Subscription services are a fast-growing area of the marked. In the las 5 years the market has grown by over 100% based on the revenue from subscription e-commerce companies on the internet retails top 500 list (1). Not just common media subscription services such as Netflix or Disney+ these have branched out into others areas such as cosmetics, games, and foods. As such many people now have one if not multiple subscription services being paid directly from their accounts each month. Although this does lend itself to ease of payment it also allows for the consumer to lose track of payments or services they no longer use. C+R Research did a survey to find out information about this subject in 2022 (2). In this survey they found that on average consumers underestimated how much they were spending by 2.5 times. This shows how easy it is to lose track of your spending when using these services that are becoming for more common. Not only the spending, 42% of people had services that they forgot they were even subscribed too. Chase did a similar survey in 2021 and found that 60% of its users had forgotten about at least one subscription service (3). The most common of these are media services which were shown that 46% of online shoppers use one of these with 15% using other services (1).

Due to the rise in subscription services, there has also been the creation of websites and apps to allow consumers to track and manage these subscriptions. There are many types and some have specific uses but there are some very popular ones that are commonly used. First is an app called Rocket or rocket money. This app is more than just a subscription tracking app as it also allows budget management for your accounts and can take other payments into account. It also allows for bill negotiations, spending insights and credit score. One important feature of this app that makes it so popular is that you can connect you back account to it and it will automatically find your current subscriptions from your payments. They also provide a service to cancel your subscriptions for you at your request.

Trim is another service for managing subscriptions. It mainly works on their website though it can be accessed from a mobile device as well. Much like rocket this site can link your bank account and find your active subscriptions. It also has the request to cancel option present. Trim also offers services like bill negotiations and giving advice from spending for ways to save money.

TrackMySubs is another website-based service for managing subscriptions and recuring payments. Originally designed for small businesses it branched out to consumers as well. This site does not link any bank accounts and some consumers may rather that as they are not comfortable connecting their accounts to 3<sup>rd</sup> party software. This site allows the customer to manually add subscriptions and services to the site as well as set up alarms for next payments and how much has been spent so far.

These three apps / sites are a good example of current software that is available for managing your subscriptions and recurring payments.

A survey of how people logged into sites and services was done by Statista in 2016 (4). This found that the two most common logins by a large margin was Facebook and google. The roughly represent 20% of total logins accounting to Addshoppers.com across their network of online shoppers (5). Also mentioned is the reasons customers gave why they would rather sign up using social logins. 65% say it's faster than registering on a website (time is money). 50% said it means one less password to remember and 12% say it ensures the website is personalized. This was in 2016 and has been on the rise since.

Overall, it seems that this is a very valid and rising area for a website or app to be created. Many people prefer to log in with social logins like Facebook or google so this could be integrated into the app. Further research into the banking connection for auto adding apps may be needed if it is within the scope of a final year project. Have not investigated moving it to a cloud service as of yet, will confirm viability first. Seems app vs website are about half and half so either should work and most sites are mobile friendly. The most common functions are tracking, alarms and cancelation which would be best to have along with auto adding subscriptions for those that connect a bank account.

TrackMySubs is a website-based service for managing subscriptions and recuring payments. Originally designed for small businesses it branched out to consumers as well. This site does not link any bank accounts and some consumers may rather that as they are not comfortable connecting their accounts to 3<sup>rd</sup> party software. This site allows the customer to manually add subscriptions and services to the site as well as set up alarms for next payments and how much has been spent so far. These are the steps for signing up and add subscriptions to this service. (6)

When first signing up there is the option of using google to auto sign in or creating your own account manually with an email (fig 1). Both of these steps will eb shown but the end result is the same. Should you choose to manually create your account you will initially be prompted to add some of the more popular subscriptions or search for less popular ones by name (fig 2).

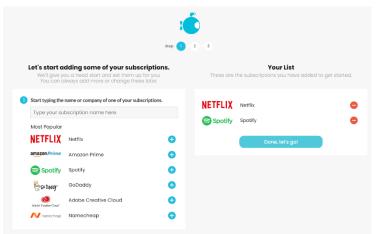


Figure 2

Before we begin...

Would you like to use your social account? This will avoid a small amount of typing.

Yes please, I hate typing.

Geogle

No thanks, I'll use my e-mail.

E-Mail Address

Already have an account? Login here

Figure 1

After this is done you will then be prompted to enter and confirm you email address (fig 3).

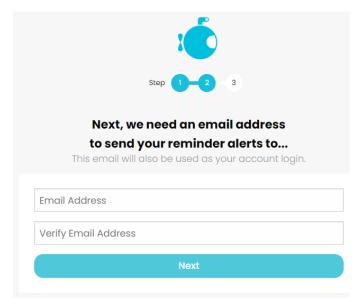


Figure 3

The final stage of manual setup is entering you name, password, agreeing to the terms and conditions and completing a captcha (fig 4).

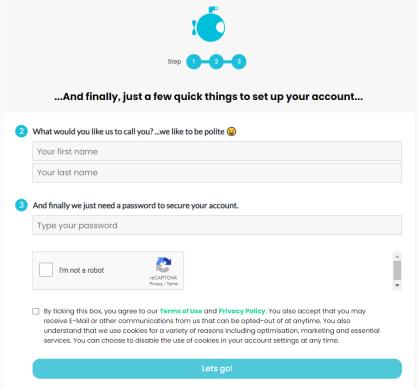


Figure 4

Once your account has been created you will be asked to select your currency and your time zone to make sure alarms ring at the correct time and your costs are correct (fig 5). You will also have been sent a verification email.

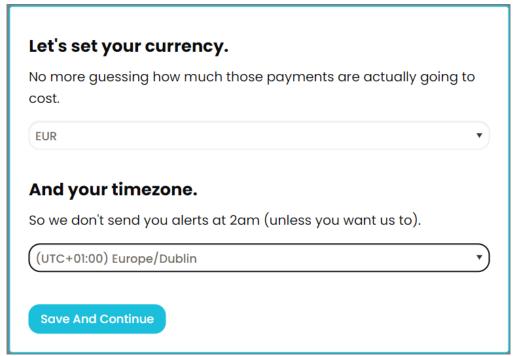


Figure 5

Once all this has been done you will be brought to the main homepage shown below (fig 6).

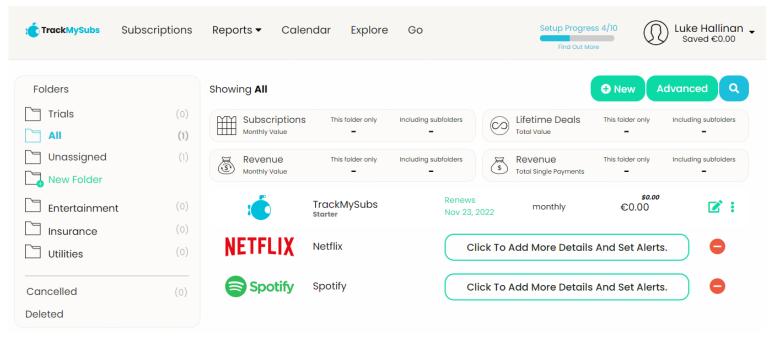


Figure 6

Next will be a run through of using google to sign in. upon clicking google in fig 1 you will be prompted to select your google account and be brought to the below page (fig 7) to either create a new account or link it to an existing trackmysubs account.

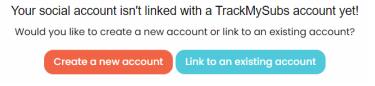


Figure 7

If you create a new account from here the menus in figure 3 and 4 are auto filled for you. After clicking through the same as a manual account you will be brought to the same homepage in figure 6. This page holds most of the functionality for the site. The folders on the left are for the user to split up their subscriptions as the desire and get the total value of subscriptions in each. These can be customized to be anything grouping the user wishes.

The four main types of tracking are shown above the current folders subscriptions. These are the subscriptions section, lifetime deals and revenue for monthly and single payments. These each display they total values of all recurring payments in the folder and sub folders. The "All" folder can be used to get the total of the whole account.

New subscriptions can also be added here using the new or advanced buttons. The new button is the simpler way to add as it breaks up the process and allows some to be filled automatically. This process is shown in figure 8-16 below in order. Each of the options in figure 8 set the text box type in figure 9 but all the other windows stay the same. As you type the company section autofills suggestions and as in fig 10 and if it is a know one then the icon or name will appear as the image like figure 11. As shown in figure 13 there is a calendar dropdown to select the date of the payment and it will show this as in figure 14. Finally after entering the cost, you will be able to set an alarm to notify you when the payment will recure. The default setting for this is an email to the address that was used to set up the account but other emails can be added is the user desires.



Figure 8

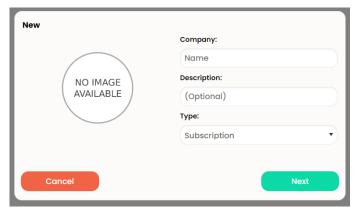


Figure 9

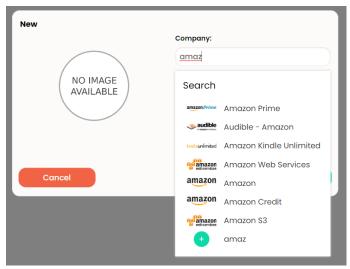


Figure 10

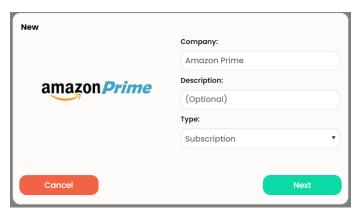


Figure 11

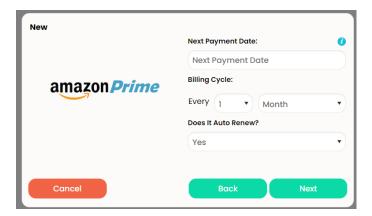


Figure 12

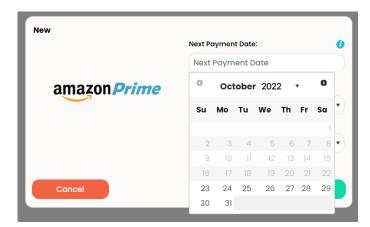


Figure 13

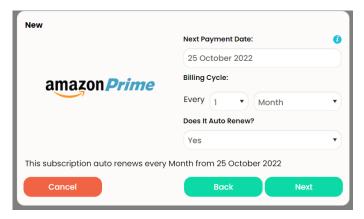


Figure 14

New		
amazon <i>Prime</i>	Cost:	
	0.00	
	Currency:	
	EUR ▼	
This subscription auto renews every Month from 24 October 2022		
Cancel	Back Next	

Figure 15

New		
	Do you want to set a reminder alert?	
	Yes, use my default alert	
amazon <i>Prime</i>		
	You don't have a default alert profile, set one here.	
	Yes, create custom alert	
	No thanks	
This subscription auto renews every Month from 24 October 2022		
Cancel	Back	

Figure 16

The other option for adding subscriptions is the advanced button which gives all the details In one large window shown in figure 17 below. This also has some additional sections such as contract expiry and url link to the website of the company. You can also specify the folder and add tag for the sake or organization. Contact manager allows you to add contacts for the alerts to use and the alert manager uses these to let the user know when a payment is due.

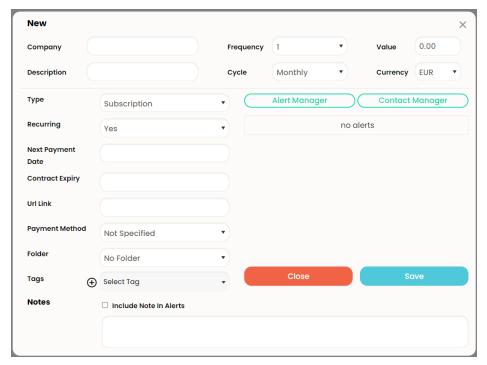


Figure 17

When adding an alarm for a payment you get the popup shown below in figure 18. Custom alerts is the alarm id. When selecting when to be alerted you have a choice of a day, week, or month before as shown. The reason for the alert can be for a payment o/ trial expiry date or the contract end date. Finally, the contact is selected from the ones you add in the contact manager and by default only has the name and email used to set up the account.

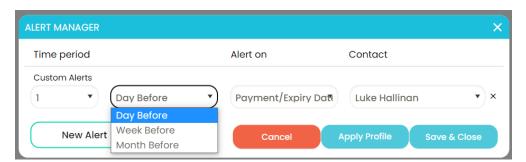


Figure 18

Once all this has been done the subscriptions will be added to the homepage. While there on the right of each subscription is an edit button and three dots that show other options for that sub as shown in figure 19 below. From left to right these are delete, pause, duplicate, attachments, edit history, payment history, alert manager and finally a button to close the options menu.

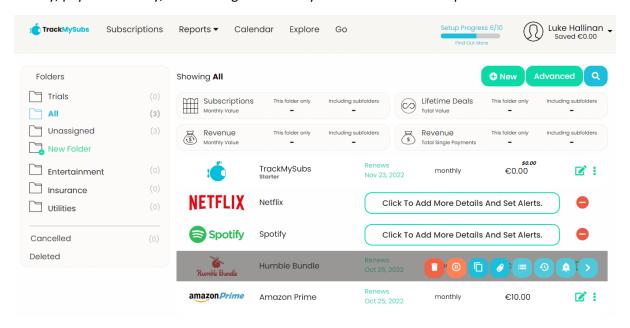


Figure 19

This website also has features in the top banner for reports, calendar and popular subscriptions called explore. Each of these will be shown below. First is the reports section (fig 20).

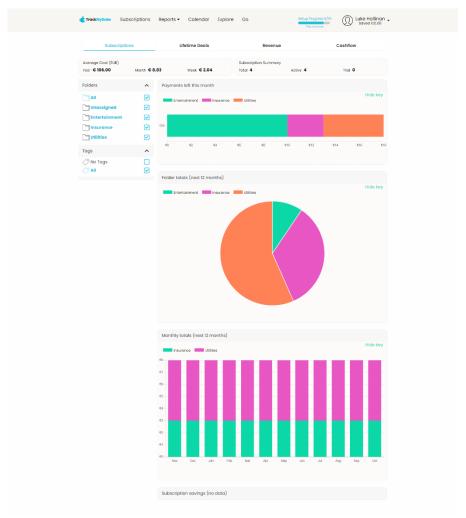


Figure 20

This page allows the user to view their monthly and yearly totals and other information about each folder of payments. This is all generated automatically for the user from their input data. It can also be filtered based on folder, tag and payment type if needed.

Secondly there is the calendar page shown in figure 21 below. This can be used to look ahead and get a good idea of what is due when. Like the reports it can be filtered the same way and auto colours each folder.

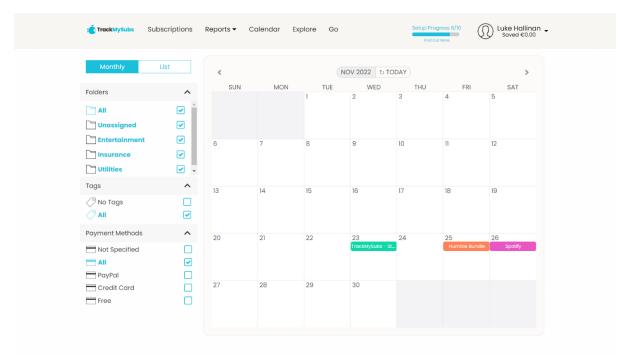


Figure 21

Finally, is the explore section that allows the user to look at popular subscriptions and lifetime deals shown in figure 22. Any of these can be selected to give information about them such as their price, rating, and cancelation rates (fig 23).

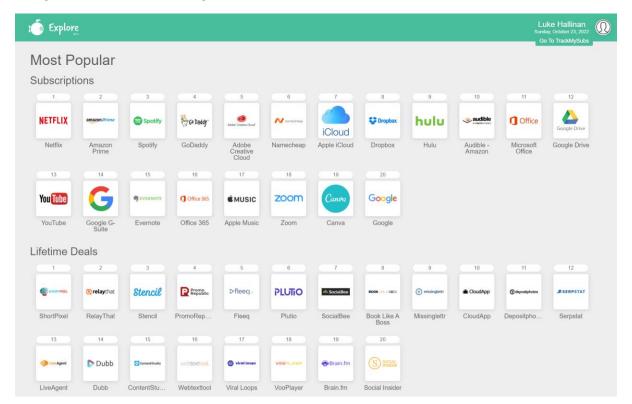


Figure 22

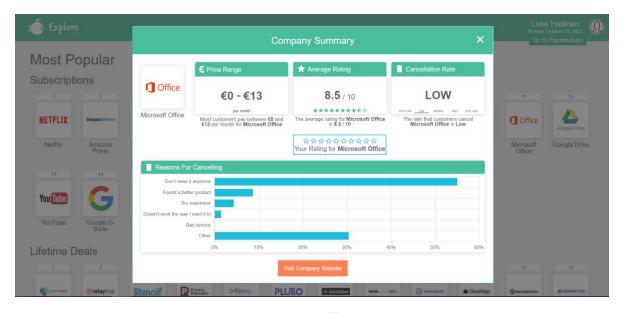
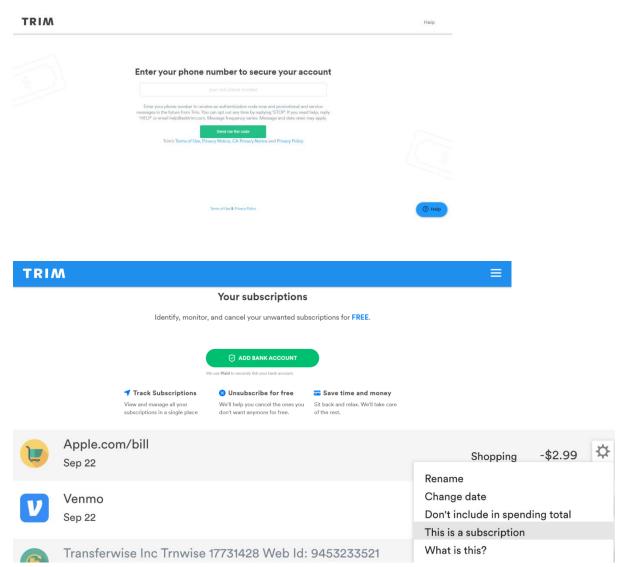


Figure 23

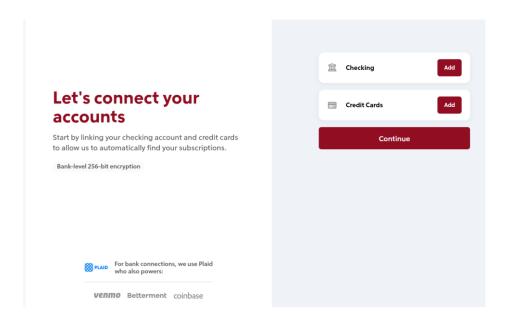
This site is very similar to this project and as such has been researched in more details. Features such as adding subscriptions and alarms will work much the same way with some minor differences. Although the file system is a good way to organize your subscriptions it takes up a lot of space even if it is unused as shown above. None of the subscriptions are added to any folders yet the entertainment, insurance and utilities folders are still visible and can be selected. Likewise, the options for single payments and lifetime deals are unnecessary as they are no currently in sure and due to the nature of these item there would be no recuring fees.

The data is not stored on the local machine as such it must be requested from a database elsewhere when loading the page. This is the most common method for this type of site and will more than likely be the same method used in this project.

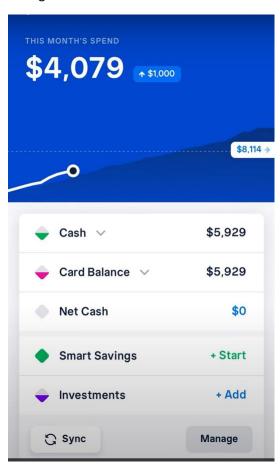
Trim works predominantly as a text service. Trim required a phone number to sign up. You can also add an email if you wish and get email notifications much like trackmysubs and rocket money. It also requires you to add your bank account to make an account and auto add subscriptions.if any subscriptions are missed they can be added from the transactions menu



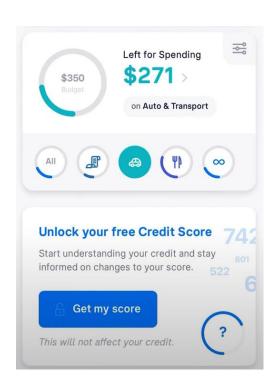
Rocket money on the other hand needs an email and a bank account or credit card to start up an account. This allows it to auto add all your subscriptions and payments and well as assist you in saving m0ney elsewhere.

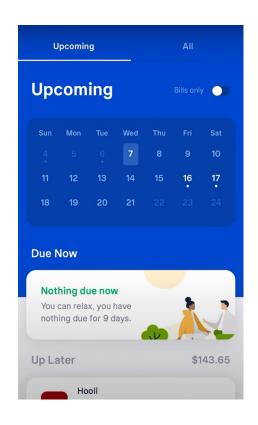


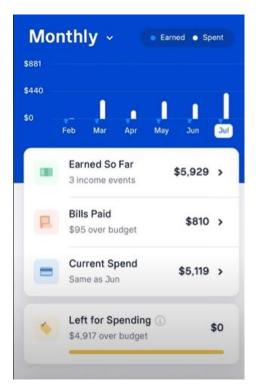
Rocket money allows you to track you balance in accounts that are connected as well as the options to give advice on smart saving such as cancelling old unused subscriptions and investments of savings



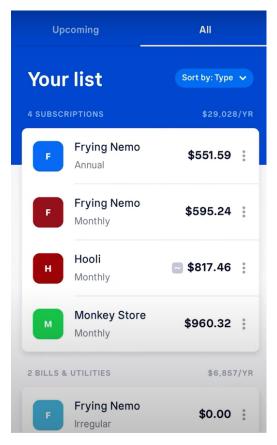
Much like track my subs rocket money has similar features for tracking monthly spending. They also have extra features such as credit score as you have linked your bank account. Aslo much like trackmysubs there is a calendar of upcoming payments to allow you tog et an overview of that months spending.

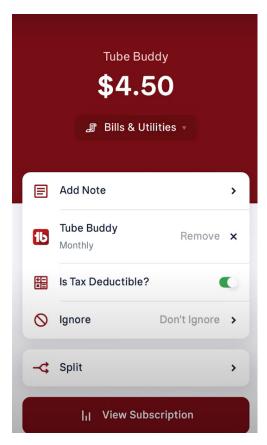




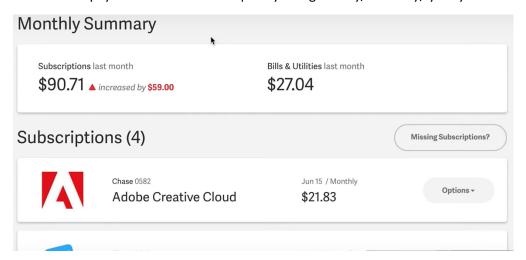


Rocket money also has a subscription tracking page like the homepage of trackmysubs. These subs are automatically found when you connect an account. For rocket money this also includes payments suck as utilities and bills much. These sorts of payments can be added into trackmysub and manually sorted as utilities too. Should rocket money fail to find a sub you have the option to manually add it in. these subscriptions can also be clicked to go into more details for each one and add notes to them.

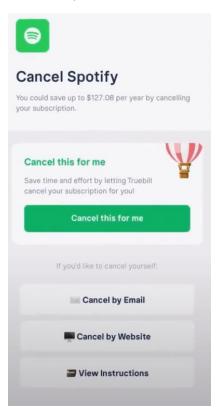


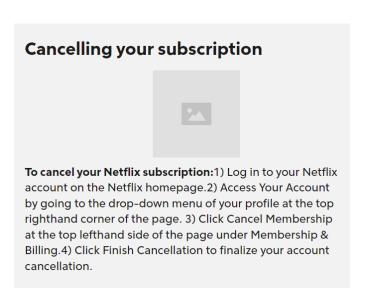


Rocket money can also be access online. The homepage has your subscriptions and bills much like track my subs does. This will give you a list of current s subscriptions and bills as well as the amount spent last month. It also has the option to manually add in any missing subscriptions. Each sub also has the next payment date and its frequency being weekly/ monthly/ yearly.



Rocket money also allows you to cancel subscriptions but unlike trackmysubs there are multiple ways to do this. For subscriptions that allow it you can cancel my email to make it easier and quicker for you. Not all subs allow this option so the other two are more common. Rocket money can try to cancel your subscription for you through the app's website. Some apps do not allow cancellation on your behalf or you might be reluctant to give the subscription account username and password so you will need to do it manually. In this case rocket money will give you step my step instructions on how to cancel each service. This is very useful as some companies make cancelation complicated or convoluted. In the case of some popular sites such as Netflix they even have video tutorials on how to manually cancel.





## How to cancel Netflix manually

We've put together a short video, walking you through how to cancel your Netflix subscription.



## Common Features:

- Current subscriptions / bills page
- Monthly spending / budgeting page
- Calander of upcoming payments
- Cancel subscriptions
- Alerts for next payments (email / text)
- Google / Facebook login
- Manually added subscriptions
- Payment type organizations

## Useful features:

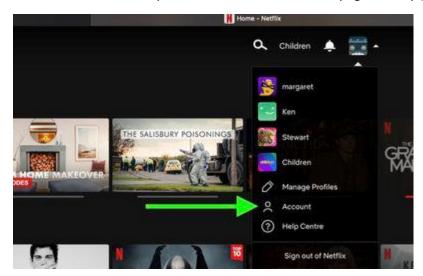
- Ignore subscription options
- Linking bank accounts
- Subscription cancelation instructions
- Payments list tab

## Other notable features:

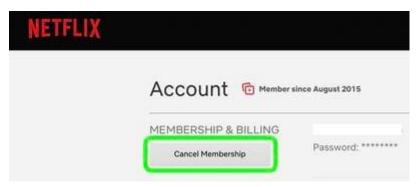
• Bill negotiation

Survey: <a href="https://forms.gle/yckB1kRykj9wE8TY8">https://forms.gle/yckB1kRykj9wE8TY8</a>

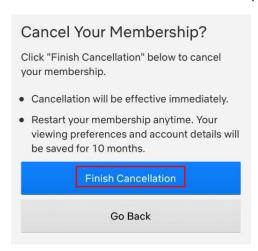
One of the main features of the site will be the cancelation of subscriptions. For popular ones such at Netflix and Spotify may also be possible to unsubscribe for the user rather then just provide step by step cancelation instructions. Most such as Netflix are reasonably easy to unsubscribe from. Below are the steps to cancel both Netflix and Spotify. First is to go to the Netflix homepage. This can easily be done with a redirect on the cancel button. There the user must select the account icon in the top right. From the drop-down menu select the account option. This could easily be done for the user with some local JavaScript or a redirect to the account page directly.[1]



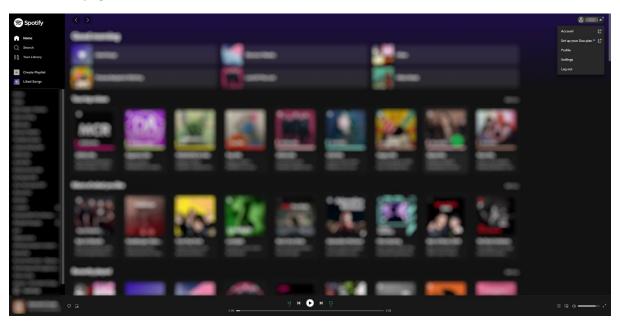
This will bring you to the account options when the user can select cancel membership option. One selected they use will be asked to confirm their cancelation.



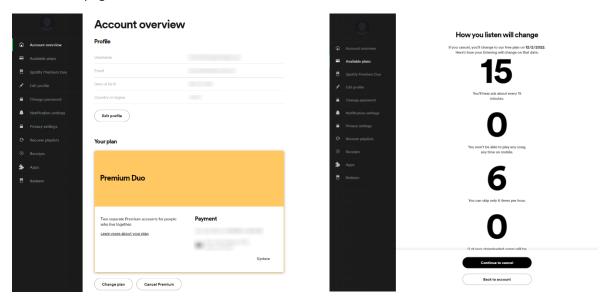
This is the last chance for the user to stop cancelation before ending the subscription.



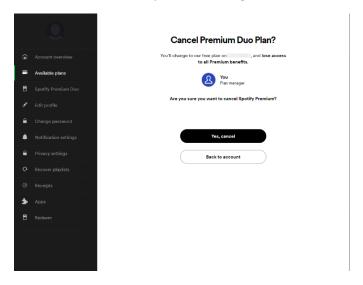
Spotify if much the same for cancelations. Once at the main site gain easily achieved by a redirect the top right account symbol drops down. From here account is selected which will bring the user to the account page.



On the main account page, the user must scroll down to the cancel premium button. This will cancel payments for the active subscription. They will then be asked to continue cancelling and be offered other available plans. One they select continue to cancel the user will be brought to the final cancelation page.



Finally the user selects yes, cancel to complete the cancelation process. Both of these services' cancelation process could be reasonable easily automated provided the user can provide the correct account username and password to sign in.



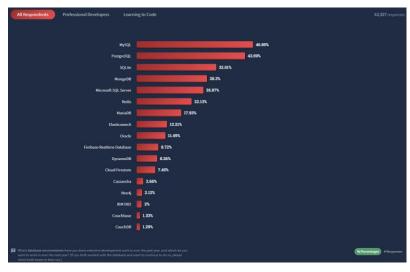
This app will use a database to store the information of the users and their subscriptions. There are multiple databases types that could be used but for a web application of this size the most common ones would be Oracle, MySQL and PostgreSQL. [8]

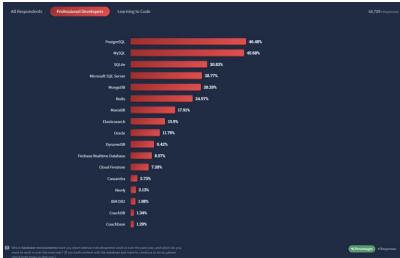
Oracle is the most widely used of these options. It uses a relational database system that can use c, c++ and java. Overall, it is one of the most extensively used relational databases. [8]

MySQL is one of the most popular databases in 2022 according to stack overflows 2022 survey [9], especially when involved with web development. its main focus is on stability, robustness and maturity. It is written with c and c++ and uses a structured query language. [8]

PostgreSQL formally known just as POSTGRES is another database written in c. is is primarily used by business that deal with large amounts of data. [8]

During their survey stack overflow found that most web developers used mySQL the most beating PostgreSQL by a small percentage. However, when only professional developer are considered this is reversed.





Because of how common they both are for web development MySQL and PostgreSQL will both be looked into in more detail. In general both of these databases will run a web application well. The major differences come from how read/write heave the app is and how large its intended customer base will be. Below are some of the advantages and disadvantages of each [10]

PostgreSQL		
Pros	Cons	
Free and does not require and subscription fee	The speed of reading data is slower than	
for corporations to use.	MySQL though this can be improved with	
	optimization by the business	
It is very customizable and can be tuned to	Although growing PostgreSQL is not yet	
better work with the company's data	supported by many open-source applications	
As PostgreSQL is a creative collaboration and	There is a lack or organizational support as it is	
new management solutions can be found and	a collaborative undertaking which can make it	
shared easily	unpopular	
Very high scalability that many businesses may	Postgres forks a new process for each new	
require if they foresee large growth	client connection [11]	

[10]

MySQL		
Pros	Cons	
Operates on multiple platforms making the software portable and very compatible with web applications	Lacks support for bulk database processing	
Connection is continuous while providing integrity and data protection	Limited customization compared to PostgreSQL which can make it less then ideal for some companies uses	
Encryption algorithms are complex and give reliable data protection	Limited to test bug reports and security patches despite being open source	
Open-source software that leverages budget costs for companies seeking a reliable database system	Currently losing popularity as more advanced and customizable options become available	

[10]

Overall MySQL seems to be the better option for this type of web application. The app will not be containing huge amount of customer data as people don't generally have more then 5 subscriptions each. This makes its limits on size and scalability much less of a problem. It will also we very data read heavy compart to write as one the subscription is added its will mostly be used to allow the customer to check the upcoming payments without editing the actual data. Due to the simplicity of this app the high functionality and customization of PostgreSQL will not be needed and setting up and managing the database may be made unnecessarily complicated because of it.

User	Subscriptions
• id	• Id
First name	• Name
Last name	<ul> <li>Company</li> </ul>
<ul> <li>Username</li> </ul>	• Website
<ul><li>password</li></ul>	Category
• Email	• Image
<ul> <li>Phone number</li> </ul>	<ul> <li>Description</li> </ul>
<ul> <li>Account number</li> </ul>	
<ul> <li>Currency</li> </ul>	
Time zone	

Current Sub	Alerts
• Id	• id
<ul> <li>Currency</li> </ul>	<ul> <li>Current datetime</li> </ul>
<ul> <li>Cost</li> </ul>	Time zone
<ul><li>Date</li></ul>	Alert method
<ul> <li>Recurring length</li> </ul>	<ul> <li>User id</li> </ul>
<ul> <li>Alert (Boolean)</li> </ul>	<ul> <li>Number of days early</li> </ul>
<ul> <li>Alert id</li> </ul>	
<ul> <li>Sub username</li> </ul>	
<ul> <li>Sub password</li> </ul>	
<ul> <li>Next pay date</li> </ul>	
<ul> <li>Group</li> </ul>	
<ul><li>Notes</li></ul>	
<ul> <li>Cancelled</li> </ul>	

https://www.diva-portal.org/smash/get/diva2:1665351/FULLTEXT01.pdf

https://www.tandfonline.com/doi/full/10.1080/14783363.2012.677305

https://escholarship.org/uc/item/2r6031th

in 2012 Shwu-Min Horng published a paper on what influences users decisions to pay for web 2.0 subscriptions. As this project will be creating a web application it is important to take some of the main points of consideration in that paper and focus on them. The main aspects that influence a users willingness to pay for a web subscription were broken down into 11 factors. These are Convenience, Ease of use, Essentiality, Added value, Perceived service quality, Usage frequency, Perceived fairness, Security concerns, Interaction intensity, Differentiations and Desire fulfilments.

Though this project will function on web 3.0 many of the variables from 2.0 will be employed and some from 1.0. for this we will mainly focus on Convenience, Ease of use, Essentiality, and Added value.

Convenience - this has been found to be an important factor of online user satisfaction. Subscription services generally offer specific or privileged contents to the user. The convenience of obtaining instant access to desired contents plays an important role in users' willingness to pay for these services. Applications like rocket money and trim offer a service to cancel your subscriptions faster then doing it yourself but this is a paid service unavailable on the free version of the apps. These is one of the aspects users might pay for the convenience of easier cancelation.

Ease of use – it was shown that this was significantly related to user satisfaction when using a website. Ease of use represents how well a website is capable of providing functions that increase users' incentives to pay. Due to this special care will be taken to ensure that the web application is straightforward and simply laid out to avoid user confusion.

Essentiality - the perceived value of information depends on how important or essential it is to meet customers' information needs. It was found that consumers were willing to pay for certain information that was otherwise free, if the information met their immediate needs. This will be a very important factor and one of the main focuses of this project. Users could if they so desired go through their back statements and manually record their current subscriptions. The aim of this application is to remove the need for the user to preform this task. This along with ease of use will influence the users willing to pay or use such a service.

Added value - Providing added value is a strategy used in many product or service promotion campaigns. This is used heavily in advertising by all three of the studies applications currently on the marked. They all claim that using their service can save you money therefore adding value to your accounts. This is done through many methods such as cancelling forgotten subscriptions, negotiating payments and setting budgets. The ability to ease the cancelling of a subscription is a feature that will be going into this web application.

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