



UNIVERSIDAD DE BURGOS  
ESCUELA POLITÉCNICA SUPERIOR  
Grado en Ingeniería en Informática



**TFG del Grado en Ingeniería Informática**

**título del TFG  
Documentación Técnica**



Presentado por nombre alumno  
en Universidad de Burgos — 16 de junio de 2017  
Tutor: nombre tutor

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# Índice de figuras

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# Índice de tablas

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## *Apéndice A*

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# Plan de Proyecto Software

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### **A.1. Introducción**

La planificación es un punto importante en cualquier proyecto. Estimar el trabajo, el tiempo y el dinero que va a suponer la realización del proyecto aunque vaya a cambiar más tarde es interesante para saber si puede haber posibilidades de que sea viable. Para ello, debemos analizar cuidadosamente los componentes del proyecto. Con este análisis pretendemos conocer los requisitos del proyecto y pretendemos que mediante modificaciones siga sirviendo en un futuro.

### **A.2. Planificación temporal**

En un principio se planteo seguir una metodología ágil, esta sería scrum ya que existía experiencia anterior. Por supuesto no se pudo usar completamente ya que no se tenía un equipo, no se hicieron reuniones diarias...

Se empezó a usar ZenHub como tablero kanban donde se situarían las tareas con sus costes.

### **A.3. Estudio de viabilidad**

En este apartado se estudiarán los costes en los que se incurren al desarrollar este proyecto.

#### **Viabilidad económica**

El proyecto incurre en distintos tipos de costes



Tabla A.1: Costes de personal

Concepto	Coste
Salario neto	1000
Retención IRPF (19 %)	360.53
Seguridad social (28,30 %)	537.00
Salario bruto	1897.53
4 meses tiempo parcial(3/4)	5692.59

Tabla A.2: Costes de material al mes

Concepto	Coste
Ordenador portátil	25
Alquiler de oficina	99
1 mes	124
4 meses	496

### Costes de personal

El proyecto se lleva a cabo por un desarrollador junior empleado a tiempo parcial (30h/semana) durante cuatro meses. Se considera el siguiente salario:

### Costes de material: hardware y software

Como material podemos considerar lo mínimo necesario para llevar un proyecto así:

Un único coste puntual (ordenador portátil) que aproximamos en 600 y en la tabla se pondrá su coste amortizado contando con una amortización a 4 años. Se ha comprobado que internet está incluido en el alquiler de la oficina.

### Costes totales

El sumatorio de todos los costes es de 6188,59. Podríamos recortar más en ciertos puntos pero debido a que no se va a llevar a cabo como esta planteado aquí, esto solo es una aproximación del coste de oportunidad.

### Beneficios

Si nuestro interés fuese vender el proyecto este no sería el proyecto que venderíamos, tendríamos que añadir medidas de tiempo computacional en cada operación.

Una vez consigamos calcular tiempos de computación podemos restringir a cada usuario una cantidad de tiempo. De esta manera podemos crear planes

para cada usuario, podemos plantearnos hacer un plan gratuito y varios planes de pago según cantidad de tiempo computacional que se le permita usar al cliente.

### Viabilidad legal

<https://spdx.org/licenses/LGPL-2.1.html>

La licencia necesaria para nuestro proyecto debido a las dependencias que tiene tendrá que ser compatible con aquellas de las bibliotecas que hemos usado, la licencia más restrictiva que hemos usado es la de paramiko siendo LGPL (2.1 y 3.0) , esta licencia esta pensada para librerías e incluye el siguiente párrafo:

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*Apéndice B*

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## **Especificación de Requisitos**

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- B.1. Introducción
- B.2. Objetivos generales
- B.3. Catalogo de requisitos
- B.4. Especificación de requisitos

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## **Especificación de diseño**

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- C.1. Introducción
- C.2. Diseño de datos
- C.3. Diseño procedimental
- C.4. Diseño arquitectónico

## *Apéndice D*

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# Documentación técnica de programación

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### D.1. Introducción

El proyecto al estar descompuesto en microservicios tiene varias partes bien diferenciadas. Esto se refleja en todas las partes del proyecto.

### D.2. Estructura de directorios

La estructura de directorios depende del proyecto, en el proyecto web la estructura es:

- alembic: carpeta autogenerada por alembic, control de versiones de la base de datos.
- babel: carpeta que guarda las traducciones generadas por babel.
- config: carpeta con los archivos de configuración, algunos son fuentes en python.
- docs: carpeta donde se guarda lo necesario para ejecutar sphinx (generación de documentacion incode).
- report: carpeta donde reside la documentación out of code.
- tests: tests para la aplicación.
- WhatAClass: carpeta donde se mantienen la mayoría de los fuentes, estos fuentes sirven para contener todas las partes del proyecto, algunos solo direccionan a las carpetas donde están los fuentes .

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- WhatAClass/translations: carpeta para las traducciones ya compiladas para no tener que incluirlo en cada ejecución o despliegue.
  - WhatAClass/static: para tener archivos que se pueden servir independientemente de manera estática.
  - WhatAClass/templates: plantillas a ser interpretadas con jinja2.
  - WhatAClass/\*\* : el resto de carpetas se usan para guardar código de una manera más organizada que simplemente no tener carpetas.
  - El resto de archivos que se extienden a partir de la raíz del microservicio son para control de versiones, integración continua, despliegue, instalación, tests...
- 
- \* .coveragerc: recubrimiento de los test.
  - \* .gitignore: control de versiones.
  - \* .travis.yml: integración continua.
  - \* Dockerfile: docker y contenerización.
  - \* Procfile: despliegue en heroku.
  - \* README.md: documentación.
  - \* babel.cfg: configuración de la traducción.
  - \* create\_db.py: script para crear la base de datos posiblemente sea eliminado.
  - \* docker-compose.yml: docker compose para despliegue con la base de datos directamente.
  - \* requirements-prod.txt: para instalación.
  - \* requirements.txt: para instalación.
  - \* run.py: ejecución con el servidor que proporciona flask, solo para debug, no usar en producción.
  - \* runtime.txt: heroku, especificación de la versión.
  - \* setup.cfg: instalación con pip, más automática y transparente al usuario.
  - \* setup.py: instalación con pip, más automática y transparente al usuario.
  - \* start.py: script para generar la app, no genera base de datos.

- \* test.py: script para testear la app.
- \* uwsgi.ini: configuración para que uwsgi conozca donde esta el script de ejecución en producción.
- \* wsgi.py: script que genera la aplicación y la base de datos, esta preparado para ser llamado por uwsgi en producción.

### D.3. Manual del programador

Se recomienda usar un IDE aunque no es necesario. Con el script run.py podemos ejecutar la aplicación para debug.

Para añadir cosas a la página web necesitaremos de conocimientos de flask o de un framework web similar, Spring (Java) es similar a como funciona flask, aunque como cabe esperar tiene diferencias considerables.

Tras conocer flask debemos conocer sus blueprints. Estas son una herramienta que principalmente nos deja descomponer el código en varios apartados permitiendo mantener distintas partes de la aplicación por distintas personas.

Para añadir la blueprint a la aplicación nos debemos dirigir a WhatA-Class/app.py ya que es el archivo donde esta la factoría de la aplicación. Ya hay ejemplos codificados de esto en app.py y solo tenemos que verlos y los lugares de donde hemos importado esas blueprints para saber cómo seguir desarrollando sistemas similares.

### D.4. Compilación, instalación y ejecución del proyecto

Se recomienda usar un gestor de entornos virtuales como venv, pyenv, conda...

Para este ejemplo usaremos el recomendado por la documentación oficial de python venv: Para crearlo: `python3 -m venv ./venv`

Para activarlo: `source venv/bin/activate`

Para desactivarlo `deactivate`

Los pasos para instalar el servicio web son:

- `sudo apt install git python3-pip`
- `git clone https://github.com/Jazriel/WhatAClass.git`
- `cd WhatAClass`

- `sudo pip3 install -r requirements.txt`

La instalación se puede hacer desde los fuentes con `'sudo pip3 install -r requirements.txt'` o con `'sudo pip3 install --editable .'`. Esto usa `requirements.txt` o `setup.py` para instalar las dependencias, ahora mismo se favorece la instalación con el primer comando. Al ser python un lenguaje interpretado no necesitamos compilarlo manualmente, se compilará JIT (just in time).

Para ejecutar en desarrollo lo mejor sería usar el script `run.py` (script específico para desarrollo, no se puede usar en producción), aunque se puede usar un script listo para producción no se recomienda ya que los errores son menos descriptivos y mucho más difíciles de solventar.

Para desplegar esta preparado para ser desplegado con docker cuya instalación se puede encontrar en el siguiente enlace: <https://docs.docker.com/engine/installation/linux/ubuntu/install-using-the-repository>

Se puede ejecutar con docker pero se recomienda usar docker-compose:

`user@machine: /folder$ docker-compose build & & docker-compose up`

## D.5. Pruebas del sistema

Las pruebas se pueden ejecutar con `test.py` que lanza los tests de la carpeta `tests/`. si queremos ver el recubrimiento de el código podemos usar una herramienta como coverage y ejecutar `test.py` a través de esa herramienta.



*Apéndice E*

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## **Documentación de usuario**

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- E.1. Introducción**
- E.2. Requisitos de usuarios**
- E.3. Instalación**
- E.4. Manual del usuario**

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