

Ekspektasi:

- Hasil berubah real-time (dengan debounce).
- Pencarian dieksekusi server-side.
- Minimal 3 kolom utama tercakup.

The screenshot shows the 'Enrollment Management' interface. The search bar now contains the value '21'. The 'Status' dropdown is still 'DRAFT' and the 'Semester' dropdown is still 'GANJIL'. The 'Page Size' dropdown is still '10'. The 'Export CSV' button is still present. The table below the filters is partially visible, showing the same columns as in the previous screenshot.

localhost:5173/enrollments

Semua Bookmark

### Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199921	Student 199921	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199821	Student 199821	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199721	Student 199721	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199621	Student 199621	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199521	Student 199521	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199421	Student 199421	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199321	Student 199321	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199221	Student 199221	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199217	Student 199217	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199213	Student 199213	IF025	Course IF025	GANJIL	DRAFT

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## 9. TS-09: Advanced Filter Semua Kolom (Multi Filter)

Langkah:

- Buka panel advanced filter.
- Set filter untuk beberapa kolom sekaligus (mis. academic\_year + status + course\_code).
- Terapkan.

Ekspektasi:

- Semua kondisi filter diterapkan.
- Query di backend benar (AND default).
- Dapat reset/clear filter.

localhost:5173/enrollments

Semua Bookmark

### Enrollment Management

Total: 1250000 Page: 1 / 125000

Single-page CRUD — server-side pagination, sorting, filtering, searching, inline update, delete.

[Export CSV](#)

Search: Search NIM / Name / Course Code

Status: All Semester: All Page Size: 10

Debounce: 400ms

#### Advanced Filter

Multi-filter • AND/OR

Logic: AND [+ Add Filter](#) [Clear](#)

Field: Academic Year Operator: Starts With Value: 2021/2022

Tips: Use palat: "A,B,C" • between palat: "min,max"

Field: Status Operator: Equals Value: DRAFT

Tips: Use palat: "A,B,C" • between palat: "min,max"

### Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199997	Student 199997	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199993	Student 199993	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199989	Student 199989	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199985	Student 199985	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199981	Student 199981	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199977	Student 199977	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199973	Student 199973	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199969	Student 199969	IF025	Course IF025	GANJIL	DRAFT

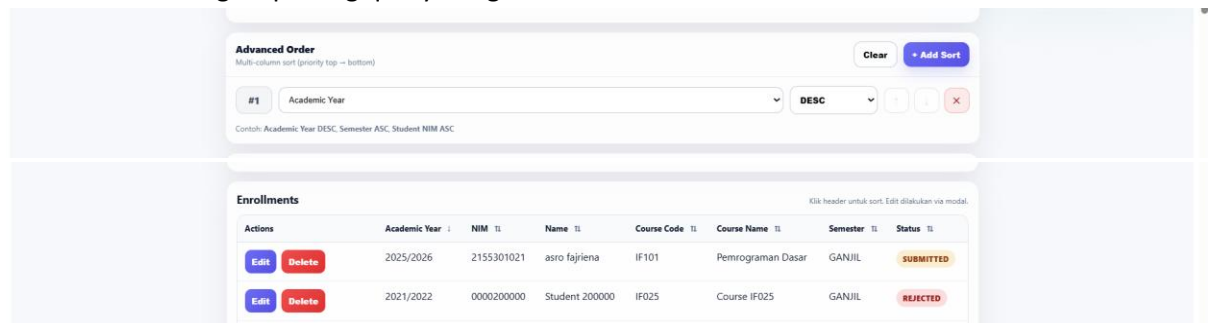
## 10. TS-10: Advanced Query (AND/OR)

Langkah:

- Buat filter group A dan B.
- Terapkan kombinasi AND.
- Terapkan kombinasi OR.

Ekspektasi:

- Hasil sesuai logika AND/OR yang didokumentasikan.
- Backend menangani parsing query dengan aman.



## 11. TS-11: Update

Langkah:

- Pilih salah satu enrollment.
- Ubah status atau semester/tahun.
- Simpan.

Ekspektasi:

- Data berubah di DB.
- Validasi tetap berlaku.
- UI memperbarui baris data.

Before:

The screenshot shows the 'Enrollments' table with the same data as in the previous image. The status of the first row is 'SUBMITTED' and the semester is 'GANJIL'.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED

After:

The screenshot shows the 'Enrollments' table after an update. The status of the first row has changed from 'SUBMITTED' to 'GENAP', and the semester has changed from 'GANJIL' to 'GENAP'.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GENAP	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED

## 12. TS-12: Delete

Langkah:

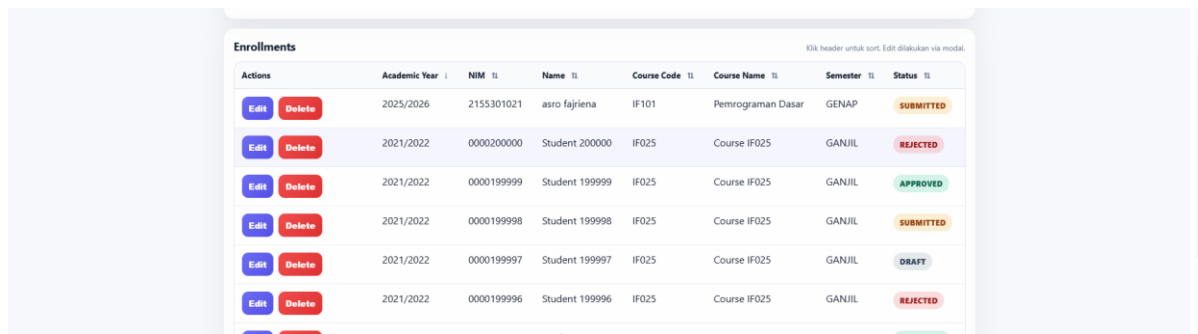
- Hapus salah satu enrollment.
- Refresh data.

Ekspektasi:

- Enrollment tidak tampil lagi (atau soft delete, sesuai dokumentasi).
- Tidak merusak data student/course (kecuali kandidat memilih cascading dengan alasan

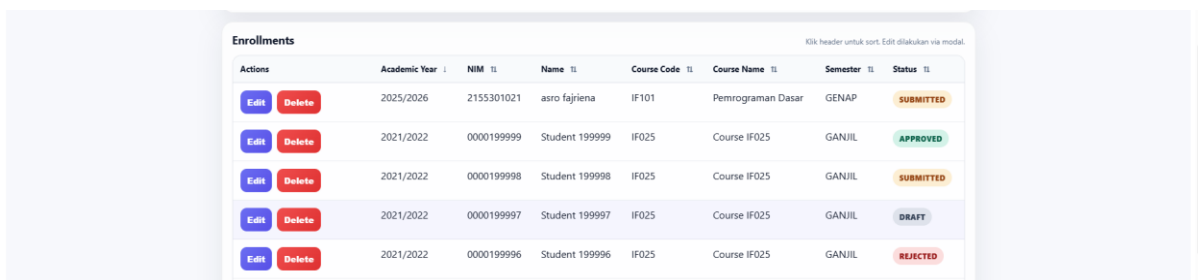
jelas).

Before:



Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GENAP	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199999	Student 199999	IF025	Course IF025	GANJIL	APPROVED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199998	Student 199998	IF025	Course IF025	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199997	Student 199997	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199996	Student 199996	IF025	Course IF025	GANJIL	REJECTED

After:

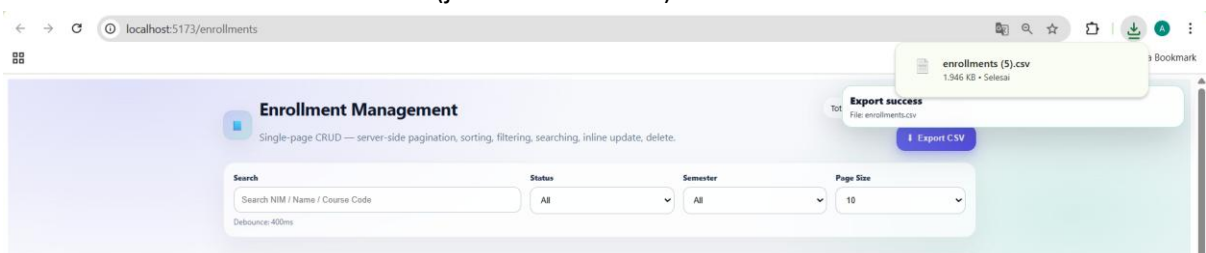


Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199999	Student 199999	IF025	Course IF025	GANJIL	APPROVED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199998	Student 199998	IF025	Course IF025	GANJIL	SUBMITTED
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199997	Student 199997	IF025	Course IF025	GANJIL	DRAFT
<a href="#">Edit</a> <a href="#">Delete</a>	2021/2022	0000199996	Student 199996	IF025	Course IF025	GANJIL	REJECTED

### 13. TS-13: Export 5 Juta Data (CSV/Excel)

Langkah:

- Tanpa filter, klik Export.
- Tunggu file siap/terunduh.
- Verifikasi file berisi seluruh data (jumlah baris besar).





enrollments enrollments enrollments .env enrollments enroll

File Edit View

0000006955,"Student 6955",student6955@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED

0000006956,"Student 6956",student6956@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED

0000006957,"Student 6957",student6957@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,DRAFT

0000006958,"Student 6958",student6958@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,SUBMITTED

0000006959,"Student 6959",student6959@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED

0000006960,"Student 6960",student6960@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED

0000006961,"Student 6961",student6961@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,DRAFT

0000006962,"Student 6962",student6962@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,SUBMITTED

0000006963,"Student 6963",student6963@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED

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0000006965,"Student 6965",student6965@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,DRAFT

0000006966,"Student 6966",student6966@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,SUBMITTED

0000006967,"Student 6967",student6967@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED

0000006968,"Student 6968",student6968@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED

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0000006970,"Student 6970",student6970@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,SUBMITTED

0000006971,"Student 6971",student6971@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED

0000006972,"Student 6972",student6972@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED

0000006973,"Student 6973",student6973@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,DRAFT

0000006974,"Student 6974",student6974@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,SUBMITTED

0000006975,"Student 6975",student6975@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED

0000006976,"Student 6976",student6976@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED

0000006977,"Student 6977",student6977@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,DRAFT

0000006978,"Student 6978",student6978@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,SUBMITTED

0000006979,"Student 6979",student6979@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED

0000006980,"Student 6980",student6980@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED

0000006981,"Student 6981",student6981@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,DRAFT

0000006982,"Student 6982",student6982@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,SUBMITTED

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0000006984,"Student 6984",student6984@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED

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0000006986,"Student 6986",student6986@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,SUBMITTED

0000006987,"Student 6987",student6987@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED

Ln 1, Col 1

1.991.946 characters

Plain text

100%

Unix (LF)

UTF-8