Charitabl-E

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Abstract

It can be frustrating to donate to different organizations with different donation pages. It also makes it hard to track charitable giving. Charitabl-E is a platform that connects users and charities to simplify charitable giving. It allows users to donate directly to different charities and also lookup different categories of charities. It allows them to track how much they have spent on different categories of cause and organizations so when the tax season comes, they don't have to hunt down charity acknowledgements. It is a user-friendly platform that makes it easier for local and underfunded charities to track their donations.
So, don't wait, **donate**!

Introduction

This application aims to simplify charitable donations. The main motivation for this project came from my frustrations while donating to different Black Lives Matter organizations and funds. Most local charities and non-governmental organizations are underfunded and don't have the resources to keep a trackable record. This can hinder donations as two-thirds U.S. donors want to give more to causes, they care about but 65% of them have concerns related to organizing and tracking their charitable giving[1]. For individuals and organizations who donate, maintain a record of their donations and acknowledgement can pose a substantial administrative burden especially for tax purposes. Hence, this application offers a solution by organizing their giving[2].

Firstly, this application will allow individuals or organizations to donate directly to charities without the hassle of going to various pages and inserting payment information. It will allow users to organize and maintain a record of their donations. Moreover, it will feature an option to keep their donation public or private to protect the user's anonymity. It will also help the charities by creating a user-friendly record of donations received.

Secondly, the data collected by this app will allow for interesting analysis related to donations and user demographic. This analysis can help charities assess their strategies regarding their donor demographic. It will also help them create financial projection based on past years and hence help them with financial planning.

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[1] "Overcoming Barriers To Giving". 2017. *Fidelitycharitable.Org*,1-4. https://www.fidelitycharitable.org/content/dam/fc-public/docs/insights/overcoming-barriers-to-giving.pdf

[2] "Overcoming Barriers To Giving". 2017. *Fidelitycharitable.Org*, 12.

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Database Design

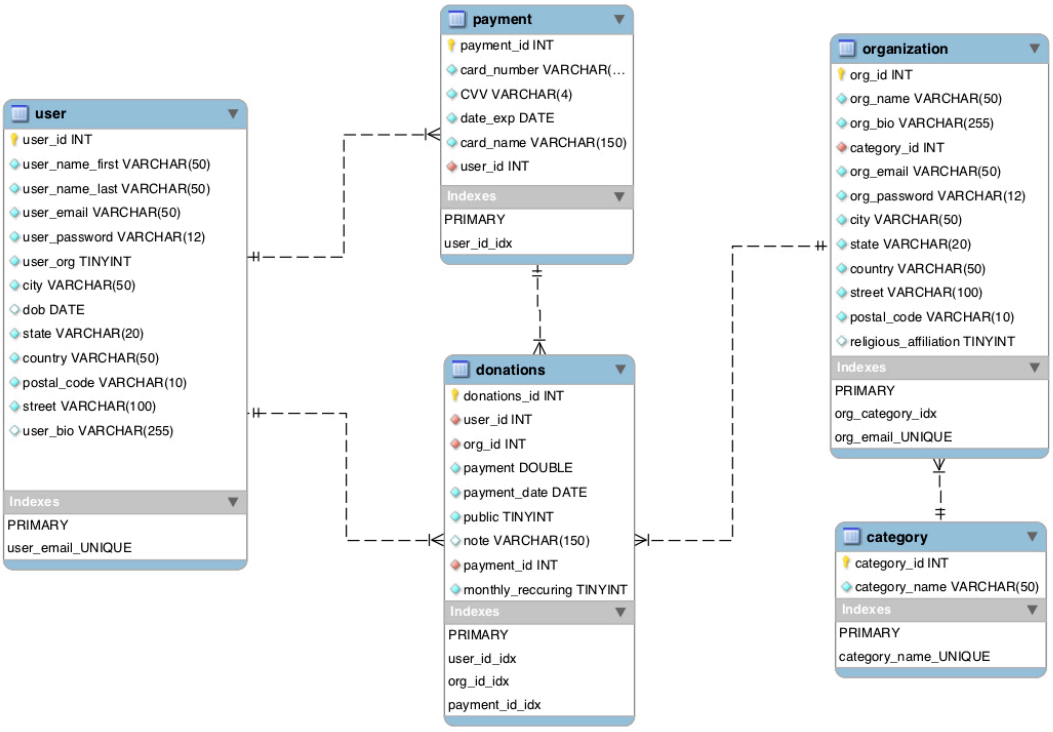

Figure 1. Conceptual Model

The ER diagram above shows relationships between the five tables. The '*user'* table has basic information about the user such as name, date of birth, email and address. If the user is an organization the filed 'user_org' is true and the date of birth is null. Also, the user can have a 'bio', but it is not required. Each user can have multiple payments which can be saved and applied at donation checkout. This payment table has basic payment information related to card details. The 'organization' table details information about the charities and NGO's a user can donate to. It has the name, email, address, category, bio etc. of the organization. To create transparency the organization is required to have a bio outlining their efforts. This category refers to the category table with unique 'category_name' as we don't want duplicate categories. An organization can only have one category. The table also tracks if the organization has religious affiliations which will be indicated to the user. The donations table outlines the transaction between the user and the organization. It has the amount being donated by the user, the date of transaction and the payment method used. The donor also has the option of adding a note to the donation and making the donation monthly recurring for the fixed amount. Each donation can be made private depending on the user's preference of anonymous donations.

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Data Sources and Methods

This prototype utilizes mock data generated through Mockaroo. It is trying to replicate the data that will be acquired through the application. To effectively replicate future data, I manually edited the entries for monthly recurring payments and categories.

User Cases

This application will allow for multiple interesting queries about donations.

1. We will be able to see total donations made by a user in different categories. This will allow the users to get a breakdown of the causes they have already donated too. Hence, this will help them plan future donations if they want to diversify their donations or explore new categories.

```
--  donations made by users_id 1 to include null
select   category_name, count(payment) as number_of_donation, sum(payment) as total_donation
from user left join donations on (user.user_id = donations.user_id)
left join organization on (organization.org_id = donations.org_id)
 join category on (category.category_id = organization.category_id)
 where user_name_first like 'Sebastiano'
 group by category_name
 order by count(payment) desc;
```

category_name	number_of_donation	total_donation
Mental Health Awarness	6	1445731.26
Domestic abuse	5	50
Aquatic Diversity	1	681605.81
Wildlife Conservation	1	681605.81

2. What are the total donations received per category?

This will allow us to understand the most popular categories to the least popular categories. The app can also feature a highlights section which will show organizations that have received very few donations and attract users to explore these categories for donations.

```
select  category_name, sum(donations.payment) as sum_donations
from organization left join donations on (organization.org_id = donations.org_id)
left join category on (category.category_id = organization.category_id )
group by category_name
order by  sum_donations desc;
```

category_name	sum_donations
Environmental Protection and Conservation	13604580.110000001
Aquatic Diversity	12567969.810000002
Wildlife Conservation	9341910.28
Domestic abuse	8862019.149999999
Mental Health Awarness	8564881.68
Medical Research	7206063.739999999
▶ Animal Rights, Welfare, and Services	6847569.399999999
black lives matter	6582469.53
Abortion rights	6223349.16
Landmark Preservation	5151017.62
Equal Pay	4875554.41
Performing Arts	3423427.5
Food Banks	3258937.31
Youth Education Programs	3028699.57
Religious Activities	742406.35

3. Number of charities in each category

This will provide a summary of most populated categories to least populated in terms of the number of charities. It might help in reaching out to charities in the least populated categories or understand why there are so few.

```
select count(org_name), category_name
from organization left join category on (organization.category_id = category.category_id)
group by category_name
order by count(org_name) desc;
```

count(org_name)	category_name
6	Environmental Protection and Conservation
5	Wildlife Conservation
5	Animal Rights, Welfare, and Services
4	Aquatic Diversity
4	Youth Education Programs
4	black lives matter
4	Abortion rights
3	Landmark Preservation
3	Mental Health Awarness
3	Medical Research
2	Domestic abuse
2	Performing Arts
2	Equal Pay
2	Food Banks
1	Religious Activities

4. What is the average donation made by users?

```
select avg(coalesce(a.counted,0) )
from ( select  sum(donations.payment) as counted, user.user_id
from user left join donations on (user.user_id = donations.user_id)
group by user.user_id) a ;
```

avg(coalesce(a.counted,0))
2507021.3904999997

5. User donation breakdown by year. This will give the user an overview of total donations over the years.

```
select year(donations.payment_date), sum(payment)
from user left join donations on (user.user_id = donations.user_id)
where user_name_first like 'Sebastiano'
group by year(donations.payment_date);
```

year(donations.payment_date)	sum(payment)
2020	963800.84
2022	481900.42
2019	681655.81
2015	681605.81
2018	30

There a lot of other interesting queries supported by this design relating monthly recurring and religious affiliations which are noted in the queries file.

User Interface

I used *React* to design a UI for this app. It is a basic outline of how the user can interact with this database. The visuals are from my local machine.

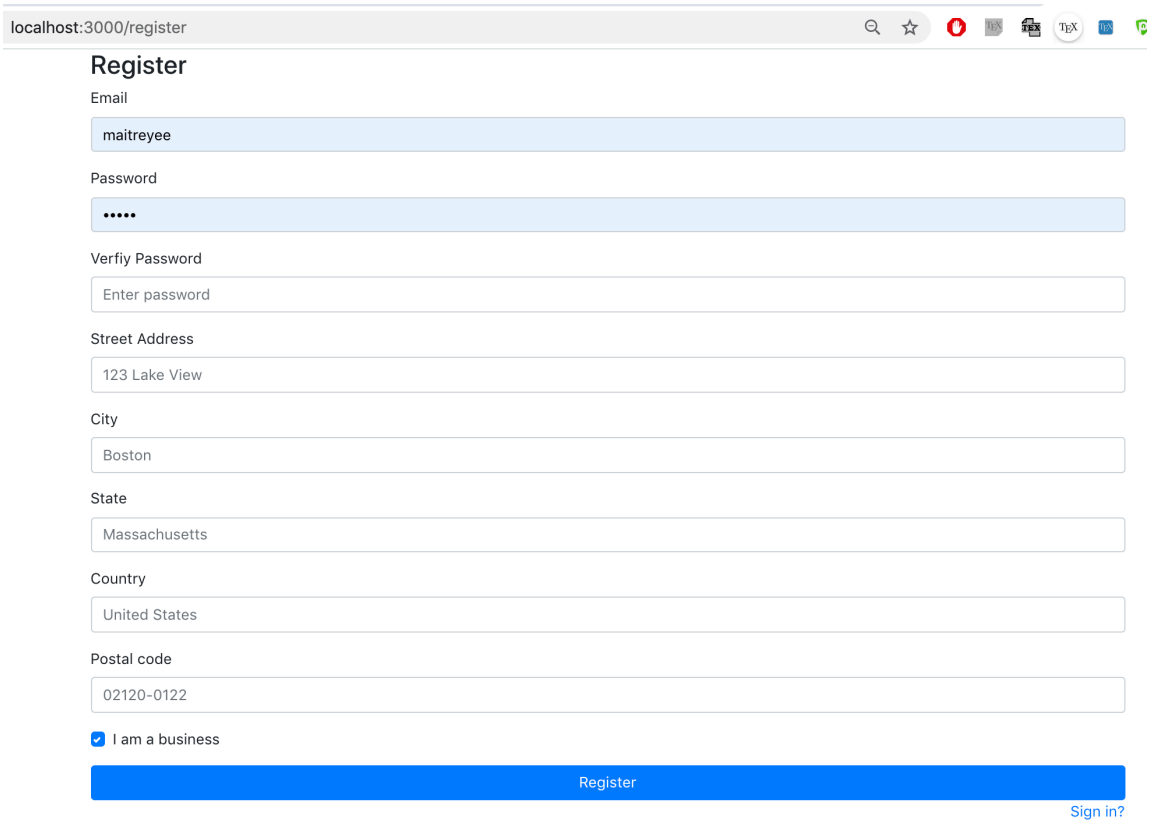

Figure 2. Registration

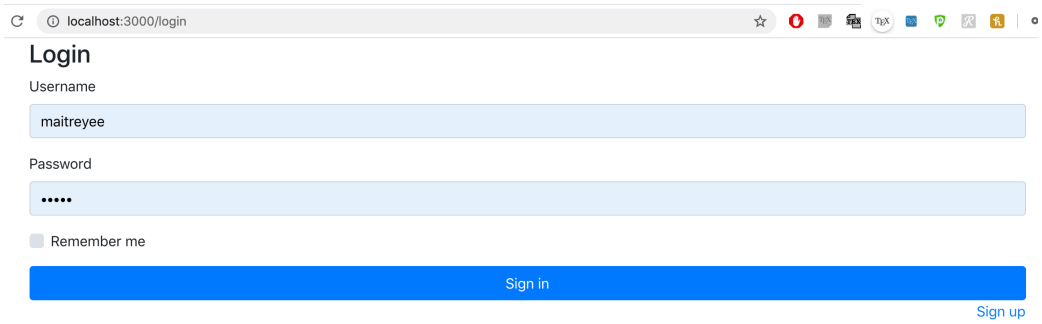

Figure 3. Login

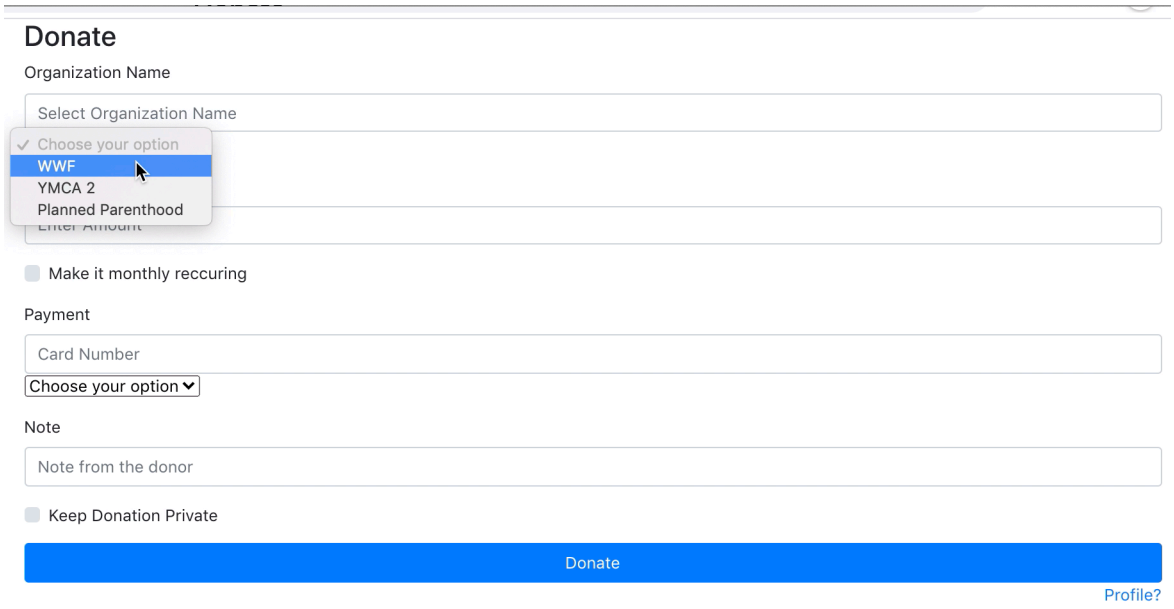

Figure 4. Donation

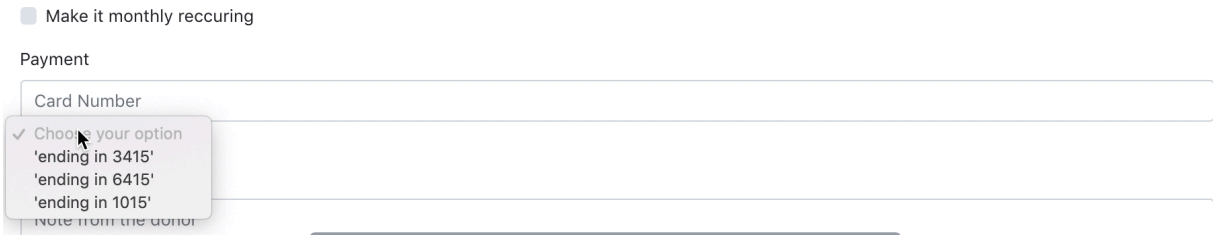

Figure 5. Selecting from saved payments

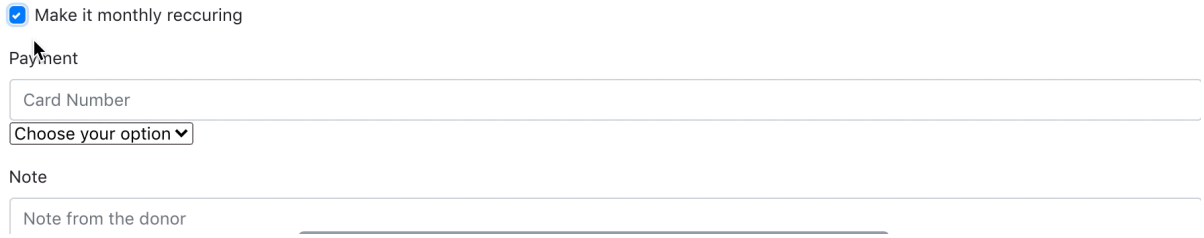

Figure 6. Option of automatic monthly donations

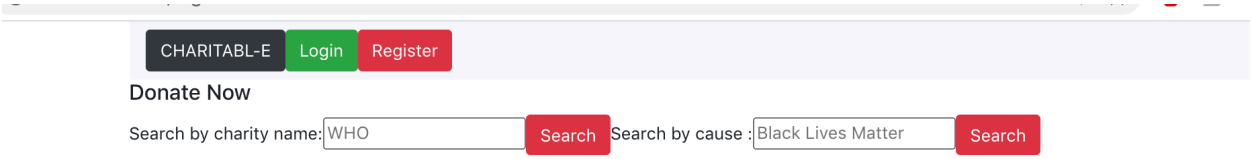

Figure 7. Homepage for Charitabl-E

Conclusions

This project gives a clear basis for the future development of this application. Given more time, the front end could be developed with react JS. The database can be extended to include more features such as a profile for organizations with events or more transparency by showing charity's funds. There is also a possibility of creating an algorithm that can suggest users different underfunded charities based on their popular categories. This idea has a lot more potential and given the brevity of time, the current design fully supports its basic functionality.

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