LIS 640 Fall 2025- 2026

Transportation Services

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Problem Statement:

UW–Madison Transportation Services struggles to identify comparable historical days due to the lack of a unified, easy-to-maintain date-tag dataset. Key external factors—academic schedules, construction closures, major events, weather, and transit changes—are tracked separately, creating inefficiencies. A consolidated dataset is needed to improve analysis, forecasting, and decision-making.

Solution Statement:

This project will design and implement a date-based tagging database and interface that centralizes weather, sports, events, closures, and academic calendar data, enabling Transportation Services staff to apply and view tags in a no-code, calendar-based tool. The solution will include a MySQL/Supabase backend, an interactive web-based calendar UI, Tableau dashboards for reporting, and documentation for long-term use.

Completed Tasks (Last 2 Weeks):

1. **Database Progress**

- Successfully migrated from a local MySQL environment to Supabase, resolving previous firewall and remote-access issues.
- Configured Supabase authentication so the entire team can access and update the shared database simultaneously.
- Uploaded all tables and established primary keys and foreign keys for weather, sports, academic, events, and parking datasets.

2. **Frontend Progress**

- Integrated the frontend calendar interface with the Supabase backend.
- The HTML/Tailwind/JS calendar now successfully pulls live tag data (sports, stadium, weather, closures).
- Began removing unused UI components and reorganizing the interface to prepare for final polishing.

3. **Additional Work**

- Synchronized all datasets according to the ERD structure.
- Ensured the calendar displays tagged data for years 2020–2024.

Tasks for the Next Project Report:

 Refine and clean the frontend interface to make it more intuitive, user-friendly, and visually consistent.

 Build initial Tableau visualizations using Supabase as a live data source.

 Create and test SQL views to simplify Tableau integration.

 Document schema, workflow, and dataflow for partner use.

 Create and finalize a shared GitHub repository to host frontend code, backend configurations, and documentation.

 Conduct internal testing to verify:

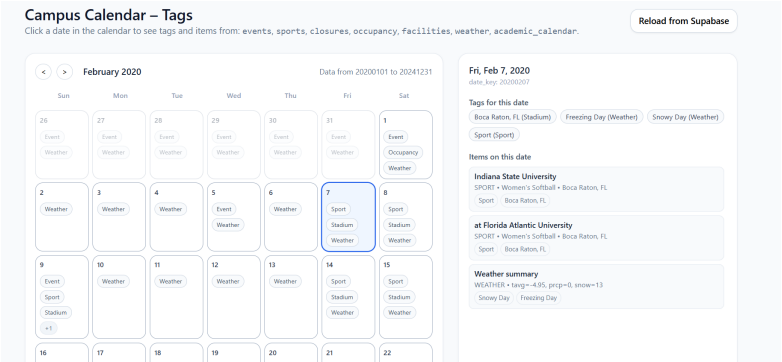
- accurate tagging,
- correct date-based filtering,
- stable connection between frontend → Supabase → Tableau.

Questions I have or Issues I'm running into:

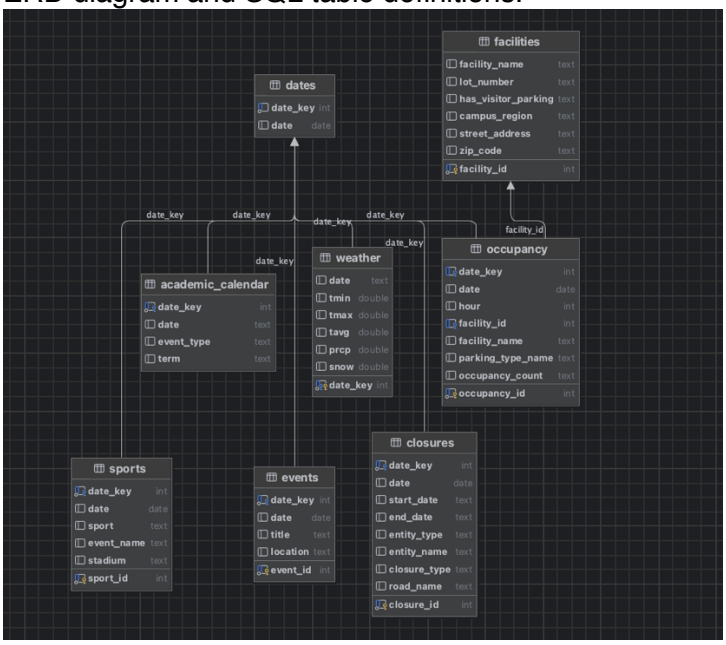
- No major blockers this week; migration to Supabase resolved all connection issues.
- Currently exploring:
  - Best practices for connecting Tableau securely to Supabase.
  - Whether Transportation Services prefers specific visualization formats.

Draft Work Product:

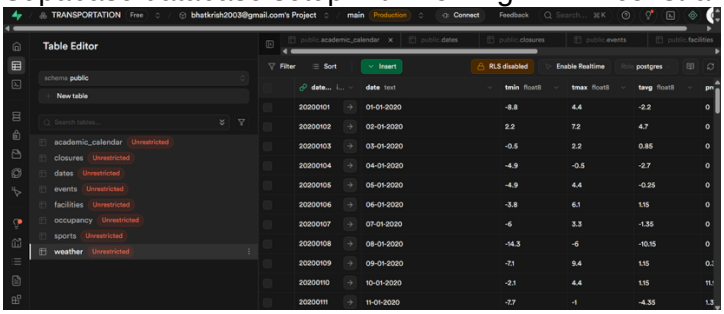
- Frontend calendar prototype with live tag display.



- ERD diagram and SQL table definitions.



- Supabase database setup with working PK/FK constraints.



Evaluation:

- Database now reliably supports multi-user access — a key requirement for the project.
- Early frontend–backend integration shows that the calendar interface can function as the core UI for tagging and viewing data.
- Next evaluation stage will assess:
    - usability for non-technical staff
    - Tableau reporting accuracy
    - performance on larger datasets

Report Outline:

1) Introduction & Background
2) Problem Definition
3) Data Sources & Collection
4) Database Design (ERD + Schema)
5) Frontend Interface Design

6) Backend–Frontend Integration (Supabase)
7) Tableau Reporting and Visualization
8) Testing & Evaluation
9) Limitations & Future Work
10) Conclusion
11) Appendix (Screenshots, SQL, Code Snippets)

References:

https://www.cityofmadison.com/projects/completed
https://meteostat.net/en/place/us/madison?s=72641&t=2025-09-07/2025-09-07
https://uwmadison.account.box.com/login?redirect_url=https%3A%2F%2Fuwmadison.app.box.com%2Fs%2F9b2qlxtsuxfc20vouvuksey1nv7ufgzq
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https://secfac.wisc.edu/wp-content/uploads/sites/50/2025/03/PrintVersion_AcademicCalendar_2025-2030.pdf
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https://www.opm.gov/policy-data-oversight/pay-leave/federal-holidays/?utm_source=chatgpt.com#url=Historical-Data
file:///Users/srivarshiniak/Desktop/Clg/LIS%20640/kelsa%20illa/index.html

https://supabase.com/docs

https://developer.mozilla.org/en-US/

Appendix

```
40  -- ============================
41  create table if not exists public.weather (
42    date_key integer references public.dates(date_key),
43    date     date,
44    tmin     double precision,
45    tmax     double precision,
46    tavg     double precision,
47    prcp     double precision,
48    snow     double precision
49  );
50
51  -- ============================
52  -- 5) ACADEMIC CALENDAR
```

Results Chart Export Source Primary Database Role

```
130 ALTER TABLE public.facilities
131   ALTER COLUMN facility_id DROP IDENTITY,
132   ALTER COLUMN facility_id ADD GENERATED BY DEFAULT AS IDENTITY;
133
134 -- OCCUPANCY
135 ALTER TABLE public.occupancy
136   ALTER COLUMN date TYPE text;
137 ALTER TABLE public.occupancy
138   ALTER COLUMN occupancy_id DROP IDENTITY,
139   ALTER COLUMN occupancy_id ADD GENERATED BY DEFAULT AS IDENTITY;
140
141 ALTER TABLE public.sports
142   ALTER COLUMN sport_id DROP IDENTITY,
143   ALTER COLUMN sport_id ADD GENERATED BY DEFAULT AS IDENTITY;
144
145 create table if not exists public.tags (
```