

# P1 - Online/Web Store



Master in Informatics and Computing Engineering

Information Systems - FINAL DOCUMENT

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## Overview

This project consists in the development of a web application for the management of an online **technology store**. This application allows the user to make an order registration, consult purchase history and track the status of an order. Besides that, every product has a score given by the users. The users of this website are separated in two groups “Administrators” and regular “Users”. Administrators are able to add products, block users and have access to information about the sales, purchases, inventory, billing and other. Regular Users have access to the products pages and can edit their profile information, also they are able to keep items in a shopping cart (even when logged out) and, at the end of their purchases, place a order for one or more items desired.

This application uses ERP Primavera as a backoffice for the sales process and stock management. The communication between the app and the ERP will be done through a Web API provided to facilitate the process. To build our Web app we use a combination of **Handlebars** (Frontend), **Node**, **Express** and **MongoDB** (Backend). This last one is a database platform that allows to access data easily, in which we have stored only crucial information for the users authentication such and email and password since its more secure and Primavera does not have an appropriate authentication system.



## Core views - Information architecture

- Product view
- Customer view
- Orders View
- Catalog View
- Shopping Cart View
- Register View
- Administrator View

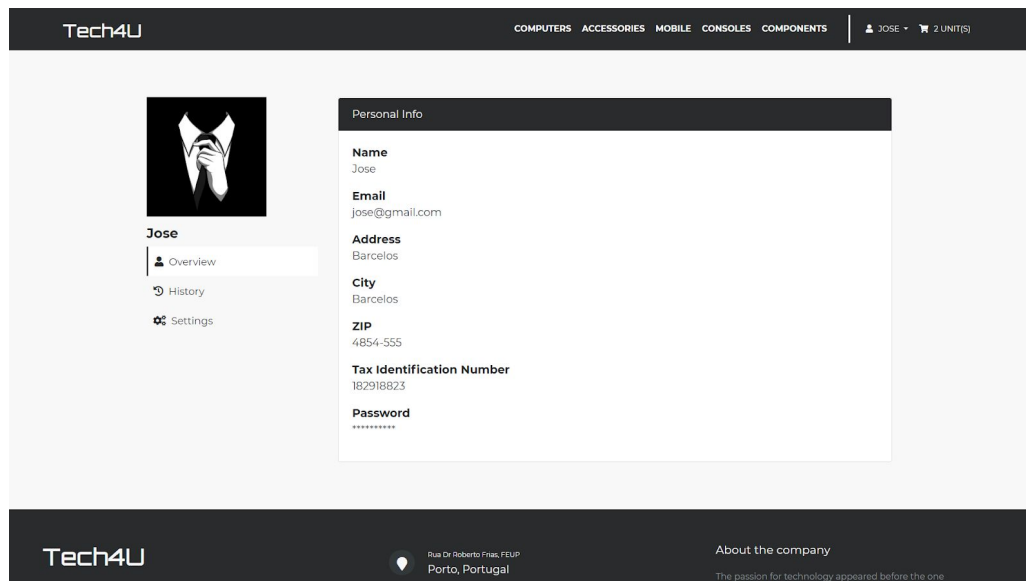
## Product view



### Elements of the core

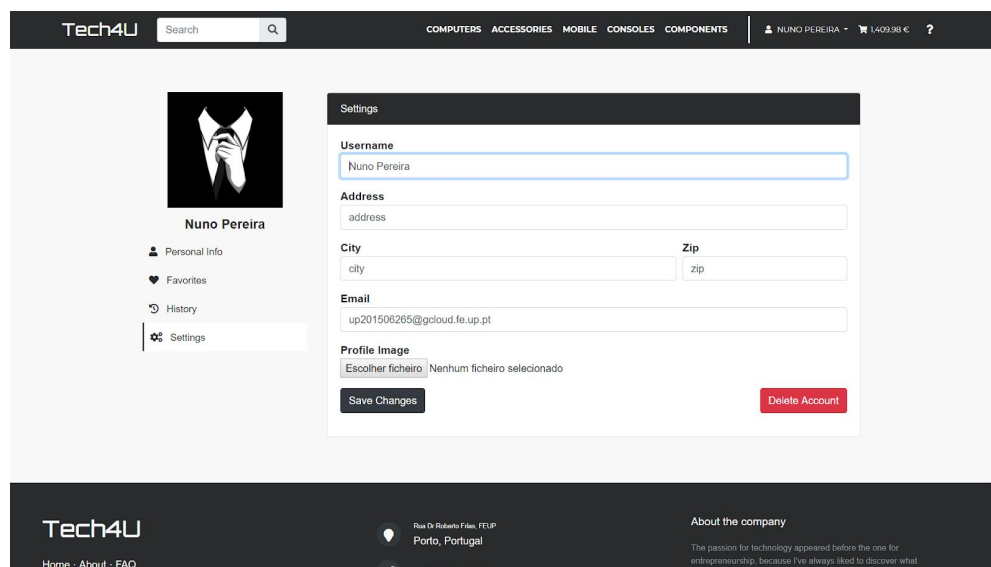
- Product overview (name, price, description, score)
- Button 01: Add product to cart

## Customer view



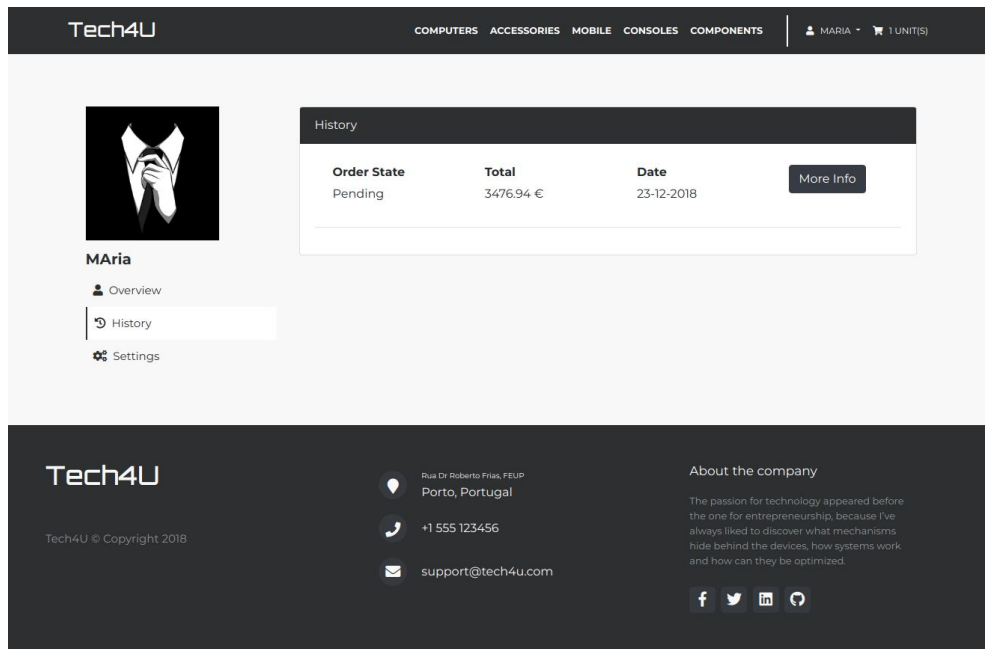
### Elements of the core:

- Customer overview
- Button 02 - Shopping history
- Button 03 - Edit profile information



### Elements of the core:

- Form 01: Edit profile form
- Button 01: Escolher ficheiro
- Button 02: Save changes
- Button 03: Delete account
- Button 04 - View personal info
- Button 05 - Shopping history



**Tech4U**

COMPUTERS ACCESSORIES MOBILE CONSOLES COMPONENTS

MARIA 1 UNIT(S)

**MARIA**

Overview

**History**

Settings

**History**

Order State	Total	Date	More Info
Pending	3476.94 €	23-12-2018	

**Tech4U**

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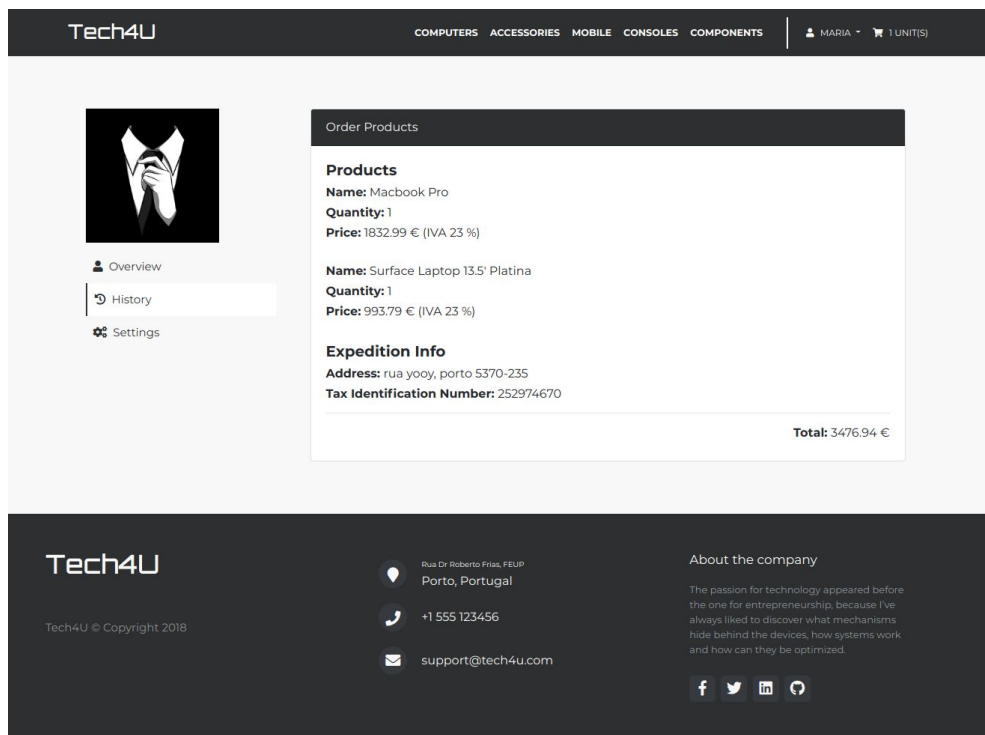
**About the company**

The passion for technology appeared before the one for entrepreneurship, because I've always liked to discover what mechanisms hide behind the devices, how systems work and how can they be optimized.

f t in q

### Elements of the core:

- List 01: Order History



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MARIA 1 UNIT(S)

**MARIA**

Overview

**History**

Settings

**Order Products**

**Products**

**Name:** Macbook Pro  
**Quantity:** 1  
**Price:** 1832.99 € (IVA 23 %)

**Name:** Surface Laptop 13.5' Platina  
**Quantity:** 1  
**Price:** 993.79 € (IVA 23 %)

**Expedition Info**

**Address:** rua yooy, porto 5370-235  
**Tax Identification Number:** 252974670

**Total:** 3476.94 €

**Tech4U**

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### Elements of the core:

- Form 01: Order Details

## Shopping cart

The screenshot shows the Tech4U website's shopping cart. At the top, a navigation bar includes the Tech4U logo, a menu with 'COMPUTERS', 'ACCESSORIES', 'MOBILE', 'CONSOLES', and 'COMPONENTS', and a user profile icon labeled 'ADMIN' with a shopping cart icon showing '2 UNIT(S)'. Below the navigation bar is a progress indicator with four steps: 1 (Cart, active), 2 (Expedition), 3 (Payment), and 4 (Confirmation). The main content area is titled 'Shopping cart' and displays two items: a Macbook Pro for 1832.99 € and an iPhone X - 256 GB for 1349.99 €. Each item has a quantity selector (set to 1) and a delete button. The total price is 3182.98 €, and a 'Checkout' button is at the bottom right. The footer contains the Tech4U logo, contact information (Rua Dr. Roberto Frias, FEUP, Porto, Portugal; +1 555 123456), and an 'About the company' section.

### Elements of the core

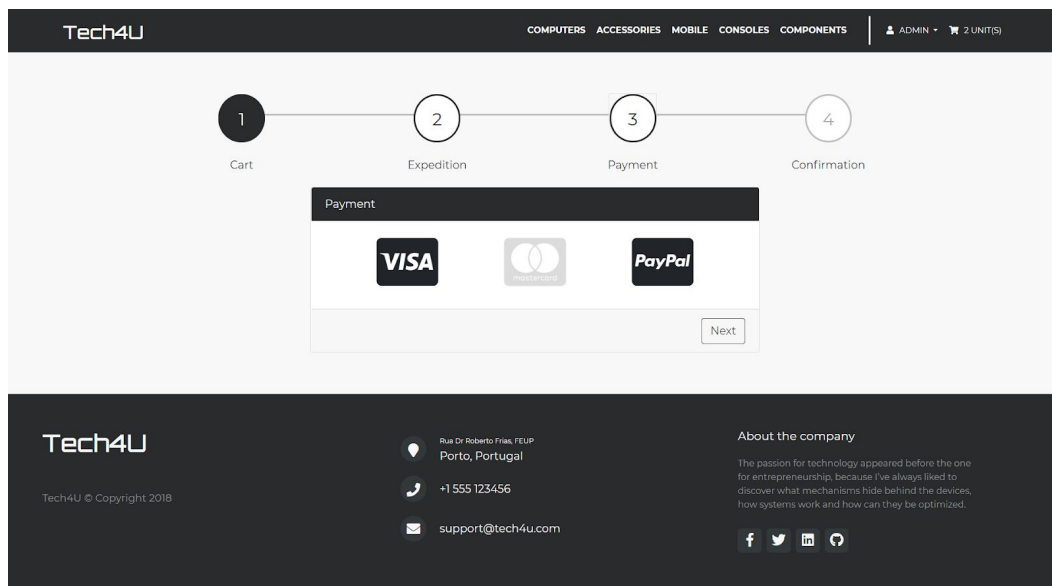
- Table 01: List of products in the shopping cart
- Button 01: Checkout
- Button 02: Delete product from shopping cart
- Button 03: Increase quantity
- Button 04: Decrease quantity

The screenshot shows the Tech4U website's expedition form. The progress indicator shows step 2 (Expedition) as active. The main content area is titled 'Expedition Info' and contains a form with the following fields: Address (Barcelos), City (Barcelos), Zip (4750-555), and Tax Identification Number (182918824). There are 'Load Data' and 'Next' buttons at the bottom of the form. The footer is identical to the previous screenshot.

### Elements of the core

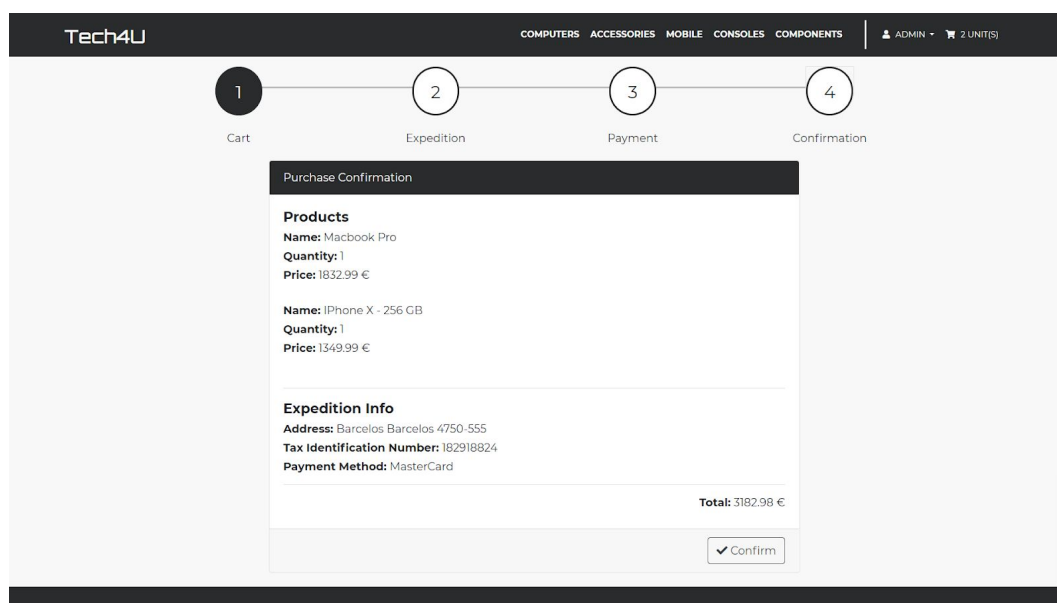
- Form 01: Expedition form
- Button 01: Next step





### Elements of the core

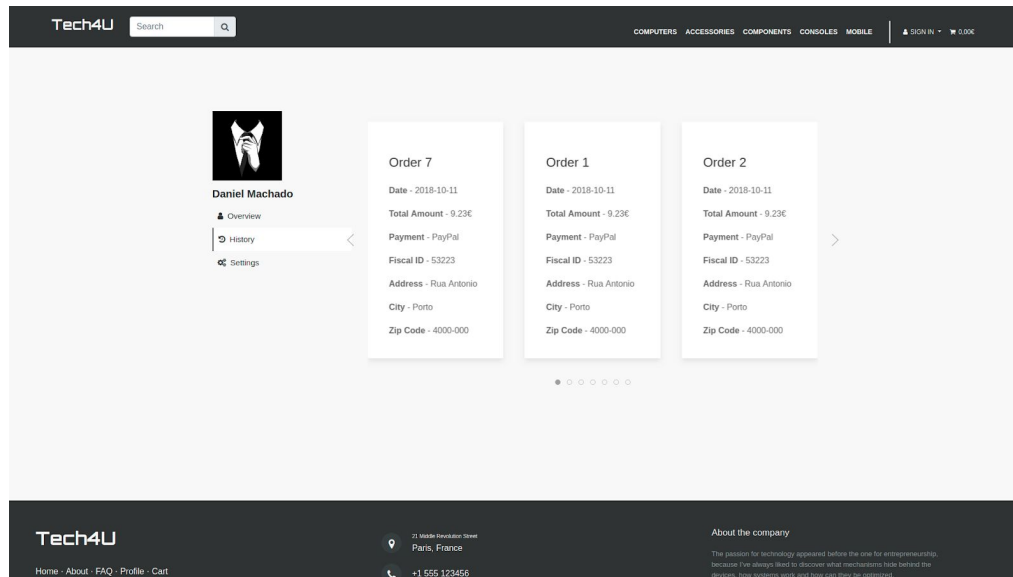
- Table 01: Method of payment
- Button 01: Next step



### Elements of the core

- Table 01: Confirmation details
- Button 01: Confirm button (Finish order)

## Orders View



### Elements of the Core

- List 01: Orders List
- Table 01: Orders Info

## Registration View

The screenshot shows a web browser displaying the Tech4U registration page. The header features the Tech4U logo, a search bar, and navigation links for COMPUTERS, ACCESSORIES, MOBILE, CONSOLES, and COMPONENTS. There are also links for SIGN IN, a shopping cart icon, and a help icon. The main content area is titled 'Sign up' and contains a form with the following fields: Username, Password, Confirm Password, Email, Address, City, and Zip. Below the form is a checkbox labeled 'Agree to terms and conditions' and a 'sign up' button. The footer includes the Tech4U logo, navigation links (Home, About, FAQ), copyright information (Tech4U © Copyright 2018), contact information (Rua Di Roberto Frias, FEUP, Porto, Portugal; +1 555 123456; support@tech4u.com), and an 'About the company' section with a brief description and social media icons for Facebook, Twitter, LinkedIn, and YouTube.

Tech4U

Search

COMPUTERS ACCESSORIES MOBILE CONSOLES COMPONENTS

SIGN IN

### Sign up

Username

Password

Confirm Password

Email

Address

City Zip

☐ Agree to terms and conditions

sign up

Tech4U

Home - About - FAQ

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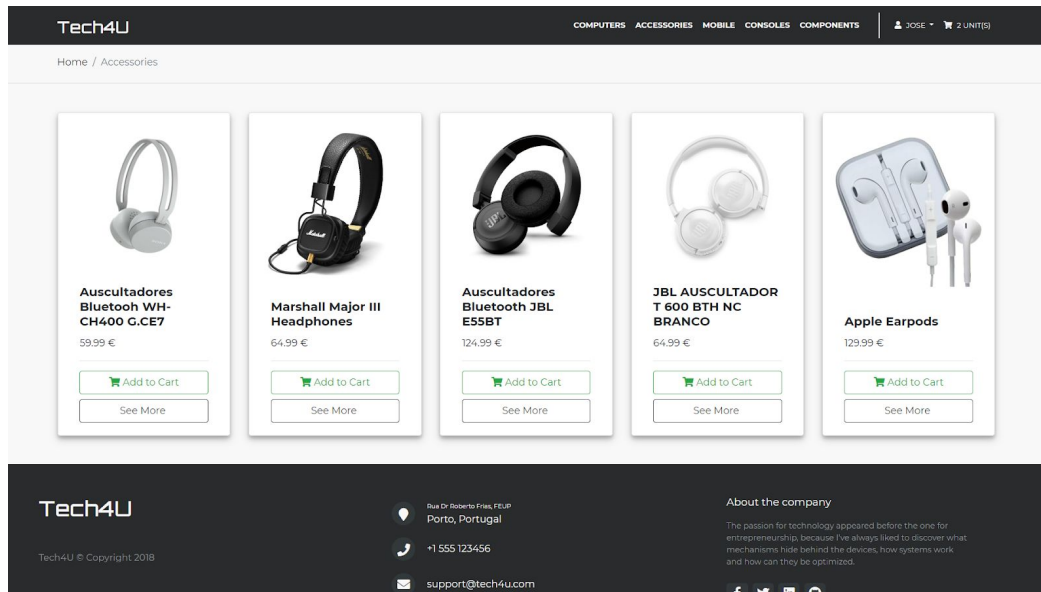
About the company

The passion for technology appeared before the one for entrepreneurship, because I've always liked to discover what mechanisms hide behind the devices, how systems work and how can they be optimized.

### Elements of the Core

- Form 01: Sign up form
- Checkbox 01: Accept Terms and Conditions
- Button 01: Sign up button

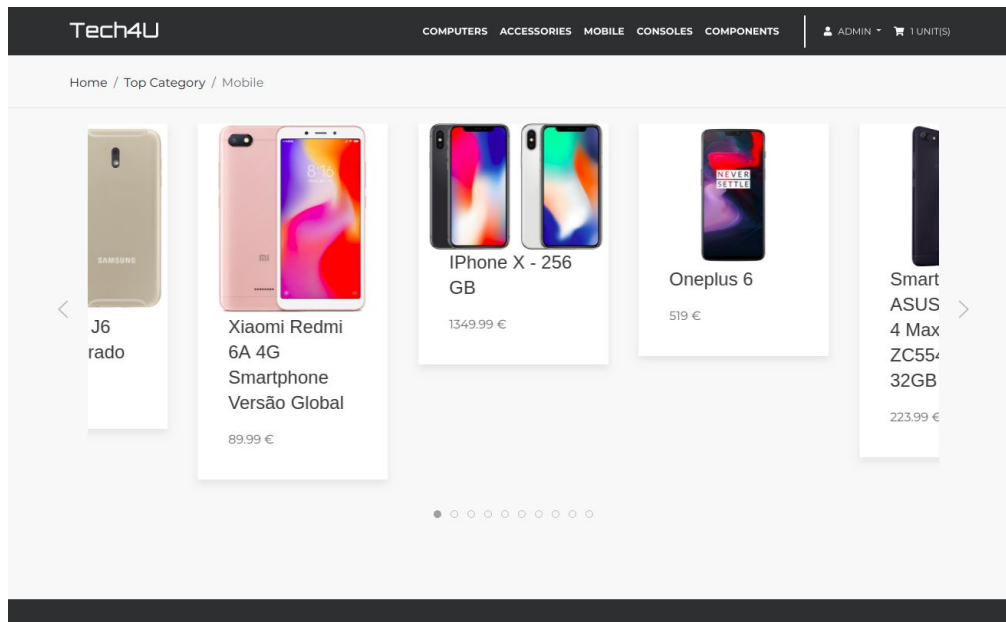
## Catalog View



### Elements of the core

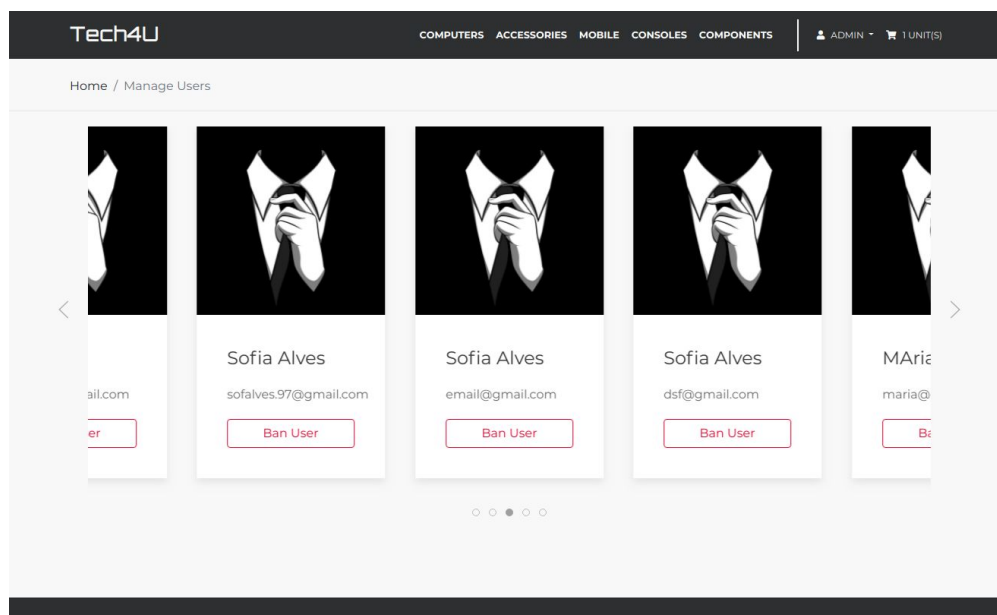
- Button 01: Add product to cart
- Button 02: See product page
- Image 01: Product image

## Administrator View



### Elements of the core

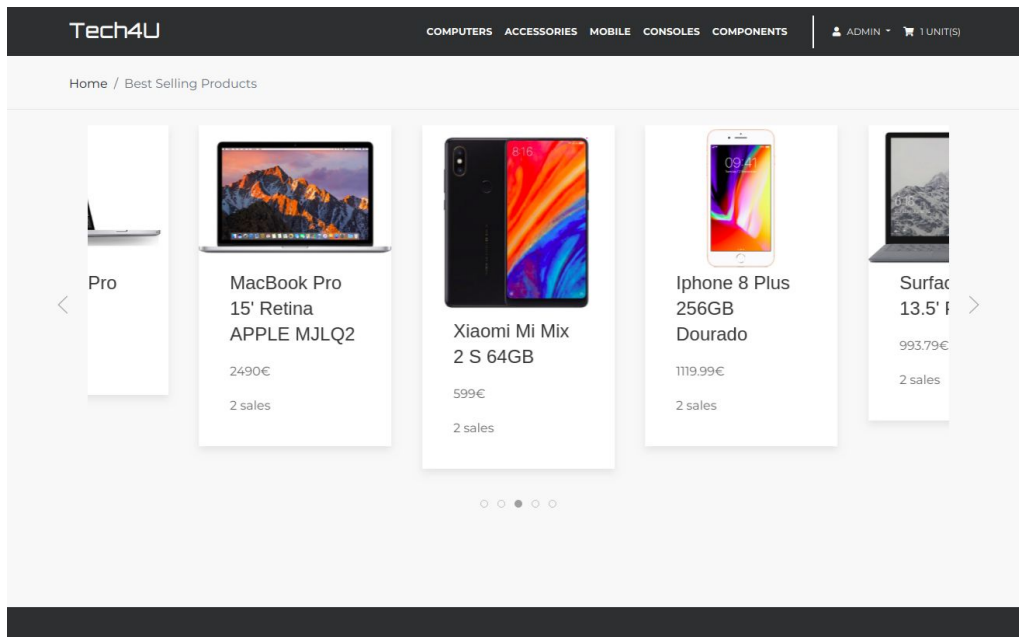
- List 01: Top Category



### Elements of the core

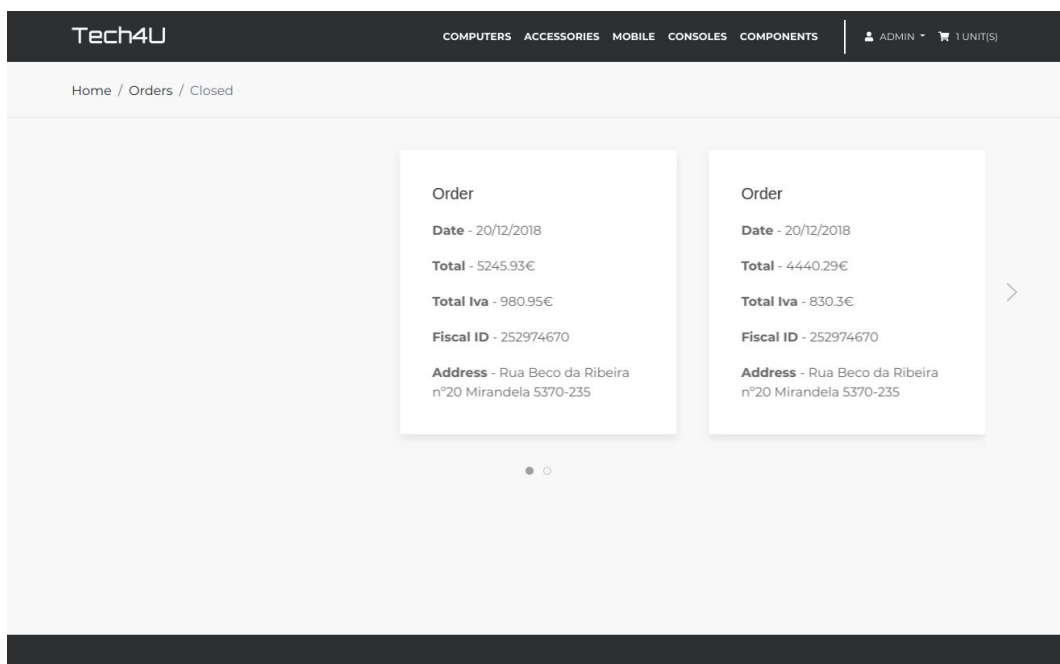
- List 01: Users List

- Button 01: Ban user



## Elements of the core

- List 01: Best Selling Products



## Elements of the core

- List 01: Closed Orders List

**Tech4U** COMPUTERS ACCESSORIES MOBILE CONSOLES COMPONENTS ADMIN 1 UNIT(S)

Home / Orders / Pending

**Order**

**Date** - 20/12/2018

**Total** - 3476.94€

**Total Iva** - 650.16€

**Fiscal ID** - 123456789

**Address** - Rua Beco da Ribeira  
nº20 Mirandela 5370-235

Confirm

**Order**

**Date** - 23/12/2018

**Total** - 3476.94€

**Total Iva** - 650.16€

**Fiscal ID** - 252974670


**Address** - rua yooy porto 5370-235

Confirm

## Elements of the core

- List 01: Pending Orders List
- Button 01: Confirm Order

**Tech4U** COMPUTERS ACCESSORIES MOBILE CONSOLES COMPONENTS ADMIN 1 UNIT(S)



**iPhone X - 256 GB**

**Add Product**

**Name**  
iPhone X - 256 GB

**Brand**  
B001

**Category**  
F001

**Warehouse**  
A1

**Score**  
4

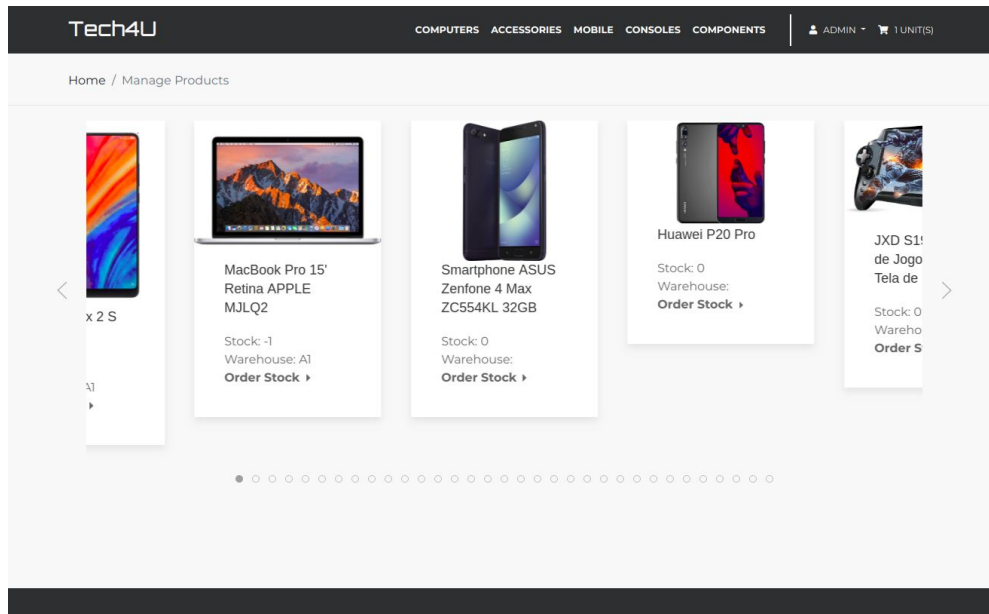
**Description**  
smartphone com capacidade de armazenamento de 256 GB e ecrã Super Retina de 5,8" (2436 x 1125 pixels a 458 ppp), com relação de contraste de 1000000:1; resistente à água e ao pó; Face ID; processador A11 Bionic com arquitetura de 64 bits; carregamento sem fios; câmaras grande angular e teleobjetiva de 12 MP e câmara TrueDepth; gravação vídeo 4K a 24, 30 ou 60 fps; autonomia em conversação (sem fios) de até 21 horas.

**Product Image** Choose File No file chosen

Next

## Elements of the core

- Form 01: Form to add new Product
- Button 01: Next Step to add a Product



## Elements of the core

- List 01: All products



## Interoperability with Primavera WebApi

Webservice ID	Webservice Description	Related Core Views(s)	Input	Output
get_item	Returns a product with the specified ID.	Product View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT a.Artigo, a.Descricao, am.PVP1, m.Descricao, a.Observacoes, a.Peso, f.Descricao FROM Artigo a INNER JOIN Marcas m ON m.Marca=a.Marca INNER JOIN Familias f ON f.Familia=a.Familia INNER JOIN ArtigoMoeda as am ON a.Artigo = am.Artigo WHERE a.Artigo=<productID>	<pre>{   "DataSet": {     "Table": [       {         "Artigo": "A001",         "Descricao": "Macbook Pro",         "PVP1": 1832.99,         "Descricao1": "Apple",         "Observacoes": "CPU: 2.9GHz Intel Core i9-8950HK (hex-core, 8 threads, 12MB cache, up to 4.8GHz) \r\nGraphics: AMD Radeon Pro 560X, Intel UHD Graphics 630.\r\nRAM: 32GB (2,400MHz DDR4)\r\nScreen: 15.4-inch, 2,880 x 1,800 Retina display (backlit LED, IPS, 500 nits brightness, wide color P3 gamut)\r\nStorage: 2TB SSD.",         "Peso": 4.8,         "Descricao2": "Computers"       }     ]   },   "Query": "System.Data.SqlClient.SqlCommand" }</pre>
get_categories	Returns all categories of products	All Views	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT Familia, Descricao FROM Familias	<pre>{   "DataSet": {     "Table": [       {         "Familia": "F001",         "Descricao": "Computers"       },       {         "Familia": "F002",         "Descricao": "Accessories"       },       {         "Familia": "F003",         "Descricao": "Mobile"       },       {         "Familia": "F004",         "Descricao": "Consoles"       },       {         "Familia": "F005",         "Descricao": "Components"       }     ]   },   "Query": "System.Data.SqlClient.SqlCommand" }</pre>

				}
get_category	Returns all products from a specified category, alongside with some relevant information about the products	Catalog View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT a.Artigo, a.Descricao, am.PVP1 FROM Artigo as a INNER JOIN Familias ON a.Familia = Familias.Familia INNER JOIN ArtigoMoeda as am ON a.Artigo = am.Artigo WHERE Familias.Descricao =<categoryName>	{ "DataSet": { "Table": [ { "Artigo": "A003", "Descricao": "Auscultadores Bluetooth WH-CH400 G.CE7", "PVP1": 59.99 }, { "Artigo": "A026", "Descricao": "Marshall Major III Headphones", "PVP1": 64.99 }, { "Artigo": "A027", "Descricao": "Auscultadores Bluetooth JBL E55BT", "PVP1": 124.99 }, { "Artigo": "A028", "Descricao": "JBL AUSCULTADOR T 600 BTH NC BRANCO", "PVP1": 64.99 }, { "Artigo": "A029", "Descricao": "Apple Earpods", "PVP1": 129.99 } ] }, "Query": "System.Data.SqlClient.SqlCommand" }
create_client	When a user concludes his registration a new client must be created with the data provided	Registration View	<b>Route: POST</b> <IP>/WebApi/Base/Clientes/Atualiza  <b>Body:</b> { Cliente: <ID>, Nome: <NAME>, Morada: <ADDRESS>, Localidade: <CITY>, CodigoPostal:<ZIP>, LocalidadeCodigoPostal: <CITY>, NumContribuinte: <NIF>, CondPag: 2, Moeda: "EUR", Pais: "PT" }	N/A
get_client	Returns the client with the specified ID	Customer View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT Fac_Mor, Fac_Local, Fac_Cp,	{ "DataSet": { "Table": [ { "Fac_Mor": "Rua Beco da Ribeira

			NumContrib FROM Clientes WHERE Clientes.Cliente=<userID>	n°14", "Fac_Local": "Mirandela", "Fac_Cp": "5370-235", "NumContrib": "123456789" } ] }, "Query": "System.Data.SqlClient.SqlCommand" }
update_client	Allows the user to change his information in the system	Customer View	<b>Route: POST</b> <IP>/WebApi/Base/Clientes/Atualiza  <b>Body:</b> {  CodigoTabLog: "Cliente", ChaveLog: "Cliente", Cliente: <ID>, Nome: <NAME>, Morada: <ADDRESS>, Localidade: <CITY>, CodigoPostal:<ZIP>, LocalidadeCodigoPostal: <CITY>, NumContribuinte: <NIF>, CondPag: 2, Moeda: "EUR", Pais: "PT", EmModoEdicao: true }	N/A
get_client_orders	Returns all order the client has placed alongside with the status of the order.	Orders View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT CONVERT(VARCHAR(10),cd.Data,103), cd.DataCarga, cd.NomeFac, cd.Id, cd.TotalMerc, cd.TotalIva, cd.TotalDocumento,, cd.NumContribuinte, cd.MoradaEntrega, cd.LocalidadeEntrega, cd.CodPostalEntrega, cds.Estado FROM CabecDoc cd INNER JOIN CabecDocStatus cds ON cd.id = cds.IdCabecDoc WHERE cd.Entidade=<userID> AND cd.TipoDoc="ECL"	{ "DataSet": { "Table": [ { "Column1": "20/12/2018", "DataCarga": "20-12-2018", "NomeFac": "Daniel", "Id": "cdec0f7f-0434-11e9-bd65-080027d86509", "TotalMerc": 2826.78, "TotalIva": 650.16, "TotalDocumento": 3476.94, "NumContribuinte": "123456789", "MoradaEntrega": "Rua Beco da Ribeira nº20", "LocalidadeEntrega": "Mirandela", "CodPostalEntrega": "5370-235", "Estado": "P" } ] }, "Query": "System.Data.SqlClient.SqlCommand" }
get_order_products	Return all products, their respective quantities,	Orders View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT Id.Taxalva, Id.descricao,	{ "DataSet": { "Table": [ { "Taxalva": 23,

	unit price and total price from a specified order		Id.quantidade, Id.PrecUnit, Id.PrecoLiquido, Id.Taxalva, Id.TotalIva FROM LinhasDoc as Id WHERE Id.IdCabecDoc =<orderID>	<pre> "descricao": "Macbook Pro", "quantidade": 1, "PrecUnit": 1832.99, "PrecoLiquido": 1832.99, "Taxalva1": 23, "TotalIva1": 421.59 }, { "Taxalva": 23, "descricao": "Surface Laptop 13.5' Platina", "quantidade": 1, "PrecUnit": 993.79, "PrecoLiquido": 993.79, "Taxalva1": 23, "TotalIva1": 228.57 } ] }, "Query": "System.Data.SqlClient.SqlCommand" } </pre>
create_order	When a customer finishes a purchase a document with the specified fields must be created to save his order in the system	Shopping Cart View	<b>Route: POST</b> <IP>/WebApi/Vendas/Docs/CreateDocument/  <b>Body:</b> <pre> {   "Linhas": [     {       "Artigo": &lt;Item&gt;,       "Quantidade": &lt;Quantity&gt;     }   ],   "Tipodoc": "ECL",   "Entidade": &lt;ID&gt;,   "TipoEntidade": "C",   "ModoPag": &lt;PAYMENT&gt;,   "MoradaEntrega": &lt;ADDRESS&gt;,   "LocalidadeEntrega": &lt;CITY&gt;,   "CodPostalEntrega": &lt;ZIP&gt;,   "DataVenc": &lt;DATE&gt;, } </pre>	N/A
get_best_sellers	Return the top X of the best selling products, X must be specified by the Administrator	Administrator View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT TOP(4) Artigo, Descricao, PrecUnit, SUM(Quantidade) AS TotalQuantity FROM LinhasDoc GROUP BY Artigo, Descricao, PrecUnit ORDER BY SUM(Quantidade) DESC	<pre> {   "DataSet": {     "Table": [       {         "Artigo": "A001",         "Descricao": "Macbook Pro",         "PrecUnit": 1832.99,         "TotalQuantity": 5       },       {         "Artigo": "A023",         "Descricao": "MacBook Pro 15' Retina APPLE MJLQ2",         "PrecUnit": 2490,         "TotalQuantity": 2       },       {         "Artigo": "A014",         "Descricao": "Xiaomi Mi Mix 2 S 64GB", </pre>

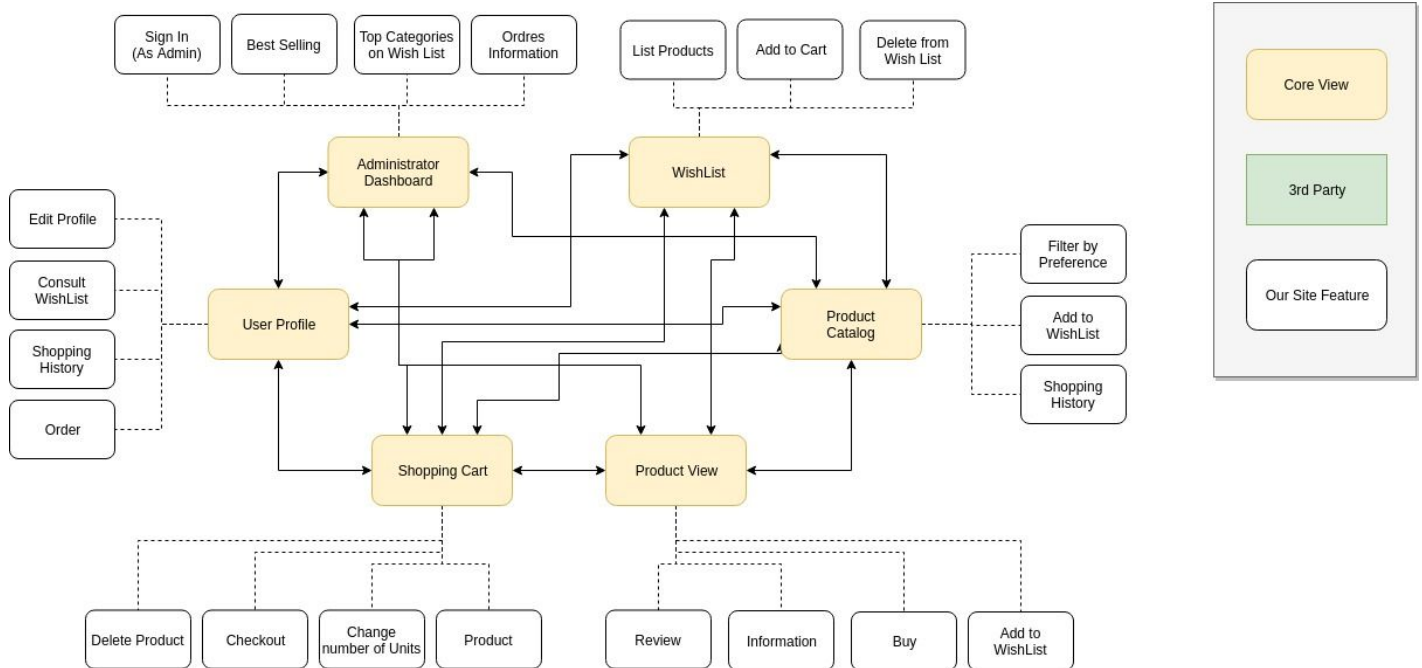
				<pre>         "PrecUnit": 599,         "TotalQuantity": 2       },       {         "Artigo": "A009",         "Descricao": "Iphone 8 Plus 256GB Dourado",         "PrecUnit": 1119.99,         "TotalQuantity": 2       }     ]   },   "Query": "System.Data.SqlClient.SqlCommand" } </pre>
get_top_category	Returns the most purchased category	Administrator View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT TOP(1) f.familia, f.descricao FROM Familias as f INNER JOIN Artigo as a ON f.familia=a.familia INNER JOIN LinhasDoc as ld ON ld.artigo=a.artigo GROUP BY f.familia,f.descricao ORDER BY SUM(ld.quantidade)	<pre> {   "DataSet": {     "Table": [       {         "familia": "F003",         "descricao": "Mobile"       }     ]   },   "Query": "System.Data.SqlClient.SqlCommand" } </pre>
get_transformed_orders	Returns all the transformed orders	Administrator View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT CONVERT(VARCHAR(10),cd.Data,103), cd.TotalMerc, cd.TotalIva, cd.TotalDocumento, cd.ModoPag, cd.NumContribuinte, cd.MoradaEntrega, cd.LocalidadeEntrega, cd.CodPostalEntrega, cds.Estado FROM CabecDoc cd INNER JOIN CabecDocStatus cds ON cd.id = cds.IdCabecDoc WHERE cds.Estado ="T"	<pre> {   "DataSet": {     "Table": [       {         "Column1": "20/12/2018",         "TotalMerc": 4264.98,         "TotalIva": 980.95,         "TotalDocumento": 5245.93,         "ModoPag": null,         "NumContribuinte": "252974670",         "MoradaEntrega": "Rua Beco da Ribeira nº20",         "LocalidadeEntrega": "Mirandela",         "CodPostalEntrega": "5370-235",         "Estado": "T"       },       {         "Column1": "20/12/2018",         "TotalMerc": 3609.99,         "TotalIva": 830.3,         "TotalDocumento": 4440.29,         "ModoPag": null,         "NumContribuinte": "252974670",         "MoradaEntrega": "Rua Beco da Ribeira nº20",         "LocalidadeEntrega": "Mirandela",         "CodPostalEntrega": "5370-235",         "Estado": "T"       }     ]   },   "Query": "System.Data.SqlClient.SqlCommand" } </pre>

get_peding_orders	Returns all pending orders	Administrator View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT CONVERT(VARCHAR(10),cd.Data,103), cd.NumDoc, cd.Entidade, cd.TotalMerc, cd.TotalIva, cd.TotalDocumento, cd.NumContribuinte, cd.MoradaEntrega, cd.LocalidadeEntrega, cd.CodPostalEntrega, cds.Estado FROM CabecDoc cd INNER JOIN CabecDocStatus cds ON cd.id = cds.IdCabecDoc WHERE cds.Estado ="P" AND cd.TipoDoc="ECL"	
manage_products	Return a list with all the products and their respective stock	Administrator View	<b>Route: GET</b> <IP>/WebApi/Administrador/Consulta  <b>Body:</b> SELECT a.Artigo, a.Descricao,aa.Armazem, SUM(aa.StkActual) FROM Artigo a INNER JOIN V_INV_ArtigoArmazem aa ON aa.Artigo = a.Artigo GROUP BY a.Artigo,a.Descricao,aa.Armazem	<pre>{   "DataSet": {     "Table": [       {         "Column1": "20/12/2018",         "NumDoc": 4,         "Entidade": "2",         "TotalMerc": 2826.78,         "TotalIva": 650.16,         "TotalDocumento": 3476.94,         "NumContribuinte": "123456789",         "MoradaEntrega": "Rua Beco da Ribeira nº20",         "LocalidadeEntrega": "Mirandela",         "CodPostalEntrega": "5370-235",         "Estado": "P"       }     ]   },   "Query": "System.Data.SqlClient.SqlCommand" }</pre>
create_stock_order	Place a new order to update the stock of a product	Administrator View	<b>Route: GET</b> <IP>/WebApi/Compras/Docs/CreateDocument  <b>Body:</b> <pre>{   "Linhas": [{"Artigo": &lt;ID&gt;, "Quantidade":&lt;QUANTITY&gt;}],   "Tipodoc": "ECF",   "Entidade": "F001",   "TipoEntidade": "F",   "CondPag": 2 }</pre>	N/A
create_item	Creates an item with the specified fields	Administrator View	<b>Route: POST</b> <IP>/Base/Artigos/Atualiza/  <b>Body:</b> <pre>{   "Artigo": &lt;ID&gt;,   Descricao: &lt;NAME&gt;,   Caracteristicas: "",   Observacoes: &lt;DESCRIPTION&gt;, }</pre>	N/A

			CodBarras: "", UnidadeBase: "UN", UnidadeVenda: "UN", UnidadeCompra: "UN", UnidadeEntrada: "UN", UnidadeSaida: "UN", Marca: <BRAND>, Familia: <CATEGORY>, Peso:<SCORE>, IVA: "23", MovStock: "S" }	
create_item_price	When a new item is create another route must be called in order to associate a price to that item	Administrator View	<b>Route: POST</b> <IP>/Base/ArtigosPreco/Atualiza/  <b>Body:</b> { "Artigo": <ID>, "Moeda": "EUR", "Unidade": <UN>, "Descricao": "", "PVP1": <PRICE> }	N/A
transform_doc	Documents created when a user finishes an order are of type "ECL" these must be transform in documents of type FA after the payment is validated	Administrator View	<b>Route: POST</b> <IP>/Vendas/Docs/TransformDocument/ECL/A/<docID>/000/true  <b>Body:</b> { "Tipodoc": "FA", "Serie": "A", "Entidade": <CLIENT>, "TipoEntidade": "C", }	true

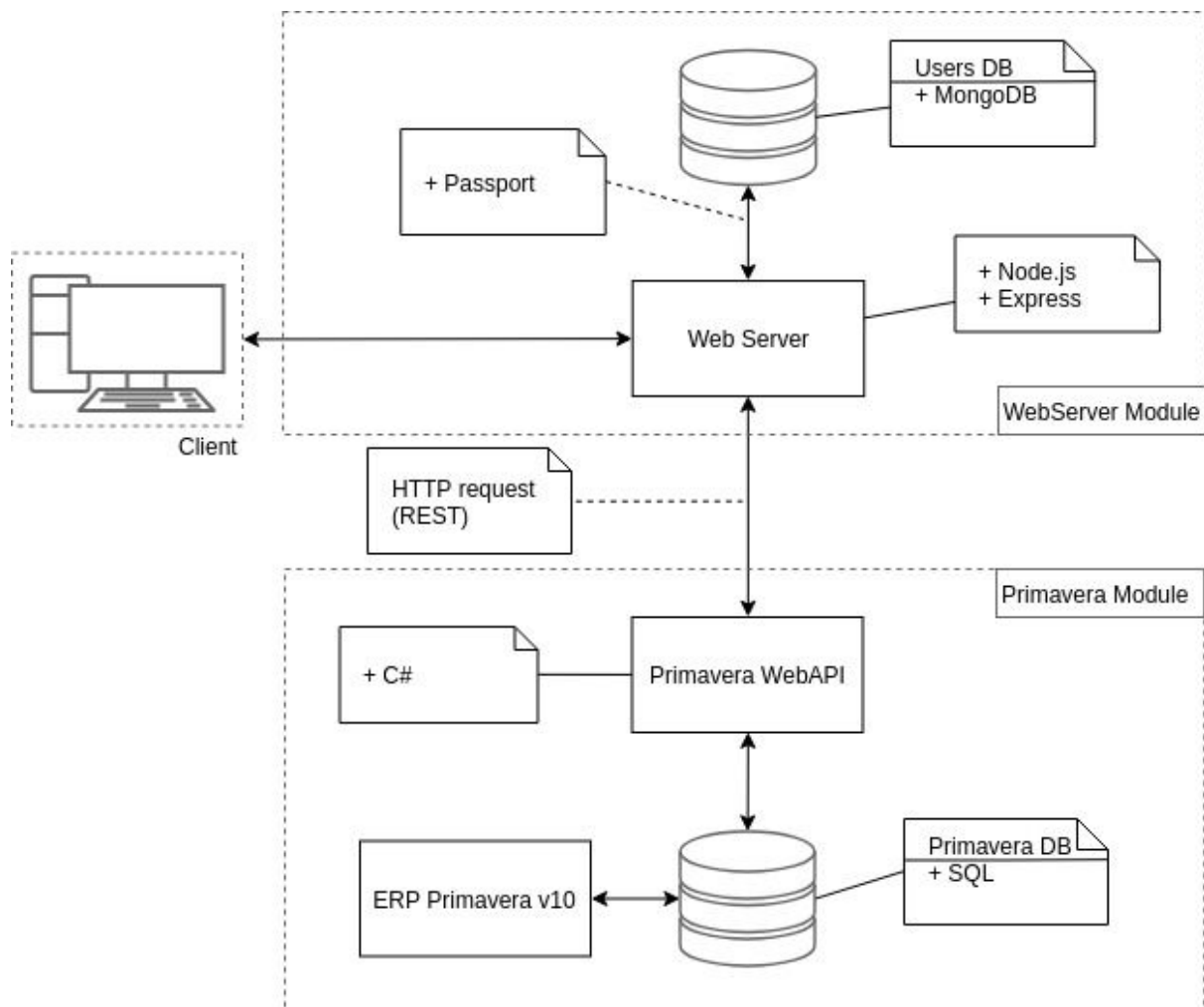
**NOTE:** A service to remove clients, products or any other has not been implemented since keeping this information in the database, even though they are not relevant to the app anymore, can be useful for statistical purposes.

# Paths





# System Architecture



## Project Specifications vs Delivered Project

As the project evolved we realized that some of the features we have specified in previous deliveries would require little or no interaction with ERP Primavera. Features like reviews, wishlist and item score although relevant in an online shop did not seem to add any interoperability with ERP Primavera. As such we decided to invest in more specific and elaborated “Administrator Dashboard” instead.

We made available to the Administrator of our site different sets of information about sales and products, such as “Top Category” and “Best Selling Products”, also the Administrator is able to easily manage users, products and orders.

Besides that, in our opinion online stores are all about users experience, so we tried to make our website as user friendly as possible. Making it 100% responsive, very interactive so the user is always aware of his interaction with the app and (again in our opinion) easy on the eye. Also to improve the user experience, and because there was no appropriate way to use Primavera to this meaning, the shopping cart is stored solely in cookies until the moment the user places an order this allows him to add items to the cart even without being authenticated and his choices to endure even if the browser is closed.

## Lessons Learned