

**Institute of Technology Carlow Software Development**

**Research Document**

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# Abstract

# Introduction

The goal of this project is to develop a cross platform application based on the already existing L.E.T.S. system. The application can be used to xyz. The application will allow users to register a profile and login, search for jobs and offer their services.

This report will detail the research that has been carried out to facilitate the development of the application. It will focus mostly on the technologies to be used to develop the application including front-end, back-end and hosting technologies

# L.E.T.S as a system

What is a L.E.T.S system?

Local Exchange Trading Systems (LETS is a locally organized economic system which allows members to participate in the exchange of goods and services among others in the local community group. Local Exchange Trading Systems (LETS) use their own locally created currency which are usually of units of value which can be traded or bartered in exchange for goods or services e.g. “sillyBucks”. Members of LETS typically view the systems as organized and cooperative schemes that maximize purchasing power while benefiting members and the community.

# Existing Systems

|  |  |
| --- | --- |
| Name: | Odd Jobs |
| Type: | Application |
| Device: | Android Smart Phone |
| Available From: | Play store |
| Downloads: | 10,000 + |
| Rating | 2.5 |
| Created by: | Sage Nyong |

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|  |  |
| --- | --- |
| Name: | Near Jobs |
| Type: | Application |
| Device: | Android Smart Phone |
| Available From: | Play store |
| Downloads: | 10,000 + |
| Rating | 2.8 |
| Created by: | Near Jobs Inc |

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| --- | --- | --- |
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|  |  |
| --- | --- |
| Name: | Fiverr – Freelance Services |
| Type: | Application |
| Device: | Android Smart Phone |
| Available From: | Play store |
| Downloads: | 1,000,000 + |
| Rating | 4.6 |
| Created by: | Fiverr |

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Likes and dislikes of sample applications

|  |  |
| --- | --- |
| Name: | Odd Jobs |
| Likes | Dislikes |
| Colour scheme | Forced use of location |
| Side form | Slow to load |
| Free to download | Maps not loading correctly |
|  | Zoom out feature not working |

|  |  |
| --- | --- |
| Name: | Near Jobs |
| Likes | Dislikes |
| Colour scheme | Slow to load |
| User Interface | Crashes regularly |
| Good log in features |  |
| Sort by job |  |
| Sort by category |  |
| Free to download |  |

|  |  |
| --- | --- |
| Name: | Fiverr – Freelance Services |
| Likes | Dislikes |
| Colour scheme | Cost to post a job |
| Excellent User Interface |  |
| Login with Facebook(optional) |  |
| Advanced sort and search and filtering |  |
| Responsive |  |
| Free to download |  |

# Backend

What way will I use to store the information returning from the application?  
  
The application will need to store user’s registration, profile information and any data generated from job creation. The application will need a database, because the application will primarily be used with phones a lightweight database if preferred. The database must be scalable, reliable, fast and cross platform.

## SQL

Structured Query Language (SQL) has been primary way data is stored for(a long time), their popularity with users increased in the 1990s with the release of MySQL. NoSQL stands for ‘Not Only SQL’ and has been in existence since the 1960’s but has only recently gained traction due to popular databases such as MongoDB, CouchDB and more recently Firebase.

Both SQL and NoSQL do the same thing as in storing data, but both have very different approaches on how they achieve this. With a SQL database the relational approach is used. Tables to store information, the records are represented as columns and rows. A tables relations will include either one-to-one, one-to-many or many-to-many in a SQL database.

Option 1.

|  |  |
| --- | --- |
| Name: | Maria DB |
| Developed By: | Community Developed fork of MYSQL |
| Cost: | Free |

Option 2.

|  |  |
| --- | --- |
| Name: | MYSQL |
| Developed By: | Oracle Corporation |
| Cost: | Free |

Some of advantages of using SQL as a database include;

Structured – Uses rows and columns to store the data

Free – No cost to use

Good documentation – There is a good standard of documentation available which will make troubleshooting any problems more manageable

Fast data retrieval – Searching a SQL database is fast

Some of disadvantages of using SQL as a database include;

Structuring the data - Could be difficult to structure the data coming back from an app

Real Time results- not necessarily real time

## NO-SQL

There four types of NoSQL databases are;

1. **Key-Value Store** - It has a Big Hash Table of keys & values
2. **Document-based** **Store -** Itstores documents made up of tagged elements. (Example- MongoDB, CouchDB)
3. **Column-based Store -**Each storage block contains data from only one column.
4. **Graph-based** - A network database that uses edges and nodes to represent and store data.

(site this!)

Option 1.

|  |  |
| --- | --- |
| Name: | Firebase |
| Developed By: | Google |
| Cost: | Free (Community Edition) |

Option 2.

|  |  |
| --- | --- |
| Name: | MongoDB |
| Developed By: | MongoDB Inc. |
| Cost: | Free (Community Edition) |

Advantages of NO-SQL: Structured, free, good documentation good tutorials, comes in human readable formats like JSON

Disadvantages: More time to structure the data correctly for retrieval

# Frontend

## Platforms

Which platforms do I intend my project to run on?

1. P.C.
2. Tablet
3. Mobile (Android + Apple)

## Development

1. Ionic

Ionic is an open-source SDK (Software Development Kit) for hybrid mobile app development. It was released in 2013 and built on top of AngularJS and Apache Cordova. It has a similar syntax to the Angular framework and is developed by Google.

1. Html5

Html5 is a mark-up language used for structuring and presenting content on the web. It is the fifth and current major version of the HTML standard. This framework is used to display content on the web.

1. CSS

CSS is the language for describing the presentation of Web pages, including colours, layout, and fonts. It allows for the presentation to different types of devices, such as large or small screens. CSS is independent of HTML and can be used with any XML-based markup language.

1. Bootstrap 3

Bootstrap is an open-source framework for designing websites and web applications. It contains design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions.

1. Type Script

TypeScript is a free and open-source programming language developed and maintained by Microsoft. It is a strict syntactical superset of JavaScript, and adds optional static typing to the language. Anders Hejlsberg, lead architect of C# and creator of Delphi and Turbo Pascal, has worked on the development of TypeScript.

1. JavaScript

JavaScript is most commonly used as a client-side scripting language, the code is written into HTML pages. When a user requests an HTML page with JavaScript in it, the script is sent to the browser and it's up to the browser to do something with it.

1. Python

Python is an interactive object-oriented programming language. Used a lot with data science. Relatively easy to work with and has many useful imports available. Web apps can be created with the flask module.

1. Android Studio​

Android Studio is an IDE developed by Microsoft for Android development. Applications can be developed in Android Studio and tested or displayed in the built in emulator. Applications created in android studio are native, which means they can only be ran on Android devices. If you wished to have the device run on other devise such as windows or different platforms like iOS the code would have to be rewritten which makes the multi-platform development more expensive in both time and munerty terms.

1. Angular

AngularJS is a structural framework for dynamic web apps. It lets you use HTML as your template language and lets you extend HTML's syntax to express your application's components clearly. AngularJS's allows for data binding and dependency injection.

What I intend to use.

Ionic2

I will use the Ionic 2 frame-work to develop this application.

Reasons for my choice

* Documented (each of the technology’s used)
* Tested (been around for a while apps already created)
* Supported (large git community)
* Structured (frame work is defined and should be easy to follow)
* Forced Typing of variables (Typescript)
* Developed by Google (so problem not going anywhere)
* Uses familiar technology’s such as (Html5, CSS, Bootstrap3 and Typescript)
* Most of the code can be reused for web-apps(Angular framework)
* Ionic can be unit tested (Jasmine)
* Can be compiled into and android and IOS SDK (cross platform)

# Tools

Process management dfaq is this

Document management probably git

Version control git obviously

Testing jasmine testing framework for

# Conclusion

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