Project Brief

Document Information

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Author:	Hassan Tariq, Killian O'Driscoll
Owner	Jason Quinlan
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Approval

Date	Name and Signature
15/03/2021	Jason Quinlan
15/03/2021	Hassan Tariq
15/03/2021	Kevin Mukuna
15/03/2021	Killian O Driscoll
15/03/2021	Kieran O Sullivan
15/03/2021	Kiu Man Yeung

Introduction

Currently there are many applications out there that advertise real estate and properties, for example daft.ie. Although these applications allow users to make informed decisions through a mixture of innovative product features and in-depth quarterly market analysis, as well as allowing users to select and filter different search results, there does not seem to be a system out there that accurately predicts the price of the property. By analyzing the data provided by the user we hope to provide an accurate price prediction model, which will not only give an estimate of the value of the property at the time of posting but will also show how that price might change over time .This will be acquired using inflation rates that will affect the price and various pieces of data provided by the user. We believe that this is an important feature that customers should be aware of, to let them know the value of what they are purchasing as well as what the value will be in the future and this is the selling point of our product. By developing this application, we wish to expand on the existing products that are out there by implementing a prediction model using AI and machine learning algorithms, as well as presenting them using a graphical interface.

The project will make use of some if not all the components we have learned thus far:

- Security (Authentication, Integrity, validation of data)
- Http Protocol
- Python Programming and Django framework
- Web Programming (HTML, CSS, jQuery, JS, any other relevant languages/libraries that will be added as progress)
- If we have sufficient time, we could migrate our product to the cloud (e.g., AWS)
- Optimization and speed

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Project Management Team

Role	Description	Appointee(s)
Product owner	Responsible for overseeing the development of the project, checking in weekly in scrum meeting.	Jason Quinlan
Front end developer	Organizing the layout of the site. Work on the about page. Changing the layout of posts, change profile layout, help with the styling and presentation of the dashboard. Writing the 'documentation and preparation' section of the lessons learned, recording 'navigation' section for screencast.	Katy Yeung
Backend developer	Implementing price prediction model & graph representation of price over time using chart.js, validating and storing user data. Work on charting price estimation. Implementing messaging function, working on dashboard functionality. Writing 'project management' and 'framework & technical details' sections for lessons learned. Record 'price prediction' and 'profile' sections for screencast.	Kieran O'Sullivan & Kevin Mukuna
Documentation	Maintaining & updating product documentation (e.g., product brief), organizing work, testing current build. Update the product brief. Write the 'goals' and 'communication' sections for lessons learned. Record 'registration' and 'new post' sections for project screencast. Review and create final versions for screencast & lessons learned. Update user guide to reflect newest changes, assist with dashboard implementation.	Hassan Tariq & Killian O'Driscoll

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Definition

Background:	Given the current situation in the world and how it's affecting the economy, property prices are quite volatile, and it can be hard for a seller to get an idea of how much their property is actually worth. Providing a simple, accurate prediction of how much their property is worth will be of great value to our users.
Main Goal:	Our main goal is to build a web application that advertises property and uses a prediction model to give accurate prices of property, allowing customers and real estate agents to make informed decisions easily.
Desired Outcomes:	The desired outcome is to create an application that is easily accessible and beneficial to users, advancing our skills in the process. We want to make sure we deliver a quality product that works as promised
Constraints and Assumptions:	Time constraint, lack of group work experience, lack of resources, working remotely. Assumption made would be that the data will need to be real and accurate as possible to make accurate predictions.
Interfaces:	No other prior experience of developing a similar product before, although some group members have experience of developing web applications.
Project Approach:	In-house based on the different skill sets of group members and by assigning roles to each member while having meetings and updating the product owner regularly.
Project Product Description:	The product is a web application that will advertise property and come up with accurate prices using a prediction model. The web application will allow users to register and create an account to allow easy access of data and allow users to post on their profiles. Users can delete and edit their posts as they wish. Posts can be archived before deleting them. A range of products will be displayed on the home page for people to see without having to login or register. If we have time, we can add additional features on the side that show news posts and other announcements etc. For example, **Dr.** Quinlan has a land of x acres and he wishes to sell it. He can post about it on the web application. The goal will be to use the data provided by Mr. Quinlan, and our pre-defined matrix in the backend and compare the prices with already existing objects to analyze what the value of the property is currently and what it will be in the future. This will be represented with a graphical user interface showing changes throughout. Example factors affecting the prices of the property will be inflation, deflation in the market and various attributes of the property, such as size, number of rooms etc.

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Project Objectives

	Target	Tolerance
Scope:	Functions include: - Creating an account by registering - Graphical representation of price prediction model using chart.js - Posts visible on home page to all users, with or without an account - Accurate price predictions - Users will be able to edit/delete their posts - Archive posts before deleting them - Authentication for user registration - Automate the web application using a .sh script - Multiple picture uploads in a gallery format	Most of the items mentioned here are integral to our product. While strictly speaking some of them (for instance the ability for users to edit/delete posts) are optional, we feel that they are necessary for our users to have a pleasant, productive experience using our site. Our hope is to implement all of the features mentioned here and more.
Time:	8 weeks	No tolerance on the timeline of the project, final submission is due after 8 weeks and there will be no room to work on the project after that deadline.
Cost:	Time: 20 hours a week Computing power Storage: Cloud costs & databases to store property information	Due to the relatively short timeline, we don't have much tolerance here. While it is true that some weeks will involve more work than others, we believe that an average of 20 hours a week is what is needed to get the product finished in time.
Quality:	Functional, user friendly, competitive	Little tolerance here, our goal is to provide a product which is easy to use and gives users all the facilities they need to buy/sell property.
Risks:	Not finishing the development of the application due to time constraints	
Benefits:	Provides customers/real estate agents with a better experience by giving them accurate price predictions based on the current market Provide reliability to the customer as costs are accurate relative to the market Provide the best user experience as possible	

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MoSCoW Prioritization:

What our product must have:
- ✓ Users must be able to register an account and login
- ✓ Users must be able to upload a post/s of their property
- ✓ There must a price prediction model with a graphical representation
- ✓ The prediction model must be able to predict current and future price of property
- ✓ Ability for users to edit and delete their posts.
- ✓ When users register, they get an authentication link to their email

What our product should have:
- ✓ Users should be able to customize their profile and upload profile picture etc.
- ✓ Users should be able to search and filter properties by various attributes
- ✓ A .sh script to automate the execution tasks
- ✓ A page dedicated to user guide, which shows users how to use the website

What our product could have:

- ✓ Chat/messaging system for users to communicate with each other, inquire about posts etc.
- • A separate section for properties for rent rather than sale
- ✓ Data visualization represented with a dashboard that will allow users to understand the analytics

What our product will not have:

- • Our site will be limited to property only; users will not be able to buy/sell anything else
- • Addresses will be limited; the property listed will only be limited to Ireland

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Figure 1 – Software Architecture Diagram:
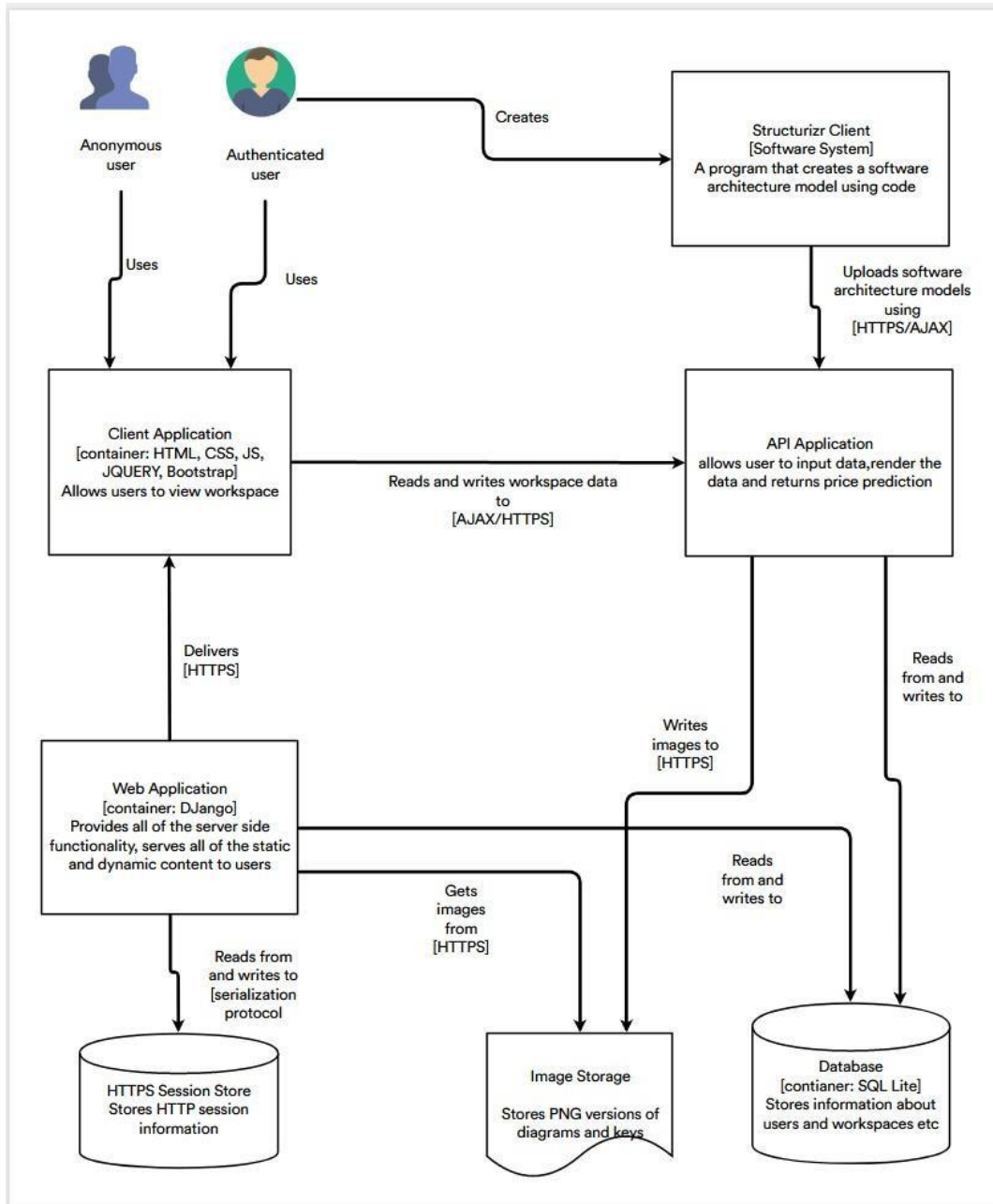
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Explanation of the architecture diagram:

This is an overview of our architecture diagram. As you can see both the authenticated and anonymous user can go on the web application and view the client application. The authenticated user can then go on to interact with the software system login, upload new posts, view other profiles etc.
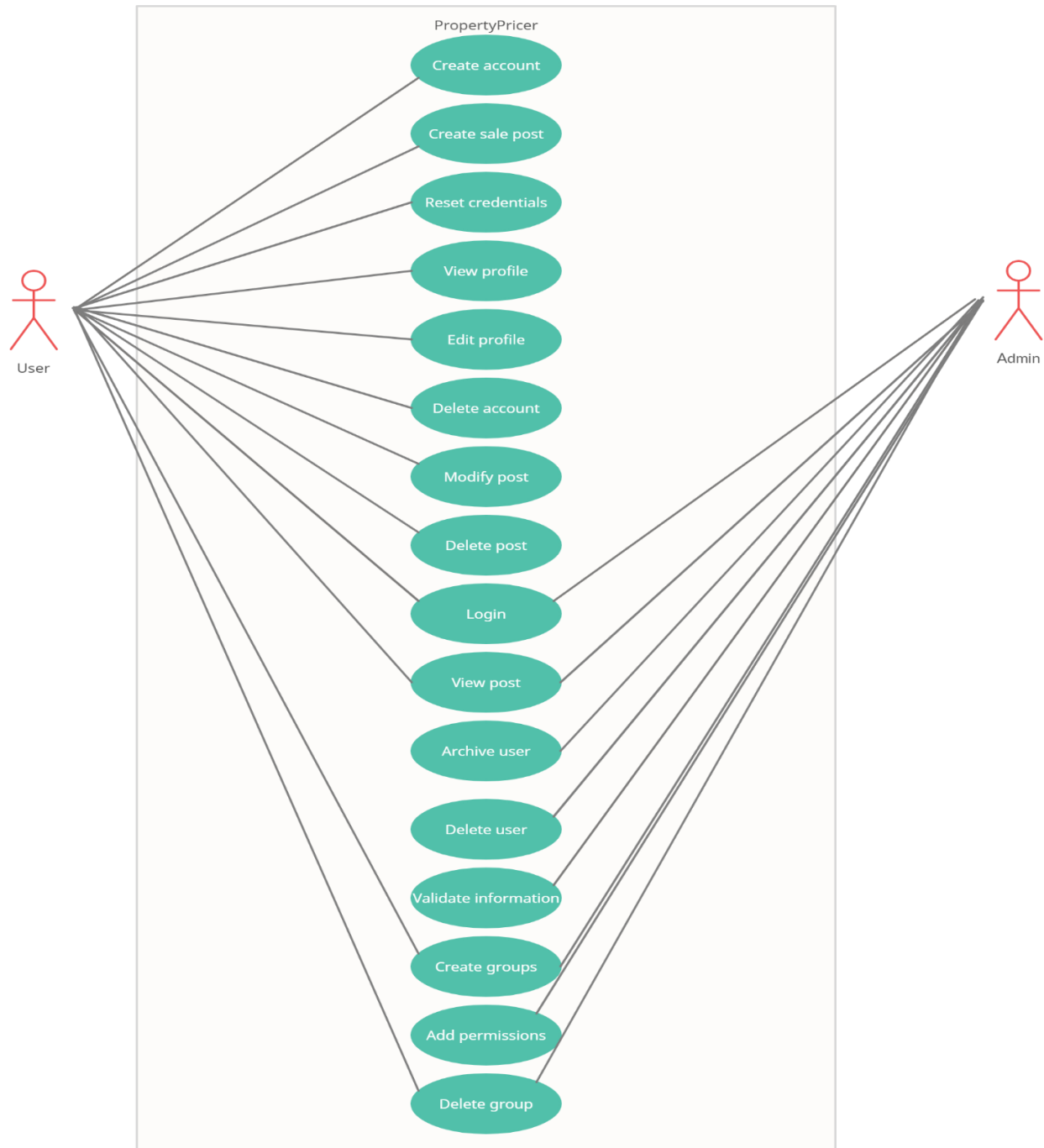
The software system uses HTTPS/AJAX to interact with the API which in return allows the authenticated user to upload posts, render data and get a price prediction in return. The client application which is the front end also reads and writes to the API application using AJAX/HTTPS.

The API application interacts with the database to handle database queries and store user information and store server-side functionalities of the web application as well as that it will store the data that will be used for the prediction model.

The web application back end gets images from the image storage and the API application writes images to the image storage through HTTPS which stores PNG versions of images and keys. The back end of the web application delivers content to the client application using HTTPS.

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Figure 2 - Use Case Diagram

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Figure 3 – Week 7 Gantt chart

write up num. for user guide				100%
week 7	**08/03/21**	**15/03/21**	**0h**	**0%**
Work on dashboard	08/03	15/03	0	0%
change post layout and size	08/03	14/03	0	0%
crispy form format	08/03	14/03	0	0%
message button and notification	08/03	14/03	0	0%
messaging system	08/03	14/03	0	0%
delete account implement	08/03	14/03	0	0%
user interaction section analytics	08/03	14/03	0	0%
registration form - add names	08/03	14/03	0	0%
user guide address restriction	08/03	14/03	0	0%
user guide - mobile not recommended	08/03	14/03	0	0%
user guide - how to use dashboard	08/03	14/03	0	0%

Katy Yeung
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Kieran O'Sullivan
Kieran O'Sullivan
Hassan Tariq
Kevin Mukuna
Killian O'Driscoll
Killian O'Driscoll
Killian O'Driscoll