

Universities of Burgos, León and
Valladolid

Master's degree

Business Intelligence and Big Data in Cyber-Secure Environments



Thesis of the Master's degree in
Business Intelligence and Big Data in
Cyber-Secure Environments

título del TFM

Presented by Adrián Riesco Valbuena
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Tutor: Alvar Arnáiz González

Universities of Burgos, León and Valladolid



Master's degree in Business Intelligence and Big Data in Cyber-Secure Environments

Mr. Alvar Arnáiz González, professor of the department named Computer Engineering, area named Computer Languages and Systems.

Exposes:

That the student Mr. Adrián Riesco Valbuena, with DNI 71462231N, has completed the Thesis of the Master in Business Intelligence and Big Data in Cyber-Secure Environments titled NOMBRE TFM.

And that thesis has been carried out by the student under the direction of the undersigned, by virtue of which its presentation and defense is authorized.

In Burgos, February 6, 2022

Approval of the Tutor:

Mr. Alvar Arnáiz González

Resumen

En este primer apartado se hace una **breve** presentación del tema que se aborda en el proyecto.

Descriptores

Palabras separadas por comas que identifiquen el contenido del proyecto Ej: servidor web, buscador de vuelos, android ...

Abstract

A **brief** presentation of the topic addressed in the project.

Keywords

keywords separated by commas.

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Memory

Introduction

Description of the work, the structure of the memory and the rest of the material delivered.

Project objectives

This section explains precisely and concisely what are the objectives pursued with the completion of the project. It is possible to distinguish between the objectives set by the requirements of the software to be built and the technical objectives that it poses when putting the project into practice.

Theoretical concepts

Theoretical concepts.

Theoretical concepts of L^AT_EX¹.

3.1 Sections

Section.

Subsection

Subsection.

Subsubsection

Subsubsection

3.2 References

Use of cite [?], [?].

3.3 Images

Images.

¹Example of footnote



Figure 3.1: Image caption

3.4 Lists

Three possibilities:

Itemize.

- First item.
- Second item.

Enumerate.

1. First item.
2. Second item.

Description.

First item. Info.

Second item. Info.

3.5 Tables

TablaSmall.

Tools	App	AngularJS	API REST	BD	Memoria
HTML5		X			
CSS3		X			
BOOTSTRAP		X			
JavaScript		X			
AngularJS		X			
Bower		X			
PHP			X		
Karma + Jasmine		X			
Slim framework			X		
Idiorm			X		
Composer			X		
JSON		X	X		
PhpStorm		X	X		
MySQL				X	
PhpMyAdmin				X	
Git + BitBucket		X	X	X	X
MikTeX					X
TeXMaker					X
Astah					X
Balsamiq Mockups		X			
VersionOne		X	X	X	X

Table 3.1: Tools and technologies used

Techniques and tools

This part of the report aims to present the methodological techniques and development tools that have been used to carry out the project. If different alternatives of methodologies, tools, libraries have been studied, a summary of the most outstanding aspects of each alternative can be made, including comparisons between the different options and a justification of the choices made. It is not intended that this section become a chapter of a book dedicated to each of the alternatives, but to comment on the most outstanding aspects of each option, with a brief review of the essential foundations and bibliographical references so that the reader can broaden their knowledge. knowledge on the subject.

Relevant aspects of the project

This section aims to collect the most interesting aspects of the development of the project, commented by its authors. It must include from the exposition of the life cycle used, to the most relevant details of the analysis, design and implementation phases. It is sought that it is not a mere operation of copying and pasting diagrams and extracts from the source code, but that the solution paths that have been taken are really justified, especially those that are not trivial. It may be the most appropriate place to document the most interesting aspects of the design and implementation, with a greater emphasis on aspects such as the type of architecture chosen, the indexes of the database tables, normalization and denormalization, distribution in files³, business rules within databases (EDVHV GH GDWRV DFWLYDV), development aspects related to the WWW... This section must become the summary of the practical experience of the project, and by itself justifies that the report becomes a useful document, a reference source for authors, tutors and future students.

Related works

This section would be similar to a state of the art of a thesis or dissertation. In a final master's thesis, its presence does not seem so obligatory, although it can be left to the tutor's judgment to include a small commented summary of the works and projects already carried out in the field of the current project.

Conclusions and future work lines

Every project must include the conclusions derived from its development. These can be of a different nature, depending on the type of project, but normally there will be a set of conclusions related to the results of the project and a set of technical conclusions. In addition, it is very useful to make a critical report indicating how the project can be improved, or how work can continue along the lines of the completed project.

Appendix

Appendix A

Project Plan

A.1 Introduction

The project planning was decided in an initial meeting between the author and its tutor. It was based in an Agile methodology, with two-weeks *sprints* and meetings between the author and his tutor conditioned to their availability.

The project repository was stored in GitHub under the url <https://github.com/AdrianRiesco/Data-Engineer-project>. Each *sprint* was created as an *milestone*, with the *issues* contained there being the tasks assigned. The *issues* were created to reflect tasks at most eight hours, allowing the author segregate his work and manage each *sprint* better. The author closed an *issue* when the task was finished and a *milestone* when the *sprint* was over, regardless of its state. If a task remained in an open state when a *sprint* reached its planned end date, the *issue* was transfered to the next *milestone*.

A meeting was held by the author and his tutor at the end of each sprint. During these meetings, both of them reviewed the state and development of the tasks of the corresponding sprint and planned the tasks of the next sprint. All the *milestones* and *issues* can be consulted in the project repository.

A.2 Temporary planning

The sprints carried out for the development of the project are described below with they correspondant dates:

Initial meeting. Held on Monday January 31st, it was the start point for the first sprint. During this meeting, the objective of the project, the data source and the tools to be used were validated by both the author and his tutor. The author previously made a research and came with an idea and the tutor exposed his point of view to create the final goal.

Sprint 1 . Weeks of January 31st and February 7th. This Sprint had the following tasks assigned:

- Configure the work environment.
- Configure the project memory template.
- Write a draft of the objectives and main goals.
- Write a brief description of the tools selected.
- Write a brief explanation of the selected tools and the work methodology.
- Inspect Twitter and Spotify APIs.

The end-of-sprint meeting was held on M— February –th.

Sprint 2 . Weeks of February 14th and February 21st. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— February –th.

Sprint 3 . Weeks of February 28th and March 7th. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— March –th.

Sprint 4 . Weeks of March 14th and March 21st. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— March –th.

Sprint 5 . Weeks of March 28th and April 4th. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— April –th.

Sprint 6 . Weeks of April 11th and April 18th. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— April –th.

Sprint 7 . Weeks of April 25th and May 2nd. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— May –th.

Sprint 8 . Weeks of May 9th and May 16th. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— May –th.

Sprint 9 . Weeks of May 23rd and May 30th. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— June –th.

Sprint 10 . Weeks of June 6th and May 13th. This Sprint had the following tasks assigned:

- Task1.

The end-of-sprint meeting was held on M— June –th.

A.3 Feasibility study

The architecture of the project and the use case were designed to ensure its feasibility.

Economic feasibility

The project is based on open-source platforms to ensure its economic and legal feasibility. The APIs where the information was gathered are free to use if the developer keeps his queries under specific limit rates.

Legal feasibility

The project is based on open-source platforms to ensure its economic and legal feasibility.

Appendix B

Requirements

- B.1 Introduction**
- B.2 General objectives**
- B.3 Catalog of requirements**
- B.4 Requirements specification**

Appendix C

Design specification

C.1 Introduction

C.2 Data design

C.3 Procedural design

C.4 Architectural design

Appendix D

Programming technical documentation

- D.1 Introduction
- D.2 Directory structure
- D.3 Programmer's guide
- D.4 Compilation, installation and
execution of the project
- D.5 System tests

Appendix E

User documentation

E.1 Introduction

E.2 User requirements

E.3 Installation

E.4 User's manual