

Faculdade de Engenharia da Universidade do Porto



Online Store

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Group H

Mestrado Integrado em Engenharia Informática e Computação
Métodos Formais em Engenharia de Software
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Project Overview

This project, was made within the scope of the course of Information Systems taught in the 4th year of the Integrated Masters in Computing Informatics Engineering at the University of Engineering.

It consisted in the development of an online store, suchlike ebay.com or fnac.pt which allows the customer to use a shopping cart to make purchases, see the products, their descriptions, availability in each warehouse, give comments to a product and see the shipping status of each order. In order to be successful in this project, we made use of the provided ERP called Primavera and an external database to aid our development and integration with Primavera.

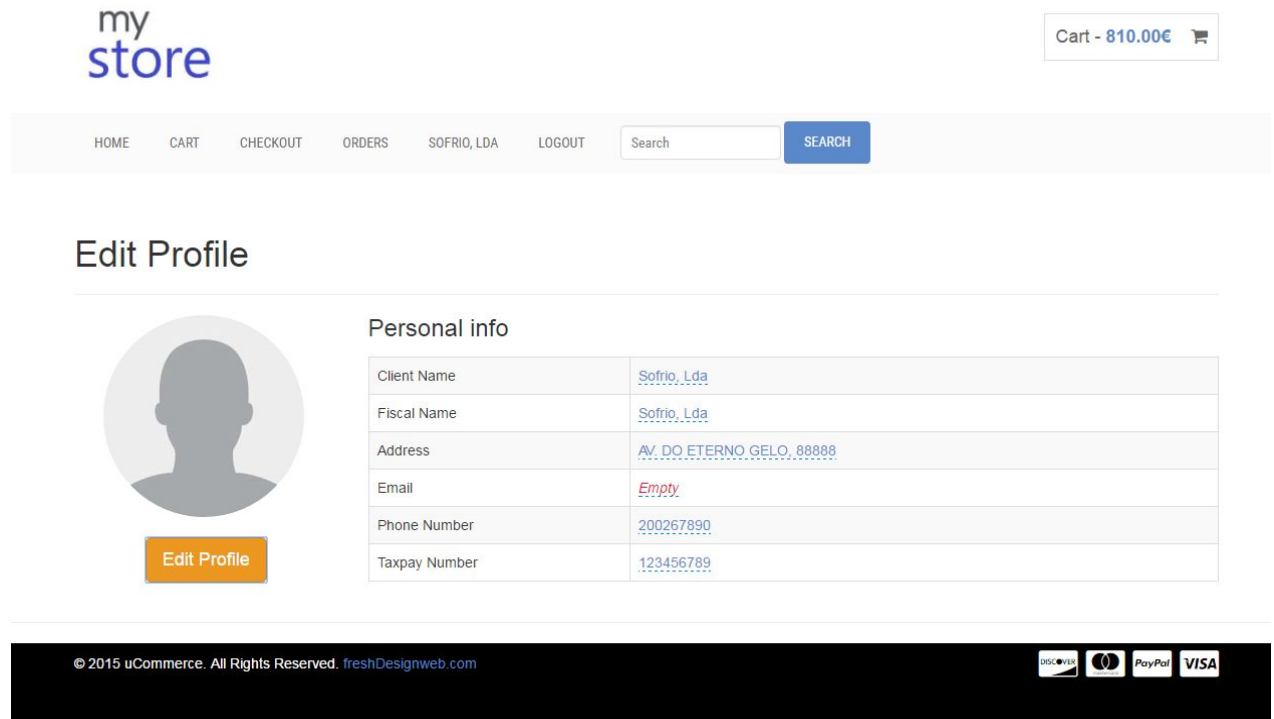
Project Functionalities/Features

Feature ID	Description	Purpose	Core View Id
F_001	Sign Up	As a guest user, i want to register in the store so i can see its content.	3
F_002	Sign In	As a registered user, i want to be able to login in the store web page so i can access my info, orders and more.	3
F_003	Profile Page	As a logged in user i want to see or edit my profile page.	1
F_004	Sign Out	As a logged in user, i want to be able to logout from the webstore.	N/A
F_005	Shopping Cart	As a user, i want to access my shopping cart so i can see my cart products.	4
F_006	Add to Cart	As a user, i want to be able to add products to my shopping cart so i can buy the items later or not.	2, 5
F_007	Sort by	As a user, i want to be able to sort the items by certain category so i can easily find the items i want.	5
F_008	Search Products	As a user i want to inquire the inventory/catalog by inserting some category/keywords.	N/A

F_009	Comment Product	As a logged in user i want to be able to comment a product so i can tell other if it is good or not.	2
F_010	Product Page	As an user i want to see a product info like their quantity and warehouse availability	2
F_011	Remove product from cart	As a user i want to be able to remove products from my shopping cart.	4
F_012	Checkout	As a user i want to be able to finish my purchases by buying the products in my shopping cart.	7
F_013	Payment Method	As a user i want to pay my purchases s selecting the method i prefer(Credit card,PayPal and ATM).	7
F_014	Order Status	As a logged in user i want to be able to see my orders status of processing.	6
F_015	Admin	As a administrator, i want to login and logout in the website as admin.	8
F_016	Validate Products	As an admin i want to validate a new products in my store.	8
F_017	Update Client types	As an admin i want to be able to update the type of a client	8
F_018	Accept payment	As an admin i want to be able to accept the payment of an order	8
F_019	Previous Orders Info	As a user i want to be able to see all my previous orders and their state	6
F_020	Product Quantity	As a user i want to select the total amount of a product i want to buy.	4

Core Views

Profile page (core view 1)



Picture 1: Personal page

Core elements:

- User name
- User address
- User email
- User phone number
- User Taxpay Number

Business goals:

- User can see and edit all his info


Product page (core view 2)

my
store

Cart - 810.00€

HOME CART CHECKOUT ORDERS SOFRIO LOGOUT

Shop



Processador Intel D326 2.5GHz

Price: 270€ ~~600€~~


Warehouses stock

A1: ✓

Product Specs


Family: Computadores
Brand: Produtos Primavera
Model: No Model
Warranty: No Warranty
IVA : 20%, 45€
Product Discount: 0%
Client Discount : 10%

User Comments




SOFRIO Sun Dec 18 2016 16:01:42 GMT+0000 (GMT Standard Time)

Bom produto




SOFRIO


RELATED PRODUCTS



Pentium D925 Dual Core



Pentium 4 945+ Dual Core 3.4GHZ







Pentium 4 945+ Dual Core 3.4GHZ

prev

next

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Picture 2: Product page

Core elements:

- Product specifications
- Product description
- Product image
- Product price
- Product comments
- Related products

Business goals:

- See the complete information of a product.
- Add product to cart

Login page (core view 3)

my store

Cart - €

HOME CART CHECKOUT ORDERS LOGIN Search SEARCH

Username

Password

LOGIN

Not registered? [Create an account](#)

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DISCOVER AMEX PayPal VISA

Picture 3: Login and registraton page

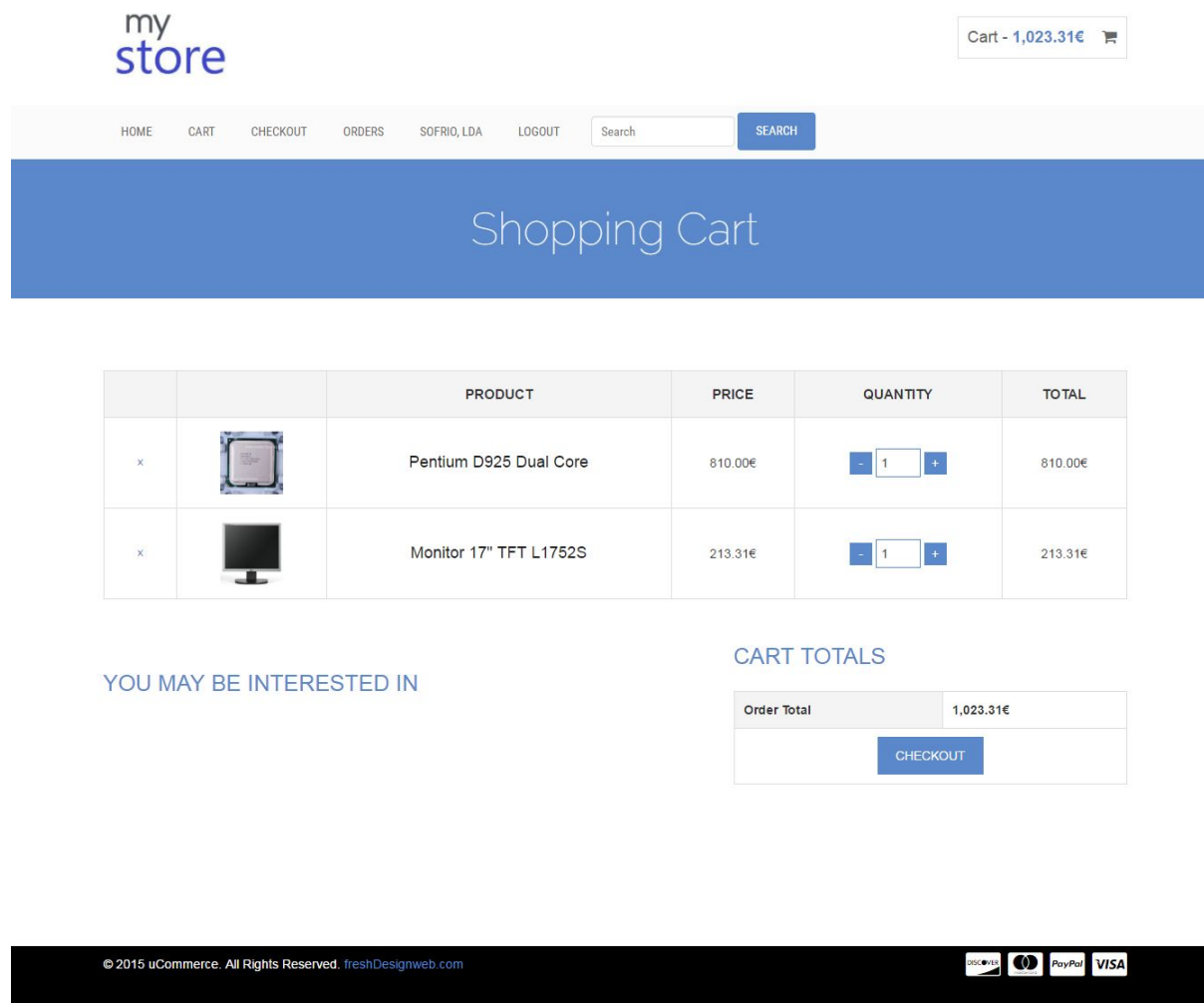
Core elements:

- Username field
- Password field

Business goals:

- Login of the user
- Register a new user

Cart page (core view 4)



Picture 4: Cart page

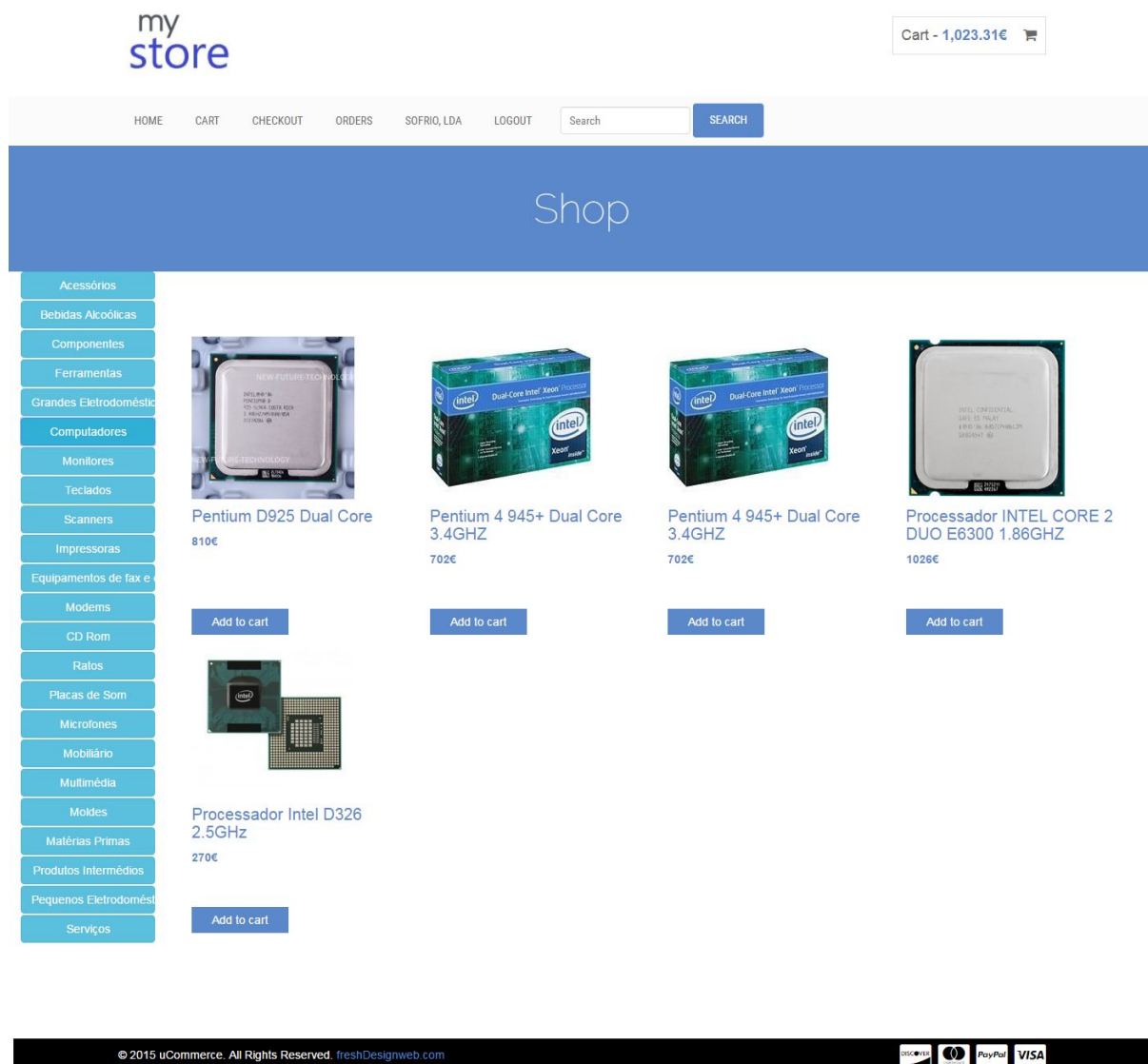
Core elements:

- Products in cart
- Price of the products

Business goals:

- Proceed to checkout
- Remove items from cart
- Add items to cart

List of products in store (core view 5)



Picture 5: Product listing

Core elements:

- Product image
- Product price
- Product categories
- List of products

Business goals:

- Add a product to the cart
- List all of the products in a store
- List the products by category

Order tracking (core view 6)

my store

Cart - 1,550.40€

HOME CART CHECKOUT ORDERS PRIMA LOGOUT Search SEARCH

All Orders per page ▾

↑ DATE OF PURCHASE ↓	↑ ORDER ↓	↑ TOTAL VALUE ↓	STATUS	PDF	INVOICE
2016-12-18 00:00:00	1138	1,560.00€	Order Placed, waiting payment acceptance		
2016-12-16 00:00:00	1137	6,000.00€	Order Shipped		Invoice

1 < 1 > 1

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DISCOVER MC PayPal VISA

my
store

Order: {DE1C4503-C53C-11E6-A705-0800276F1B91}

Client: PRIMA
NIF: 147147147
Address: Rua do Porto
Date: 2016-12-18 00:00:00

Id	Name	Quantity	Price/Uni	Total
A0002	Pentium 4 945+ Dual Core 3.4GHZ	1	1080	1080
B0002	Gravador DVD Usb 2.0 Super Multi Drive	1	480	480
Total:				1560

Picture 6 and 7: Orders listing and pdf

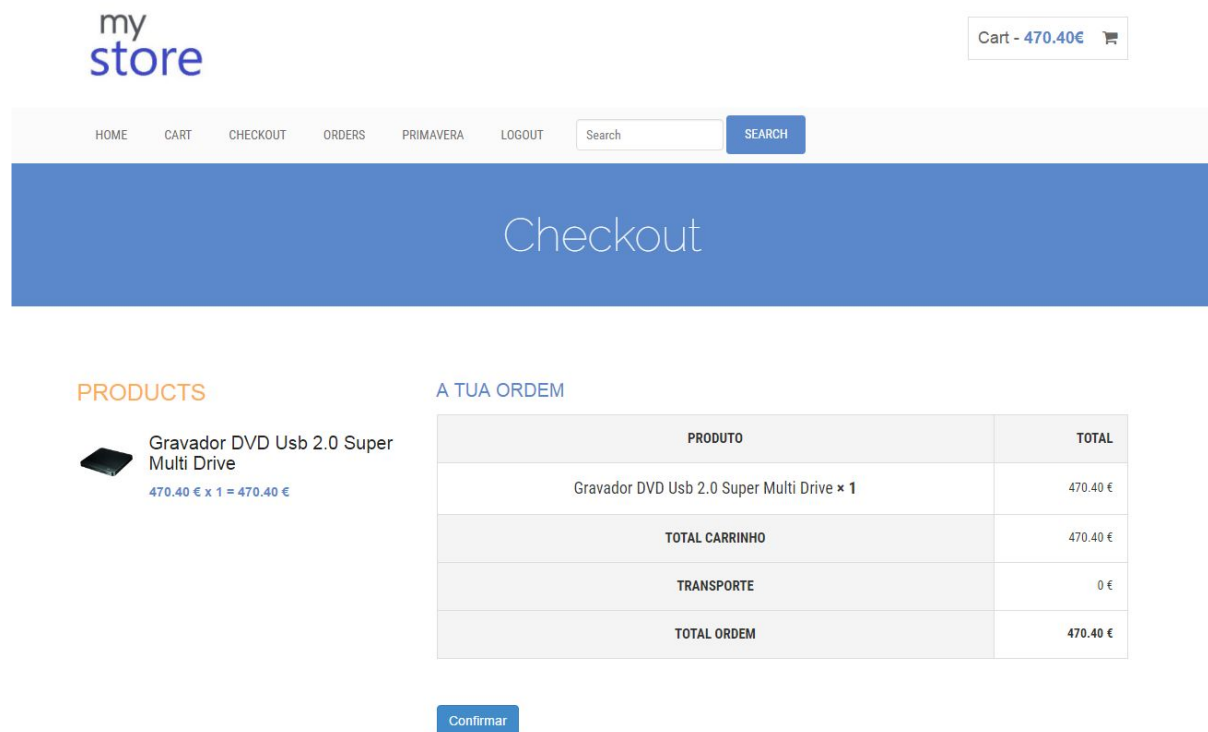
Core elements:

- Date of purchase
- Order id
- Products name
- Status order
- Order total value
- Order documents

Business goals:

- Easy access to all of the orders of the user

Checkout page (core view 7)



Picture 8: Checkout page

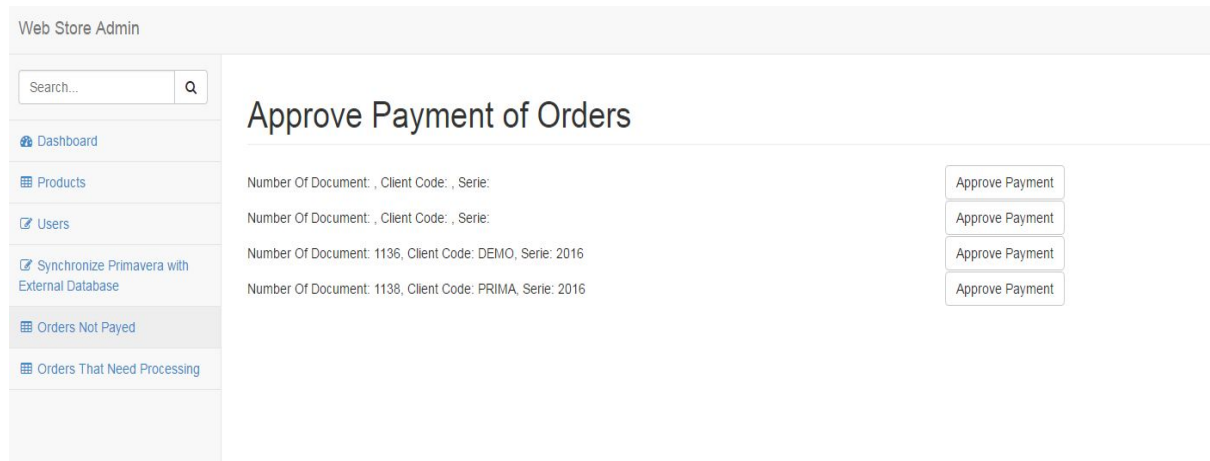
Core elements:

- Address of shipment
- Shipment details
- Payment method
- Products in cart

Business goals:

- Payment of an order

Admin dashboard (core view 8)



Picture 9: Admin dashboard

Core elements:

- listing of products without image
- listing of users changing type
- synchronize external db with primavera
- orders to pay

Business goals:


- Add images to products
- accept type changes in users
- accept payment of orders

Other Features

One of the features that differentiate mystore from other online stores is the attribution of discounts to clients who buy more. Each client has a type associated that defines the pvp that he has to pay for each product. The more value he spends, the lower the prices will become for him.


Here is the price of 2 products for a new client (*PRIMAVERA*):

[CART](#) [CHECKOUT](#) [ORDERS](#) [PRIMAVERA](#) [LOGOUT](#)



Pentium D925 Dual Core
1200€

Add to cart




Pentium 4 945+ Dual Core
3.4GHZ
1080€

Add to cart


While clients with a lot more spent on my store (*SOFRIO*) can buy the same products for a much lower price:

[CART](#) [CHECKOUT](#) [ORDERS](#) [SOFRIO, LDA](#) [LOGOUT](#)



Pentium D925 Dual Core
810€

Add to cart



Pentium 4 945+ Dual Core
3.4GHZ
702€

Add to cart

This way we encourage clients to be loyal to the store.

Interoperability with Primavera

Client

getClients

ID	getClients
Description	Get all the clients existing in the database
Core Views	N/A
Path	https://<website>/api/clients
Verb	GET
Input	-
Output	Attachment(getClient)

getClientById

ID	getClientsById
Description	Get all the client information by his id
Core Views	1, 2, 5, 7
Path	https://<website>/api/clients?id={id}
Verb	GET
Input	-
Output	Attachment(getClientById)

createClient

ID	createClient
Description	Create a new client
Core Views	3
Path	https://<website>/api/client
Verb	POST
Input	Attachment(createClient)
Output	-

editClient

ID	editClient
Description	Edit the client information
Core Views	1
Path	https://<website>/api/clients?id={id}
Verb	PUT
Input	Attachment(editClient)
Output	-

typesClient

ID	typesClient
Description	Get all client types existing in the database
Core Views	1, 8
Path	https://<website>/api/clients/types
Verb	GET
Input	-
Output	Attachment(typesClient)

Orders

getOrdersId

ID	getOrdersId
Description	Get an order by the Id
Core Views	6, 8
Path	https://<website>/api/orders?orderId={orderId}
Verb	GET
Input	-
Output	Attachment(getOrdersId)

getOrderByClient

ID	getOrderByClient
Description	Get all the orders of a certain client.
Core Views	6
Path	https://<website>/api/orders?client={client}
Verb	GET
Input	-
Output	Attachment(getOrderByClient)

getClientOrderById

ID	getClientOrderById
Description	Get an order of a specific client.
Core Views	6
Path	https://<website>/api/orders/{client}?orderId={orderId}
Verb	GET
Input	-
Output	Attachment(getClientOrderById)

getPDFofOrder

ID	getPDFofOrder
Description	Get a pdf of an order invoice.
Core Views	6
Path	https://<website>/api/orders/pdf?orderId={orderId}
Verb	GET
Input	-
Output	Returns a pdf file that downloads on the browser.

getClientTotal

ID	getClientTotal
Description	Gets the client total orders.
Core Views	6
Path	https://<website>/api/orders/total?client={client}
Verb	GET
Input	-
Output	Returns an integer

getOrdersPerPageClient

ID	getOrdersPerPageClient
Description	Get the client orders with a certain number of orders per page.
Core Views	6
Path	https://<website>/api/orders/{client}?page={page}&numperpage={num}
Verb	GET
Input	-
Output	(Same as getOrderByClient but it is a paged and numbered)

newOrder

ID	newOrder
Description	Create a new order
Core Views	7
Path	https://<website>/api/DocVenda
Verb	POST
Input	Attachments(newOrder)

Utils

getCountries

ID	getCountries
Description	Get all the countries in the database.
Core Views	1, 3
Path	https://<website>/api/utils/countries
Verb	GET
Input	-
Output	Attachment(getCountries)

getDistricts

ID	getDistricts
Description	Get all the districts in the database.
Core Views	3
Path	https://<website>/api/utils/districts
Verb	GET
Input	-
Output	Attachment(getDistricts)

getPaymentTypes

ID	getPaymentTypes
Description	Get all the payment types in the database.
Core Views	7
Path	https://<website>/api/utls/paymenttypes
Verb	GET
Input	-
Output	Attachment(getPaymentTypes)

getPaymentWays

ID	getPaymentWays
Description	Get all the payment ways in the database.
Core Views	7
Path	https://<website>/api/utls/paymentways
Verb	GET
Input	-
Output	Attachment(getPaymentWays)

getExpeditionWays

ID	getExpeditionWays
Description	Get all the expedition ways in the database.
Core Views	7
Path	https://<website>/api/utls/expeditionway
Verb	GET
Input	-
Output	Attachment(getExpeditionWays)

Warehouse

getWarehouses

ID	geWarehouses
Description	Get all the warehouses in the database.
Core Views	5
Path	https://<website>/api/Warehouse
Verb	GET
Input	-
Output	Attachment(getWarehouses)

getWarehouseById

ID	geWarehouseById
Description	Get all the products that exist in that specific warehouse.
Core Views	N/A
Path	https://<website>/api/Warehouse?warehouseId={warehouseId}
Verb	GET
Input	-
Output	Attachment(getWarehouseById)

Products

getProducts

ID	getProducts
Description	Get all the products of the database with their information
Core Views	5
Path	https://<website>/api/products
Verb	GET

Input	-
Output	Attachment(getProducts)

getProductsById

ID	getProductsById
Description	Get a product information by the product Id.
Core Views	5
Path	https://<website>/api/products?id?{id}
Verb	GET
Input	-
Output	Attachment(getProductById)

getProductsFamily

ID	getProductsFamily
Description	Get all the families of products
Core Views	5
Path	https://<website>/api/products/family
Verb	GET
Input	-
Output	Attachment(getProductsFamily)

getProductsByFamily

ID	getProductsByFamily
Description	Get all the products of a certain family.
Core Views	5
Path	https://<website>/api/products/family/{id}
Verb	GET
Input	-
Output	Attachment(getProductsByFamily)

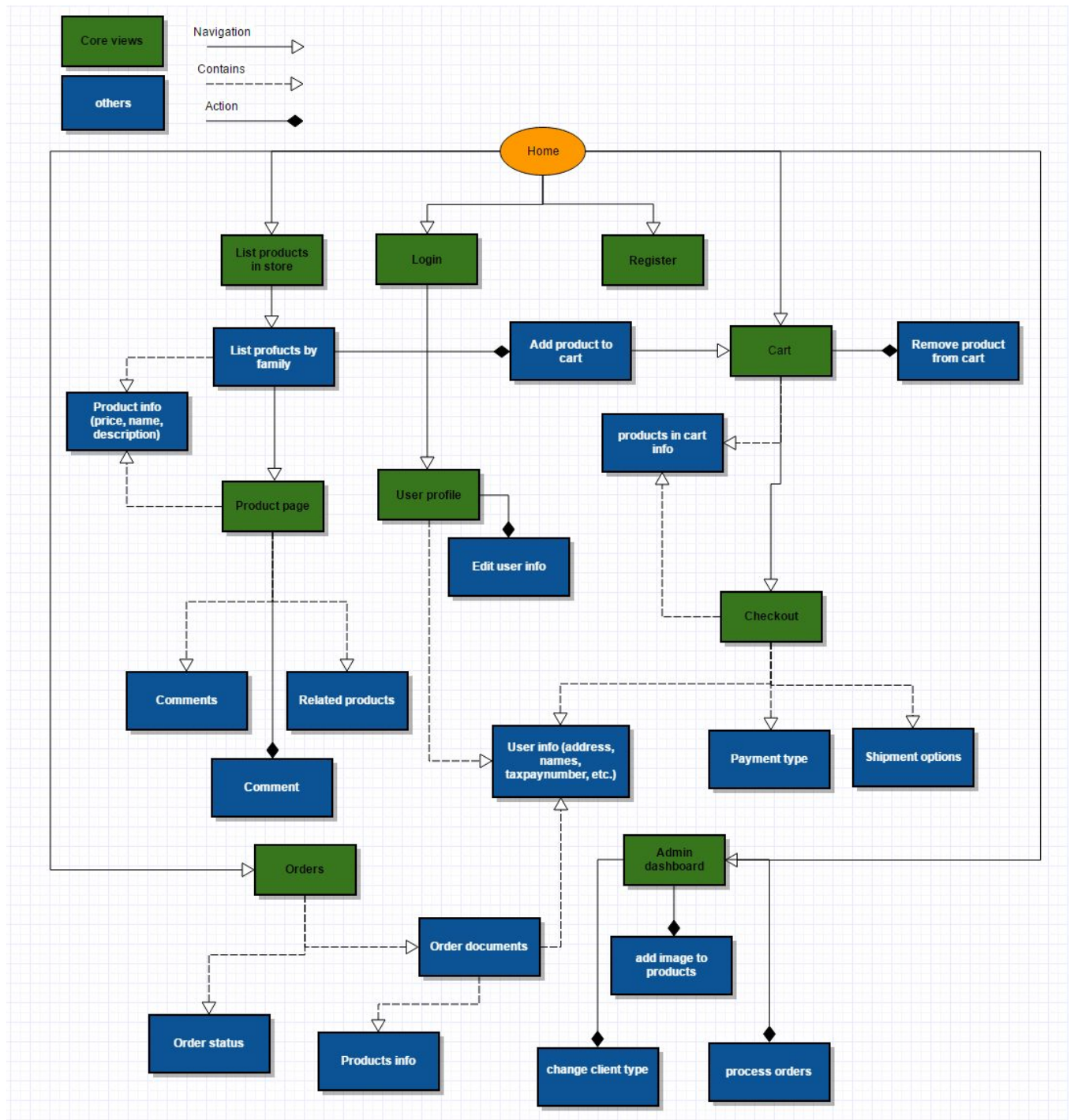
getProductsByWarehouseAndId

ID	getProductsByWarehouseAndID
Description	Get all the products of a certain warehouse and family.
Core Views	5
Path	https://<website>/api/products/warehouseId={warehouseId}&familyId={familyId}
Verb	GET
Input	-
Output	Attachment(getProductsByWarehouseAndId)

searchProducts

ID	searchProducts
Description	Search all the products by the search text.
Core Views	5
Path	https://<website>/api/products/search/{query}
Verb	GET
Input	-
Output	Attachment(searchProducts)

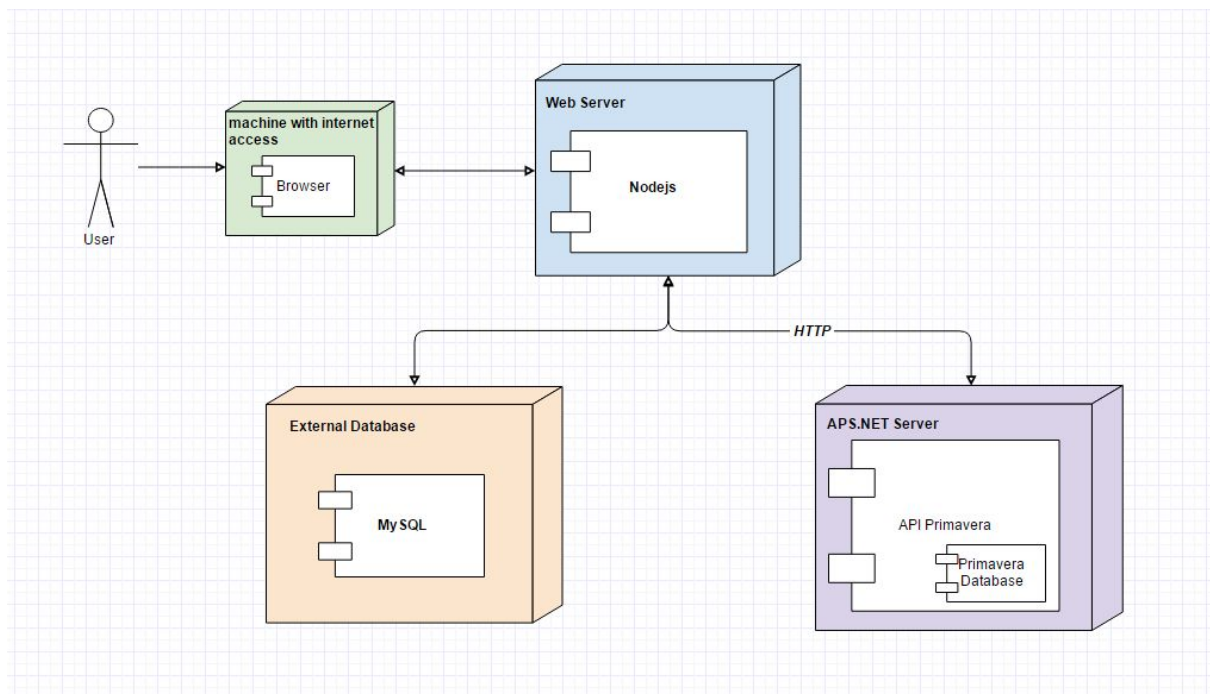
Paths



Architecture

The architecture of our system is a client-server model in which we use nodejs has a server to communicate with the information systems. Those information systems correspond to an external MySQL database and the ASP.NET Server.

The external database is used to store user credentials, products images, carts and other information we could not store in Primavera, while the ASP.NET server is an API to access information stored in Primavera.



Project Specification and Delivered Project

We were able to implement almost everything we expected to do with the exception of a rating system for the products. Everything else was completed and is functional, including an admin dashboard which was not in the project specification. We thought that this dashboard would be crucial to some back office operations that the project needed.

A lot more interoperability with Primavera had to be done in order to respond to the amount of information needed by the site.

During the project specification we had no code done at all and yet we managed to complete the project in time. We kept going with the specification plan and even made the website a bit more user friendly.

Conclusions

This project was an interesting challenge, with it we were able to learn a lot, from website development to stock management with an ERP (Enterprise resource planning).

Designing and developing a website is more difficult than it looks like, especially when you need to learn new techniques to do it. Primavera was an unknown tool for us prior to this course and learn how to use it took a lot of time and effort, but we managed to do it.

Now we are more skilled in website development, API (Application programming interface) creation and usage and ERP usage.

Attachments

getClient

```
{
  "Morada": "PASSEO DE PORTUGAL, 464646",
  "CodCliente": "ALCAD",
  "NomeCliente": "Soluciones Cad de Madrid, SA",
  "NumContribuinte": "989922456",
  "Moeda": "EUR"
}
```

getClientById

```
{
  "Address": "AV. DO ETERNO GELO, 88888",
  "Address2": "",
  "CodClient": "SOFRIO",
  "NameClient": "Sofrio, Lda",
  "FiscalName": "Sofrio, Lda",
  "TaxpayNumber": "123456789",
  "Email": "",
  "PostCode": "1000-001",
  "Local": "POLO NORTE",
  "Phone": "200267890",
  "Phone2": "200260000",
  "Country": "PT",
  "ClientDiscount": 10,
  "PaymentType": "3",
  "PaymentWay": "DEP",
  "ClientType": "001",
  "District": "",
  "ExpeditionWay": "02",
  "Currency": "EUR"
}
```

createClient

```
{
  "Address": "sample string 1",
  "Address2": "sample string 2",
  "CodClient": "sample string 3",
  "NameClient": "sample string 4",
  "FiscalName": "sample string 5",
  "TaxpayNumber": "sample string 6",
}
```

```
"Email": "sample string 7",
"PostCode": "sample string 8",
"Local": "sample string 9",
"Phone": "sample string 10",
"Phone2": "sample string 11",
"Country": "sample string 12",
"ClientDiscount": 13.1,
"PaymentType": "sample string 14",
"PaymentWay": "sample string 15",
"ClientType": "sample string 16",
"Disctrict": "sample string 17",
"ExpeditionWay": "sample string 18",
"Currency": "sample string 19"
}
```

editClient

```
{
  "Address": "sample string 1",
  "Address2": "sample string 2",
  "CodClient": "sample string 3",
  "NameClient": "sample string 4",
  "FiscalName": "sample string 5",
  "TaxpayNumber": "sample string 6",
  "Email": "sample string 7",
  "PostCode": "sample string 8",
  "Local": "sample string 9",
  "Phone": "sample string 10",
  "Phone2": "sample string 11",
  "Country": "sample string 12",
  "ClientDiscount": 13.1,
  "PaymentType": "sample string 14",
  "PaymentWay": "sample string 15",
  "ClientType": "sample string 16",
  "Disctrict": "sample string 17",
  "ExpeditionWay": "sample string 18",
  "Currency": "sample string 19"
}
```

typesClient

```
[
  {
    "Code": "001",
    "Description": "Clientes Finais"
  },
  {
    "Code": "002",
    "Description": "Revendedores"
  },
  {
    "Code": "003",
    "Description": "Grossistas"
  }
]
```

getOrdersId

```
{
  "id": "{80F965D3-8BE0-11E6-B468-080027397412}",
  "Client": {
    "Address": "PASSEIO DE PORTUGAL, 464646",
    "Address2": "",
    "CodClient": "ALCAD",
    "NameClient": "Soluciones Cad de Madrid, SA",
    "FiscalName": "Soluciones Cad de Madrid, SA",
    "TaxpayNumber": "989922456",
    "Email": "teste@mail.com",
    "PostCode": "61001",
    "Local": "VILANUEVA DE ARRIBA",
    "Phone": "00.034.1.474747447",
    "Phone2": "",
    "Country": "ES",
    "ClientDiscount": 0,
    "PaymentType": "2",
    "PaymentWay": "DEP",
    "ClientType": "003",
    "Disctrict": "",
    "ExpeditionWay": "05",
    "Currency": "EUR"
  },
  "NumDoc": 1126,
  "Data": "2016-10-06T00:00:00",
  "TotalMerc": 335,
  "Serie": "2016",
  "Status": 2,
  "TotalRealMerc": 326.71,
  "LinhasDoc": [
    {

```

```

        "CodArtigo": "B0001",
        "DescArtigo": "Monitor 17" TFT L1752S",
        "TotalDescArtigo": 3.52,
        "TotalDescontoCliente": 0,
        "IvaTotal": 0,
        "IdCabecDoc": "{80F965D3-8BE0-11E6-B468-080027397412}",
        "Quantidade": 1,
        "Unidade": "UN",
        "Desconto": 2,
        "PrecoUnitario": 176,
        "TotalILiquido": 176,
        "TotalLiquido": 172.48,
        "TotalPrecoArtigo": 172.48,
        "Armazem": null
    },
    {
        "CodArtigo": "B0003",
        "DescArtigo": "Monitor TFT 747D 17",
        "TotalDescArtigo": 4.77,
        "TotalDescontoCliente": 0,
        "IvaTotal": 0,
        "IdCabecDoc": "{80F965D3-8BE0-11E6-B468-080027397412}",
        "Quantidade": 1,
        "Unidade": "UN",
        "Desconto": 3,
        "PrecoUnitario": 159,
        "TotalILiquido": 159,
        "TotalLiquido": 154.23,
        "TotalPrecoArtigo": 154.23,
        "Armazem": null
    }
],
}

```

getOrderByClient

```

[
{
    "id": "{80F965D3-8BE0-11E6-B468-080027397412}",
    "Client":
    {
        "Address": "PASSEIO DE PORTUGAL, 464646",
        "Address2": "",
        "CodClient": "ALCAD",
        "NameClient": "Soluciones Cad de Madrid, SA",
        "FiscalName": "Soluciones Cad de Madrid, SA",
        "TaxpayNumber": "989922456",
        "Email": "teste@mail.com",
        "PostCode": "61001",
        "Local": "VILANUEVA DE ARRIBA",
        "Phone": "00.034.1.474747447",
        "Phone2": "",
        "Country": "ES",
        "ClientDiscount": 0,
        "PaymentType": "2",
    }
}
]

```

```

        "PaymentWay": "DEP",
        "ClientType": "003",
        "Disctrict": "",
        "ExpeditionWay": "05",
        "Currency": "EUR"
    }
    ,
    "NumDoc": 1126,
    "Data": "2016-10-06T00:00:00",
    "TotalMerc": 335,
    "Serie": "2016",
    "Status": 2,
    "TotalRealMerc": 0,
    "LinhasDoc": [
        {
            "CodArtigo": "B0001",
            "DescArtigo": "Monitor 17" TFT L1752S",
            "TotalDescArtigo": 3.52,
            "TotalDescontoCliente": 0,
            "IvaTotal": 0,
            "IdCabecDoc": "{80F965D3-8BE0-11E6-B468-080027397412}",
            "Quantidade": 1,
            "Unidade": "UN",
            "Desconto": 2,
            "PrecoUnitario": 176,
            "TotalILiquido": 176,
            "TotalLiquido": 172.48,
            "TotalPrecoArtigo": 172.48,
            "Armazem": null
        }
        ,
        {
            "CodArtigo": "B0003",
            "DescArtigo": "Monitor TFT 747D 17",
            "TotalDescArtigo": 4.77,
            "TotalDescontoCliente": 0,
            "IvaTotal": 0,
            "IdCabecDoc": "{80F965D3-8BE0-11E6-B468-080027397412}",
            "Quantidade": 1,
            "Unidade": "UN",
            "Desconto": 3,
            "PrecoUnitario": 159,
            "TotalILiquido": 159,
            "TotalLiquido": 154.23,
            "TotalPrecoArtigo": 154.23,
            "Armazem": null
        }
    ],
}
]

```

getClientOrderById

```

{
    "id": "{80F965D3-8BE0-11E6-B468-080027397412}",
    "Client":
    {

```

```

    "Address": "PASSEO DE PORTUGAL, 464646",
    "Address2": "",
    "CodClient": "ALCAD",
    "NameClient": "Soluciones Cad de Madrid, SA",
    "FiscalName": "Soluciones Cad de Madrid, SA",
    "TaxpayNumber": "989922456",
    "Email": "teste@mail.com",
    "PostCode": "61001",
    "Local": "VILANUEVA DE ARRIBA",
    "Phone": "00.034.1.474747447",
    "Phone2": "",
    "Country": "ES",
    "ClientDiscount": 0,
    "PaymentType": "2",
    "PaymentWay": "DEP",
    "ClientType": "003",
    "District": "",
    "ExpeditionWay": "05",
    "Currency": "EUR"
  }
,
  "NumDoc": 1126,
  "Data": "2016-10-06T00:00:00",
  "TotalMerc": 335,
  "Serie": "2016",
  "Status": 2,
  "TotalRealMerc": 326.71,
  "LinhasDoc": [
    {
      "CodArtigo": "B0001",
      "DescArtigo": "Monitor 17" TFT L1752S",
      "TotalDescArtigo": 3.52,
      "TotalDescontoCliente": 0,
      "IvaTotal": 0,
      "IdCabecDoc": "{80F965D3-8BE0-11E6-B468-080027397412}",
      "Quantidade": 1,
      "Unidade": "UN",
      "Desconto": 2,
      "PrecoUnitario": 176,
      "TotalILiquido": 176,
      "TotalLiquido": 172.48,
      "TotalPrecoArtigo": 172.48,
      "Armazem": null
    }
  ,
    {
      "CodArtigo": "B0003",
      "DescArtigo": "Monitor TFT 747D 17",
      "TotalDescArtigo": 4.77,
      "TotalDescontoCliente": 0,
      "IvaTotal": 0,
      "IdCabecDoc": "{80F965D3-8BE0-11E6-B468-080027397412}",
      "Quantidade": 1,
      "Unidade": "UN",
      "Desconto": 3,
      "PrecoUnitario": 159,
      "TotalILiquido": 159,

```



```

        "TotalLiquido": 154.23,
        "TotalPrecoArtigo": 154.23,
        "Armazem": null
    },
],
}

```

newOrder

```

{
  "id": "sample string 1",
  "Client": {
    "Address": "sample string 1",
    "Address2": "sample string 2",
    "CodClient": "sample string 3",
    "NameClient": "sample string 4",
    "FiscalName": "sample string 5",
    "TaxpayNumber": "sample string 6",
    "Email": "sample string 7",
    "PostCode": "sample string 8",
    "Local": "sample string 9",
    "Phone": "sample string 10",
    "Phone2": "sample string 11",
    "Country": "sample string 12",
    "ClientDiscount": 13.1,
    "PaymentType": "sample string 14",
    "PaymentWay": "sample string 15",
    "ClientType": "sample string 16",
    "District": "sample string 17",
    "ExpeditionWay": "sample string 18",
    "Currency": "sample string 19"
  },
  "NumDoc": 2,
  "Data": "2016-12-18T15:37:52.6022531+00:00",
  "TotalMerc": 4.1,
  "Serie": "sample string 5",
  "Status": 6,
  "TotalRealMerc": 7.1,
  "LinhasDoc": [
    {
      "CodArtigo": "sample string 1",
      "DescArtigo": "sample string 2",
      "TotalDescArtigo": 3.1,

```

```
"TotalDescontoCliente": 4.1,
"IvaTotal": 5.1,
"IdCabecDoc": "sample string 6",
"Quantidade": 7.1,
"Unidade": "sample string 8",
"Desconto": 9.1,
"PrecoUnitario": 10.1,
"TotalLiquido": 11.1,
"TotalLiquido": 12.1,
"TotalPrecoArtigo": 13.1,
"Armazem": "sample string 14"
},
{
  "CodArtigo": "sample string 1",
  "DescArtigo": "sample string 2",
  "TotalDescArtigo": 3.1,
  "TotalDescontoCliente": 4.1,
  "IvaTotal": 5.1,
  "IdCabecDoc": "sample string 6",
  "Quantidade": 7.1,
  "Unidade": "sample string 8",
  "Desconto": 9.1,
  "PrecoUnitario": 10.1,
  "TotalLiquido": 11.1,
  "TotalLiquido": 12.1,
  "TotalPrecoArtigo": 13.1,
  "Armazem": "sample string 14"
}
]
```

getCountries

```
[
  {
    "Initials": "PT",
    "Name": "Portugal"
  },
  {
    "Initials": "AT",
    "Name": "Austria"
  },
  {
    "Initials": "BE",
    "Name": "Bélgica"
  },
  ...
]
```

getDistricts

```
[
  {
    "DistrictCode": "00",
    "Description": "Ignorado"
  },
  {
    "DistrictCode": "01",
    "Description": "Aveiro"
  },
  {
    "DistrictCode": "02",
    "Description": "Beja"
  },
  {
    "DistrictCode": "03",
    "Description": "Braga"
  },
  ...
]
```

getPaymentTypes

```
[
  {
    "PaymentTypeCode": "1",
    "PaymentTypeDescription": "Pronto Pagamento"
  },
  {
    "PaymentTypeCode": "2",
    "PaymentTypeDescription": "Fatura 30 dias"
  },
  {
    "PaymentTypeCode": "3",
    "PaymentTypeDescription": "Fatura a 45 dias"
  },
  ...
]
```

getPaymentWays

```
[
  {
    "PaymentWayCode": "MB",
    "PaymentWayDescription": "Rec. por Multibanco"
  },
  {
    "PaymentWayCode": "TRA",
    "PaymentWayDescription": "Transferência eletrónica"
  },
  ...
]
```

getExpeditionWays

```
[
  {
    "ExpeditionCode": "01",
    "ExpeditionDescription": "CTT"
  },
  {
    "ExpeditionCode": "02",
    "ExpeditionDescription": "Transportadora"
  },
  {
    "ExpeditionCode": "03",
    "ExpeditionDescription": "N/ Viatura"
  },
  ...
]
```

getWarehouses

```
[
  {
    "Code": "A1",
    "Description": "Armazém 1",
    "Adress": "Av. do Progresso, 36",
    "PostalCode": "9630-800",
    "PostalCodeLocal": "Vila Fria",
    "Phone": " "
  },
  {
    "Code": "A2",
    "Description": "Armazém 2",
    "Adress": "No Adress",
    "PostalCode": "No PostalCode",
    "PostalCodeLocal": "No PostalCodeLocal",
    "Phone": "No Phone"
  },
  ...
]
```

getWarehouseById

```
[
  {
    "Code": "A0001",
    "Description": "Pentium D925 Dual Core",
    "Prices": {
      "PVP1": 1000,
      "PVP2": 698,
      "PVP3": 748,
      "PVP4": 700,
      "PVP5": 817,
      "PVP6": 875
    }
  },
  {
    "Code": "A0002",
    "Description": "Pentium 4 945+ Dual Core 3.4GHZ",
    "Prices": {
      "PVP1": 926,
      "PVP2": 860,
      "PVP3": 897,
      "PVP4": 817,
      "PVP5": 933,
      "PVP6": 1050
    }
  },
  ...
]
```

getProducts

```
[
  {
    "Code": "A0001",
    "Description": "Pentium D925 Dual Core",
    "Family": "Computadores",
    "SubFamily": "Computadores linha branca",
    "Brand": "Linha Branca",
    "Model": "No Model",
    "Currency": "EUR",
    "Discount": 0,
    "IVA": "20",
    "STKActual": 560,
    "DeliveryTime": 15,
    "Warranty": "1 Ano",
    "Prices":
    {
      "PVP1": 1000,
      "PVP2": 698,
      "PVP3": 748,
      "PVP4": 700,
      "PVP5": 817,
      "PVP6": 875
    }
  },
  {
    "Warehouses": [
      {
        "Code": "A1",
        "Stock": 560
      }
    ]
  },
  {
    "Code": "A0002",
    "Description": "Pentium 4 945+ Dual Core 3.4GHZ",
    "Family": "Computadores",
    "SubFamily": "Computadores pessoais",
    "Brand": "Produtos Primavera",
    "Model": "No Model",
    "Currency": "EUR",
    "Discount": 0,
    "IVA": "20",
    "STKActual": -415,
```

```

    "DeliveryTime": 15,
    "Warranty": "1 Ano",
    "Prices":
    {
        "PVP1": 926,
        "PVP2": 860,
        "PVP3": 897,
        "PVP4": 817,
        "PVP5": 933,
        "PVP6": 1050
    }
    ,
    "Warehouses": [
        {
            "Code": "A1",
            "Stock": 4
        }
        ,
        {
            "Code": "A2",
            "Stock": -419
        }
    ]
    ,
    ...
]

```

getProductById

```

{
    "Code": "A0001",
    "Description": "Pentium D925 Dual Core",
    "Family": "Computadores",
    "SubFamily": "Computadores linha branca",
    "Brand": "Linha Branca",
    "Model": "No Model",
    "Currency": "EUR",
    "Discount": 0,
    "IVA": "20",
    "STKActual": 560,
    "DeliveryTime": 15,
    "Warranty": "1 Ano",
    "Prices":
    {
        "PVP1": 1000,
        "PVP2": 698,
        "PVP3": 748,
        "PVP4": 700,
        "PVP5": 817,
        "PVP6": 875
    }
}

```



```

    }
    ,
    "Warehouses": [
        {
            "Code": "A1",
            "Stock": 560
        }
    ],
}

```

getProductsFamily

```

[
    "Acessórios",
    "Bebidas Alcoólicas",
    "Componentes",
    "Ferramentas",
    "Grandes Eletrodomésticos",
    "Computadores",
    "Monitores",
    "Teclados",
    "Scanners",
    "Impressoras",
    "Equipamentos de fax e cópia",
    "Modems",
    "CD Rom",
    "Ratos",
    "Placas de Som",
    "Microfones",
    "Mobiliário",
    "Multimédia",
    "Moldes",
    "Matérias Primas",
    "Produtos Intermédios",
    "Pequenos Eletrodomésticos",
    "Serviços"
]

```

getProductsByFamily

```

[
    {
        "Code": "A0001",
        "Description": "Pentium D925 Dual Core",
        "Prices":
        {
            "PVP1": 1000,
            "PVP2": 698,
            "PVP3": 748,

```

```

        "PVP4": 700,
        "PVP5": 817,
        "PVP6": 875
    }
    ,
    "Discount": 0,
    "IVA": "20",
    "StkActual": 560
}
,
{
    "Code": "A0002",
    "Description": "Pentium 4 945+ Dual Core 3.4GHZ",
    "Prices":
    {
        "PVP1": 926,
        "PVP2": 860,
        "PVP3": 897,
        "PVP4": 817,
        "PVP5": 933,
        "PVP6": 1050
    }
    ,
    "Discount": 0,
    "IVA": "20",
    "StkActual": 4
}
,
...
]

```

getProductsByWarehouseAndId

```

[
    {
        "Code": "A0001",
        "Description": "Pentium D925 Dual Core",
        "Prices":
        {
            "PVP1": 1000,
            "PVP2": 698,
            "PVP3": 748,
            "PVP4": 700,
            "PVP5": 817,
            "PVP6": 875
        }
        ,
        "Discount": 0,
        "IVA": "20",
        "StkActual": 560
    }
]

```

```

    }
    ,
    {
      "Code": "A0002",
      "Description": "Pentium 4 945+ Dual Core 3.4GHZ",
      "Prices":
      {
        "PVP1": 926,
        "PVP2": 860,
        "PVP3": 897,
        "PVP4": 817,
        "PVP5": 933,
        "PVP6": 1050
      }
      ,
      "Discount": 0,
      "IVA": "20",
      "StkActual": 4
    }
    ,
    ...
  ]

```

searchProducts

```

[
  {
    "Code": "A0001",
    "Description": "Pentium D925 Dual Core",
    "Prices":
    {
      "PVP1": 1000,
      "PVP2": 698,
      "PVP3": 748,
      "PVP4": 700,
      "PVP5": 817,
      "PVP6": 875
    }
    ,
    "Discount": 0,
    "IVA": "20",
    "StkActual": 560
  }
  ,
  {
    "Code": "A0002",
    "Description": "Pentium 4 945+ Dual Core 3.4GHZ",
    "Prices":
    {
      "PVP1": 926,

```

```

        "PVP2": 860,
        "PVP3": 897,
        "PVP4": 817,
        "PVP5": 933,
        "PVP6": 1050
    }
    ,
    "Discount": 0,
    "IVA": "20",
    "StkActual": 4
}
,
{
    "Code": "A0002",
    "Description": "Pentium 4 945+ Dual Core 3.4GHZ",
    "Prices":
    {
        "PVP1": 926,
        "PVP2": 860,
        "PVP3": 897,
        "PVP4": 817,
        "PVP5": 933,
        "PVP6": 1050
    }
    ,
    "Discount": 0,
    "IVA": "20",
    "StkActual": -419
}
],
...
]

```