



Maintenance Document

Care for you

Team Agile Port (TP03)

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Content

Introduction.....	3
System Description.....	3
System Architecture.....	3
Package Architecture.....	4
Software Environment.....	5
Training Skill.....	5
Data/Database.....	6
Open Dataset Detail.....	6
ER Diagram.....	7
Data Management.....	7
Future Development.....	8
Error Condition.....	8
System Testing.....	9
Performance Testing.....	9
Unit Testing.....	10
Source Code.....	11

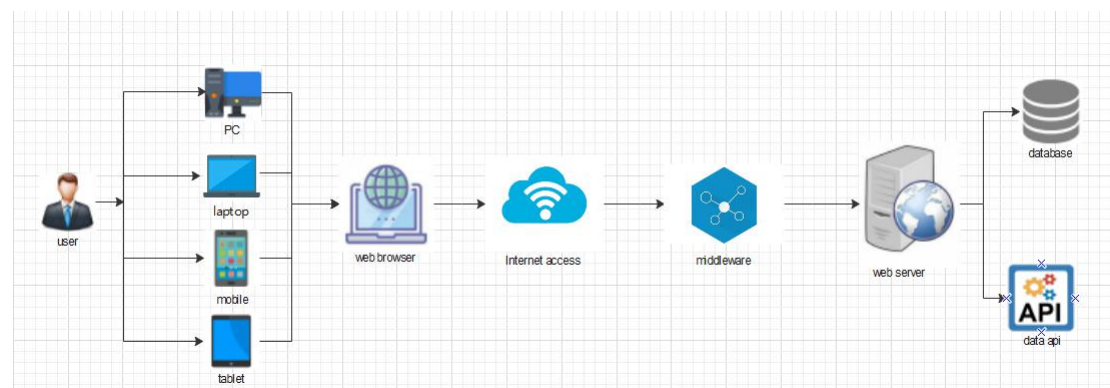
Introduction

The maintenance document will introduce in detail the technical aspect used to improve and modify the website of <http://www.careforyou.cf/>, helping the technicians who will take over this project in the future to add or modify new features of the system more effectively. The document contains detailed information on the software environment, open source data used, database, and plans for new features of the website. The error condition and performance test of the system will also be presented and analyzed in the document. The target audience may be technicians, database administrators who provide maintenance information.

The website CareForYou aims to solve the problem faced by some First Generation Australians whose parent parents are working and whose native language is not English while growing up in Australia is that they find it difficult to understand and speak English as a second language early on in their lives, specially at school and day care.

System Description

System Architecture



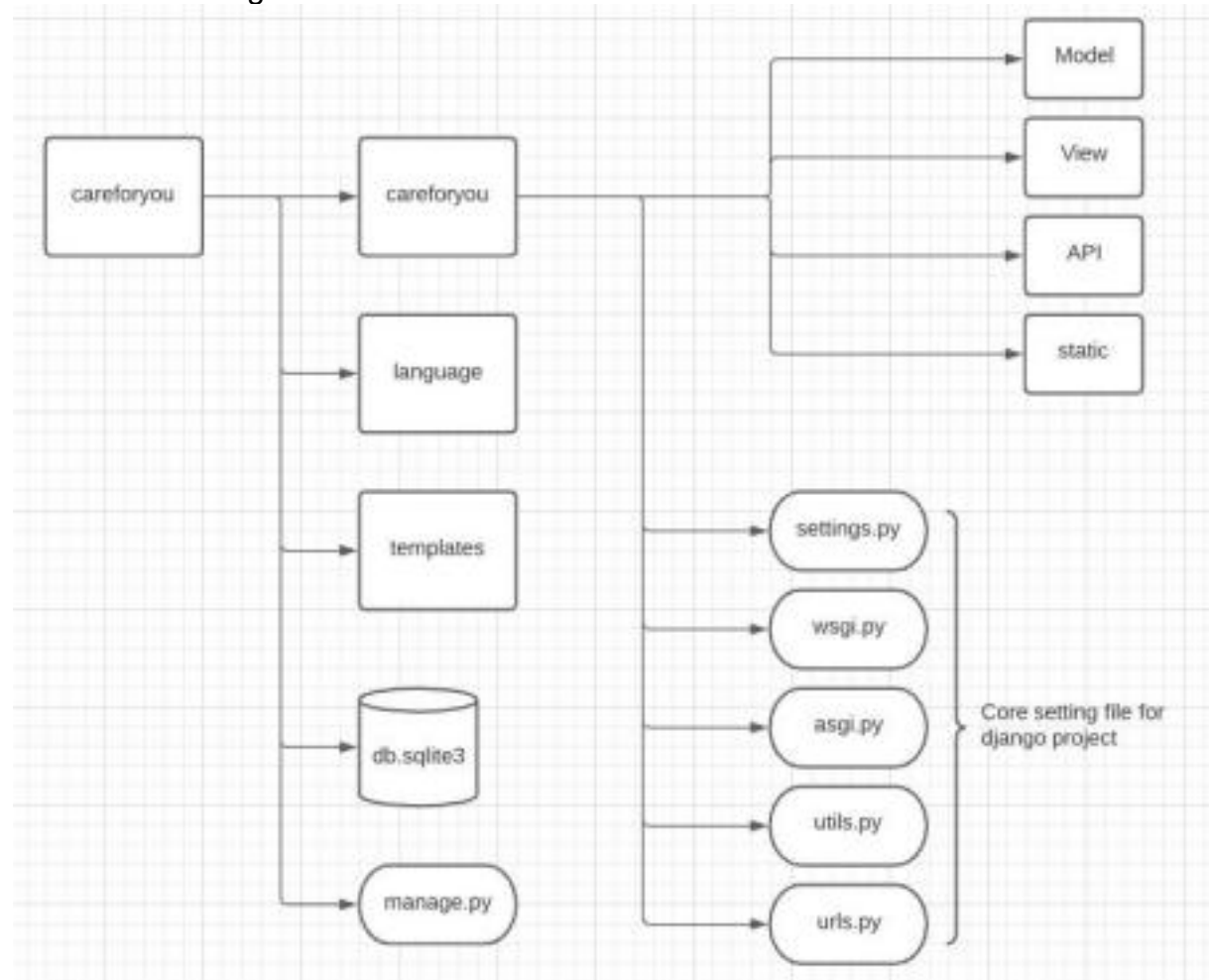
According to the above figure, this system is a client-server structure, and the use process requires an Internet connection. The client part is the browser, which can be any web browser that supports the HTML5 standard and supports all smart devices and platforms.

For the server, it is mainly divided into four parts: middleware, web server, database and external API. The middleware part mainly includes nginx responsible for static file hosting and a series of internal middleware managed by django. The web server is uWSGI and Nginx that can connect to the python project in this system.

The database system of this system uses SQLite, which is a lightweight database that is very simple and easy to manage. The database plays a very important role in this system and it is mainly used to store various data about childcare. These data are sourced from the official website of the Australian government and imported into the database after processing.

Package Architecture

This system is developed using the Django framework, the basic file structure is shown in the figure below.



There are three folders and two files in the root directory. The careforyou folder contains the core python code, the language folder contains translation files for multi-language support, and the template folder contains the needed Web page template. The database file db.sqlite3 is the main file of the database system, and manage.py is the entry point for system startup and management.

There are four word folders in the core folder, they are Model, View, API and static. Model contains all the data models in the system, and the View folder is the management module that contains all pages of the entire website. The API folder contains all internal and external APIs, and the static folder

contains all the static files required by the website, including JS, CSS, and images.

Software Environment

Software	Description
Django	The creation and development of the website based on Django web application framework and the version number is Django-3.1.2. Django is a high-level python programming language driven open source model. View, controller style web application framework, which originated from the open source community. With this architecture, programmers can easily and quickly create high-quality, easy to maintain, database driven applications.
Bootstrap	The front-end framework of the website adopts bootstrap, which is a concise, intuitive and powerful front-end development framework based on HTML, CSS and JavaScript, which makes web development faster. Bootstrap provides elegant HTML and CSS specification, which is written in dynamic CSS language Less.
PyCharm	The IDE used in website development is PyCharm. PyCharm is a python IDE with a set of tools that can help users improve their efficiency when using Python language development, such as debugging, syntax highlighting, project management, code jumping, intelligent prompt, automatic completion, unit testing, and version control. In addition, the IDE provides some advanced functions to support professional web development under the Django framework.
HTML, CSS, JS	<p>HTML(Hypertext Markup Language)is a kind of specification, a kind of standard, it marks the various parts of the web page to be displayed through the tag symbols.</p> <p>CSS(cascading style sheet) can be used to define how to display HTML elements and control the appearance of web pages.</p> <p>JS(JavaScript) is a kind of client-side scripting language based on objects and events driven with relative security. At the same time, it is also a script language widely used in client-side web development. It is often used to add dynamic functions to HTML pages, such as responding to various operations of users.</p>

Training Skill

For the technical personnel who carry out the follow-up development and maintenance of the project, they must meet the following requirements:

1. Fully understand the Django web development framework, including the MVT model, the role and relationship of each part of the file included in the project.
2. Proficient in using Python language
3. Familiar with the design and development of front-end pages, including HTML, CSS and JavaScript

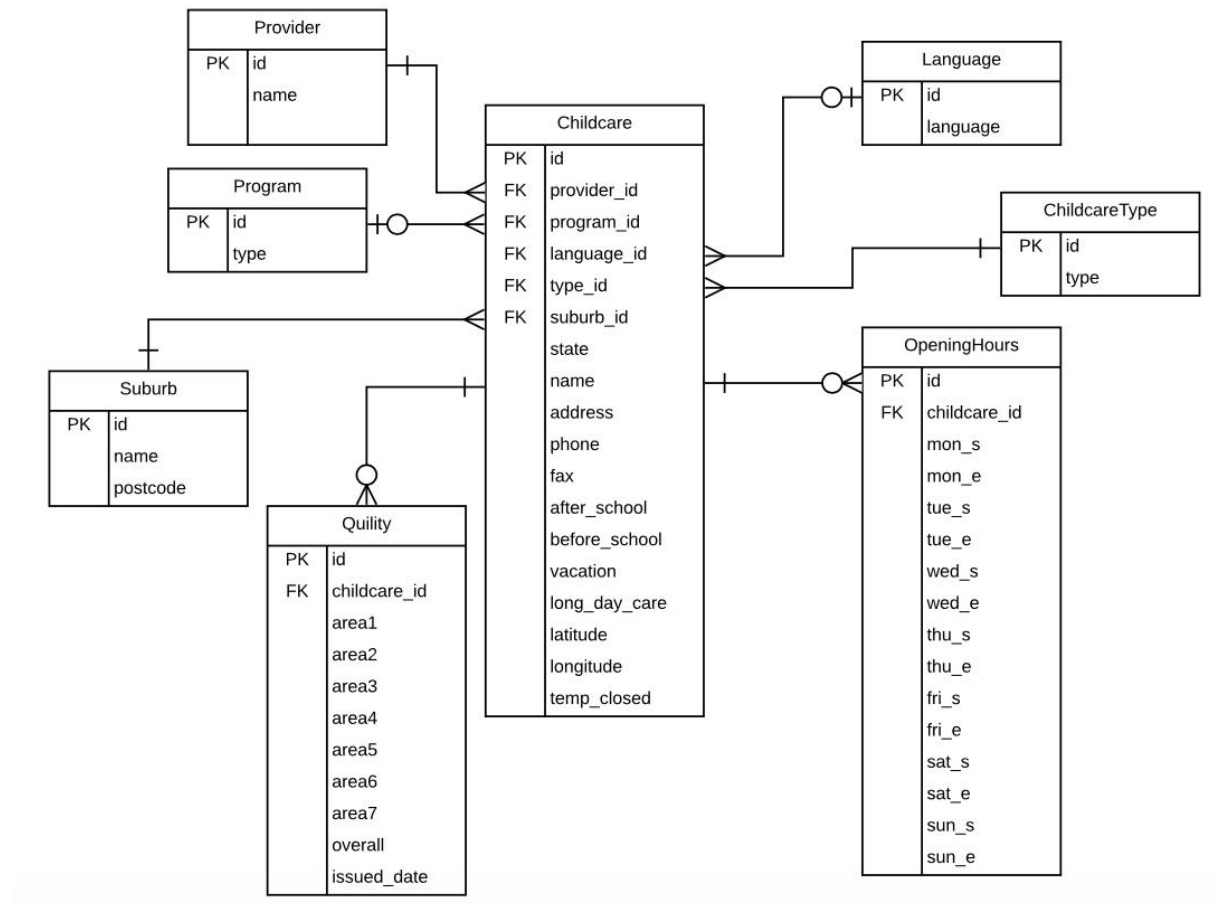
4. Technicians need to have a certain understanding of SQLite databases including the basic SQL language and the ability to process and analyze data.

Data/Database

Open Dataset Detail

Dataset Name	Functionality	Description
https://www.education.vic.gov.au/Documents/about/programs/Early-Childhood-Language-Program-Participating-Services-Jan2020.xlsx	Find Childcare Nearby	Implement a search function to search for information about childcare in Victoria, Australia
Geocoding API	Map Display	Accurate coordinates are displayed in the map of the results and details page based on the address information of the childcare
gnews.io	News, Articles Display	The home page of the website contains a news area, which will daily update the news about the childcare
Google Places	Customer's reviews for childcare	The details page of the website has a section containing customer reviews, which includes different customers' reviews for the current childcare, rating and date of reviews

ER Diagram



In the ER diagram, Childcare, Provider, Program, Suburb, Quality, Language, ChildcareType and OpeningHours are entities. When the user enters the suburb's partial name in the search box on the home page, the name data automatically completed in the drop-down list comes from the Suburb table. Similarly, the language type that appears in the language selection drop-down list comes from the language table. After the user completes the search, the childcare information that meets the search criteria comes from the rest of the tables in the database.

Data Management

In Django, SQLite3 is used because of data relationship. It is a lightweight database that complies with the ACID (atomicity, consistency, isolation, durability) relational database management system, supports multiple development languages, C, C++, C#, PHP, Perl, Java, Python, Ruby, etc., use basic SQL language to add, delete, modify, and query data.

Future Development

This section will explain the limitations of some functions of the website and provide constructive suggestions for future development

1. For the search function, when the user first selects the language type and then enters the suburb information, the suburb drop-down list cannot automatically filter out the suburb names that meet the language type criteria. In the future development, this function can be considered to improve, so as to achieve bidirectional asynchronous refreshing of suburb information and language type information.
2. For the details page, in the future development, considering adding the image information of the corresponding childcare, or adding a link to navigate to the official website of the corresponding childcare.
3. For the customer reviews, sorting function can be added in the future plan, which can sort or filter the user's comments according to posted time, rating score, etc
4. The New and articles API allows only 100 requests per day on free account. After the 100th request of the day, it sends a blank response on further requests. This may result in an news and articles section on home page. In the future development, consider using paid account to avoid this kind of situation.
5. The translation function can not translate the content of the external website. It is suggested that this function should be improved in the future development

Error Condition

This section lists the common errors and explanations in using Django to develop this project. For more information about Django error conditions, please refer to the official document link:

<https://docs.djangoproject.com/en/3.0/ref/exceptions/>

Exceptions Name	Description
AppRegistryNotReady	This exception is raised when attempting to use models before the app loading process, which initializes the ORM, is complete.

ObjectDoesNotExist	The <code>base</code> class for Model.DoesNotExist exceptions. A try/except for ObjectDoesNotExist will catch DoesNotExist exceptions for all models.
EmptyResultSet	EmptyResultSet may be raised during query generation if a query won't return any results. Most Django projects won't encounter this exception, but it might be useful for implementing custom lookups and expressions.
FieldDoesNotExist	The FieldDoesNotExist exception is raised by a model's <code>_meta.get_field()</code> method when the requested field does not exist on the model or on the model's parents.
PermissionDenied	The PermissionDenied exception is raised when a user does not have permission to perform the action requested.
ViewDoesNotExist	The ViewDoesNotExist exception is raised by <code>django.urls</code> when a requested view does not exist.
FieldError	The FieldError exception is raised when there is a problem with a model field

System Testing

Performance Testing

The performance test of the home page and information page are implemented through the Google PageSpeed. PageSpeed Insights (PSI) reports on the performance of a page on both mobile and desktop devices, and provides suggestions on how that page may be improved. The performance scores of the home page and information page are 66 and 84 respectively. For more information, please refer to the link below.

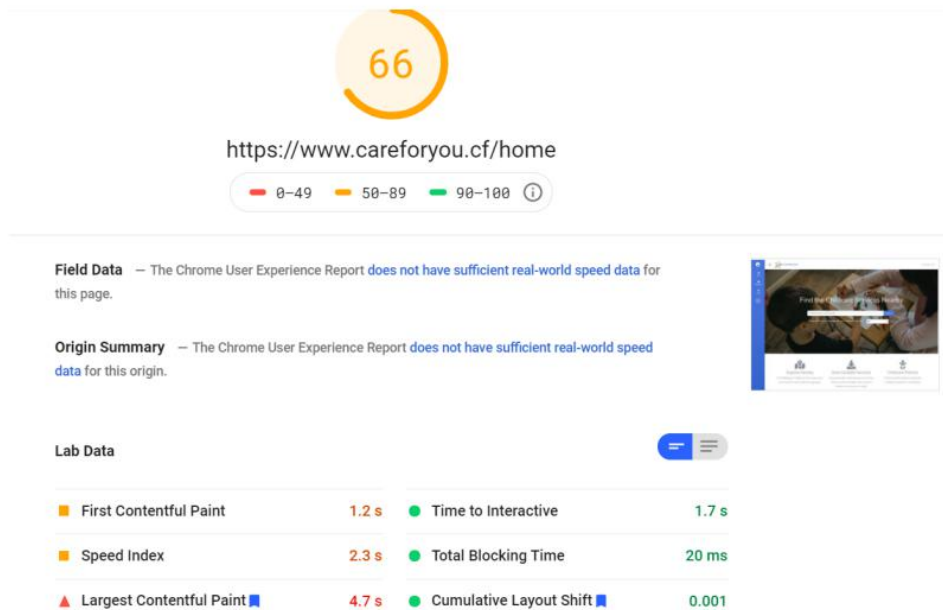
1. home page:

<https://developers.google.com/speed/pagespeed/insights/?url=https%3A%2F%2Fwww.careforyou.cf%2Fhome&tab=desktop>

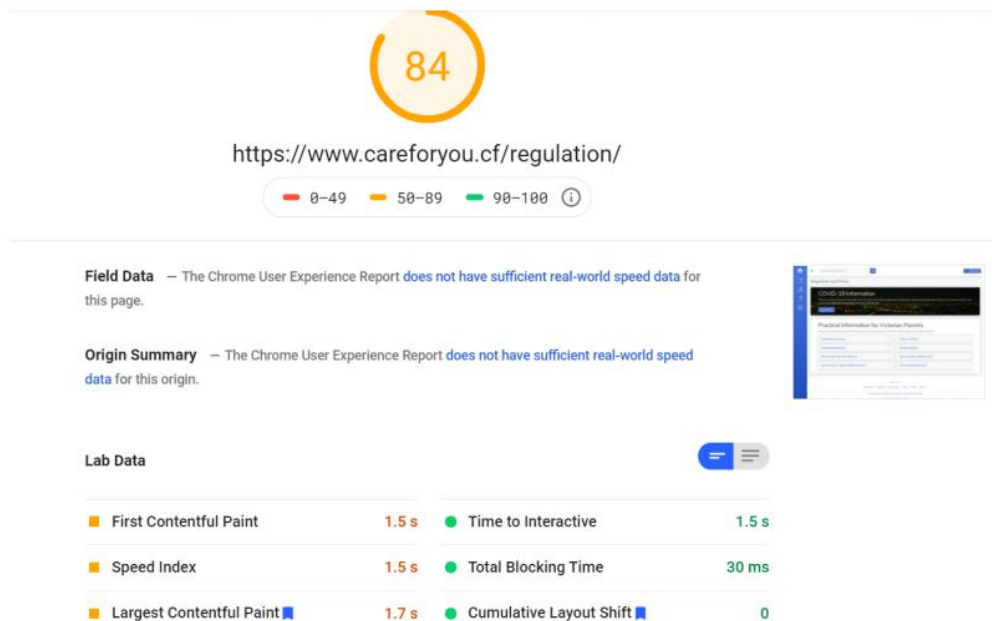
2. Information page:

<https://developers.google.com/speed/pagespeed/insights/?url=https%3A%2F%2Fwww.careforyou.cf%2Finformation&tab=desktop>

Performance Testing Report Home Page:



Performance Testing Score Regulations Page:



Unit Testing

Test No	Unit name	Expected Results	Actual Results	Pass/Fail
1	Information	When the user	Same as	Pass

	display	enters the search criteria in the search box on the home page and clicks the search button, all the results that meet the criteria will be displayed on the page correctly	expected results	
2	Button testing	All the clickable elements in the website, including buttons and text, will navigate to the corresponding page and display the information correctly after clicking	Same as expected results	Pass
3	Links to external official websites	When clicking the "Learn More" button in the information interface, the user will be correctly navigated to the Victorian Government website	Same as expected results	Pass
4	External API testing	Functions related to external API will display the result of the call correctly, including news function, map display function and reviews function	Same as expected results	Pass

Source Code

Subsequent development teams and technicians can obtain the source code of this project through the following link:

https://drive.google.com/drive/folders/1tJuLysJE77tmJpGzjz_SzjuJEAiAXXq4