Firstly, I broke down the problem so that I could understand it better

> The process you are going to build loosely reflects some of the processes we use to get data from **excel** into our system and render visualisations. The **user** must enter a **customer** and the **information** captured as follows.
>
> - ***First Name***
> - ***Last Name***
> - ***Date of Birth***

The basic task here is to find a way to get data from our excel sheet to our system

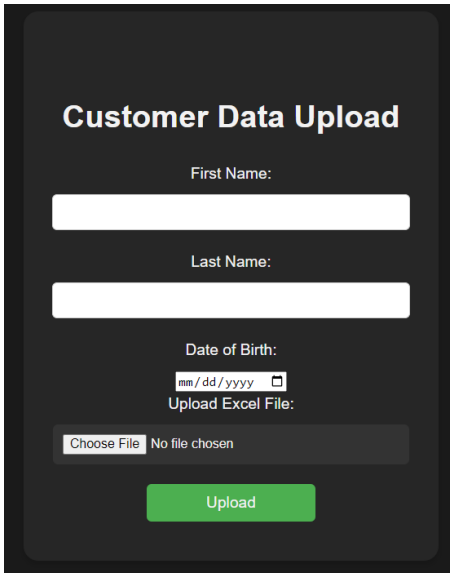
I created an excel spreadsheet and input all the data, I then formatted it into a table so that it wouldn't be difficult to extract

	A	B	C
1	Month	Income	Expense
2	Jan	R 19,770.00	R 3,438.00
3	Feb	R 29,926.00	R 25,382.00
4	Mar	R 21,500.00	R 26,737.00
5	Apr	R 29,023.00	R 18,685.00
6	May	R 24,486.00	R 22,691.00
7	Jun	R 29,245.00	R 13,706.00
8	Jul	R 28,474.00	R 10,402.00
9	Aug	R 25,398.00	R 12,039.00
10	Sep	R 33,953.00	R 3,411.00
11	Oct	R 30,650.00	R 26,110.00
12	Nov	R 20,149.00	R 9,971.00
13	Dec	R 30,613.00	R 20,821.00
14			

The second task was to get the user to upload their excel spreadsheet while they enter their details such as full name and date of birth so I used HTML forms as suggested in the instructions

> The user is also going to **upload** an **excel file** with that has the customer's **financial income and expenses** in the last **12 months**. All user interaction should just be through super simple **HTML forms.** The user must upload the excel file when they capture the customer information. The system must **render a temporal graph** showing the customers income and expenditure for the last 12 months.

I managed to put together a simple form and I completed my task of getting customer information and the sheet



My next task was finding a way to extract the excel data and create a graph

My initial thought was to import it into a database and create the graph afterwards but I found that really challenging and got a lot of errors in the process so I decided to use an alternative which is the Pandas module in Python

Firstly I created a simple program to test my logic, the goal was to just be able to read the data and generate a graph then I would worry about the web application later

After a lot of trial and error and research I got it to work and I was generating graphs in my console

```
import pandas as pd
import matplotlib.pyplot as plt

file_path = 'Income-Expense.xlsx'
df = pd.read_excel(file_path)

month_num = range(1, len(df) + 1)

plt.figure(figsize=(13, 5))
bar_width = 0.4
spacing = 0
font_size = 6

plt.bar([num + spacing for num in month_num], df['Income'], label='Income', color='green', width=bar_width)
plt.bar([num + bar_width + spacing * 2 for num in month_num], df['Expense'], label='Expense', color='red',
        width=bar_width)

for i, income in enumerate(df['Income']):
    plt.text(month_num[i] + spacing, income, f'{income:.2f}', ha='center', va='bottom', color='black', rotation=0,
             fontsize=font_size)

for i, expense in enumerate(df['Expense']):
    plt.text(month_num[i] + bar_width + spacing * 2, expense, f'{expense:.2f}', ha='center', va='bottom', color='black',
             rotation=0, fontsize=font_size)

plt.xlabel('Month')
plt.ylabel('Amount (Rands)')
plt.title('Income and Expenses in the Last 12 Months')
plt.legend()

plt.xticks([num + bar_width + spacing for num in month_num], df['Month'], rotation=45)

plt.tight_layout()
plt.grid(True)
plt.show()
```

After that came the most difficult part, implementing this on the web application

I spent the most time doing this because I kept getting errors and it wouldn't want to work, I kept having to start over because it just wasn't working out, especially when I was implementing the database SQLite

I would get the code right at some moments but getting the temporal graph was a huge mountain to climb

I did more research and reading to find out how best I could solve the issue and I still had no luck, because every time I hit submit to get the graph, something weird would just happen, error after error but I managed to make it work

I had to create two different functions, one to read the data and the other to create the graph because putting them together was too conflicting so that is when I had my breakthrough and was able to complete the task