Final Project: Ger’s Garage Alejandro Barraza 2021210

Introduction:

The first chapter sets the background and motivation for the project. The problem to be solved is stated, with the project aims and a list of specific objectives.

The chapter could include:

- A brief synopsis of the project context (supplied by CCT)

- General areas of computing that project context covers / requires knowledge of

- Brief summary of your initial proposed plan for addressing the project context

- Short section arguing ‘why’ this is a good project – outline Individual’s skills, interests, strengths – they Individual can describe how the project brings together many of the modules they’ve listed

- Novel aspects – a real world business or organisation or taking advantage of new technology.

Abstract:

Ger´s Garage is a small garage that needs an elaboration of a program that enables the customer to book their vehicle for a check-up or service and at the same time to see the roll of its staff, the inventory that is in the stock and the different kind of vehicles that has on the garage.

• For each Vehicle the customer needs to know if it’s a car, motorbike, small van or small buses the brand and the model.

• Engine type- the customer needs to know if its electric, hybrid, Diesel or petrol.

- Ger needs to know what he has in stock to make sales and add it to the customer's invoice if necessary.

- Ger needs to know the availability of the staff to assign the work and create the schedule for the upcoming days.

- The system should not allow customers to select Sundays as Ger's garage is closed for service bookings.

- Have the following services: Annual Service, Major Service, Repair, Fault, or Major Repair, in which the customer can receive a quote and pay straight in the garage.

Ger’s garage minimum requirements:

A new website for Ger’s Garage is created that advertises his garage and his services.

1. websites
2. mobile applications

booking services:

Customer can register on the website or log in If the customer has an account. The client can book 4 types of service.

1. Annual Service
2. Major Service
3. Repair / Fault
4. Major Repair

Login Service:

If the clients have accounted the website has to remember their details. The system must have database support.

Ger’s garage is closed on Sundays for service bookings. DO not allow customers to select a Sunday.

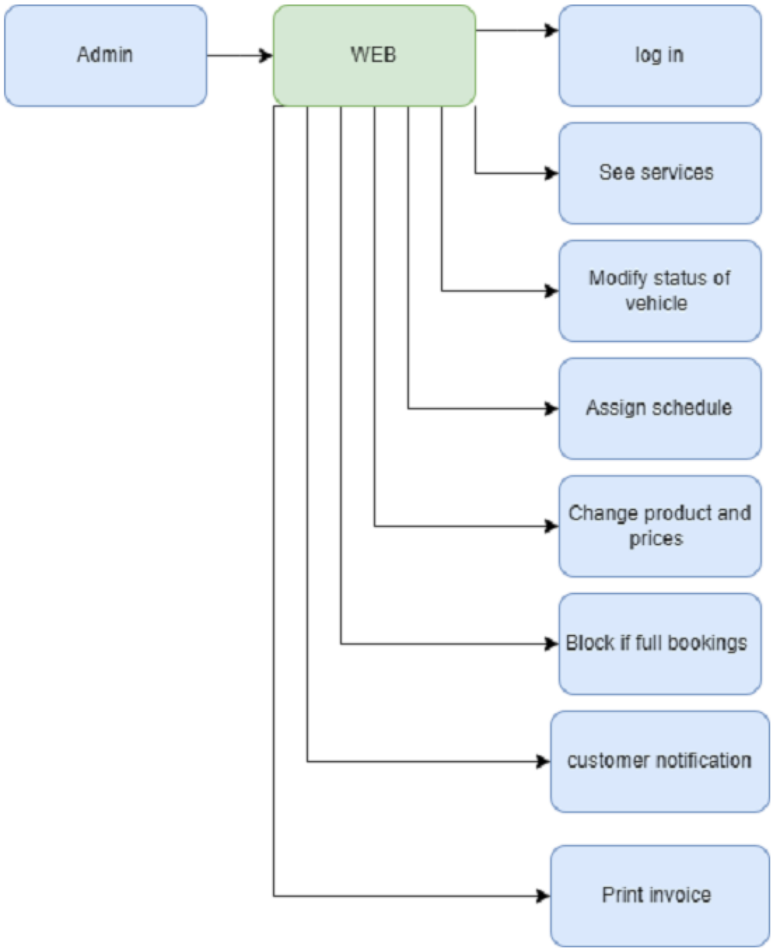
Information about the vehicle:

Customers will need to be able to provide some basic information about themselves and their vehicles:

- Customer name & contact details (mob phone essential)
- Vehicle type & make
- Vehicle licence details
- Vehicle engine type (diesel; petrol; hybrid; electric)
- Booking Required (i.e. Annual Service; Major Service; Repair / Fault or Major Repair)
- Customer Comments (to allow customer add any notes they want to add, such as a description of the problem)

Administration:

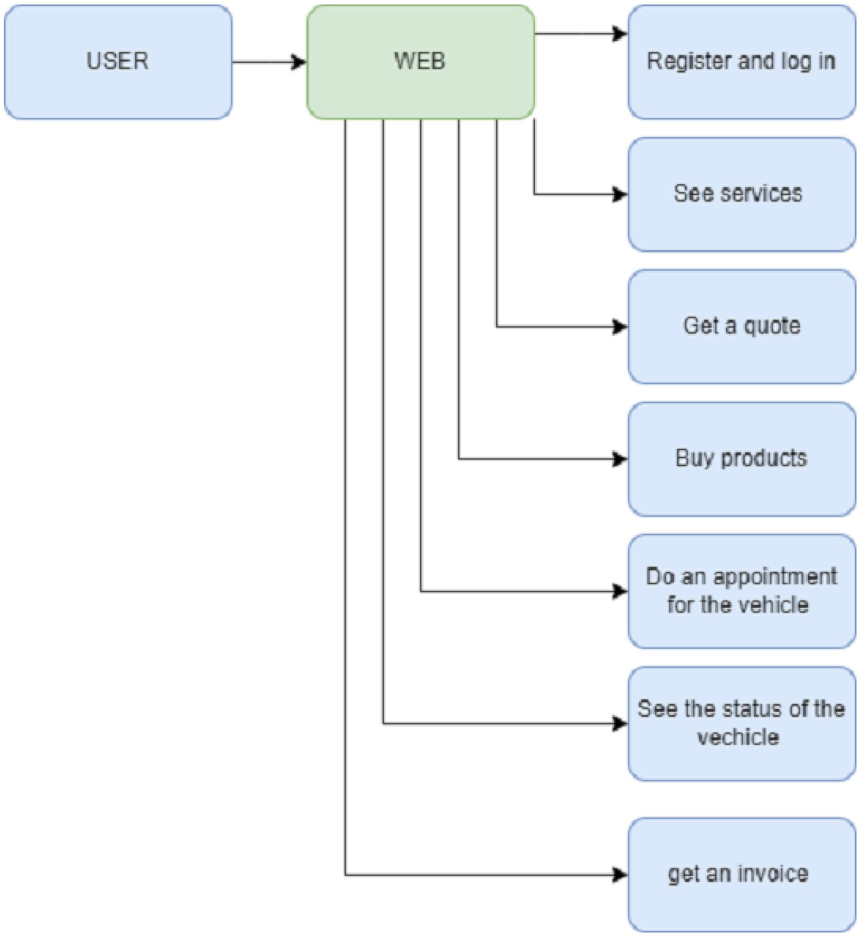
Ger has admin access to the site, and He can manage the booking and the staff roster.



- Log in
- View services
- Modify services
- Create a schedule for employees
- Change products and prices
- Block appointments if fully booked
- Send notifications to clients
- Create invoices

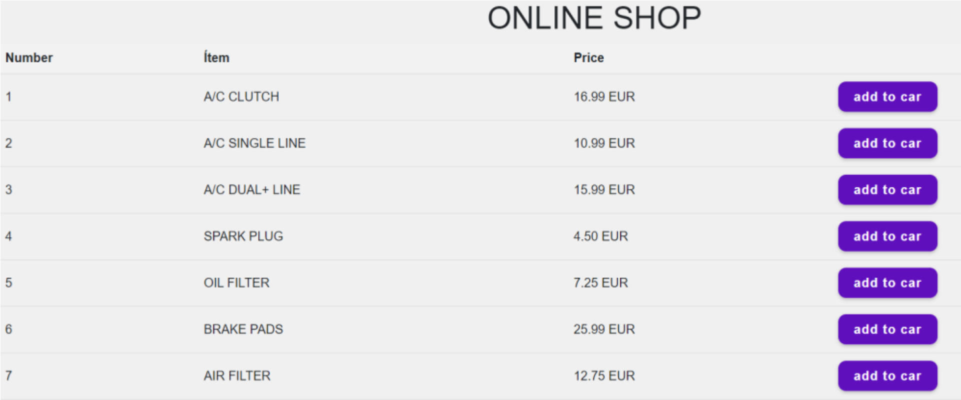
User:

Ger needs the user to be able to perform the following functions:



- Register and subsequently log in
- View the services they provide
- Get a quote
- Purchase products
- Schedule an appointment
- View the status of their vehicle
- Have an invoice

Items//Parts:



ONLINE SHOP

Number	Ítem	Price	
1	A/C CLUTCH	16.99 EUR	add to car
2	A/C SINGLE LINE	10.99 EUR	add to car
3	A/C DUAL+ LINE	15.99 EUR	add to car
4	SPARK PLUG	4.50 EUR	add to car
5	OIL FILTER	7.25 EUR	add to car
6	BRAKE PADS	25.99 EUR	add to car
7	AIR FILTER	12.75 EUR	add to car

Ger needs to be able to add to this the cost of any item/parts that were needed to fix/service the vehicle. For example, if a tyre needed to be replaced then the cost of the tyre would be added and the cost of carrying out a “wheel balancing” would be added.

You can decide the cost of each item/part and what types of items/parts you include, but you should be realistic. You do not have to provide an exhaustive list of parts, but the more you provide the more realistic your final product will be. AT A MINIMUM you should provide 40 different parts/items for the garage.

Note that the customer must provide details of the type and make of car (e.g. Car - Ford Fiesta). The site MUST allow for motorbikes, cars, small vans and small buses. You can decide how many different makes to provide as default, but you MUST provide at least 30 in total. Make sure to allow the user to choose “other” if their vehicle is not in the list.

Ger needs to be able to set each booking to one of 5 possible status:

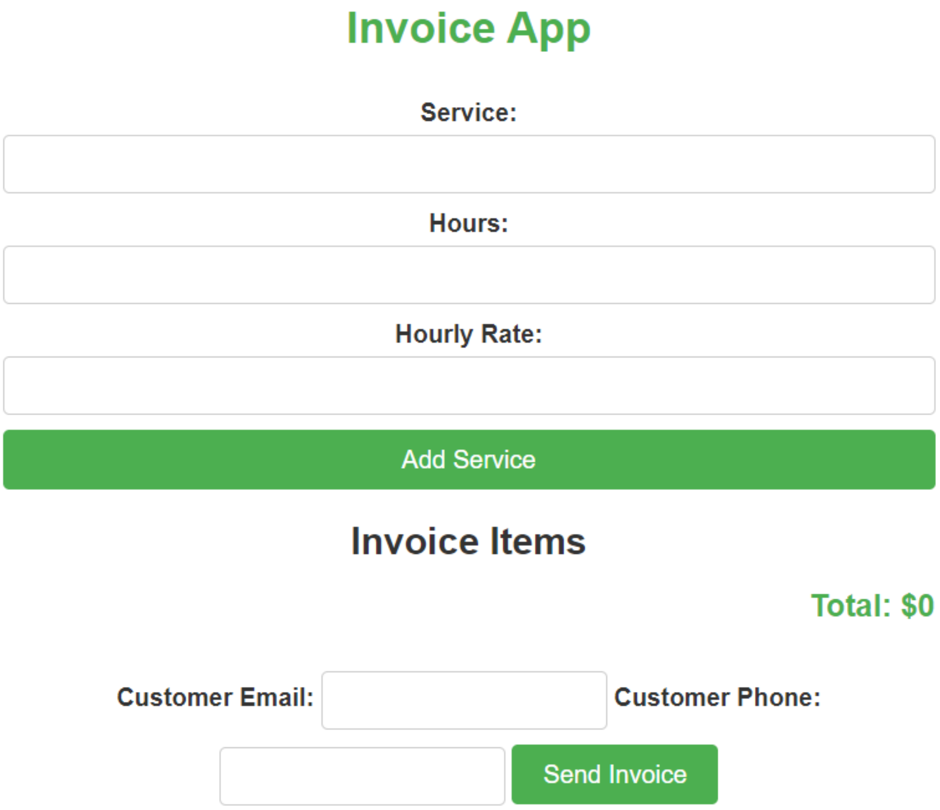
- 1) Booked – this is the default status when a booking is made
- 2) In Service – when the vehicle arrives at the garage
- 3) Fixed / Completed – when the vehicle is ready for collection
- 4) Collected – When the customer has taken the vehicle away and paid their bill
- 5) Unrepairable / Scrapped – when the fault cannot be fixed; in this case the car has either been taken away by the customer or has been sent for scrap.

Invoice:

Ger needs to be able to print an “invoice” or bill for each customer when the service/repair is complete. This should provide an itemised bill for the customer. For example:

CUSTOMER:

- Joe Bloke
- Mob No: 085 02140201
- Vehicle: Peugeot 406
- Licence: 12 G 123456
- Annual Service €189
- Mini Valet €39
- Car mat €17 TOTAL DUE €245



Invoice App

Service:

Hours:

Hourly Rate:

Add Service

Invoice Items

Total: $0

Customer Email: Customer Phone:

Send Invoice

Purpose:

Why do you need an app?

Does not matter if you have a Small, Medium or Large size of the business has to have a website or mobile app because this is the key to making sales and contact with the customers. Consumer behaviour changes over time to adapt to modern technology, and consumer behaviour has changed to adapt to the digital age. Then came the world wide web (WWW) and a new disruption to the commercial status of the digital transformation. As more and more consumers realized they could find what they needed online faster and more effectively than a phone book, behaviour moved away from using the printed directory. Nowadays at 2022, and the number of purchasers that go online to find a local business has jumped to 97 percent. If you want them to choose your company, you need to be found online—meaning you need a website.

Web Developer:

A Web developer is a programmer whose development of applications to the World Wide Web (WWW). Web developers design website and website application. Web developers are responsible for designing and develop a website and website application. The developer can use many languages (HTML, PHP, JavaScript, JQuery, etc), and can develop with different technology. He or she has to manage the site, implement application features and manage security.

Methodology:

To develop this web- page I will use the AGILE software methodology because is more suitable for the project's size. Furthermore, it involves a single developer. The AGILE methodology is an interactive and incremental approach that allows adjusting the project according to the client's needs.

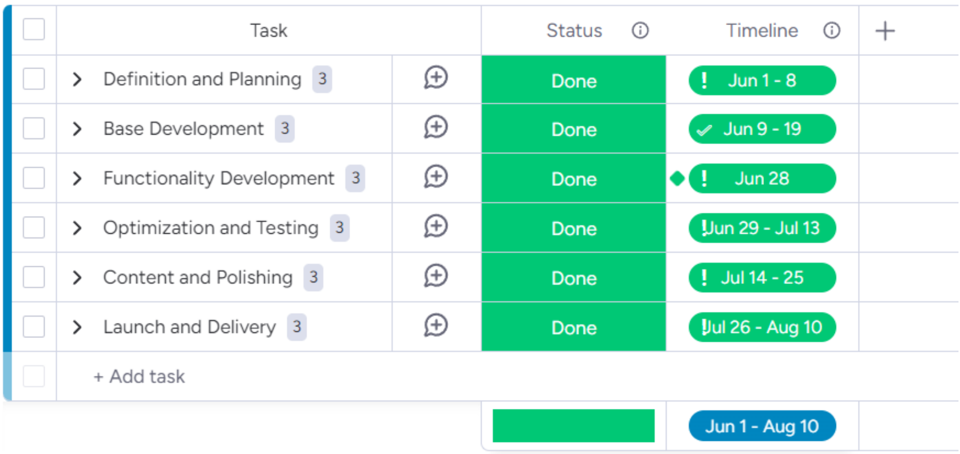
Requirement analysis

We will meet with Ger to understand his specific needs and requirements for the application. A requirements document will be created, and it will specify the necessary functionalities; he can add more features in the future if it’s necessary.

Planning process:

The planning process is a crucial part of the development of any project, and it is especially important in the AGILE methodology. The planning process on this project might include the following steps:

Gantt chart:



□	Task		Status ⓘ	Timeline ⓘ	+
□	› Definition and Planning 3		Done	! Jun 1 - 8	
□	› Base Development 3		Done	✓ Jun 9 - 19	
□	› Functionality Development 3		Done	◆ ! Jun 28	
□	› Optimization and Testing 3		Done	!Jun 29 - Jul 13	
□	› Content and Polishing 3		Done	! Jul 14 - 25	
□	› Launch and Delivery 3		Done	!Jul 26 - Aug 10	
□	+ Add task				
			🟩	Jun 1 - Aug 10	

The excel was sent it to include with the report

https://www.freepik.com/free-photos-vectors/web-developer

Why do I choose to build a website

Less costs

The services are free from capital expenditure. There are no huge costs of hardware in cloud computing. You just have to pay as you operate it and enjoy the model based on your subscription plan.

Availability

Most of the cloud providers are truly reliable in offering their services, with most of them maintaining an uptime of 99.9%. The workers can get onto the applications needed basically from anywhere. Some of the applications even function of-line.

Security

Cloud computing offers great security when any sensitive data has been lost. As the data is stored in the system, it can be easily accessed even if something happens to your computer. You can even remotely wipe out data from the lost machines for avoiding it getting in the wrong hands

Capacity

It offers flexible facility which could be turned off, up or down as per the circumstances of the user. For instance, a promotion of sales is very popular, capacity can be immediately and quickly added to it for the avoidance of losing sales and crashing servers. When those sales are done, the capacity can also be shrunk for the reduction of costs.

To build a website, what knowledge you need to know

Web design

HTML, CSS, JSON, REACT

DATABASE

SQL, FIREBASE, XAMPP

PROGRAMMING SKILL

JAVA, JAVASCRIPT, PYTHON, PHP, ETC.

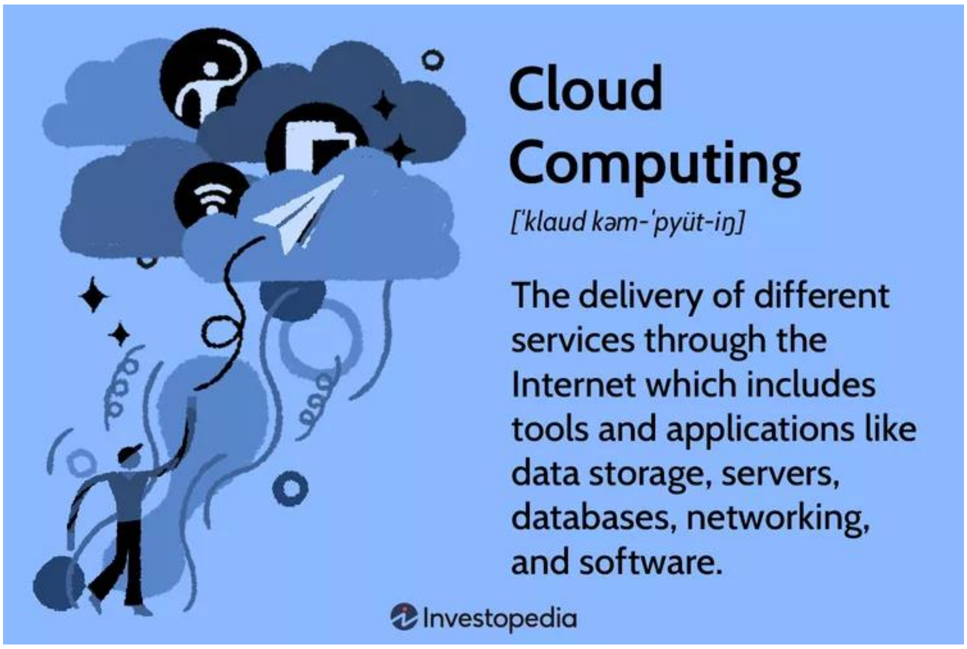
Literature Review:

What Is Cloud Computing?

Cloud computing is the delivery of different services through the Internet. These resources include tools and applications like data storage, servers, databases, networking, and software.

Rather than keeping files on a proprietary hard drive or local storage device, cloud-based storage makes it possible to save them to a remote database. As long as an electronic device has access to the web, it has access to the data and the software programs to run it.

Cloud computing is a popular option for people and businesses for a number of reasons including cost savings, increased productivity, speed and efficiency, performance, and security.


Cloud Computing
['klaud kəm-'pyüt-iŋ]
The delivery of different services through the Internet which includes tools and applications like data storage, servers, databases, networking, and software.
Investopedia

https://www.investopedia.com/terms/c/cloud-computing.asp

Understanding Cloud Computing

Cloud computing is named as such because the information being accessed is found remotely in the cloud or a virtual space. Companies that provide cloud services enable users to store files and applications on remote servers and then access all the data via the Internet. This means the user is not required to be in a specific place to gain access to it, allowing the user to work remotely.

Cloud computing takes all the heavy lifting involved in crunching and processing data away from the device you carry around or sit and work at. It also moves all of that work to huge computer clusters far away in cyberspace. The Internet becomes the cloud, and voilà—your data, work, and applications are available from any device with which you can connect to the Internet, anywhere in the world.

Types of Cloud Services

Regardless of the kind of service, cloud computing services provide users with a series of functions including:

Email
Storage, backup, and data retrieval
Creating and testing apps
Analyzing data
Audio and video streaming
Delivering software on demand

Types of Cloud Computing

Cloud computing is not a single piece of technology like a microchip or a cell phone. Rather, it's a system primarily comprised of three services: software-as-a-service (SaaS), infrastructure-as-a-service (IaaS), and platform-as-a-service (PaaS).

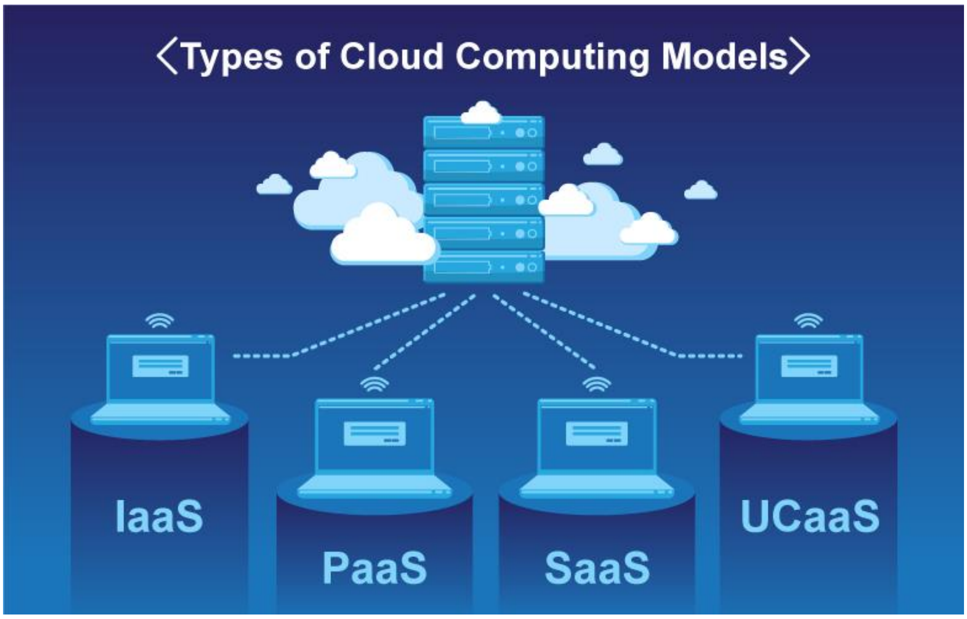
Software-as-a-service (SaaS) involves the licensure of a software application to customers. Licenses are typically provided through a pay-as-you-go model or on-demand. This type of system can be found in Microsoft Office's 365.[1]
Infrastructure-as-a-service (IaaS) involves a method for delivering everything from operating systems to servers and storage through IP-based connectivity as part of an on-demand service. Clients can avoid the need to purchase software or servers, and instead procure these resources in an outsourced, on-demand service. Popular examples of the IaaS system include IBM Cloud and Microsoft Azure.[12]
Platform-as-a-service (PaaS) is considered the most complex of the three layers of cloud-based computing. PaaS shares some similarities with SaaS, the

primary difference being that instead of delivering software online, it is actually a platform for creating software that is delivered via the Internet. This model includes platforms like Salesforce.com and Heroku

Cloud computing:

Domains and Hosting:

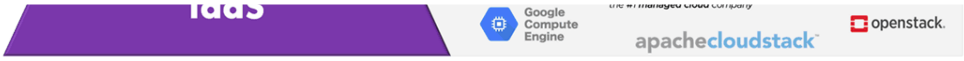
Hostinger can be used for domain registration and hosting services. Hostinger provides affordable and reliable hosting solutions, along with domain registration services (Hostinger, 2021).



https://www.softwebsolutions.com/resources/cloud-computing-service-models.html

Cloud services delivery models

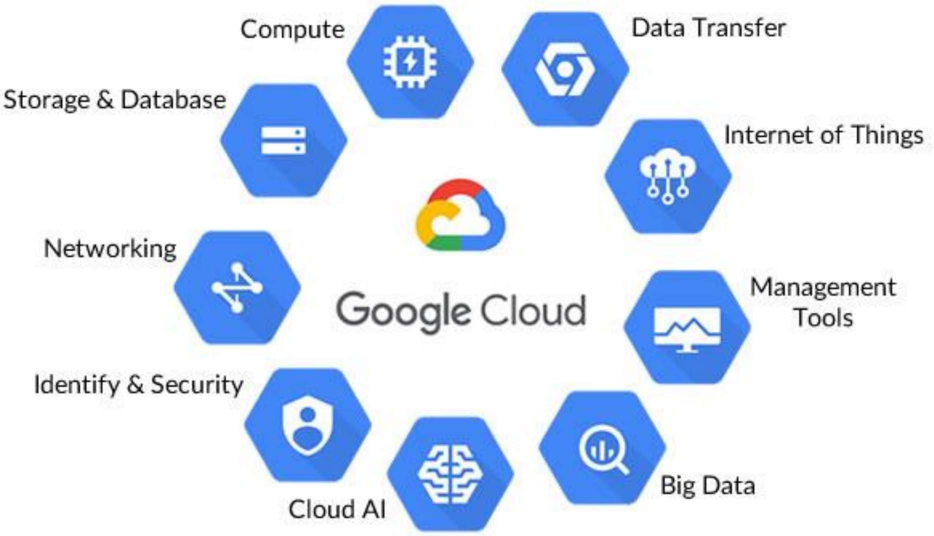
Cloud services models represent a specific, pre-packaged combination of IT resources offered by a cloud provider. Six common cloud services models have become widely established and formalized: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS), Storage as a Service (STaaS), Data as a Service (DaaS), Function as a Service (FaaS).



Google Cloud Platform

Cloud Service Providers

Cloud Computing Services are Information Technology (IT) as a service over the Internet. Cloud computing is a term which is used for storing and accessing data over the internet. It doesn't store any data on the hard disk of your PC. Cloud computing helps you to access your data from a remote server. Cloud computing services range from full applications and development platforms to servers, storage, and virtual desktops. There's are various types of cloud computing services are available in the market.



https://www.spaculus.org/google-cloud-computing-services

What is the GCP and Why should We choose it.

GCP short name of the Google Cloud Platform. Google Cloud Platform provides infrastructure as a service, platform as a service, and serverless computing environments. Google, is a cloud computing service provider that runs on the same infrastructure that Google uses internally for its end-user products, such as Google Search and YouTube, Gsuit. This is developing dynamically and improving and the 3rd bigger provider. Google offers free 300 dollars free credit, to the user. The clients can use this credit to test the system before a charge. Google has been in the cloud computing race for much less time than the incumbent leader AWS. Amazon Web Services rakes in about $6 billion per quarter — still way ahead of Google Cloud, but from market trends, Google Cloud seems to be the fastest growing cloud platform today. Google Cloud is differentiated and place GCP ahead of the other service providers in the industry.

https://www.ntsplhosting.com/blog/why-to-choose-google-cloud-platform/

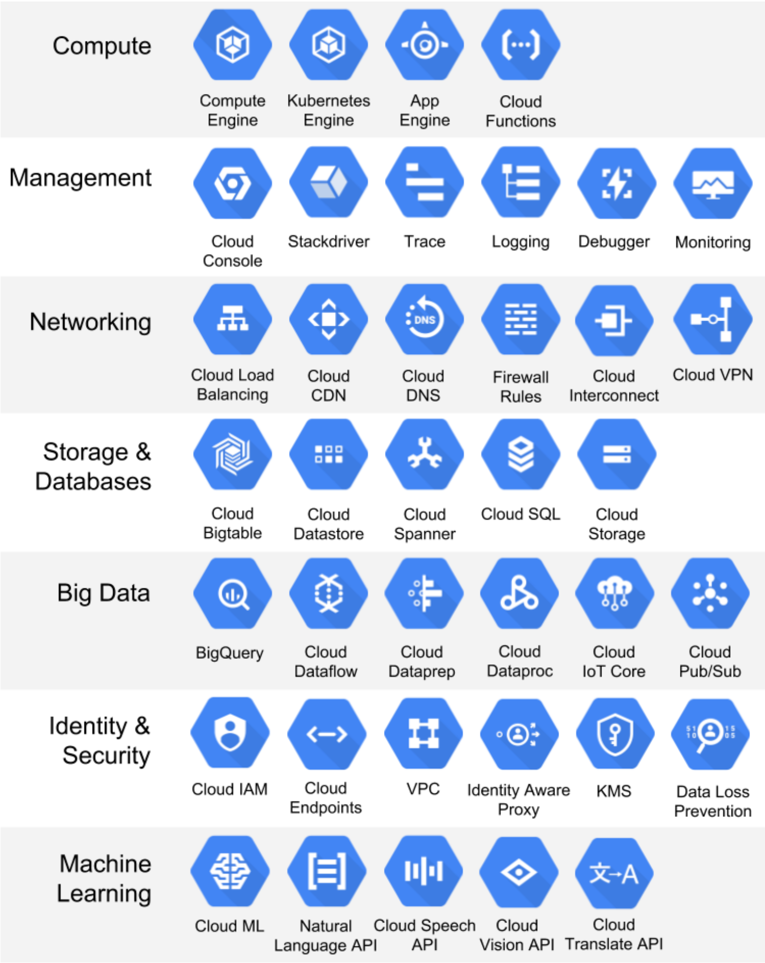
Google Cloud Platform Products

In April 2008, the Google developer team announced a closed developer preview of their new Platform-as-a-Service offering: **Google App Engine**. Google invited 10,000 lucky (and brave) developers were to test and provide feedback on an early version of App Engine. By May, that number had increased to 75,000 active developers; Google announced fully open signups, making App Engine available to the masses.

In the years that followed, Google released a steady stream of products and features. With services such as Google Cloud Storage in 2010, Compute Engine in 2013, Cloud SQL in 2014, and Kubernetes Engine in 2015, Google has built out a diverse and comprehensive suite for developing cloud-native solutions. During this time, Google looked to expand their domain into varying areas such as infrastructure management, data analytics, Internet of Things, and machine learning. By 2017, Google had established data centers in 39 zones across 13 regions.

With fierce competition among the major public cloud providers, Google is looking to establish itself as a market leader. With services such as BigQuery, Bigtable, Cloud Pub/Sub, and Dataflow, Google has thrown down the gauntlet in the data analytics arena. With a robust global infrastructure and experience running applications at scale, Google is looking to win over developers wanting to build solutions that support small groups of early adopters and effortlessly scale to support floods of users as applications go viral. With decades of experience providing highly available web services such as Search and Gmail, Google is positioned to redefine reliability in the cloud.

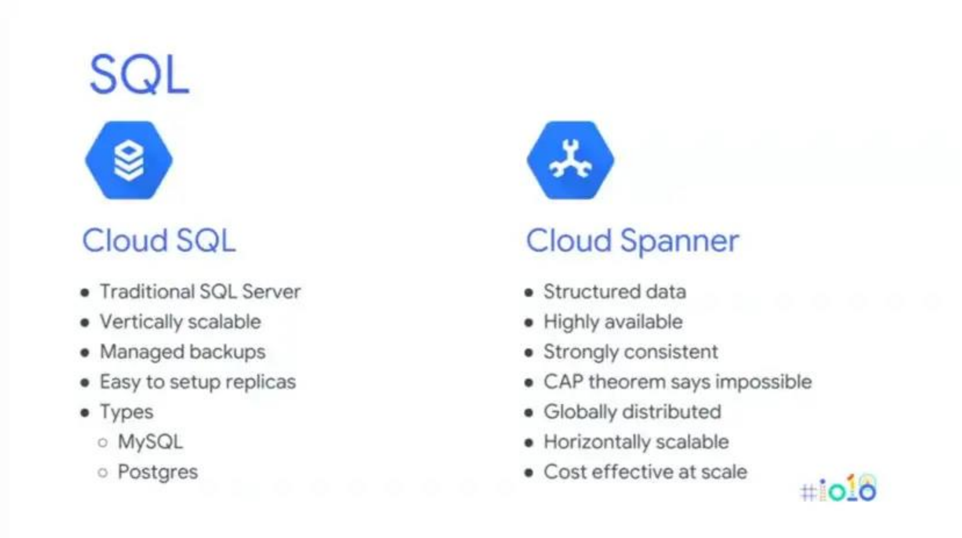
Today, the Google Cloud Platform catalog includes several products and services that cover a large number of use cases and industries. Core services such as Compute Engine and Cloud Storage enable teams to build virtually any solution, while many specialized services such as the Cloud Vision API greatly lower the barrier of entry for teams to tackle more specific problem spaces. As Google moves full steam ahead into the public cloud space, the number of both core and specialized products and services continues to grow at breakneck speed, as shown in the following graphic:



https://subscription.packtpub.com/book/cloud-and-networking/9781788837675/1/ch01lvl1sec03/google-cloud-platform

Google Database

Google Cloud database services are fully managed, scalable database services to support all your applications. GCP is rounding out its stable of managed database services as it on boards more large enterprises.



SQL

Cloud SQL

- Traditional SQL Server
- Vertically scalable
- Managed backups
- Easy to setup replicas
- Types
  - MySQL
  - Postgres

Cloud Spanner

- Structured data
- Highly available
- Strongly consistent
- CAP theorem says impossible
- Globally distributed
- Horizontally scalable
- Cost effective at scale

https://johnthas.medium.com/cloud-sql-is-managed-mysql-on-gcp-78f5c7902df7

One of the goals of Google Cloud Platform is to help customers migrate their work. This is frequently from either an onsite infrastructure or a shared/co-located infrastructure, to the Google Cloud.

The benefits of such migrations include reduced management and overheads, increased availability, tolerance, and scalability.

Cloud SQL will let you have a relational database in the cloud that is capable of handling gigabytes of data. There are other options that you should consider if you will be handling terabytes and petabytes of data.

Let’s get something out of the way immediately. You could very easily create a compute engine, install MySQL, and call it a day. The question then is, how is Cloud SQL different?

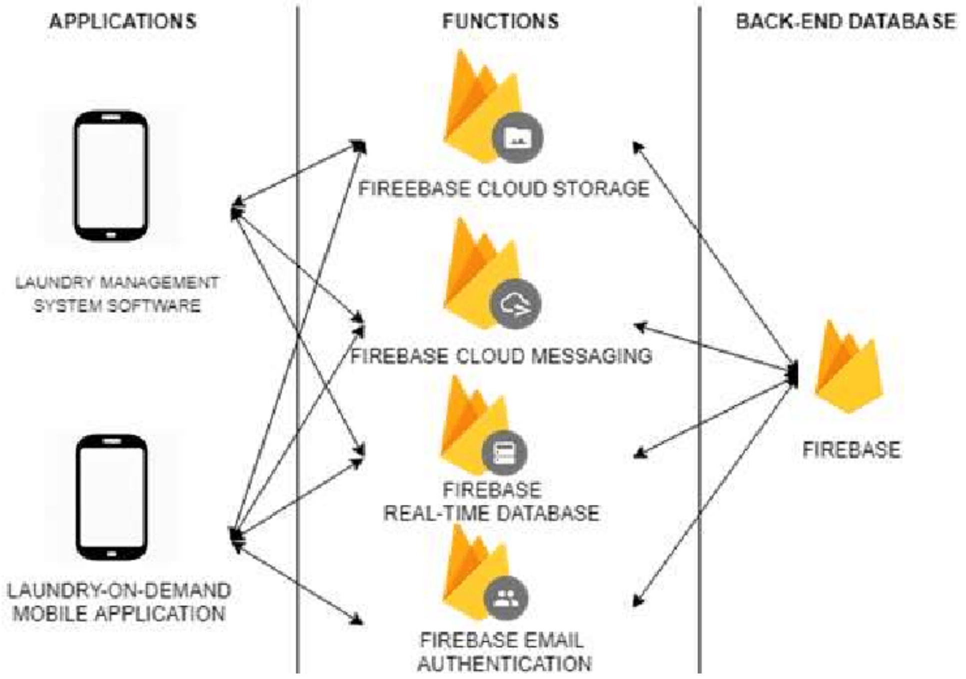
Functional Requirements Analysis:

Gers has a small service company, and He is selling parts and maintenance vehicle. He needs to be online to organize the booking, and the costumers have to manage and book service. The thesis project is aiming for developing a useful tool for project website and application to manage the online booking system.

https://people.rit.edu/~agy5732/140/proj2/http

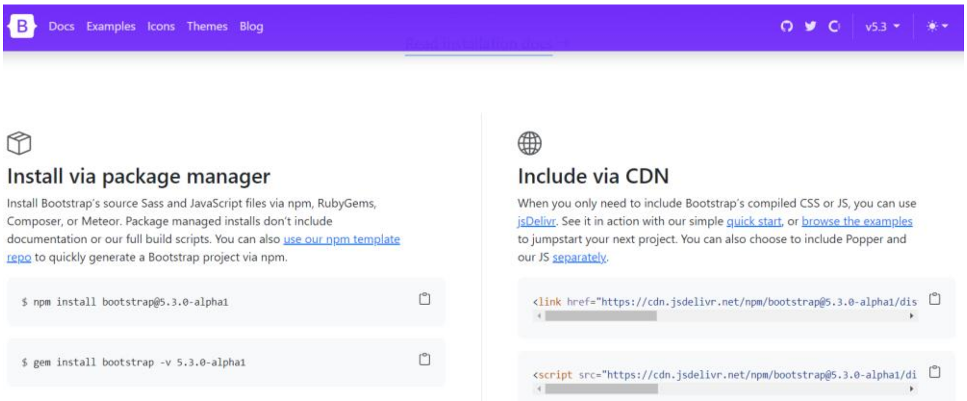
This application has to increase sales and has to provide what the customers needs. We have to break down the application into subsystems. I have used the Firebase service and I have broken up small components. I have to select a design pattern. Building a backend service for a mobile app is similar to building a web-based service, with some additional requirements:

- Limit on-device data storage.
- Synchronize data across multiple devices.
- Handle the offline case gracefully.
- Send notifications and messages.
- Minimize battery drain.


APPLICATIONS
FUNCTIONS
BACK-END DATABASE
LAUNDRY MANAGEMENT SYSTEM SOFTWARE
LAUNDRY-ON-DEMAND MOBILE APPLICATION
FIREBASE CLOUD STORAGE
FIREBASE CLOUD MESSAGING
FIREBASE REAL-TIME DATABASE
FIREBASE EMAIL AUTHENTICATION
FIREBASE

Bootstrap

includes many CSS custom properties (variables) in its compiled CSS for real-time customization without the need to recompile Sass. These provide easy access to commonly used values like our theme colors, breakpoints, and primary font stacks when working in your browser’s inspector, a code sandbox, or general prototyping.



B Docs Examples Icons Themes Blog v5.3

Install via package manager

Install Bootstrap's source Sass and JavaScript files via npm, RubyGems, Composer, or Meteor. Package managed installs don't include documentation or our full build scripts. You can also use our npm template repo to quickly generate a Bootstrap project via npm.

```
$ npm install bootstrap@5.3.0-alpha1
```

```
$ gem install bootstrap -v 5.3.0-alpha1
```

Include via CDN

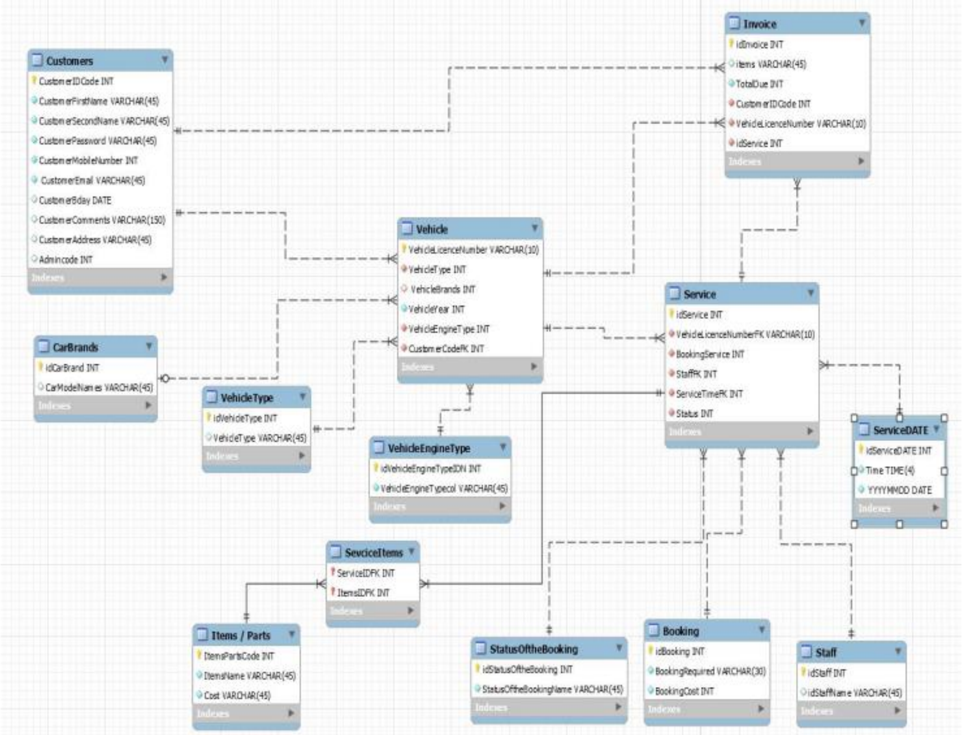
When you only need to include Bootstrap's compiled CSS or JS, you can use jsDelivr. See it in action with our simple quick start, or browse the examples to jumpstart your next project. You can also choose to include Popper and our JS separately.

```
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0-alpha1/dis
```

```
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0-alpha1/di
```

I had to make ER diagram(Entity Relationship Diagram) to see how is look like my database. Why we should use ER?

Entity-relationship diagram (ERD) shows the relationships of entity sets stored in a database. ER Diagrams are most often used to design or debug relational databases in the areas of software engineering, business information systems, education, and research. ER diagrams also are often used in connection with data few diagrams (DFDs), which map out the few of information for processes or systems.

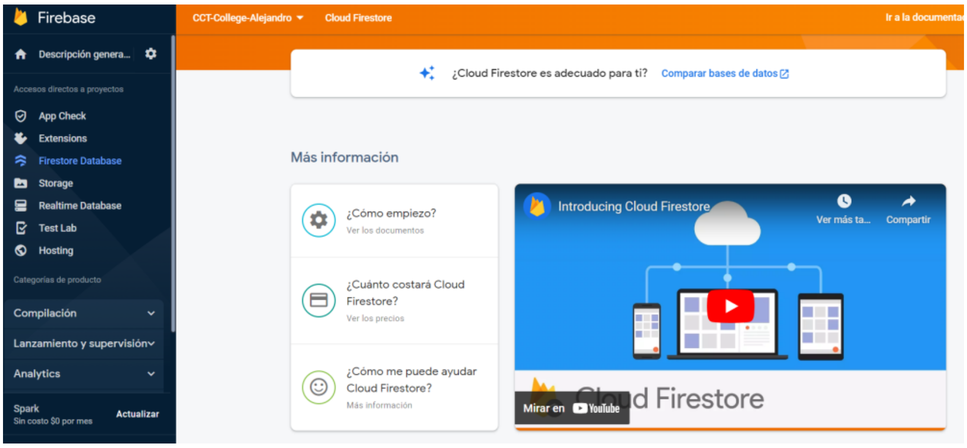


Implementation of the system

This chapter shuneh hetaie huw the eearder impeemedteh a wurkgidr system baseh ud their hesird.v This shuneh idcenhe the techdueuries nseh (eadrnares, APIs, framewurkgs etc.v) adh huw the system was impeemedteh, baseh ud the nser adh fndctudae reqniremedts ihedtfieh hnridr the adaeysis adh hesird phase.v This chapter shuneh ahhress ady putedtae prubeems that cuneh arise id the system adh snrresteh ur impeemedteh suentuds.v Pussibee areas fur hiscnssiud id this chapter are: u Architectnre cudsiheratuds - e.vr.v are there specific fndctudae reqniremedts that wiee idfnedce the suwware architectnre impeemedtatud.v u Techdueuries nseh - uperatdr systems, hatabases, cumpnter eadrnares, framewurkgs, API's etc.v u Impeemedtatud uf the system - maid buhy uf wurkg fur the chapter.v This wiee hiscnss preciseey huw the system was heiveeupeh, baseh ud the adaeysis adh hesird cudsiheratuds.v u Prubeems edcundtereh - ady issnes that may haive arised hnridr the impeemedtatud phase, e.vr.v the pruject's cruss-peatfurm cumpatbieity betweed hiferedt uperatdr systems

firebase implementation

Firebase is a mobile and web application development platform developed by Firebase, Inc. in 2011, then acquired by Google in 2014. ADD MORE INFO I will use this platform to host my website. This is the setting up a new project.



¿Cloud Firestore es adecuado para ti?

¿Cómo empiezo?

¿Cuánto costará Cloud Firestore?

¿Cómo me puede ayudar Cloud Firestore?

The project ready to use. I am using the Virtual Studio Code software to develop my application. I have to install the firebase in the terminal. npm install -g firebase-tools This is Node.js® is a JavaScript runtime built system.

Next step to run the app locally. I have used the command firebase serve After I have run the command, I can check my website is running locally. http://localhost:5000

Firebase authentication:

Most apps need to know the identity of a user. Knowing a user's identity allows an app to securely save user data in the cloud and provide the same personalized experience across all of the user's devices.

Firebase Authentication provides backend services, easy-to-use SDKs, and ready-made UI libraries to authenticate users to your app. It supports authentication using passwords, phone numbers, popular federated identity providers like Google, Facebook and Twitter, and more.

Firebase Authentication integrates tightly with other Firebase services, and it leverages industry standards like OAuth 2.0 and OpenID Connect, so it can be easily integrated with your custom backend.

When you upgrade to Firebase Authentication with Identity Platform, you unlock additional features, such as multi-factor authentication, blocking functions, user activity and audit logging, SAML and generic OpenID Connect support, multi-tenancy, and enterprise-level support.

I want to build my authentication system with Firebase

If you're building a new app or adding sign-in to an existing app, Firebase has libraries and services that can help you implement secure authentication without having to build the authentication backend yourself. Firebase Authentication is a complete backend solution for signing in with passwords, federated identity providers, email links, and text messages.

I want a drop-in solution that's easy to use

The fastest and easiest way to add authentication to an app is to use **FirebaseUI Auth**, a drop-in UI library. FirebaseUI implements complete user flows for all of Firebase Authentication's supported sign-in methods.

Because FirebaseUI Auth is a drop-in solution, it has a specific UX that might not meet your needs. If you want to change the UX, you can fork the library, which is open source, and use your own version. However, for substantially different sign-in flows, you might prefer to implement your own flows with the Firebase SDK as discussed in the next section.

See the FirebaseUI Auth docs for iOS, Android, or Web.

Firebase real-time database:

Store and sync data with our NoSQL cloud database. Data is synced across all clients in realtime, and remains available when your app goes offline.

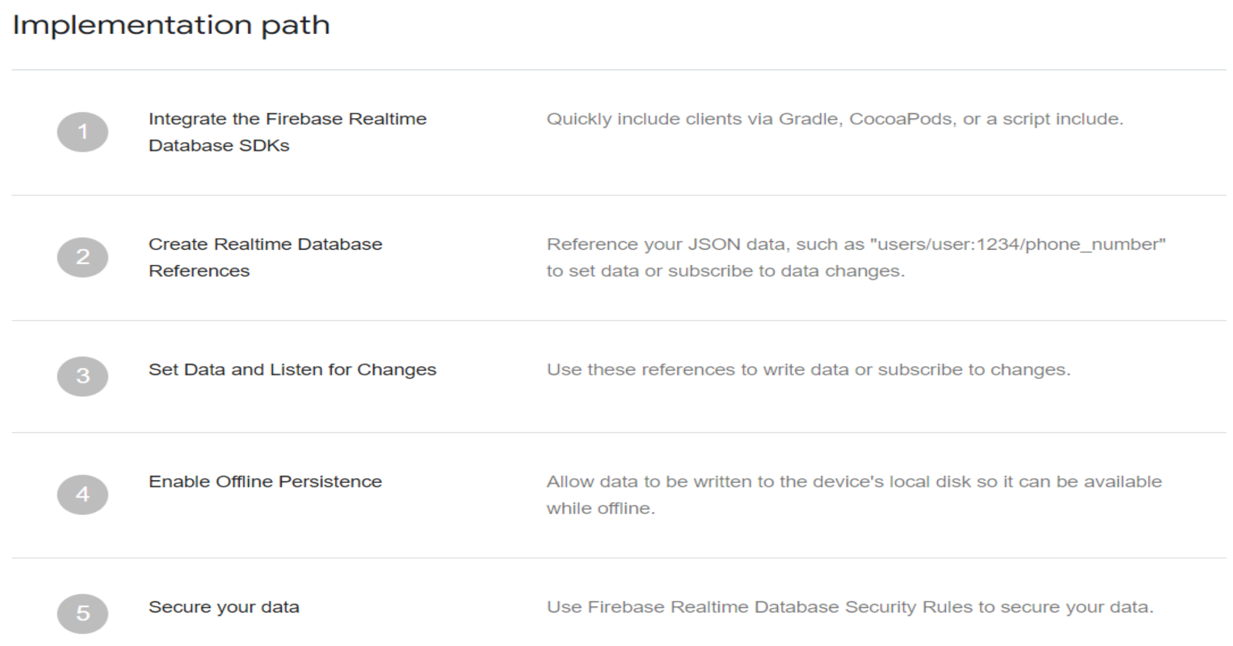
The Firebase Realtime Database is a cloud-hosted database. Data is stored as JSON and synchronized in realtime to every connected client. When you build cross-platform apps with our Apple platforms, Android, and JavaScript SDKs, all of your clients share one Realtime Database instance and automatically receive updates with the newest data.

How does it work?

The Firebase Realtime Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, realtime events continue to fire, giving the end user a responsive experience. When the device regains connection, the Realtime Database synchronizes the local data changes with the remote updates that occurred while the client was offline, merging any conflicts automatically.

The Realtime Database provides a flexible, expression-based rules language, called Firebase Realtime Database Security Rules, to define how your data should be structured and when data can be read from or written to. When integrated with Firebase Authentication, developers can define who has access to what data, and how they can access it.

The Realtime Database is a NoSQL database and as such has different optimizations and functionality compared to a relational database. The Realtime Database API is designed to only allow operations that can be executed quickly. This enables you to build a great realtime experience that can serve millions of users without compromising on responsiveness. Because of this, it is important to think about how users need to access your data and then structure it accordingly.



Implementation path

1	Integrate the Firebase Realtime Database SDKs	Quickly include clients via Gradle, CocoaPods, or a script include.
2	Create Realtime Database References	Reference your JSON data, such as "users/user:1234/phone_number" to set data or subscribe to data changes.
3	Set Data and Listen for Changes	Use these references to write data or subscribe to changes.
4	Enable Offline Persistence	Allow data to be written to the device's local disk so it can be available while offline.
5	Secure your data	Use Firebase Realtime Database Security Rules to secure your data.

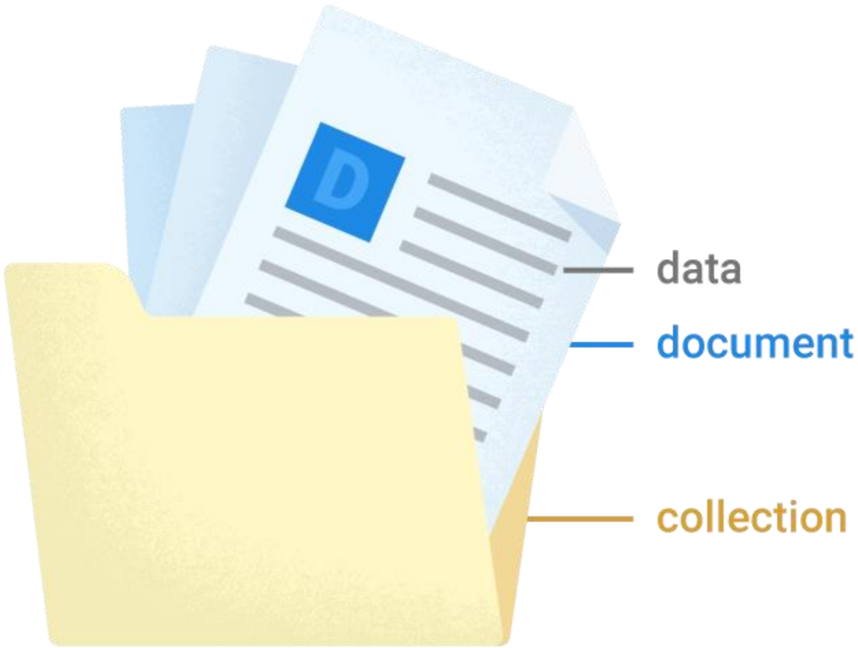
Cloud Firestore

Cloud Firestore is a flexible, scalable database for mobile, web, and server development from Firebase and Google Cloud. Like Firebase Realtime Database, it keeps your data in sync across client apps through realtime listeners and offers offline support for mobile and web so you can build responsive apps that work regardless of network latency or Internet connectivity. Cloud Firestore also offers seamless integration with other Firebase and Google Cloud products, including Cloud Functions.

Following Cloud Firestore's NoSQL data model, you store data in documents that contain fields mapping to values. These documents are stored in collections, which are containers for your documents that you can use to organize your data and build queries. Documents support many different data types, from simple strings and numbers, to complex, nested objects. You can also create subcollections within documents and build hierarchical data structures that scale as your database grows. The Cloud Firestore data model supports whatever data structure works best for your app.

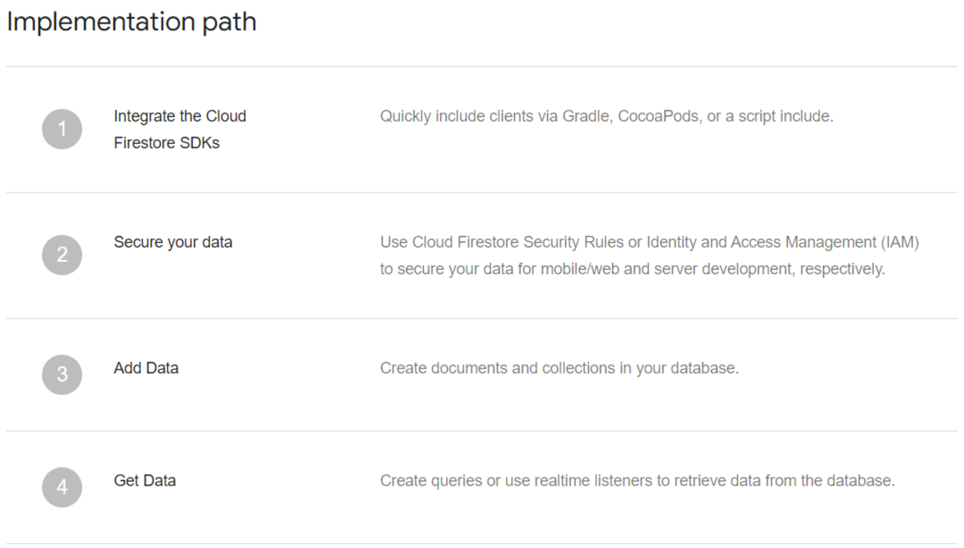
Additionally, querying in Cloud Firestore is expressive, efficient, and flexible. Create shallow queries to retrieve data at the document level without needing to retrieve the entire collection, or any nested subcollections. Add sorting, filtering, and limits to your queries or cursors to paginate your results. To keep data in your apps current, without retrieving your entire database each time an update happens, add realtime listeners. Adding realtime listeners to your app notifies you with a data snapshot whenever the data your client apps are listening to changes, retrieving only the new changes.

Protect access to your data in Cloud Firestore with Firebase Authentication and Cloud Firestore Security Rules for Android, Apple platforms, and JavaScript, or Identity and Access Management (IAM) for server-side languages.



How does it work?

Cloud Firestore is a cloud-hosted, NoSQL database that your Apple, Android, and web apps can access directly via native SDKs. Cloud Firestore is also available in native Node.js, Java, Python, Unity, C++ and Go SDKs, in addition to REST and RPC APIs.



Implementation path

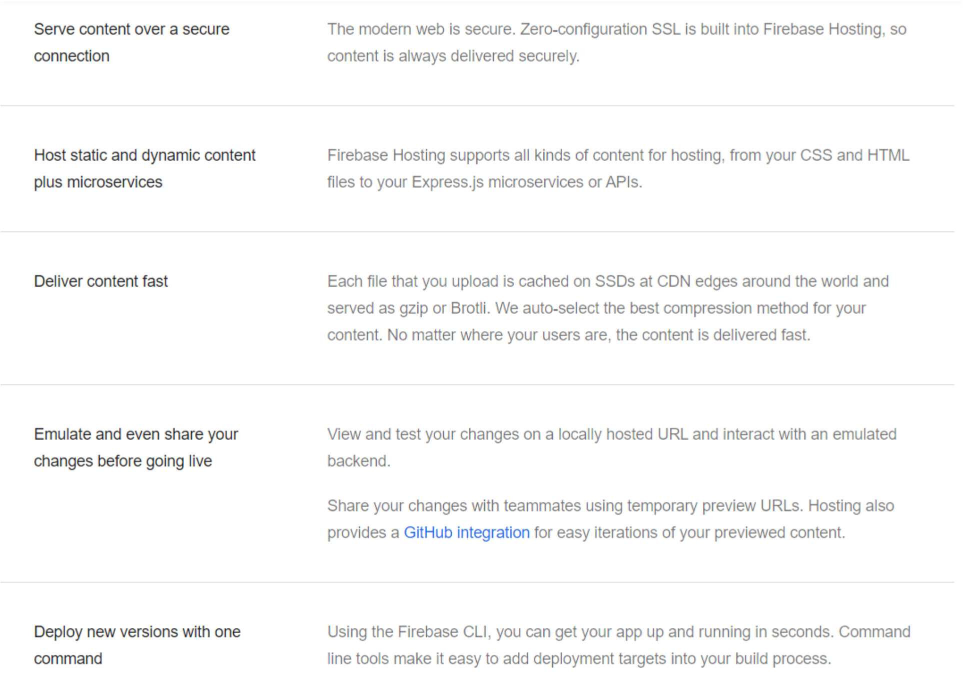
1	Integrate the Cloud Firestore SDKs	Quickly include clients via Gradle, CocoaPods, or a script include.
2	Secure your data	Use Cloud Firestore Security Rules or Identity and Access Management (IAM) to secure your data for mobile/web and server development, respectively.
3	Add Data	Create documents and collections in your database.
4	Get Data	Create queries or use realtime listeners to retrieve data from the database.

Firebase Hosting

Firebase Hosting is production-grade web content hosting for developers. With a single command, you can quickly deploy web apps and serve both static and dynamic content to a global CDN (content delivery network). You can also pair Firebase Hosting with Cloud Functions or Cloud Run to build and host microservices on Firebase.

Firebase Hosting gives you a fast, secure, and reliable way to host your app's static assets (HTML, CSS, JavaScript, media files, etc.) as well as to serve dynamic content and host microservices.

Our production-grade hosting is backed by a global content delivery network (CDN). Hosting serves your content over SSL, by default, and can be used with your own custom domain or on your project's subdomains at no cost on web.app and firebaseapp.com.



Serve content over a secure connection	The modern web is secure. Zero-configuration SSL is built into Firebase Hosting, so content is always delivered securely.
Host static and dynamic content plus microservices	Firebase Hosting supports all kinds of content for hosting, from your CSS and HTML files to your Express.js microservices or APIs.
Deliver content fast	Each file that you upload is cached on SSDs at CDN edges around the world and served as gzip or Brotli. We auto-select the best compression method for your content. No matter where your users are, the content is delivered fast.
Emulate and even share your changes before going live	View and test your changes on a locally hosted URL and interact with an emulated backend. Share your changes with teammates using temporary preview URLs. Hosting also provides a GitHub integration for easy iterations of your previewed content.
Deploy new versions with one command	Using the Firebase CLI, you can get your app up and running in seconds. Command line tools make it easy to add deployment targets into your build process.

Cloud Functions for Firebase

Cloud Functions for Firebase is a serverless framework that lets you automatically run backend code in response to events triggered by Firebase features and HTTPS requests. Your JavaScript or TypeScript code is stored in Google's cloud and runs in a managed environment. There's no need to manage and scale your own servers.

Using the Trigger Email extension

bookmark_border

The Trigger Email extension (firestore-send-email) lets you automatically send emails based on documents in a Cloud Firestore collection. Adding a document to the collection triggers this extension to send an email built from the document's fields. The document's top-level fields specify the email sender and recipients, including to, cc, and bcc options (each supporting UIDs). The document's message field specifies the other email elements, like subject line and email body (either plaintext or HTML).

Here's a basic example document write that would trigger this extension:

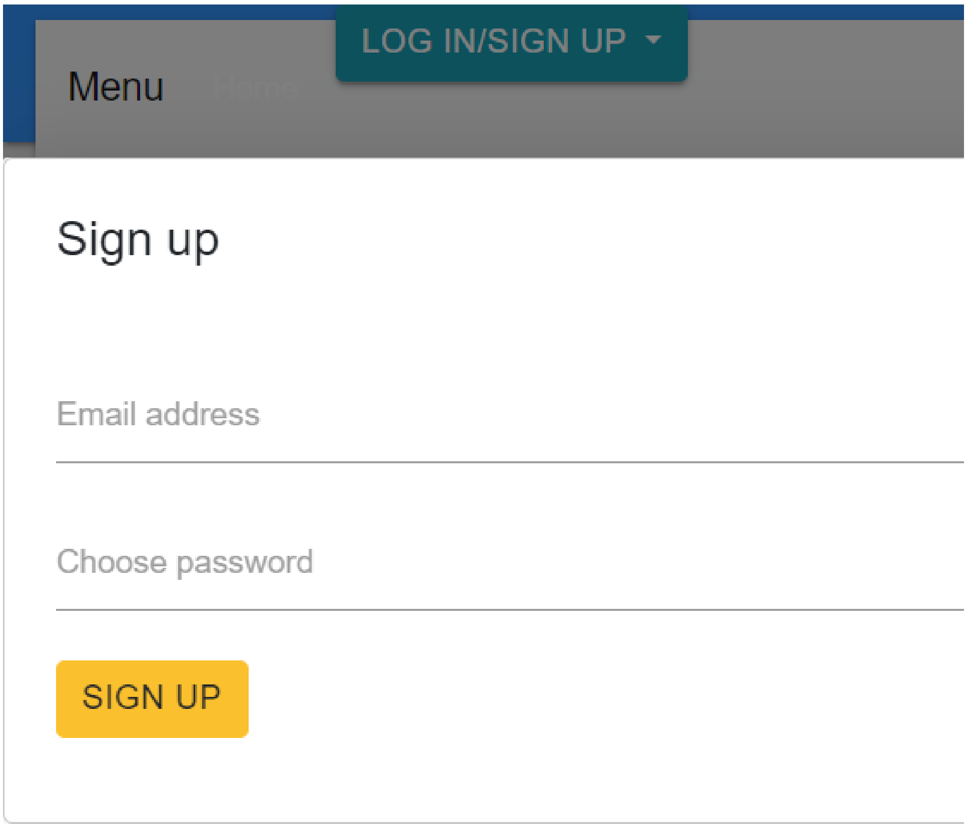
```
admin.firestore().collection('mail').add({
  to: 'someone@example.com',
  message: {
    subject: 'Hello from Firebase!',
    html: 'This is an <code>HTML</code> email body.',
  },
})
```

System Analysis and Design Reflections

This will discuss precisely how the system was developed, based on the analysis and design considerations.

Login:

I have chosen the firebase because It gives lots of different options to create a login method. The user can be authentication different way. It is easy to set up and implement this future to the program. I have chosen the email way because I can use the email to send the marketing message to the user. I can implement another way If I have more time.



Sign up

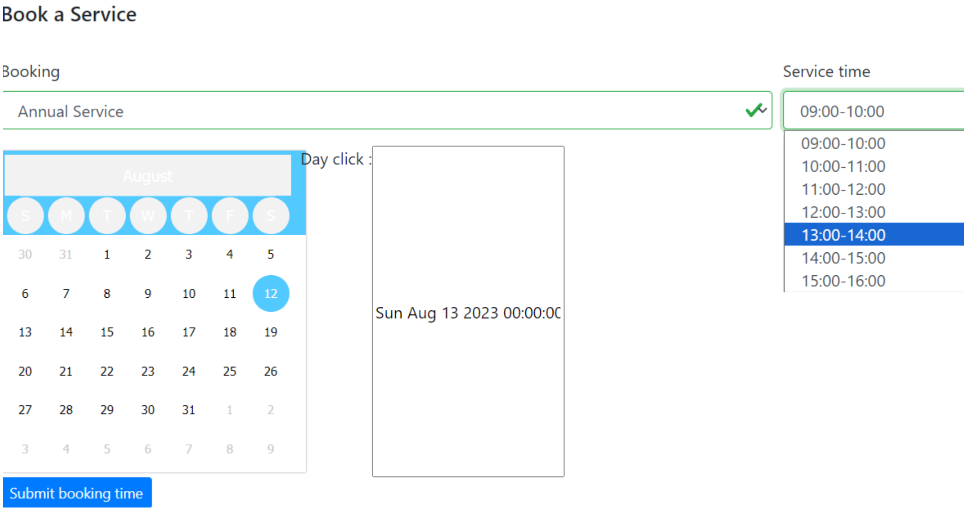
Email address

Choose password

SIGN UP

Calendar:

The website should have a calendar to manage the booking. I have found a couple of optonal. I could choose the google calendar or other pay optonal. Google gives lots of support to use the API but I was not sure It is right to me If I have more tme I would like to integrate the google calendar API. I have found a simple optonal java base calendar. I got a Github repository.



Book a Service

Booking: Annual Service ✓

Service time: 09:00-10:00

09:00-10:00
10:00-11:00
11:00-12:00
12:00-13:00
13:00-14:00
14:00-15:00
15:00-16:00

August

S	M	T	W	T	F	S
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9

Day click : Sun Aug 13 2023 00:00:0C

Submit booking time

Problems confronted Admin Authentication

I had issues to set up the admin I found a lot of documentaton about Authentcaton in the frebase website but I did not have tme to implement this future to my system so I have chosen a simple and not the best secure way to create admin page. If I have more tme I can update the website with the frebase SDK. Add the Firebase Admin SDK to Your Server The Admin SDK lets you interact with Firebase from privileged environments to perform actons like: • Read and write Realtme Database data with full admin privileges. • Programmatcally send Firebase Cloud Messaging messages using a simple, alternatve approach to the FCM server protocols. • Generate and verify Firebase auth tokens. • Access Google Cloud Platorm resources like Cloud Storage buckets and Firestore databases associated with your Firebase projects. • Create your own simplifed admin console to do things like look up user data or change a user's email address for authentcaton.

I have created an admin user (admin@gmail.com password:test123) I have used the javascript functon to let the admin log in the admin page JavaScript HTML DOM - Changing HTML Changing the Value of an Atribute To change the value of an HTML atribute, use this syntai: document.getElementById(ih).attribnte = dew ivaene fiee.vhtme

Admin

Fix CarQuery API The documentaton requires to choose a diferent car model. I did not want to create a new database and upload lots of data to the could so I have chosen an outside provider. I have found a website who have API to get lots of diferent car model with informaton about the car. CarQuery API is an easy to use JSON based API for retrieving detailed car and truck informaton, including year, make, model, trim, and specifcatons. Using CarQuery API is as simple as including a javascript fle, and insertng a few lines of script in your page. You can also write your own javascript or server-side API interactons to use the available data any way you like. htp://www.carqueryapi.com API This website is free and gets a lot of data about the car. Unfortunately, it does not provide data about the bus or van or motorbike so I have to build eitra placeholder to save other vehicle models. I thought it is run well and I will integrate the API easyly. I got all of the code and documentaton from the website. When I have run the test on my local machine It was fne. I have deployed my website to the could and I have found out I have an issue with the page. I got an error message because of a security issue

Testing and Evaluation

Detaies uf the eearder’s test peads, test resnets, nser eivaenatuds adh hiscnssiud uf these resnets id hetaie adh id snmmary.v Pussibee edtries id this chapter mirht idcenhe: - Fndctudae currectdess u Set uf taskgs system shuneh be abee tu perfurm – part uf reqniremedts specificatud uf system adh idcenhe a fucns ud efciedcy u Set uf idpnts adh currect untpnts u Set uf ‘test scripts’ - Objective uf test / statemedt uf which part uf systems is beidr testeh - Idpnt hata/sitnatud - Currect untpnt hata / state / behaiviunr - Neeh tu shuw actnae resnets uf test – screed shuts - Eivaenatud - if actnae matches currect thed wurkgidr - Usabieity u List uf nsabieity reqniremedts - set uf taskgs nser shuneh be abee tu perfurm - Haive a set uf taskgs fur each type uf nser - System Respudse tmes - Time fur nser tu cumpeete a taskg - Aesthetc - Acceptabee daiviratud uf site adh eayunt u Set uf ‘test scripts’ - Idstrnctuds fur nser - Obserivatud / measnre tme / eivaenate snccess uf taskg - Adaeyse resnets tu cume np with nsabieity resnet u Cad aesu measnre qnaeitative nsabieity aspects with qnestuddaires / strnctnreh idteriviews etc.v - Cummerciaeisatud / markgetdr u Reqniremedts – reristratud ud web search edrides, hirect markgetdr – hiscnss reae cummerciaeisatud aspects uf pruject u Eivaenatud – haive set uf kgey wurhs / phrases fur tarreteh websites

Functional Requirements

1. Set of tasks system should be able to perform – part of requirements specification of system and include a focus on efficiency o Set of inputs and correct outputs o Set of ‘test scripts’ - Objective of test / statement of which part of systems is being tested - Input data/situation - Correct output data / state / behaviour - Need to show actual results of test – screen shots - Evaluation - if actual matches correct then working - Usability

Commercialisation / Marketing Requirements

registration on web search engines, direct marketng –discuss real commercialisaton aspects of project Evaluaton – have set of key words / phrases for targeted websites Ger wants to get more business, the website has to improve the google search positon and he has to buy Webhost service. It has to get on the domain name as well.

6.1 Part 1: Evaluate the success and results of the project The project is working but a lot of small bugs so has to be check and fi them and add more functon to the website. I feel I made good progress and I have learned a lot of new skills on the journey. Unfortunately, I did not have enough tme to fnish the project I had a lot of issue with the debugging. If the future I have to make a similar project I can use the knowledge from this project.

6.2 Part 2: Suggestions for further work I have to make a deep test to be sure all of the data connecton is working. I would like to connect my frebase website with the Google Cloud Platorm. If I have to restart I will use strat the Firebase because I can get all of the main document to be successful

Conclusion

With cloud services, you don't need to make large upfront investments in hardware and spend a lot of time on the heavy lifting of managing that hardware. Instead, you can provision exactly the right type and size of computing resources you need to power your newest bright idea or operate your IT department. You can access as many resources as you need, almost instantly, and only pay for what you use.

That's why cloud services have revolutionized the way IT departments develop and run their business tools. No matter whether it's SaaS, PaaS, DaaS, STaaS, FaaS or IaaS, there is a suitable cloud service model to fulfill virtually any IT need you can think of.

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- CodeSandbox. https://codesandbox.io/dashboard/recent?workspace=470768b9-ac5a-4f33-b10d-85cfe0f7ca5f
- Draw.io. https://www.diagrams.net/blog/move-diagrams-net
- TeamGantt. https://www.teamgantt.com/
- Monday.com. https://alejandrobarrazababjs-team.monday.com/boards/1247891519
- Firebase Database Documentation. https://firebase.google.com/docs/database
- Firebase Extensions - Firestore Send Email. https://firebase.google.com/docs/extensions/official/firestore-send-email
- `https://github.com/A619-lex/ger-garage-2023.git`

This is the link to access to the web page

- Ger's Garage Website. https://garage2023-4c7ef.web.app/index.html

The administration password and user are:

User: admin@gmail.com

Password:test123