Project Research Document – Reptile Manager

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October 1, 2014

Detailed Discussion

The project is a Reptile manager application. The system will have a web service application. A windows phone service will be created if the project does not run out of time. The web app will be hosted on windows cloud services Azure.

The user will create an account on the web app. This includes a username and email address. The use of social media sites like Face book and Twitter accounts will be able to create accounts through the web app.

When log into the web app they have the option of adding their reptiles. They create a new record and they are brought to a new screen where they can fill in all the reptiles' details from gender, DOB, Morph.

When selecting the cage or rack it creates a group of animals saving time, if they are all due a clean on the one day a QR code can be scanned using the phone app saying which group are due a clean. If this feature is not available then a message via email or a notification when the user logs in will telling them of the event.

The user can set a feeding date, once a week if the animal is due a feed on Friday they will be sent a notification to the phone, email and the web app. If the event is not marked as completed another notification will be sent saying which animal or "group" missed their feed. A copy method can be used if many of the same reptiles exist creating a template saving time. The system will generate a QR code for each reptile this will be the ID, the user can print off the QR code and assign it to that reptile. Now they can keep track of their animals via the phone app.

The paring feature for breeding the reptiles, scan both QR codes and the pair matched up for breeding. A new Table is then created in the database containing this information.

The user can leave a note on the reptile through the phone app. The weight and length will be recorded to measure their growth and weight over time, the data will be represented by graphs by using the D3 JavaScript. When reptiles are due a feed the hungry icon will appear on the screen containing a list of the reptiles that are due a feed. The "my reptiles" and "my clutches" have a list of all the reptiles in the database and all the eggs that have been laid for that season. The user can search for a record via a unique number created with each reptile and clutch along with the QR code.

A device that records real time data of the current temperature in the cage is integrated with the web application, a prototype will be set up with Intel's Galileo. If the temperature changes to a dangerous level the phone and web app receive a notification.

The users of the system are reptile enthusiasts, private and public breeds.

Existing Applications in this domain

Features	Reptile Scanner	My Reptile Logger	Reptile Logger DB
Database backup	yes	Yes-phone only	no
Notifications	yes	no	no
Pairing reptiles	yes	no	no
Egg Records	yes	no	no
QR Codes	yes	no	no
Web Login	yes	no	no
CRUD	yes	yes	yes
Reports-Graphs	Yes- premium feature	no	no
Cost	yes	free	yes
Images	Yes-premium	Yes-Can crash the app	yes
Up-to-date	Yes-last update sep 2014	No- Not updated since 2011	Yes-last update sep 2014
Ease of use	No free version available.	Simply layout, but buggy,	Clear simple layout, easy to use but lacks important functionality.

Platform, Technologies and Libraries

Windows Azure hosts the web application and phone services. The database is SQL on the Azure platform. The web application is a mixture of windows MVC model in conjunction with web AP1 2.2 for xml and Jason data manipulation. The model class will be the same for both the web and mobile application. C# was the chosen language because of its LINQ operators; this will help when querying data. Web AP1 2.2 is being used because it's a restful service and is perfect for the type of web application being built. It can use oData model and functions; these are powerful data manipulation tools for returning user specific queries. The newest ASP.NET Web API version includes many interesting improvements related to OData, such as attribute routing, model aliasing, support for Enums, ETags, the $format query option, and the ability to specify which properties can be sorted, expanded, filtered, or navigated. The asynchronous methods allow the user to update details on the phone app without an internet connection. The HTTP verbs PUT, POST, DELETE, and PATCH/MERGE will be used for data manipulation of record changes on the web application. [1]

Web API simplifies the process of having data displayed from the web application to a windows phone 8 applications. [2]

 Azure provides managed SQL and uses HDInsight to build Hadoop clusters to analyze data.

The barcode feature will use the BarcodeLib**.**BarcodeReader**.**dll from BarcodeLib.com and is support by the .NET framework. [3] There are other versions online that could be used if this library doesn't work. This includes .NET Barcode QR code Reader from OnBarcode.com and QRCode which is an open source version. [4]

The risks

The major risk to the application is QR code scanner not working. This will make the phone app useless. Users will have to enter the ID of each record to view the data. This will cause a delay when taking records for each reptile and will slow down the entire process.

The phone and web application must synchronise concurrently for users to have the most up-to-date information.

The temperature recording device won't have any effects to the web or phone application if it fails to work.

Gastón Hillar. (July 01, 2014). *Using OData from ASP.NET.* Available: http://www.drdobbs.com/windows/using-odata-from-aspnet/240168672?pgno=2. Last accessed 25th Sep 2014. [1]

Microsoft ASP.NET Team. (August 22, 2014). *What's New in ASP.NET Web API 2.2.* Available: http://www.asp.net/web-api/overview/releases/whats-new-in-aspnet-web-api-22#newf. Last accessed 28th Sep 2014. [2]

none. (unknow). *Barcode for .NET.* Available: http://www.barcodelib.com/net_barcode/main.html. Last accessed 26th Sep 2014. [3]

unknow. (unknow). *Integration Guide & Tutorial to Generate Linear, 2D Barcodes using .NET Barcode Generator.* Available: http://www.onbarcode.com/tutorial/net-barcode-generation.html. Last accessed 23rd Sep 2014. [4]