Fontys HOGESCHOOL ICT

MARIO PIZZERIA CASUS ANALYSIS

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Introduction

This document concerns the analysis of the Super Mario Pizzeria casus. At first, we're going to analyze the Domino's website with its functionality concerning the use of (dynamic) data fetched from databases. Screenshots will be used as a means of help in visualizing the layout and actions taking place on the site.

In the next step we will analyze the data files available as part of the current Super Mario Pizzeria operation. Those files are in several different database formats and the data contained will have to be cleaned up and transferred to a new all-encompassing database of our own design.

Domino's website analysis

Website in question can be found under this link:

https://www.dominos.nl/

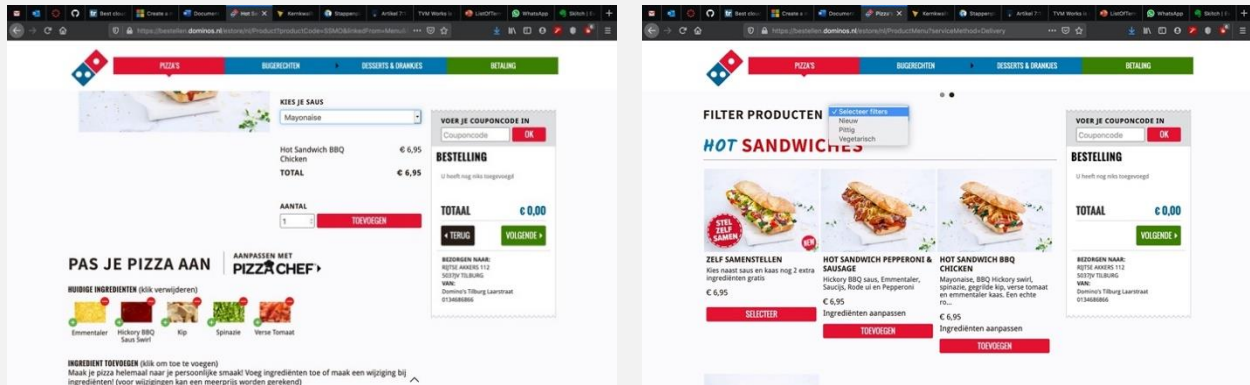Typing in postcode automatically suggest a list of nearby pizza shops:
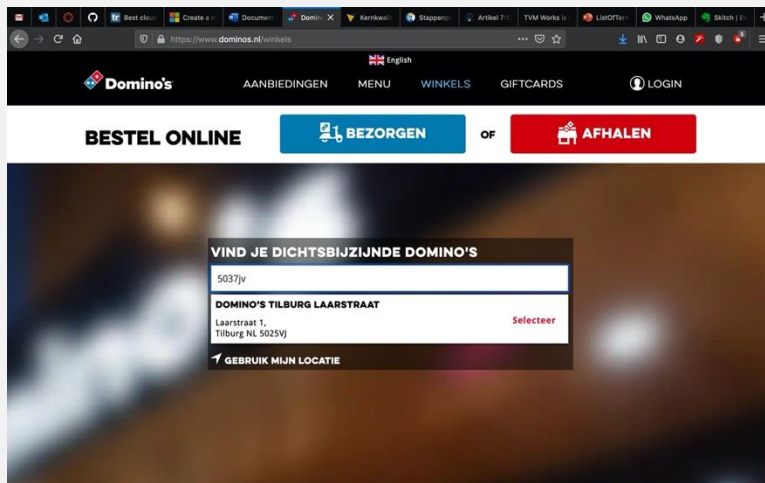
Login possibility to trace orders and recall address. Orders are being stored on the account for further use, like ordering the same meals etc.:
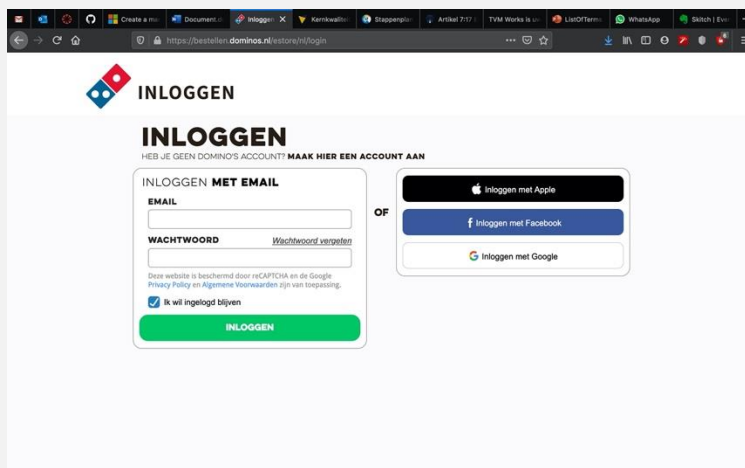
Menu display + option to Add product to the order. Order details like price, qty, products to buy etc. are dynamically updated in a sidebar:

Products can be filtered by selecting a specific filtering option:
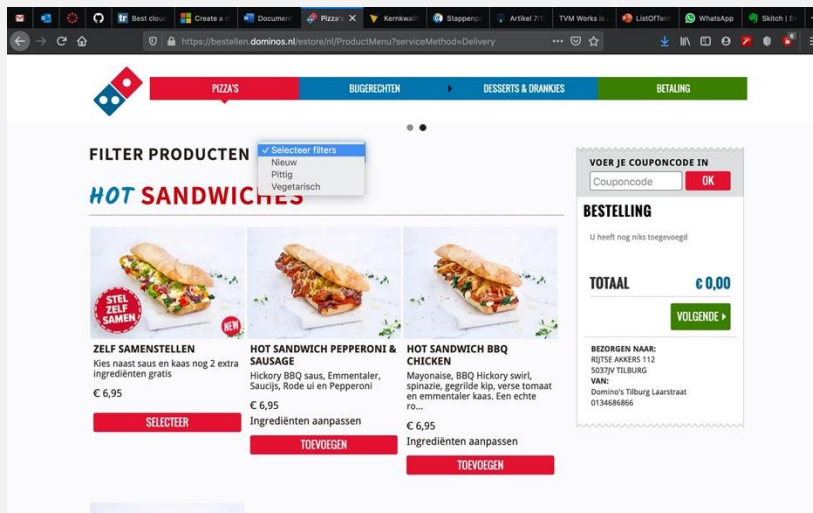
The site keeps recently used addresses in cache for convenience even without the use of an account:
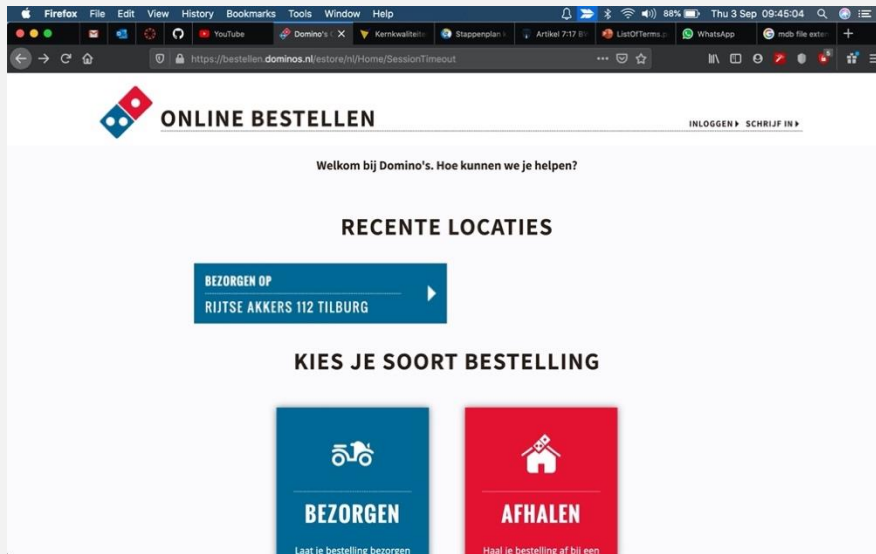
Selecting specific ingredients is realized by using drop down lists and the fee is being calculated dynamically as the user selects given ingredients:
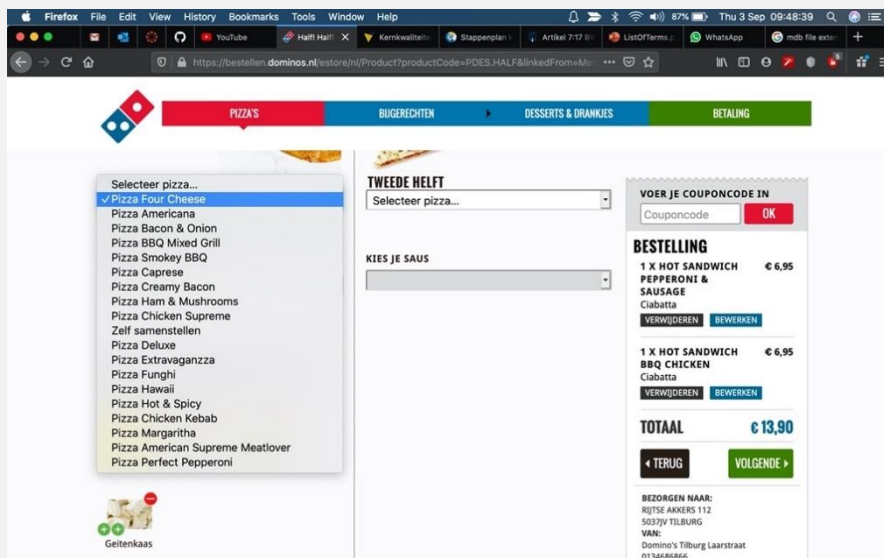
If selected by the user pizza shop is closed at the moment it is still possible to place an order on a specified date and time:

Checkout requires consent to store the user data and lets the user use the option to leave a notice to the delivery person:

At checkout payment method can be selected. It is possible to tip the delivery person at this point and the specified tip is added to the total cost:

Mario Pizzerias data types

There are different data file types used in the Mario Pizzerias current system. The files use different formats and are organized in different ways. This presents a challenge in aligning the databases with one another. There's also a problem with typing errors present in the data.

Below is a list of provided files with a short description of the contents and possible obstacles.

Extra ingredienten.csv
Contains a list of ingredients (like: ananas, bacon, salami etc.) in one row and price in second row. While the cost of ingredients seems to be correct the currency symbol used seems to be a corrupted one. File consists 29 fields.

MarioOrderData01_10000.csv - MarioOrderData04_10000.csv

Those 4 files contain a list of orders placed by clients. A complete orders history is stored here. Fields used:

Winkelnaam, Klantnaam, TelefoonNr, Email, Adres, Woonplaats, Besteldatum, AfleverType, AfleverDatum, AfleverMoment, Product, PizzaBodem, PizzaSaus, Prijs, Bezorgkosten, Aantal, Extra IngrediV´nten, Prijs Extra IngrediV´nten, Regelprijs, Totaalprijs, Gebruikte Coupon, Coupon Korting, Te Betalen.

Note that some names seem to be corrupted. Each order consists of as many rows as there are products/ingredients in the order and each order is separated by an empty row.

Overige producten.xlsx

Contains a list of products other than pizzas (ie. desserts). Field names:

categorie, subcategorie, productnaam, productomschrijving, prijs, spicy, vegetarisch

Not all products have a description (empty *productomschrijving* field). Last 2 columns are binary values. Row 23 seems to be overlapping two different categories of products (corrupted).

pizza_ingredienten.xlsx

This file contains all the pizza ingredients found on any particular pizza (similarly to a recipe). One type of pizza takes as many rows as there are ingredients on it. Fields:

categorie, subcategorie, productnaam, productomschrijving, prijs, bezorgtoeslag, spicy, vegetarisch, beschikbaar, aantalkeer_ingredient, ingredientnaam, pizzasaus_standaard

pizzabodems.xlsx

A list of available pizza bottoms. Fields:

naam, diameter, omschrijving, toeslag, beschikbaar

Winkels Mario.txt

This file contains a list of all the shops. Shops are separated by an empty line. The data seems to be organized in the following manner (top to bottom for a shop):

- *Place* (this can be a city or district, it's inconsistent)
- *Street*
- *House number*
- *City*
- *Country code*
- *Post code*
- *Phone number*

As this document has been typed in by an employee there are some typing errors etc. which would need cleaning up.

Postcode tabel.mdb

This database consists of all the postcodes and corresponding address breakdown in POSTCODES table; and municipality data in GEMEENTEN table. On this basis an address can be deducted from the postcode alone. It has the following fields:

POSTCODES table:

A13_POSTCODE, A13_REEKSIND, A13_BREEKPUNT_VAN, A13_WOONPLAATS, A13_STRAATNAAM, A13_GEMEENTECODE

GEMEENTEN table:

N42_GEM_KODE, N42_GEM_NAAM

Analysis and Data Base design

During Data Base design one has to consider many factors. Business requirements, available data, possibility of future expandability are all important considerations and shape the design. After analyzing available files, the types of data consisted within those files and relations between them we came to the following Database design. The following illustration shows tables, connections between tables and types of relations between tables.

Furthermore, we decided to use Microsoft SQL Server database to realize the project. MS SQL Server is a very well documented database with good support and software eco-system and uses T-SQL scripting which gives a lot of flexibility. We will use MS SQL Server Management Studio and Visual Studio (C# programming language) to cleanse, import and redistribute the existing data according to our DBO. Firstly, information will be imported into software of our own design which models the data. Next, data will be transported into the DB using (T)SQL queries and stored procedures.

Any problems encountered in the execution phase will be addressed and documented afterwards, so the documentation mirrors the actual situation.

DBO diagram

Address
PK	ID	INT
	StreetName	VarChar
	Number	VarChar
	Zipcode	VarChar
	City	VarChar
	CountryCode	Char(2)

Municipality
PK	N42_GEM_KODE	Decimal
	N42_GEM_NAAM	VarChar

AddressCustomer
PK	ID	INT
FK	AddressID	INT
FK	CustomerID	INT

Zipcode
PK	A13_POSTCODES	VarChar
	A13_REEKSIND	VarChar
	A13_BREEKPUNT_VAN	Decimal
	A13_BREEKPUNT_ITEM	Decimal
	A13_WOONPLAATS	VarChar
	A13_STRAATNAAM	VarChar
FK	A13_GEMEENTECODE	Decimal

PaymentMethod
PK	ID	INT
	Name	VarChar

Customer
PK	ID	INT
U	Email	VarChar
	Name	VarChar
	PhoneNumber	VarChar
FK	StoreID	INT
FK	PaymentMethodID	INT
	Password	Char(64)
	Newsletter	Bool
	Sms	Bool

Store
PK	ID	INT
	Name	VarChar
	StreetName	VarChar
	Number	VarChar
	City	VarChar
	CountryCode	Char(2)
FK	Zipcode	VarChar
	Phonenumber	VarChar

Tax
PK	ID	INT
	Rate	Decimal
	ValidFrom	Date
	ValidTill	Date

Order
PK	ID	INT
FK	StoreID	INT
	OrderTime	DateTime
	Delivery	Bool
FK	AddressID	INT
	DeliveryTime	DateTime
	DeliveryCost	SmallMoney
FK	VoucherID	INT
	Tip	SmallMoney
	PaymentMethodID	INT
FK	TaxID	INT
FK	CustomerID	INT

Voucher
PK	ID	INT
	VoucherCode	VarChar
FK	Type	INT
	Amount	INT
FK	Category	INT
	MinimumOrderAmount	INT
	IssueDate	Date
	ExpirationDate	Date

VoucherType
PK	ID	INT
	Name	VarChar
	Description	VarChar

OrderItem
PK	ID	INT
FK	OrderID	INT
	Quantity	INT

Item
PK	ID	INT
FK	OrderItemID	INT
FK N	ProductID	INT
FK N	ProductPropertiesID	INT
FK N	IngredientID	INT
FK N	IngredientPropertiesID	INT
FK N	PizzaCrustID	INT
FK N	PizzaCrustPropertiesID	INT

PizzaCrust
PK	ID	INT
FK	PizzaCrustPropertiesID	INT
	Name	VarChar

PizzaCrustProperties
PK	ID	INT
	Diameter	VarChar
	Description	VarChar
	Fee	SmallMoney
	Availability	Bool
	VersionValidFrom	DateTime
	VersionValidTill	DateTime

Product
PK	ID	INT
FK	ProductPropertiesID	INT
	Name	VarChar

ProductCategory
PK	ID	INT
	Name	VarChar

ProductProperties
PK	ID	INT
FK	ProductCategoryID	INT
	Description	VarChar
	Price	SmallMoney
	Spicy	Bool
	Vegetarian	Bool
	VersionValidFrom	DateTime
	VersionValidTill	DateTime

Ingredient
PK	ID	INT
FK	IngredientPropertiesID	INT
	Name	VarChar

IngredientCategory
PK	ID	INT
	Name	VarChar

IngredientProperties
PK	ID	INT
FK	IngredientCategoryID	INT
	Description	VarChar
	Price	SmallMoney
	Spicy	Bool
	Vegetarian	Bool
	VersionValidFrom	DateTime
	VersionValidTill	DateTime

PizzaRecipe
PK	ID	INT
FK	ProductID	INT
FK	IngredientID	INT