

Skenario Pengujian (Test Scenarios) — Wajib Dipenuhi

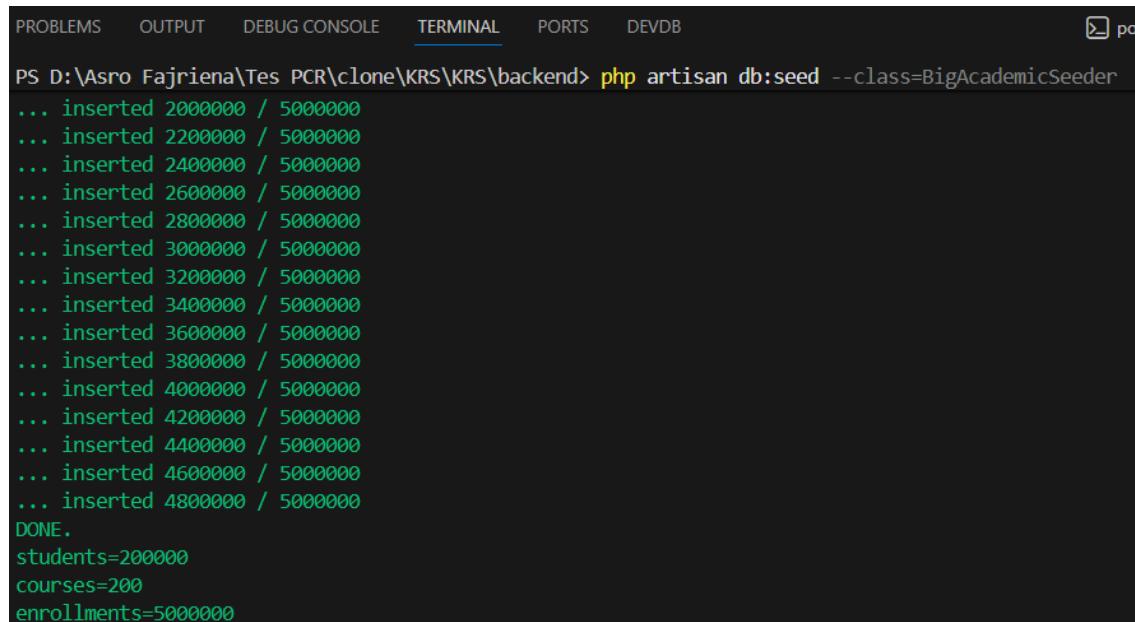
1. TS-01: Setup & Seed 5 Juta Data

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.



The screenshot shows a terminal window with several tabs at the top: PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is selected), PORTS, and DEVDB. The terminal output is as follows:

```
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.

Create Enrollment

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

NIM	Student Name
2155301021	asro fajriena

Email	Academic Year
asrofajriena31@gmail.com	2025/2026

Course Code	Credits	Semester
IF101	3	GANJIL

Course Name	Status
Pemrograman Dasar	SUBMITTED

Save Enrollment

Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	SUBMITTED

hasil

Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	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.

Create Enrollment

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

NIM	Student Name
12345	nina

Email	Academic Year
nina@gmail.com	2025/2026

Course Code	Credits	Semester
IF101	1	GANJIL

Course Name	Status
Pemrograman Dasar	DRAFT

Create failed

```
[
  "message": "The nim field format is invalid.",
  "error": "nim": [
    "The nim field format is invalid."
  ]
]
```

Save Enrollment

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.

The screenshot shows the Postman interface with a POST request to `http://127.0.0.1:8000/api/enrollments`. The request body is a JSON object with the following content:

```
1 "nim": "ABCD123",
2 "student_name": "a",
3 "email": "bukan-email",
4 "course_code": "IF1",
5 "course_name": "x",
6 "credits": 10,
7 "academic_year": "2025-2026",
8 "semester": "3",
9 "status": "DONE"
10
11
12
```

The response status is 422 Unprocessable Content, time is 255 ms, and size is 782 B.

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).

The screenshot shows a web browser displaying the 'Enrollment Management' application at `localhost:5173/enrollments`. The page includes a search bar, filters for Status and Semester, and a 'Page Size' dropdown set to 10. The top right corner shows the total number of records as 5000001 and the current page as 1 / 500001. There is also an 'Export CSV' button.

Enrollments							Klik header untuk sort. Edit dilakukan via modal.
Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2025/2026	2155301021	astro fajriena	IF101	Pemrograman Dasar	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199999	Student 199999	IF025	Course IF025	GANJIL	APPROVED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199998	Student 199998	IF025	Course IF025	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199997	Student 199997	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199996	Student 199996	IF025	Course IF025	GANJIL	REJECTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199995	Student 199995	IF025	Course IF025	GANJIL	APPROVED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199994	Student 199994	IF025	Course IF025	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199993	Student 199993	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	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
<button>Edit</button> <button>Delete</button>	2021/2022	0000000001	Student 1	IF001	Course IF001	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000000002	Student 2	IF001	Course IF001	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000003	Student 3	IF001	Course IF001	GANJIL	APPROVED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000004	Student 4	IF001	Course IF001	GANJIL	REJECTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000005	Student 5	IF001	Course IF001	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000000006	Student 6	IF001	Course IF001	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000007	Student 7	IF001	Course IF001	GANJIL	APPROVED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000008	Student 8	IF001	Course IF001	GANJIL	REJECTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000009	Student 9	IF001	Course IF001	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	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 two consecutive pages of a web application titled "Enrollment Management". Both pages have the URL "localhost:5173/enrollments" in the address bar. The top page displays a search bar with placeholder "Search NIM / Name / Course Code", dropdowns for "Status" (set to "DRAFT") and "Semester" (set to "GANJIL"), and a "Page Size" dropdown set to "10". It also shows a total count of "1250000" and a page indicator "Page: 1 / 125000". A blue "Export CSV" button is visible. The bottom page shows a table titled "Enrollments" with 10 rows of student data. Each row includes columns for Actions (Edit, Delete), Academic Year (2021/2022), NIM, Name, Course Code, Course Name, Semester, and Status (all listed as "DRAFT"). At the bottom of the table 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 two consecutive pages of the "Enrollment Management" application. The top page has a search bar containing the partial value "21", with other filters like "Status: DRAFT" and "Semester: GANJIL" and a "Page Size: 10" dropdown. The bottom page shows the results of the live search, displaying a table with 130544 entries. The search results are filtered to show only rows where the NIM or Name contains the value "21". The table structure is identical to the one in the previous screenshot, with columns for Actions, Academic Year, NIM, Name, Course Code, Course Name, Semester, and Status.

Enrollments							
Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2021/2022	0000199921	Student 199921	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199821	Student 199821	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199721	Student 199721	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199621	Student 199621	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199521	Student 199521	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199421	Student 199421	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199321	Student 199321	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199221	Student 199221	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199217	Student 199217	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	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
Total: 1250000 Page: 1 / 125000
Export CSV

Enrollment Management

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

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	X
Tips: Ingat "A,B,C" = between pakai "min,max"			
Field: Status	Operator: Equals	Value: DRAFT	X
Tips: Ingat "A,B,C" = between pakai "min,max"			

Enrollments

Klik header untuk sort. Edit dilakukan via modal.

Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2021/2022	000019997	Student 199997	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199993	Student 199993	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199989	Student 199989	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199985	Student 199985	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199981	Student 199981	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199977	Student 199977	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199973	Student 199973	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	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.

Enrollments							
Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000000	Student 200000	IF025	Course IF025	GANJIL	REJECTED

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:

Enrollments							
Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000000	Student 200000	IF025	Course IF025	GANJIL	REJECTED

After:

Enrollments							
Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GENAP	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000000000	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:

Enrollments							Klik header untuk sort. Edit dilakukan via modal.
Actions	Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
<button>Edit</button> <button>Delete</button>	2025/2026	2155301021	astro fajriena	IF101	Pemrograman Dasar	GENAP	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000200000	Student 200000	IF025	Course IF025	GANJIL	REJECTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199999	Student 199999	IF025	Course IF025	GANJIL	APPROVED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199998	Student 199998	IF025	Course IF025	GANJIL	SUBMITTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199997	Student 199997	IF025	Course IF025	GANJIL	DRAFT
<button>Edit</button> <button>Delete</button>	2021/2022	0000199996	Student 199996	IF025	Course IF025	GANJIL	REJECTED
<button>Edit</button> <button>Delete</button>	2021/2022	0000199995	Student 199995	IF025	Course IF025	GANJIL	PENDING

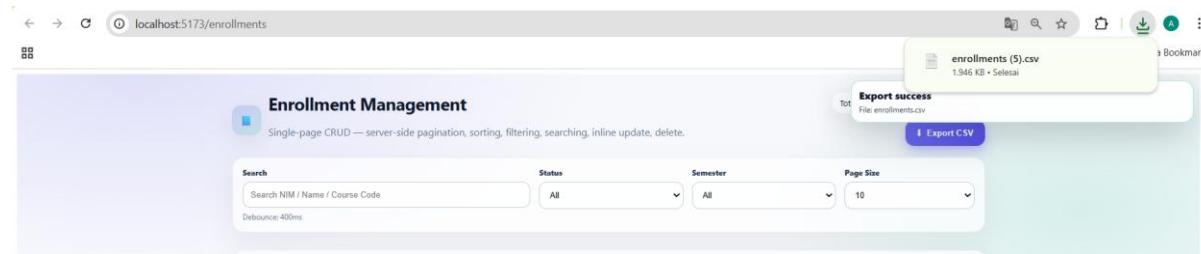
After:

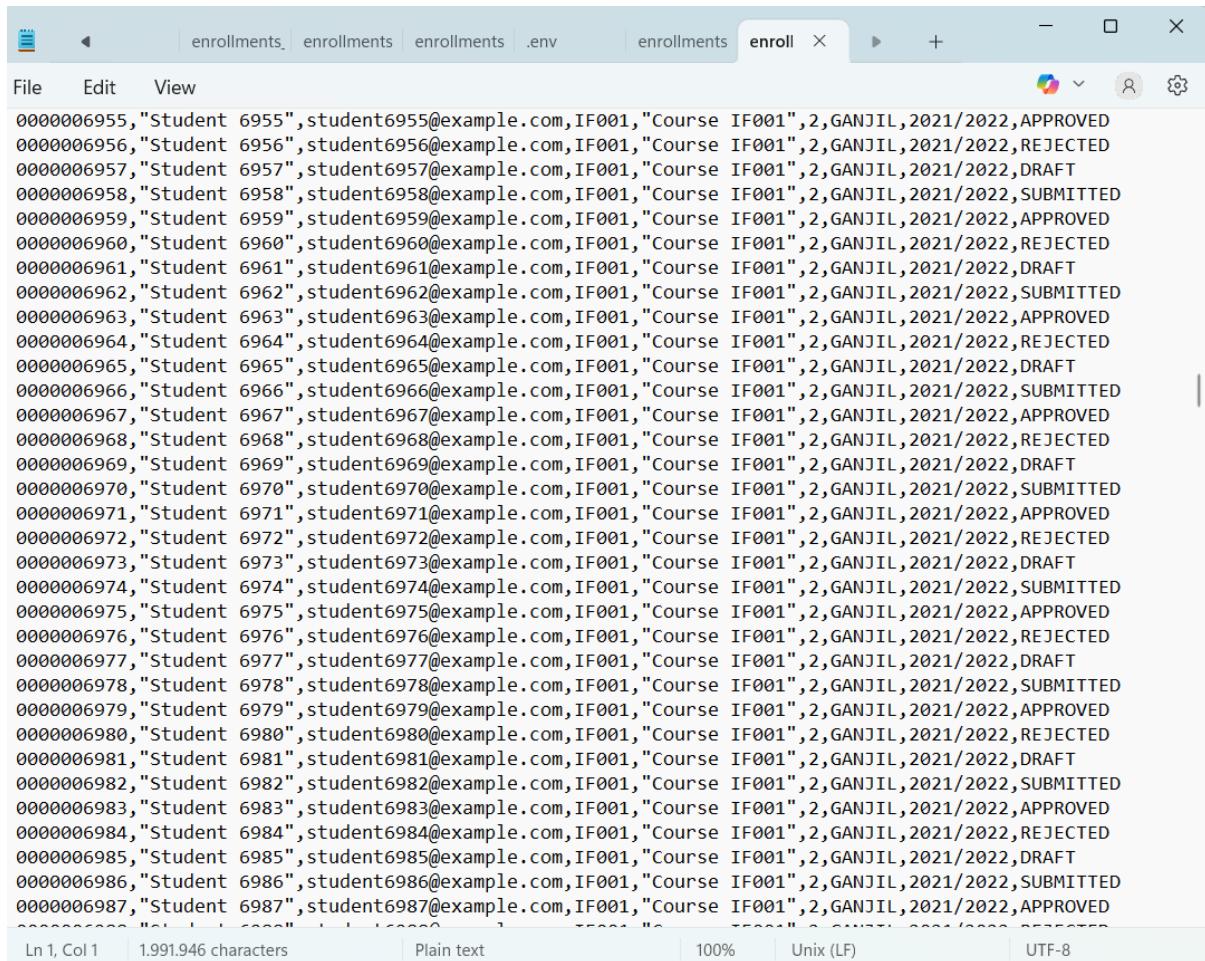
Enrollments								Klik header untuk sort. Edit dilakukan via modal.
Actions		Academic Year	NIM	Name	Course Code	Course Name	Semester	Status
Edit	Delete	2025/2026	2155301021	asro fajriena	IF101	Pemrograman Dasar	GENAP	SUBMITTED
Edit	Delete	2021/2022	0000199999	Student 199999	IF025	Course IF025	GANJIL	APPROVED
Edit	Delete	2021/2022	0000199998	Student 199998	IF025	Course IF025	GANJIL	SUBMITTED
Edit	Delete	2021/2022	0000199997	Student 199997	IF025	Course IF025	GANJIL	DRAFT
Edit	Delete	2021/2022	0000199996	Student 199996	IF025	Course IF025	GANJIL	REJECTED

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

Langkah:

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





The screenshot shows a Windows Notepad window with a title bar "enroll". The window contains a large amount of text representing enrollment data. The data is structured as a list of entries, each consisting of a unique identifier (e.g., 0000006955), a student name ("Student 6955"), an email address ("student6955@example.com"), a course code ("IF001"), a section number ("2"), a campus ("GANJIL"), a year ("2021/2022"), and a status ("APPROVED", "REJECTED", "DRAFT", "SUBMITTED"). The list continues for many more entries, indicating a large dataset of student enrollments.

```
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
0000006964,"Student 6964",student6964@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED
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
0000006969,"Student 6969",student6969@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,DRAFT
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
0000006983,"Student 6983",student6983@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,APPROVED
0000006984,"Student 6984",student6984@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,REJECTED
0000006985,"Student 6985",student6985@example.com,IF001,"Course IF001",2,GANJIL,2021/2022,DRAFT
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