**COIT20269 – Mobile Web Apps**

Assignment 2 (Report)

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# Testing strategy for mobile website

## Review of platforms targeted for the mobile website

The web site is targeted for mobile devices from most of the popular manufactures including Apple, Samsung, Google, Lenovo, Motorola and so on. Similarly, it is suitable to be viewed in modern browsers such as Chrome, Firefox, Safari, Opera and so on. However, the mobile website is only targeted for localhost network at the moment as it is not deployed in the cloud.

## Selection of platforms for testing process

It is essential to test mobile website in multiple web browser, operating system and devices before deploying in the cloud. For the testing of mobile web site, I have selected the following platforms:

**Web browsers:**

* Safari version 13.1
* Chrome version 81 (81.0. 4044.138)

I have tried to test the mobile website in the latest web browsers of mobile devices. Since, Chrome and Safari are two of the most popular web browsers and capture the largest market share according to W3Counter (2020), I have selected them as testing platform.

**Operating system:**

* iOS - version 13.4.1
* Android - 9.0 "Pie"

I have selected both iOS and Android operating system for the testing of mobile web site. In iPhone, the website was tested in latest OS version however, the website was tested in version 9.0 Pie in Android.

**Devices:**

* iPhone XR
* Pixel 2 XL

As mentioned earlier, the website is tested in both iOS and Android platform, the above listed devices were used for testing.

## Discussion of part emulators vs. the real devices play in testing

Mobile web sites need to test in as much real devices as possible since emulators cannot completely simulate the behavior of actual devices. Unadkat (2019) claims that mobile emulator does not considers factors like battery drainage, heating issues and conflict with existing applications while testing. Also, testing on emulators are fairly slower as compared to real devices (Unadkat 2019). However, it is not possible to buy almost all mobile devices available on market for sole purpose of testing. Therefore, simulators and emulators should also be used as a part of testing process if real devices are unavailable.

# Financial Case & Commentary of Application Features

## Features successfully implemented

In addition to the specification of Assignment 1, the following features are successfully implemented in the mobile website:

* Store toilet logs data in logs/logs.dat file
* Save the JSON formatted toilet logs data in cloud mongoDB Atlas database
* Search in mongoDB Atlas database for entries that matches the toilet roll type
* Display the toilet log entries fetched from database in new page
* Use express middleware to create server and setup routes
* Store utilities functions in common.js
* Store network configuration information in config.js
* Display appropriate alert message when request is sent, and response is received
* Integration with Phonegap Cordova

## Additional functionality that would be useful on the website

Administrative panel is one of the prominent features that would be really useful on the mobile website. It allows the administrator to enable or restrict the feature of the website to the users. For example, items can be added or removed from toilet roll type list in the home page dynamically through administrative panel.

Another feature that would be really useful on the mobile web site is user signup and login with their member id. It enables the authorization and improve the security of the website. Also, it allows the administrator to track which user has inserted particular data (toilet roll log) in the system.

## Ethical consideration

Every software system should follow ethical consideration and mobile website is no exception. One of the major ethical consideration of the mobile website is protection of user’s privacy. Apple Developer documentation (n.d.) points out that sensitive information such as user’s location should only be accessed when needed and the website should request permission before accessing it. Therefore, the website should only collect user’s data with their informed consent.

## Development costs

Having prior experience in web development, it took me approximately 20 hours to develop the simple toiletLogs application. Therefore, in order to develop fully-fledged application with increased functionality that can handle any type of log data, I assume that it will take addition 30 hours. Similarly, the estimated development cost for each of the three models are as follows:

* 30 hours x $100 = $3,000 for application with 10 users (Assuming that improved system would be able to handle 10 users initially)
* 60 hours x $100 = $6,000 for application with 1,000 users (Assuming development time increases by 50% as given in specification)
* 90 hours x $100 = $9,000 for application with 10,000 users (Assuming development time increases by 50% as given in specification)

## Database storage costs

According to Stennie (2019), the exact overall storage required to store data in mongoDB Atlas depends on various factors such as schema, indexes, data compression, etc. Therefore, prices are assumed by analysis and has been break down for three different user models as below:

**10 users:**

* Assuming 10 entries per month for each user, 10 users will make 100 entries. Therefore, Shared Clusters with Free pricing would be suitable for this user model (MongoDB n.d.).

**1,000 users:**

* Assuming 10 entries per month for each user, 1,000 users will make 10,000 entries. Therefore, dedicated clusters that has an estimated cost of $56.94 per month would be suitable for this purpose (MongoDB n.d.).

**10,000 users:**

* Assuming 10 entries per month for each user, 10,000 users will make 100,000 entries. Therefore, dedicated multi-region clusters having estimated cost of $98.55 per month would be suitable for this purpose (MongoDB n.d.).

## Marketing Campaign and its associated cost estimation

Appropriate marketing campaign and strategies needs to be followed for each of the three cases. For mobile website model with 10 users, marketing strategies that is targeted for small business can be followed. Therefore, convenience store and small retail business would fall in this category. Alfonso (2015) claims that email marketing is the ultimate marketing tools for small business. According to Hilltop-mail (n.d.), which is one of the email marketing company, the cost for email marketing for 100 emails targeting 0-1000 customers is $34 per month.

Similarly, the marketing strategy targeting medium-sized business needs to be followed for mobile website model with 1,000 users. Alfonso (2015) points out that hiring a freelancer writer for advertisement would be suitable for advertising to medium-sized business. According to Bonsai (n.d.), freelance marketing writer rates varies between $25 to $70. Therefore, assuming average hourly rate of $50 with 4 hours to create the marketing content, it would cost $200 for marketing for medium-sized business.

Lastly, for mobile website model with 10,000 users, marketing strategies targeting large enterprise should be followed. Alfonso (2015) claims that advertising through publishers or agencies would be good choice for this purpose. According to Mertin (2018), advertising through specialist social media agencies would cost between $1000-$3500 per month. Therefore, average cost would be around $2000 per month for such agencies.

## Estimation on break even analysis

For each of the three scenarios, the associated total cost are estimated as below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Development cost | Database storage cost | Marketing cost | Total |
| 10 users | $3,000 | Free | $34 | ~$3,000 (approx.) |
| 1,000 users | $6,000 | $56.94 | $200 | ~$6,250 (approx.) |
| 10,000 users | $9,000 | $98.55 | $2,000 | ~$12,000 (approx.) |

Table 1: Cost estimation for three models

According to the specification, it is assumed that each of the mobile website model would be provided as Software-as-a-Service after development. Firstly, for the mobile website model with 10 users, if the business is charged with $10 per month for each user, then the revenue would be $100 per month. Therefore, according to the break-even analysis, it would take approximately ($3000/$1200) 2.5 years to earn revenue from the first model. Hence, the first model is least profitable since it takes more than 2 years to reach break-even point.

Similarly, for the second model with 1,000 users, the price should be slightly lesser as compared to first model, as it contains mass users. If price is assumed to be $5 per month for each user, then the revenue would be $5,000 per month. Therefore, according to the break-even analysis, it would take ($6250/$5000) 1.25 months to reach break-even point. Hence, the second model is profitable as it takes less than 2 months to reach breakeven point.

Lastly, for the last model with 10,000 users, if we assumed the price to be $1 per month for each user (the price should be even lesser as it contains more users), then the revenue would be $10,000 per month. Therefore, it would take ($12,000/$10,000) 1.2 months to reach break-even point. Hence, the last model is highly profitable among all of the models.

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