



Nutr.io - Multi-platform application for diabetics' nutritional choices

Progress Report

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Abstract

The idea that every field of study can be digitalized in order to ease monotonous tasks is continuously growing in the modern world. Our project aims to tackle the field of Type 1 diabetes, given its growing prevalence in the world.

One of those monotonous tasks is the count and measurement of carbohydrates in meals used to administer the correspondent amount of insulin, along with their blood levels, to maintain a healthy lifestyle. A task that heavily relies on having access to food databases and realize of how many portions a meal has - usually by using a digital balance or doing estimations.

Eating in restaurants is the perfect example that showcases a gap in this field, that our project, Nutr.io, aims to fill. Most nutritional applications do not provide data for restaurants' meals, such as MyFitnessPal, nor does the user bring his digital balance from home - resulting in a faulty carbohydrate count and therefore the administration of an incorrect insulin dose.

The main goal of this project is to design a system that offers a way to facilitate difficult carbohydrate measurement situations, like in restaurants. To that end, a system that stores meals' nutritional information will be developed, where users can use and calibrate its data with their feedback.

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Chapter 1

Introduction

This document is intended to give an update on the project's progress made to this date.

Its main goal is to report that the project is progressing according to the initial plan, previously stated in the project's proposal.

The report will also state the issues encountered during this time period, mentioning the decisions the group made to solve them. This might also include changes in the accorded initial plan, that the group found relevant for the project's progress efficiency.

The diagrams and schemas developed for this project are shown when approaching the respective topic, however there is an appendix where is disposed additional information about the project, having references pointing to it when necessary.

Chapter 2

Development

2.1 Project's roadmap

According to the proposed plan, the group managed to fulfill almost all the objectives that were planned to be accomplished by this time - a relational database, a working HTTP server and a prototype Android application that can make requests to the previously stated server and use its information to display lists and detailed views.

However, as it will be detailed in the next section, the group faced some issues that caused slight drawbacks, such as the relational database conception, which had to be redesigned multiple times due to the project's requirements.

In this report's appendix there are disposed two project schedules: the initial one, also present in the project's proposal, and the actual one, which has the actual progress made to this date with the corrects starting and ending dates of each concluded milestone.

2.2 Issues encountered and project's updates

This section describes the issues found and the decisions made to overcome them, during the first project modules' development.

2.2.1 Relational database

The group had to redesign the database's conceptual model and relational model multiple times. One of the main issues that supported the main redesign was that the database only supported submissions from the users, while it had to support submissions both from users and APIs.

The other redesigns were related to the database normalization: it was normalized until the third normal form and had to be renormalized one more time because of the mentioned main redesign.

Because of this, the group invested a considerable amount of time on the database's conception, which was not considered in the initial plan. This invested time ended up colliding partially with other time periods that were reserved for other modules.

2.2.2 HTTP server

As mentioned in the project's proposal risks, the HTTP server is very similar to the DAW's project, which is an optional course inside the LEIC programme. Thus some improvements were made and errors were fixed because of the lectioned classes and the first project's delivery in DAW, which helped the group complete the tasks implied by the server's development.

However the server is lacking some functionalities as a result of the time invested in database conception, where the HTTP server depends strongly, causing some drawback to its development.

2.2.3 Android application

As a result of the time invested developing the database and the strong bond between the mobile application and the HTTP server and its completion, the Android app suffered a slight drawback, where only the essential fragments and requests work.

Although it was initially planned that the mobile application was just a prototype by this date, as it is now, the group could not implement more planned features because of the time invested in the other modules.

2.3 Group decisions

Given the previous issues, the group has the conditions to comply with the project's initial plan, with some minor changes.

As stated in the last period of the Android application's subsection, the group strongly agrees that the HTTP server has to be finished as soon as possible, to provide stability to the onward modules and their implementations, being considered a core module in this project.

Subsequently the group will have to invest a few more days in the server's development in order to fulfill the project's requirements.

Alongside with these fulfillments, the group will proceed to add more features to the mobile application, while starting the web application's development, which is compatible with the project's initial plan.

Chapter 3

Results

This chapter shows what has been achieved and developed to this date.

As previously written in the project's roadmap, this project has already a working relational database and a HTTP server, developed with postgresSQL and with kotlin and spring mvc, respectively. The group also managed to achieve, by this date as planned, its first working platform client - the android mobile application, developed with kotlin. This last one, it is still a prototype, so it lacks some features that will be completed during the next weeks.

3.1 Relational database

3.2 HTTP server

3.3 Android application

Chapter 4

Appendix

This section has disposed additional information of the project, such as project's schedules and other references mentioned in this report.

Figure 4.1: Project's initial plan with accorded in the project's proposal

