Nutri-Fitness Tracker Web Application

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Abstract

There are several health programs that intend to help people to drop weight in a natural manner. Novovida Health & Fitness is such a program, which promotes a better eating habit and physical activities in order to stimulate weight loss.

Nutri-Fitness Tracker is a web-application solution, that enables these organizations with a system that keeps track of their members improvements. Nutri-Fitness is a responsive web-application with an easy GUI that provides its members with a graphical representation of their improvements over time.

Problem

The problem is that many of these organizations lack the technology, or an information system, that will enable them to keep track of each user's progress within the program. Currently, many of these organizations keep track of their members improvements by using messy excel spreadsheets or even in a more oldie fashion way; paper and pencil.

Requirements

The Nutri-Fitness Tracker web application has the following requirements:

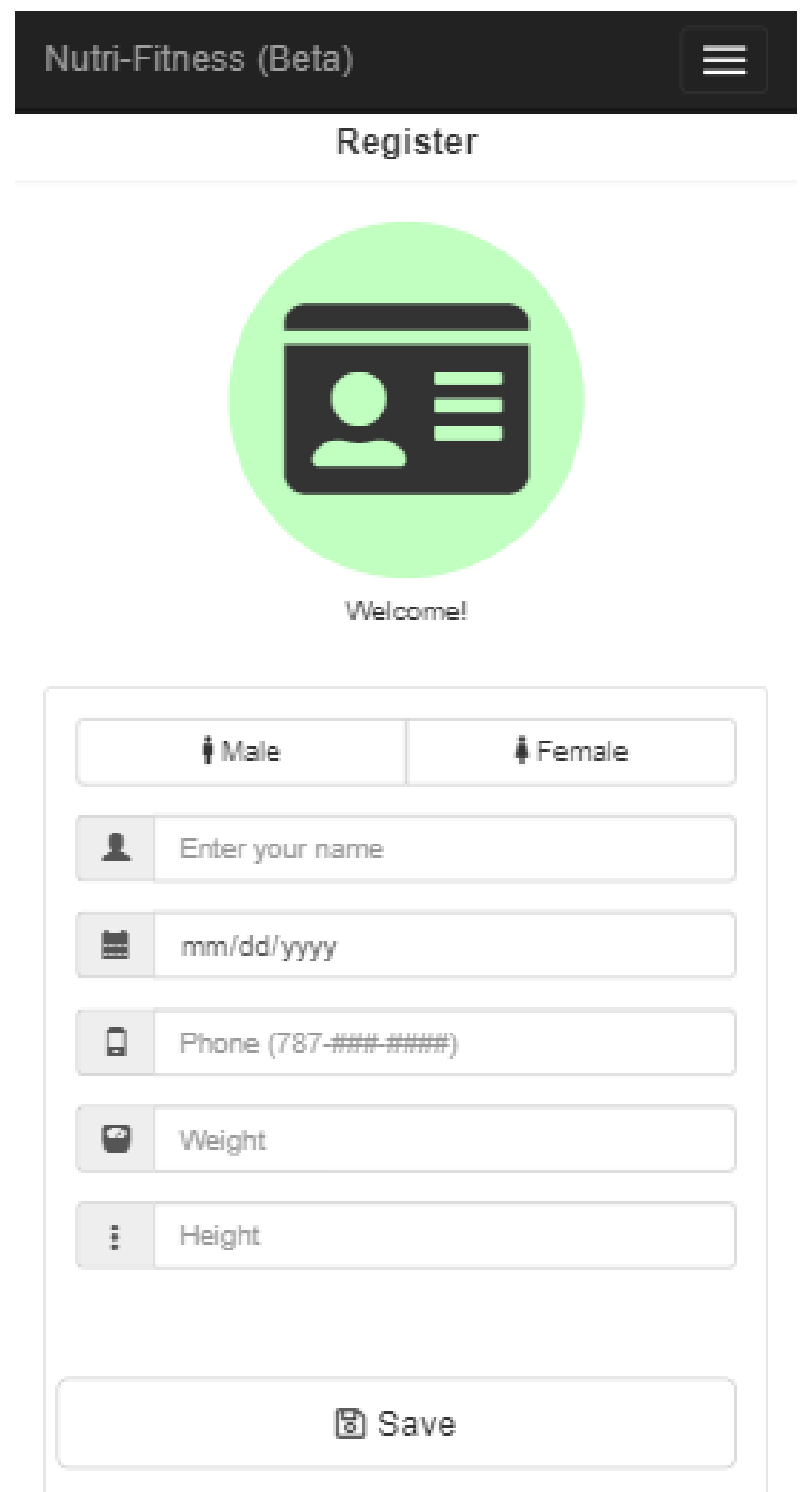
- Users should be able to authenticate using Google's sign-in API; with OAuth 2.0 protocol
- The system should store all information in a relational database
- The system should be role based; the application administrators should have access to specific content that the end-user shouldn't
- The system should calculate a "Health Overall" percentage
- The system should keep track of the user's physical improvements
- The system will provide the administrator with a section for recording the end-user's body measurements
- The system should provide a graphical representation of the end-user's improvements
- The system's Front-End should be "mobile first" design oriented

Google Sign-In

Google Sign-In is a secure authentication system that reduces the burden of login for users, by enabling them to sign in with their Google Account—the same account they already use with Gmail, Play, and other Google services.

Web Application Development

- **Database**: For the database, SQL Express was used in order to store the required information of the web application. SQL Express is a free version of Microsoft's primary relational database management system (RDBMS) – the SQL Server.
- **Tables:** In the first phase of the development process, an analysis was made in order to determine the required information that would be stored in the database. With this information on hand, a series of relational tables were created
- **Stored Procedures:** Once the tables were created, the next step was to create a series of stored procedures that will interact with the tables. Basically, a CRUD functionality was implemented for each table. CRUD stands for Create, Read, Update and Delete.
- **.Net Core Web API:** For the application to interact with the database, a middle component was needed. There's were the Web API comes into play. A RESTful API is an application program interface (API) that uses HTTP requests to GET, PUT, POST and DELETE data.
- **Front-End & Back-End:** For the web application design pattern, I decided to implement ASP.NET MVC. MVC stands for Model-View-Controller Pattern. MVC is a design pattern used to decouple user-interface (view), data (model), and application logic (controller). This pattern helps to achieve separation of concerns. Using the MVC pattern for websites, requests are routed to a Controller which is responsible for working with the Model to perform actions and/or retrieve data.



Nutri-Fitness (Beta)

Register

Welcome!

Male | Female

Enter your name

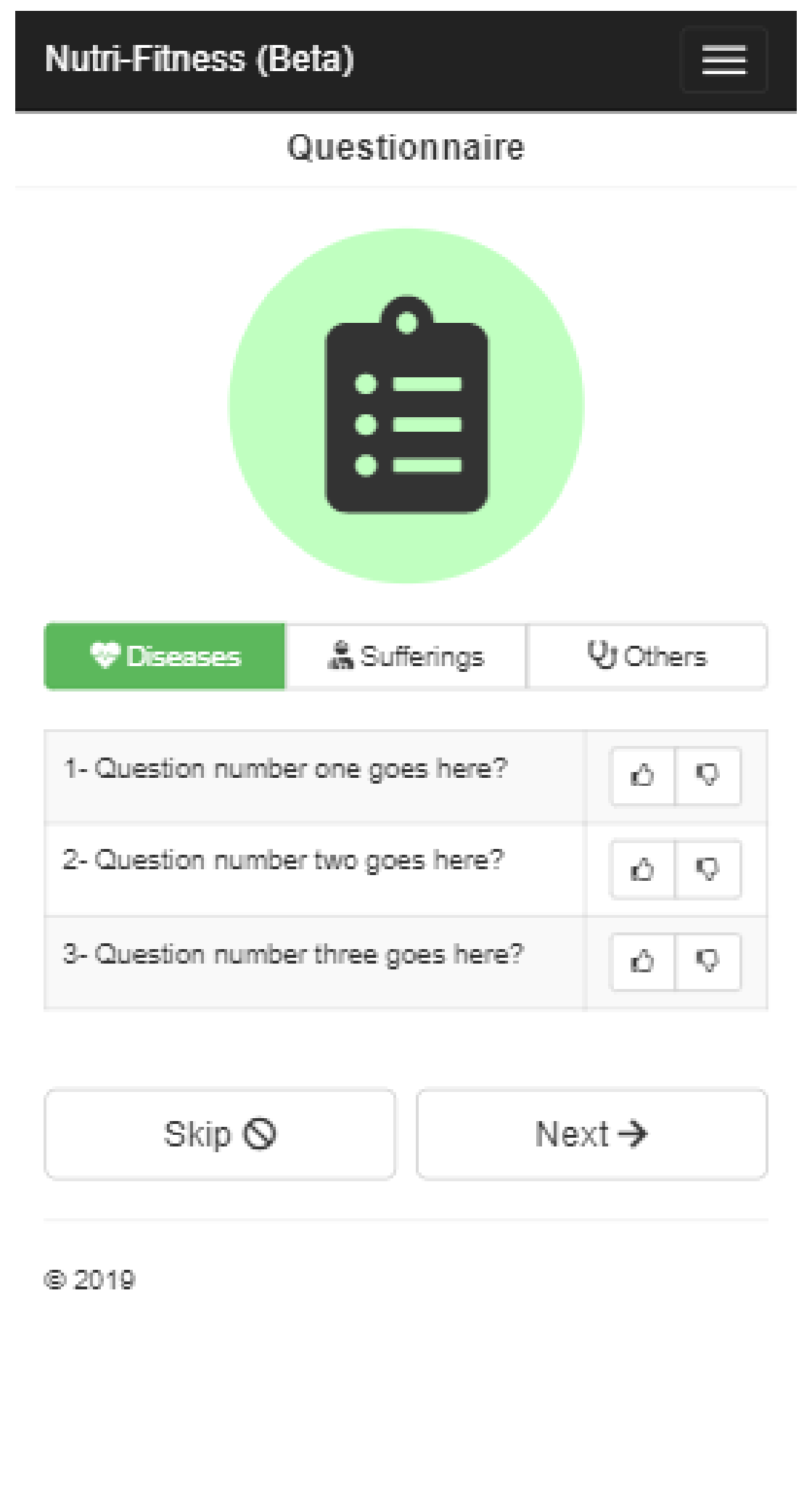
mm/dd/yyyy

Phone (787-###-####)

Weight

Height

Save



Nutri-Fitness (Beta)

Questionnaire

Diseases | Sufferings | Others

1- Question number one goes here?

2- Question number two goes here?

3- Question number three goes here?

Skip | Next →

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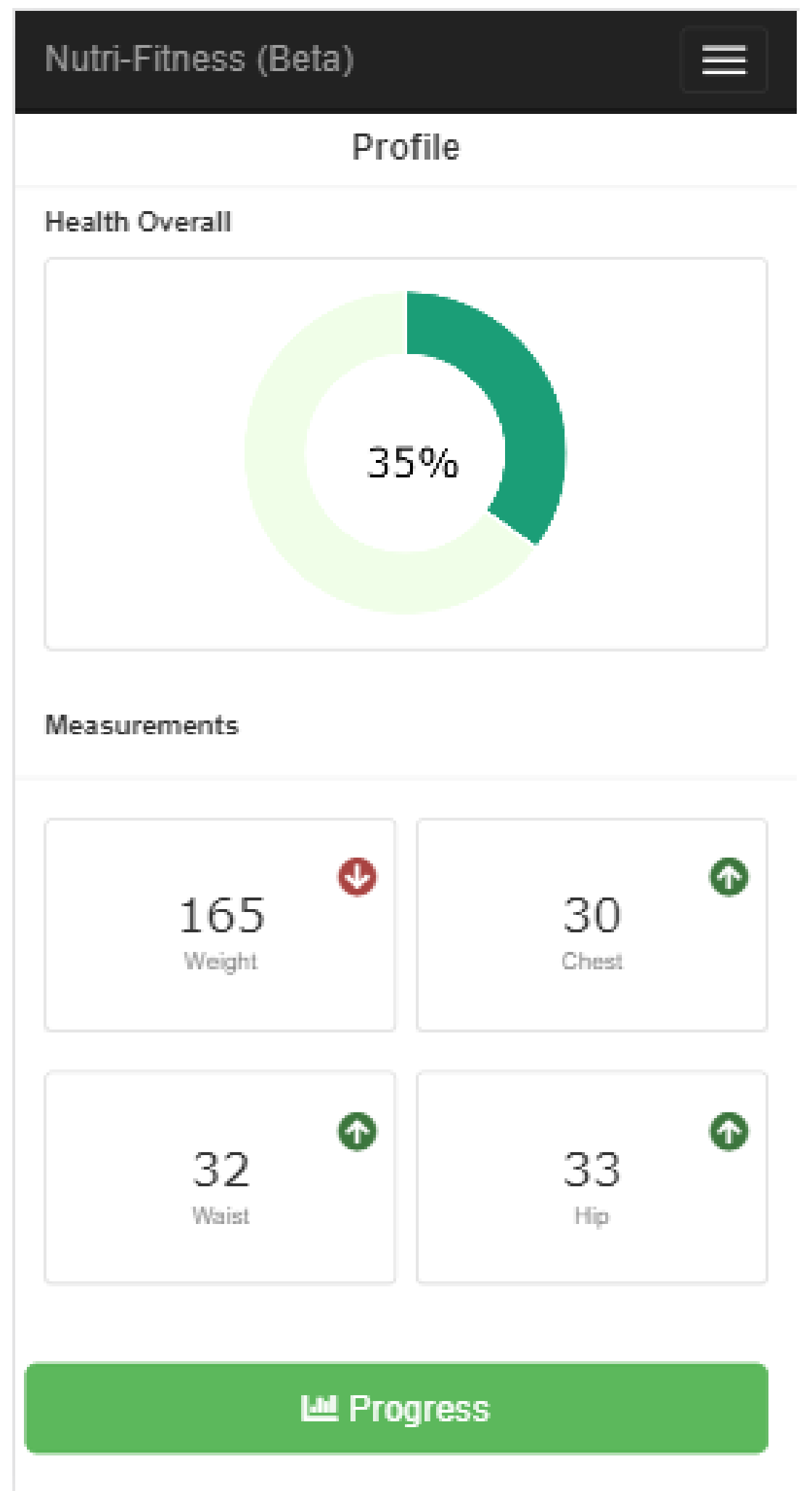


Nutri-Fitness (Beta)

Profile

Health Overall

35%

Measurements

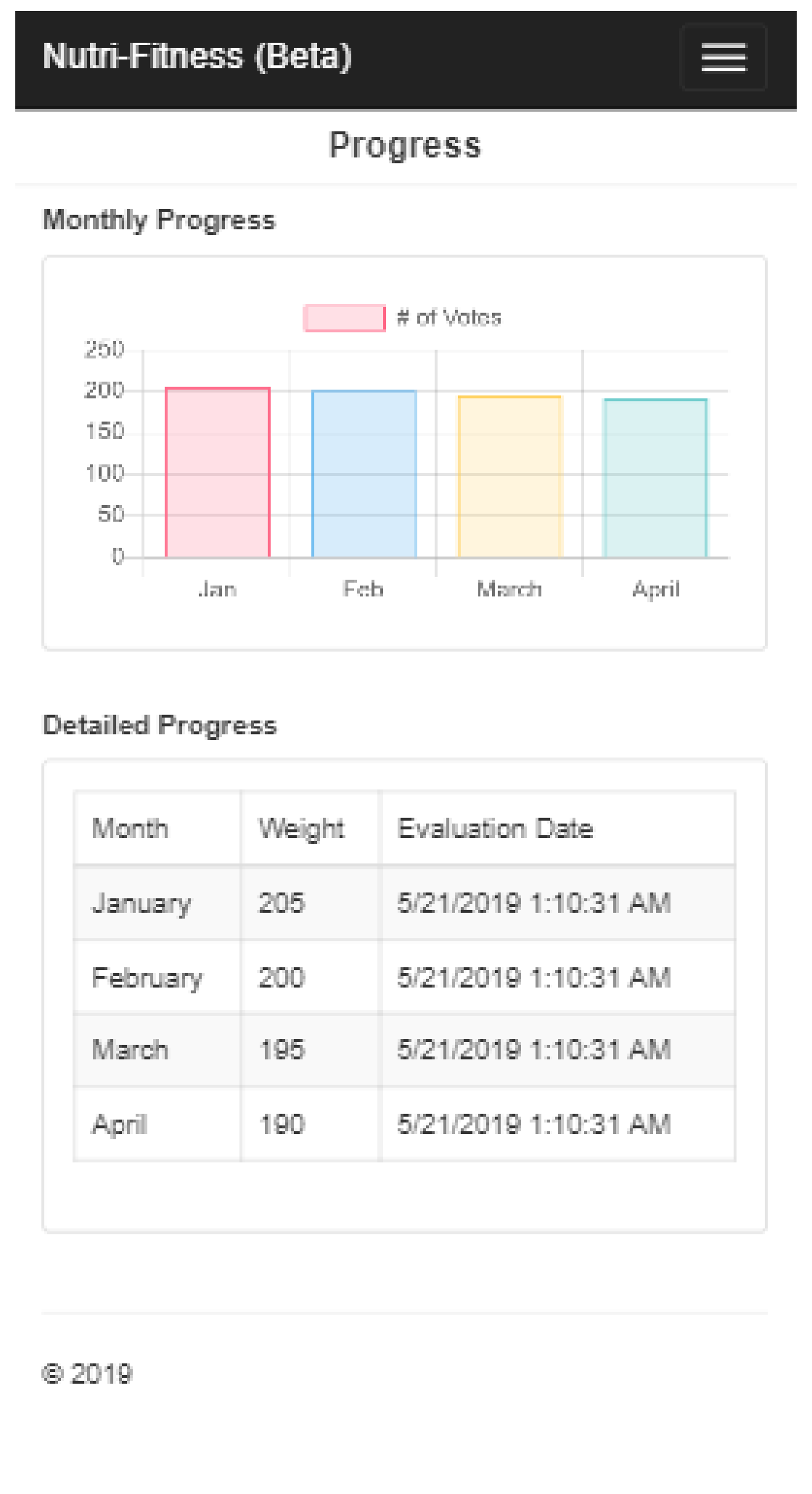
165 Weight

30 Chest

32 Waist

33 Hip

Progress



Nutri-Fitness (Beta)

Progress

Monthly Progress

Detailed Progress

Month	Weight	Evaluation Date
January	205	5/21/2019 1:10:31 AM
February	200	5/21/2019 1:10:31 AM
March	195	5/21/2019 1:10:31 AM
April	190	5/21/2019 1:10:31 AM

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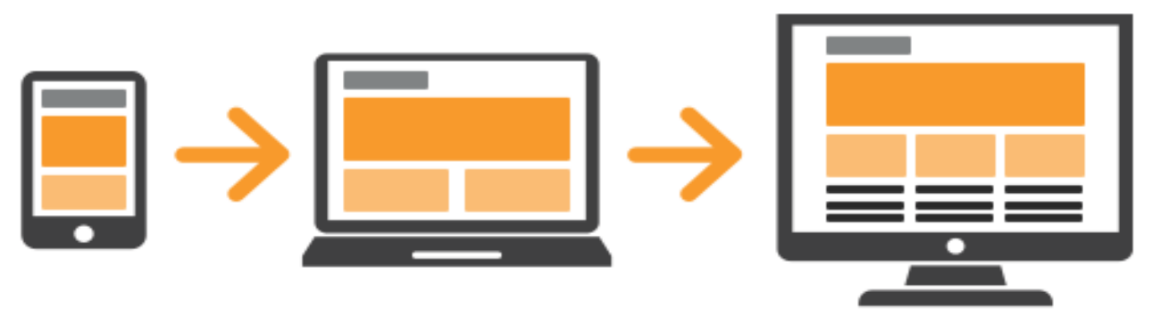
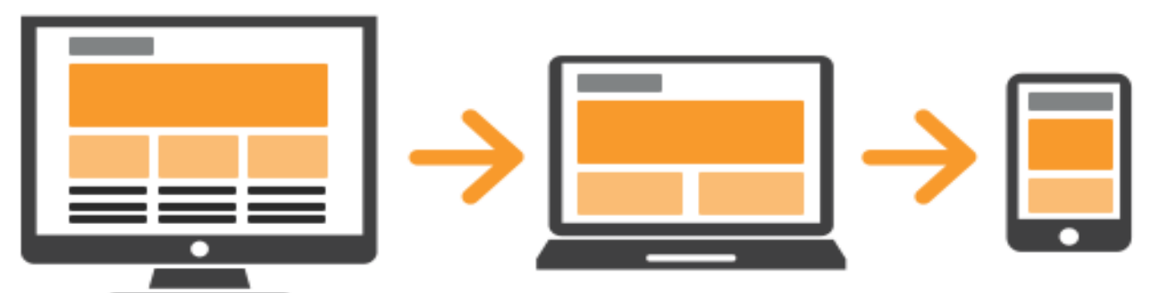
Mobile First



Mobile-First Design

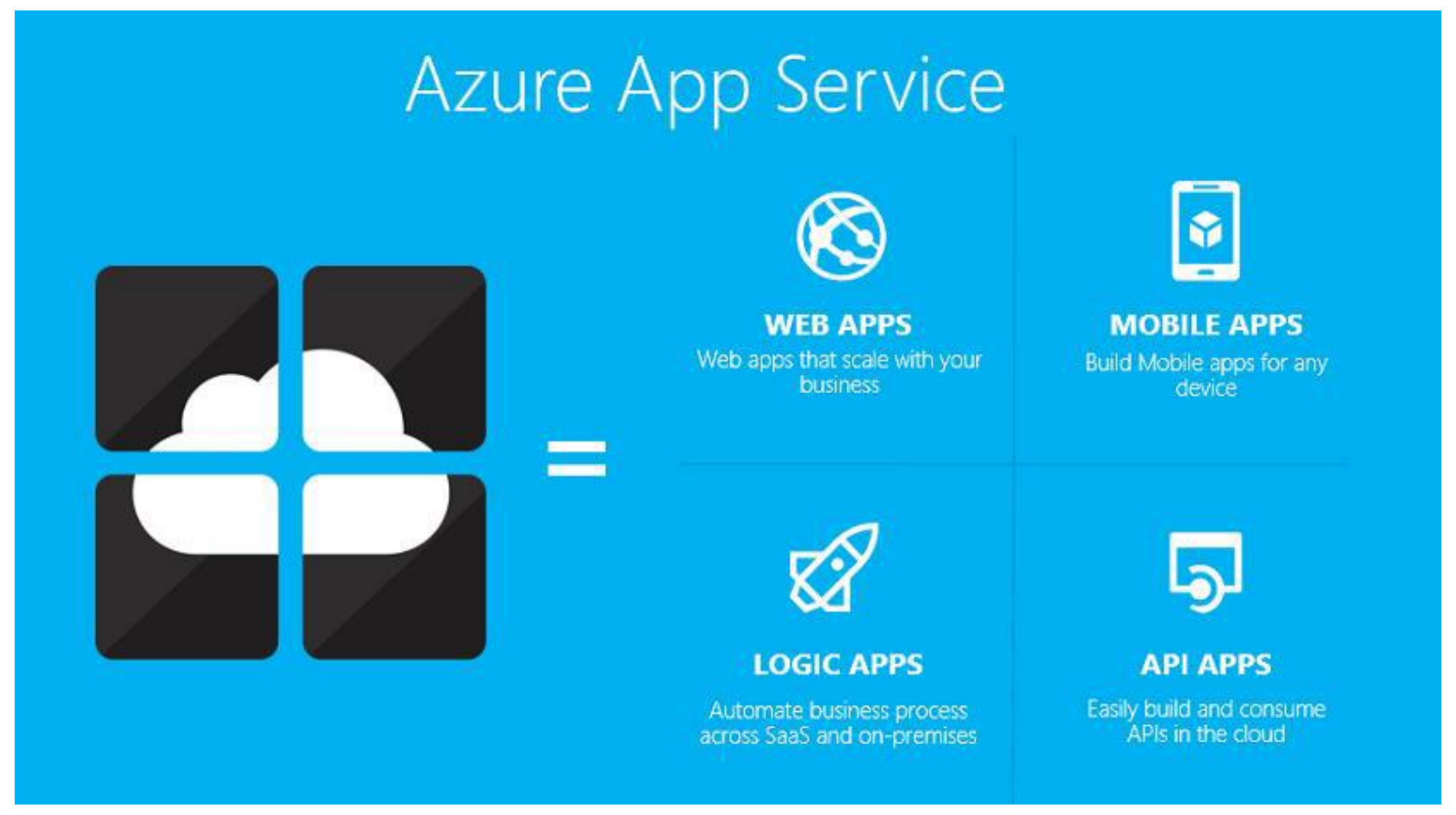


Responsive Design

Mobile-first design and layout (shown in Figure 1) are based on providing excellent mobile user-experience: fast download speeds, easy touchscreen navigation and so on. This approach was adopted because currently, 52.64% of the total traffic on the Internet is done via mobile phones, and by the end of the year experts from Zenith Media predict an increase of up to 75% [1].

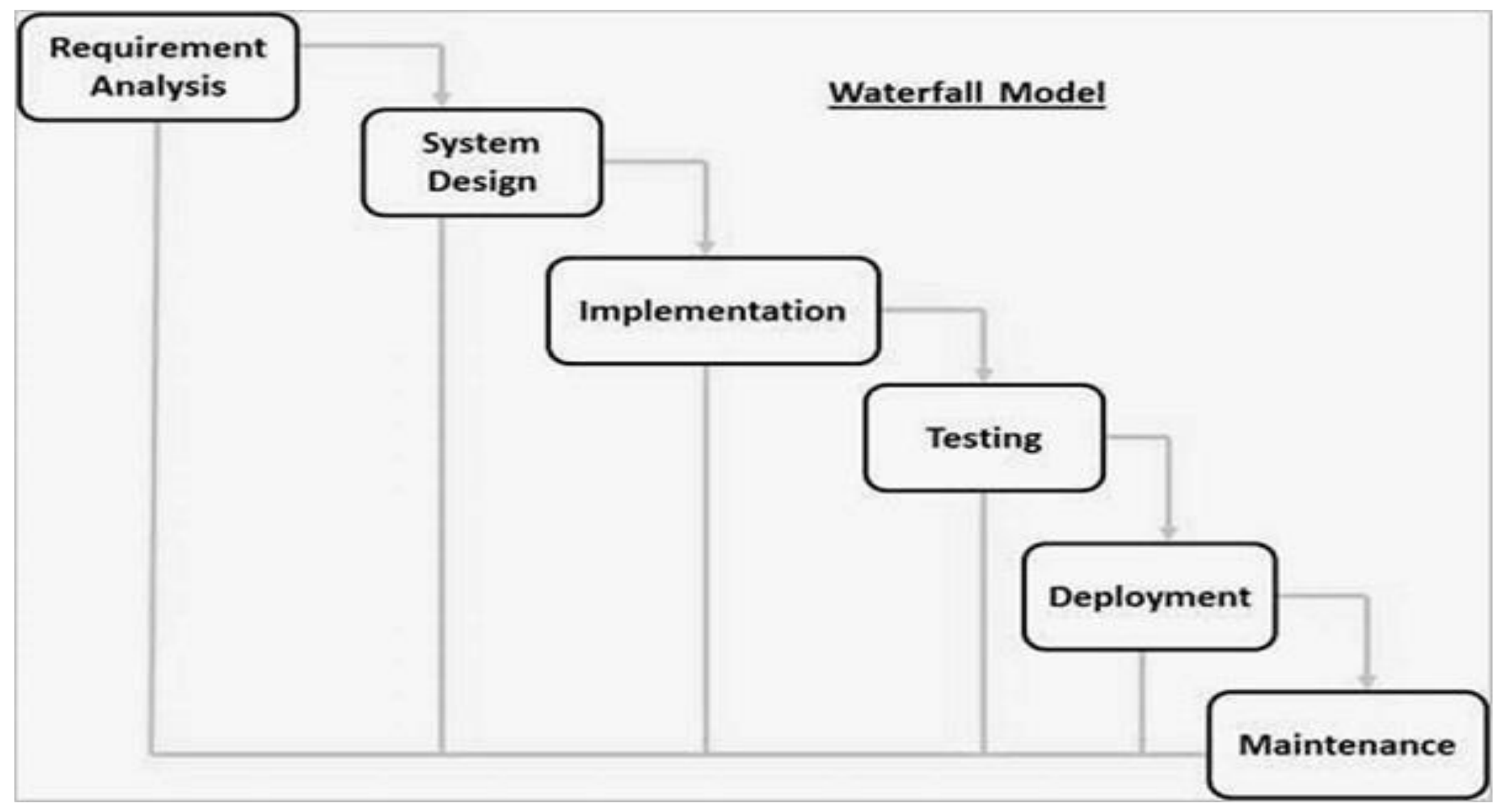
Microsoft Azure

For the deployment of the application, into a production environment, I decided to use Microsoft's Cloud Platform: Azure. Azure has a series of "Application Services", which enables to quickly build, deploy, and scale web apps. With Azure, I was able to host the web-application, Web API, and the database. Azure integrates with MS Visual Studio, which makes it very practical and simple to deploy each change.


Azure App Service
=
WEB APPS
Web apps that scale with your business
MOBILE APPS
Build Mobile apps for any device
LOGIC APPS
Automate business process across SaaS and on-premises
API APPS
Easily build and consume APIs in the cloud

SDLC Methodology

For this project, I decided to use the "Waterfall" development methodology. The Waterfall Model (shown in Figure 2), also referred to as a linear-sequential life cycle model, illustrates the software development process in a linear sequential flow. This means that any phase in the development process begins only if the previous phase is complete. In this waterfall model, the phases do not overlap [2].



Implementation Tools

The following tools where used for the development of the Nutri-Fitness Tracker web application:

- Visual Studio 2019 Community
- ASP.NET Web Application (.Net Framework)
- Model View Controller (MVC) Structure
- C# Programming Language
- .Net Core Web API
- SQL Express
- Git
- Azure App Services

Conclusion

In this project, a complete SDLC (Software Development Life Cycle) of the Nutri-Fitness Tracker web-application is shown. The system meets the client's initial requirements for tracking end-user's progress; and further shows a graphical representation for the end-user's improvements over time.

References

- [1]Kaempf, D., 2018, March 28. Mobile-First Web Design vs. Responsive Web Design. Retrieved May 1, 2019. Available: https://darwindigital.com/mobile-first-versusresponsive-web-design/
- [2]Tutorialspoint.com, 2017, May 15. SDLC Waterfall Model.Available: https://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm
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