Delivery management system for schools and drivers – MS Access

Project objective

The aim of the project was to create a system to support the management of food delivery logistics to schools.

The main problem that was solved was **the manual entry of delivery data**, which previously took a lot of time and was prone to errors. Thanks to the created system, it is possible to automate delivery planning
based on defined routes, nutritional standards, and the number of students.

The system allows for quick replenishment of deliveries, convenient assignment of schools to drivers, and generation of weekly reports in Excel.

Scope of my work

The project was fully designed and implemented by me in Microsoft Access using SQL and VBA. My activities included:

- designing a relational database (tables: Schools, Products, Standards, Routes, Deliveries, Warehouse, Demand),
- creating forms with interactive controls (e.g., selection of week, day of the week, driver, schools, products),
- implementing VBA logic to handle:
    - dynamic assignment of schools to routes,
    - automatic generation of demand based on the number of students and nutritional standards,
    - exporting data to Excel in the following structure: **1 week = 1 sheet, columns = days, driver, school, product, quantity**,
    - buttons for deleting and editing records directly from the form,
- creation of complex SQL queries (JOIN, GROUP BY, WHERE EXISTS, UPDATE, DELETE) for dynamic data processing.

Technologies used

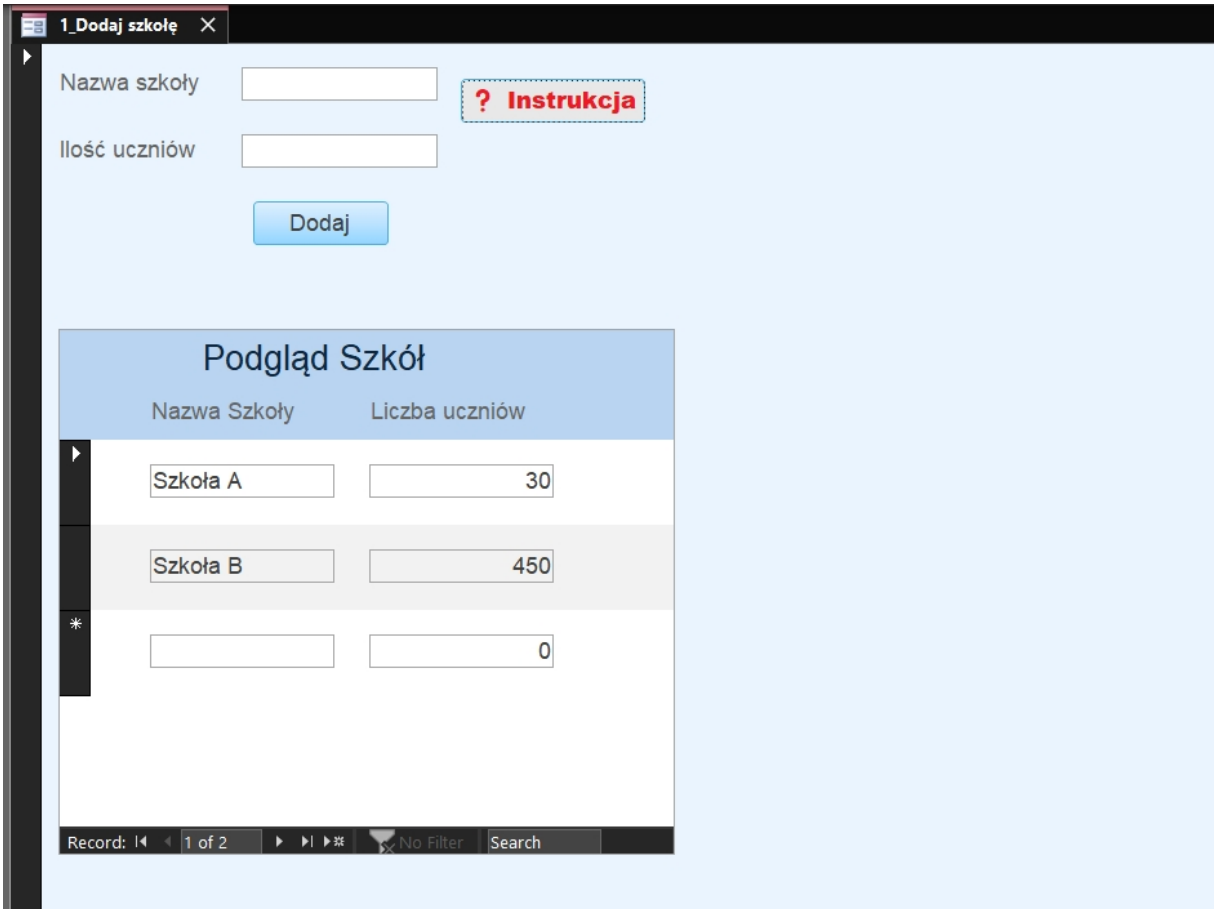
- **Microsoft Access** – database and GUI,
- **SQL (Access Query Designer + manual queries)** – data handling,
- **VBA (Visual Basic for Applications)** – application logic, automation of actions,
- **Microsoft Excel** – report generation, data export.

Operation in practice

The demand of schools results from fixed nutritional standards assigned per student in a given semester. Each school has a specific number of students in the system, and the required quantities of products are automatically calculated based on these standards.

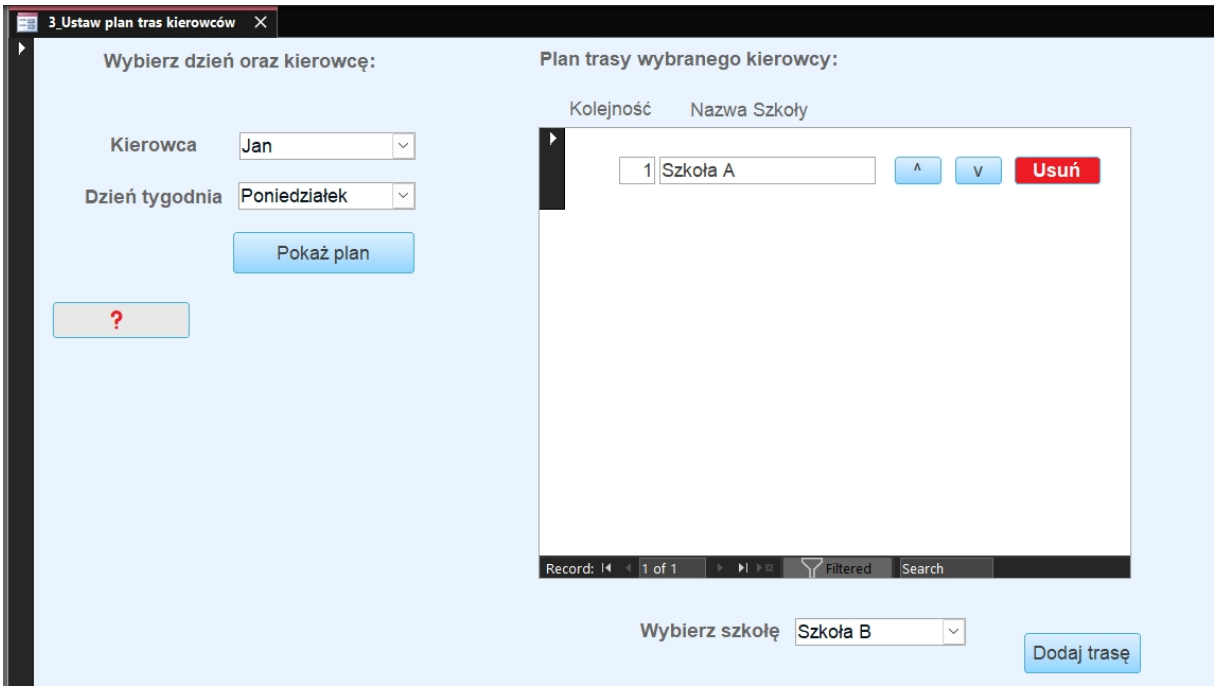
- "Add school" form.

  The user enters the name of the school and the number of students attending it.

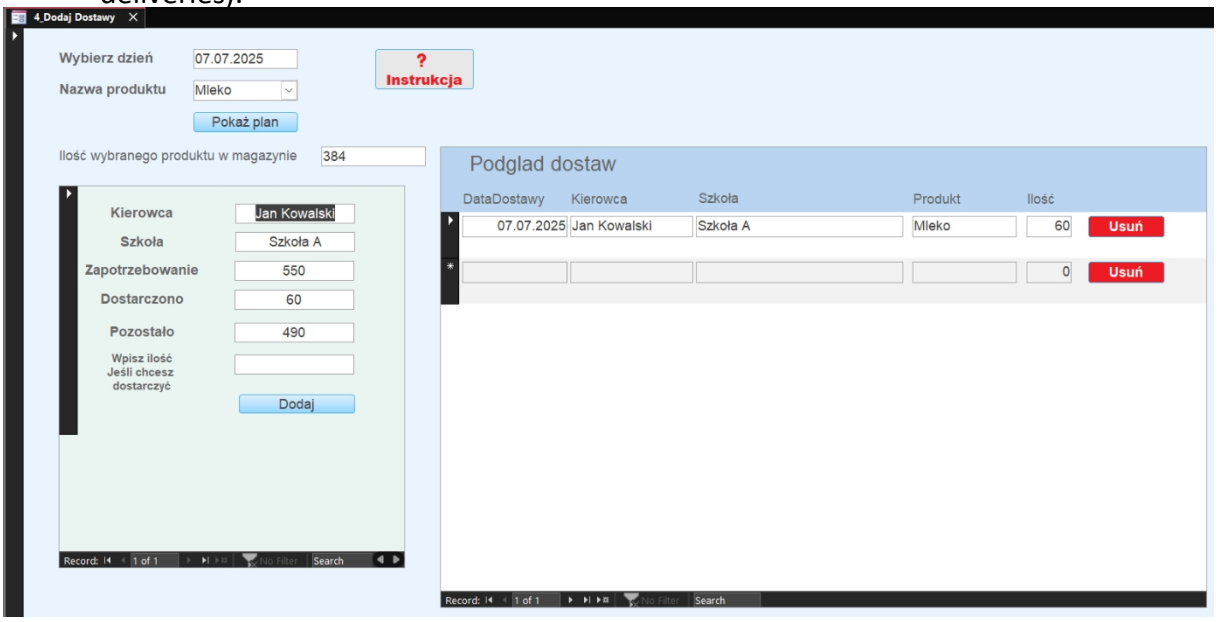


- "Replenish warehouse" form.
  The user fills in the quantity of products in stock or, after purchasing, adds products to the total value.

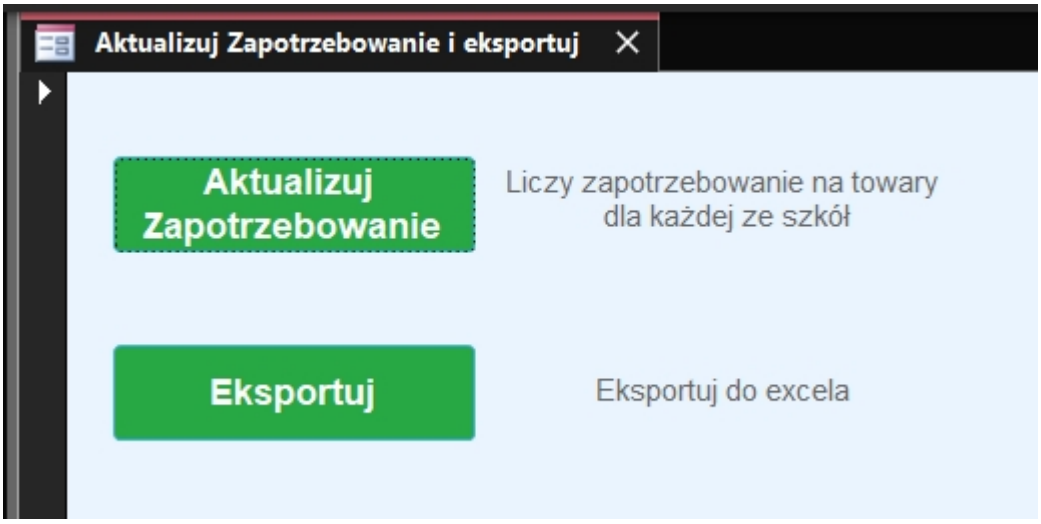
- "Set driver route plan" form.
  The user selects the day of the week and the driver, and after pressing "Show plan," the subform on the right shows the plan for the selected driver for that day of the week (drivers have a fixed route and each week is the same; I received these instructions from the client). Then the user selects
  the school and clicks "Add route." The school is added to the subform and goes to the preview. Now you can use the arrows to reorder the routes or delete them.



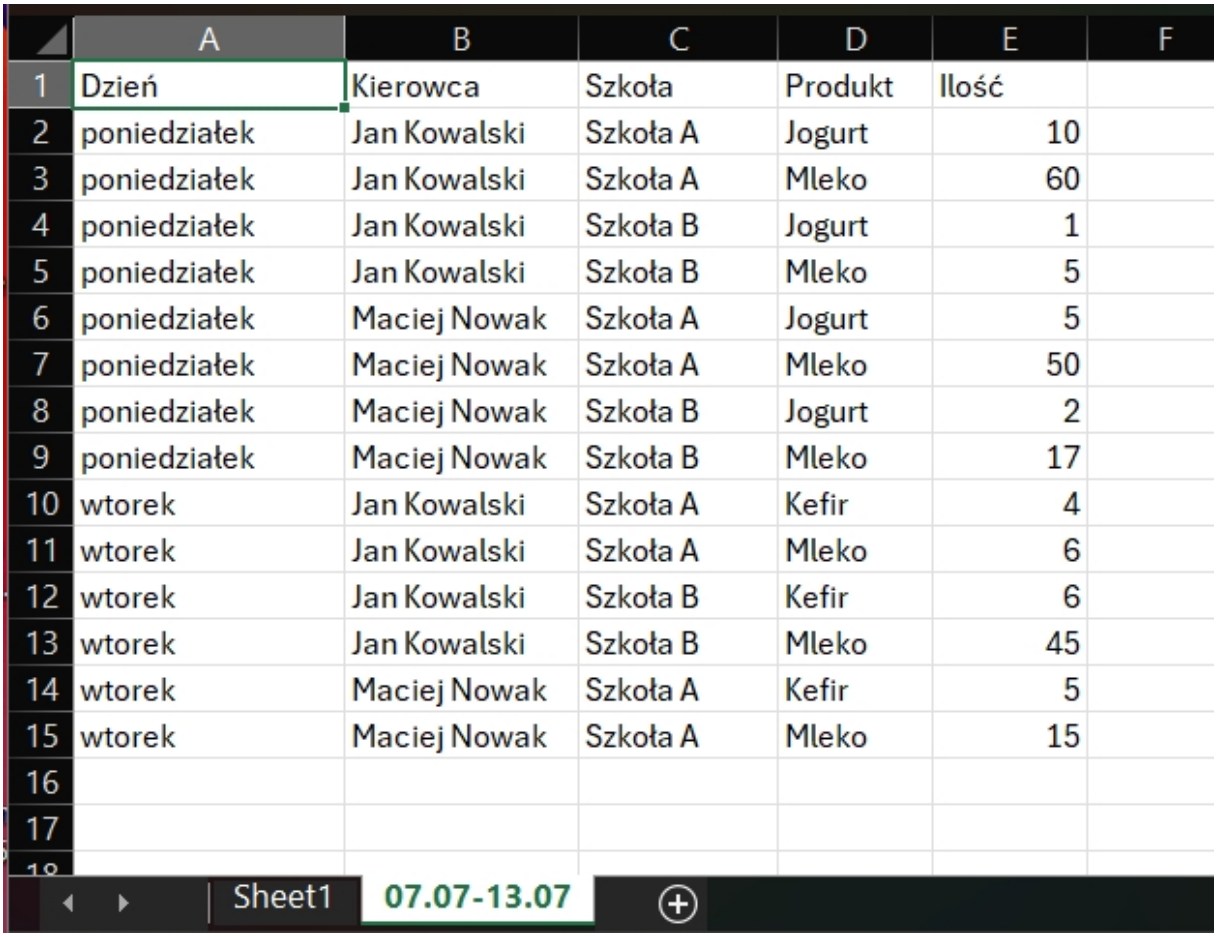
- "Add deliveries" form. The user selects the date and product name, the program shows the quantity of the selected product in stock, reads the day from the selected date and displays all drivers who have a route planned for that day, additionally displays the school's demand for the selected product and shows how much of the product has already been delivered to that school. After entering the quantity, the program saves the delivery and displays it in the subform next to it (from where you can also delete incorrectly entered deliveries).



- "Update demand and export" form. There are two buttons to choose from, Update demand calculates the demand for goods for each school, which is then used in other forms. The
creates a new Excel file, saves it in the folder where the Access file is located, creates or overwrites a sheet with the delivery week (in this example, 07.07-13.07) and displays the planned deliveries sorted by day, driver, and
school order.



- Export to Excel



	A	B	C	D	E	F
1	Dzień	Kierowca	Szkoła	Produkt	Ilość	
2	poniedziałek	Jan Kowalski	Szkoła A	Jogurt	10	
3	poniedziałek	Jan Kowalski	Szkoła A	Mleko	60	
4	poniedziałek	Jan Kowalski	Szkoła B	Jogurt	1	
5	poniedziałek	Jan Kowalski	Szkoła B	Mleko	5	
6	poniedziałek	Maciej Nowak	Szkoła A	Jogurt	5	
7	poniedziałek	Maciej Nowak	Szkoła A	Mleko	50	
8	poniedziałek	Maciej Nowak	Szkoła B	Jogurt	2	
9	poniedziałek	Maciej Nowak	Szkoła B	Mleko	17	
10	wtorek	Jan Kowalski	Szkoła A	Kefir	4	
11	wtorek	Jan Kowalski	Szkoła A	Mleko	6	
12	wtorek	Jan Kowalski	Szkoła B	Kefir	6	
13	wtorek	Jan Kowalski	Szkoła B	Mleko	45	
14	wtorek	Maciej Nowak	Szkoła A	Kefir	5	
15	wtorek	Maciej Nowak	Szkoła A	Mleko	15	
16						
17						

Sheet1 07.07-13.07

The Excel file is then forwarded to the drivers, thanks to the appropriate sorting, each driver knows what to take and in what quantity, as well as the order in which to drive to the schools.

Summary

The project demonstrates my practical skills in:

- designing relational databases,
- writing complex SQL queries,
- process automation using VBA,
- creating useful and intuitive tools for end users.

The system can be easily extended with new features, and its structure has been designed to be scalable and easy to maintain.