

F.R.I.E.N.D.S

THE ONE WITH...

T H E
B U D G E T I N G
T O O L

MICHELLE, EYASMIN AND ELLEN



Planning our project

The Capsule Wardrobe

The wellbeing app

The online game

Income, debt and savings!

Budgeting tool!

Calculate compound interest!

Planning our project – continued (Miro board snapshot)

Mind map

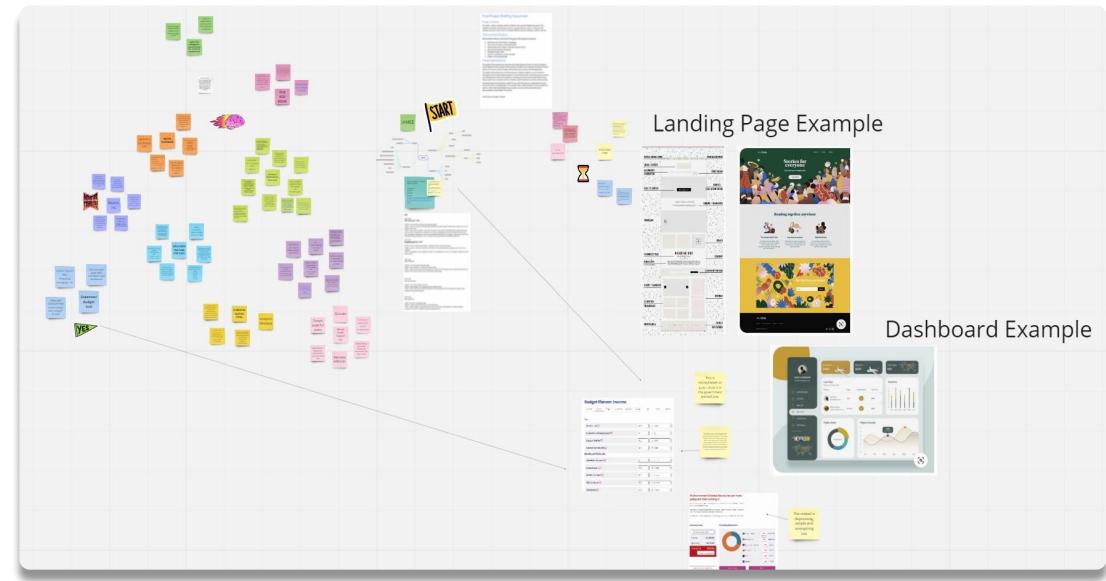
- course learning
- deliverables
- project showcase
- slideshow
- requirements
- PEP8
- OOP
- responsive web design
- agile framework
- CRUD

Idea collection

- post-it notes

Considered limitations

- time, strengths and confidence



Feedback and outcomes

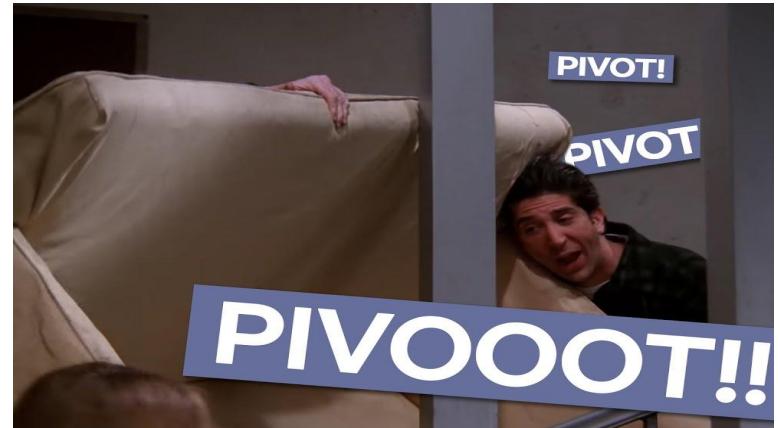
We had to pivot many of our ideas along the way. First, we narrowed down our project choices by spiking 3 potential sites:

- ▶ e-commerce site (capsule wardrobe for kids)
- ▶ online game (Pandemic Contagion by Z-Man games)
- ▶ a website and dashboard for online financial planning (budgeting tool)



Following our initial review, we unanimously decided on the **budgeting tool** due to the following:

- ▶ The concept of a financial tool is very relevant to current times and motivating to all the group members.
- ▶ This concept could offer many avenues for showcasing HTML, CSS, JavaScript, SQL and Python in a way that we could easily apply to real-life situations.



Kanban board – Group task allocations (snapshot)



Board | Table | Roadmap | + New View

Filter by keyword or by field

No Status 7

- jamee #58 Favicon
- jamee #37 Multimedia
- jamee #87 savings calc results
- jamee #88 savings function needs to return a dictionary
- jamee #89 dashboard form should say 'gross salary'
- jamee #90 dashboard results needs reworking
- jamee #91 add debt avalanche method

Todo 2

- This item hasn't been started
- jamee #64 .tooltip feature for website text (inspect page!)

In Progress 3

- This is actively being worked on
- jamee #5 define a colour theme
- jamee #69 add 'about me' to slides
- jamee #74 Use a downloaded font

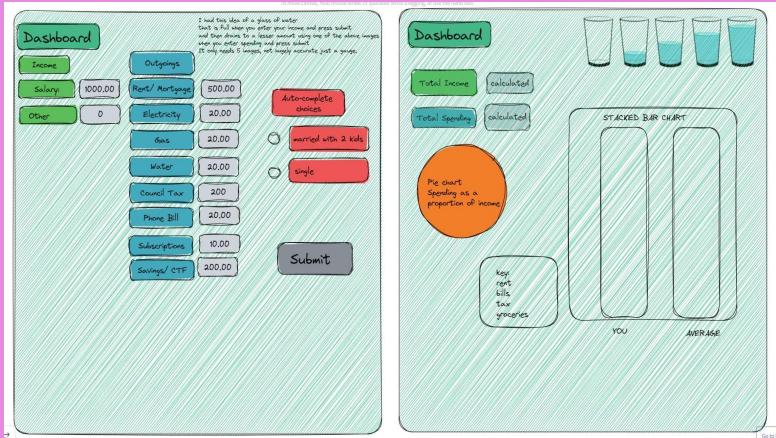
Done 69

- This has been completed
- jamee #1 Does A agree or veto this project?
- jamee #3 POC graphs on dashboard
- jamee #4 Proof of Concept - Pie Chart and Stacked Bar Chart
- jamee #27 First spike draft - Eyasmin
- jamee #10 design and create database
- jamee #14 Database integration
- jamee #11 link the database to a page to retrieve data and display results
- jamee #53 User stories - need to re-write with testing in mind
- jamee #34 Write the code to calculate the weekly

Note: Our project incurred and **resolved** numerous code conflicts.

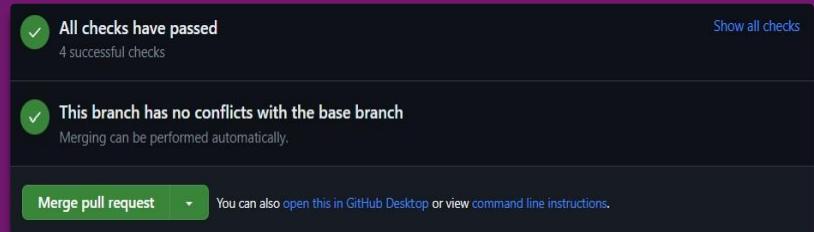
Sprint 1

- Dashboard mockup & Proof of Concept (POC)
- Initial data gathering
- Assigning overall responsibility for project areas; scrum master, design, database design, database link, project spike & calculators

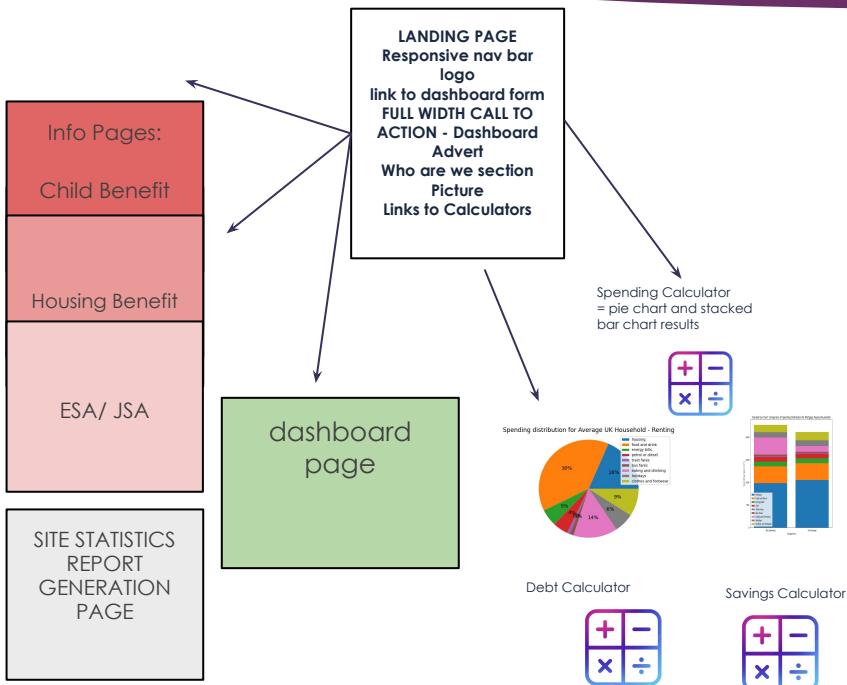


Sprint 2 – Minimum Viable Product

- Defining deliverables and assigning tasks using Github project tickets
- Database Integration - Eyasmin and Michelle
- Github workflow to check code on every pull request in a python linter
- Pytest & Behaviour Driven Development (BDD)
 - to check if pages are working locally
- Database teardown script
- Reporting feature with .txt file output
- Javascript button feature



Front-end



Back-end

Database & CRUD

- User Information Database - **BUDGET MANAGEMENT**
 - CREATE income, debt, savings and expenditure data on forms
 - READ to dashboard and calculator output pages
 - UPDATE a feature we plan to develop in subsequent roll-outs with the login
 - Meets GDPR because all data stored is used to benefit the user
- ONS Data on Average UK Spending per Income Bracket
 - Stored in the user database, because as averages it won't interfere with site statistics
 - READ to dashboard page
- Content Management Database - **BENEFITS**
 - READ to page template

OOP methods & Python

- Savings Calculator
- Debt Calculator
- Graph Generator

HTML/ CSS/ Responsive Design

- Using the layout.html throughout to create a consistent and responsive style
- Using a template with the content management database to generate a series of 'What can I claim?' pages (gov.uk/benefits-calculators-pages)

Sprint 3

Our third sprint was quite a chaotic week...

Just what is this decimal object being returned from the database?



Sprint 4

This is where we tried not to break it, cleaned the code, tested the site from a usability perspective.

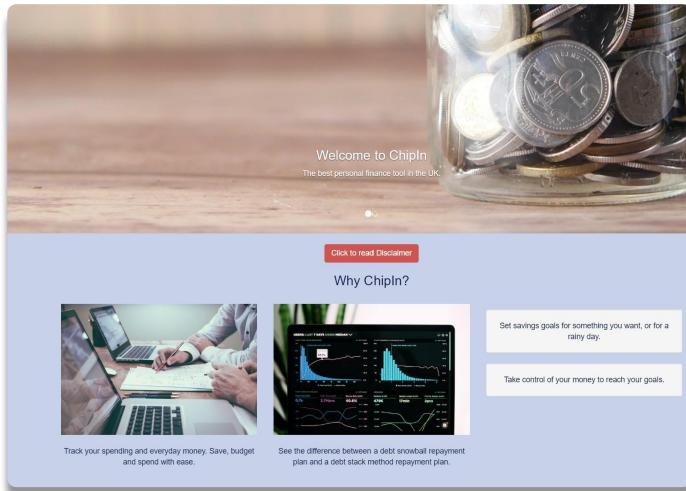
We used styling and responsive code to bring the site from 1992 into 2010 and hopefully we are now somewhere near 2023!

We tackled our coolest code problem by far which was an object referencing problem.

Final Sprint

- 🚫 Try not to break it
- ✓ Clean the code and make it readable without explanation
- ⚠ Test the site and fix potential user errors
- ⌚ Styling and responsiveness
- 💻 Lists are mutable and computers are too smart

Our Landing Page



► Features:

- ▶ a responsive carousel
- ▶ a js driven disclaimer button that calls a confirm pop-up
- ▶ & 2 calls to action with imagery for our main features:
 - ▶ dashboard
 - ▶ debt calculator
- ▶ Meet the team section

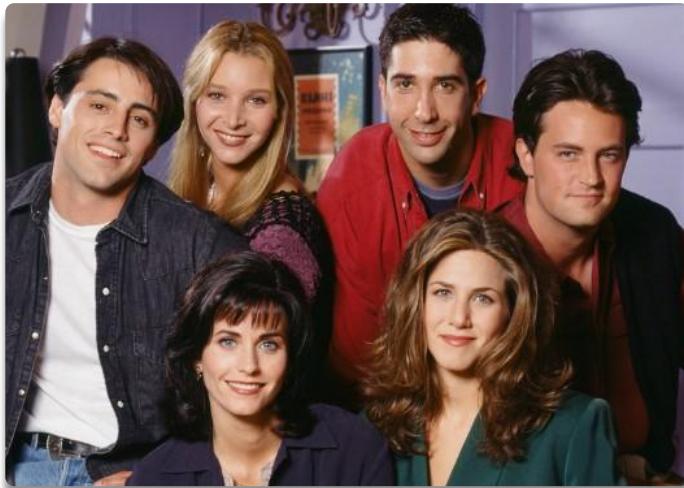
Demo

TA DAA



F•R•I•E•N•D•S

– User Engagement



We thought the features of our site would be best explained using the cast of Friends - a TV series from the mid 90's to early 00s.



- ▶ Name: Phoebe Buffay
- ▶ Occupation: Massage Therapist
- ▶ Summary information: Phoebe is an aunt to triplets. Her brother is finding childcare difficult, so she wants to help him.

Phoebe would love our benefits information

She can access our site to find the right information to support her brother with childcare information.

Benefits Information

- runs from a single jinja template
- uses a content management database
- uses a responsive accordion to display the information cribbed from and linked to gov.uk

```
@app.route('/<benefit_name>')  
def benefits(benefit_name):
```

The screenshot shows a web browser displaying the ChipIn website. The header includes links for Site Statistics, Savings Calculator, Dashboard, Debt Calculator, Stack or Snowball, Articles, Benefits (with a dropdown arrow), and a user profile icon. The main content area has a light gray background and features a large orange header with the text "Child Benefit". Below this, there are two expandable sections: "How it works" and "What you'll get". The "How it works" section contains text about Child Benefit being paid to responsible parents for children under 16 or 20 in approved education or training, with no limit on the number of children. The "What you'll get" section states there are two rates: £24.00 per week for the eldest child or only child, and £15.90 for each additional child, paid every 4 weeks. At the bottom, a note says to visit the government website for more details, with a link to "child-benefit". The footer is orange and contains the text "© ChipIn 2023 - The Shard, 32 London Bridge St, London SE1 9SG". A black arrow points from the Python code above down to the "Child Benefit" page on the website.



- ▶ Name: Rachel Green
- ▶ Occupation: Fashion Assistant
- ▶ Summary information: Rachel works hard and spends money just as hard. As a busy shopaholic living in an expensive city, she often needs guidance to manage/prevent outstanding debts.

Rachel loves our debt calculators

As a young and busy professional – she manages rent, a personal loan, a car loan and credit card repayments etc...

This is a simple debt calculator using GCSE-level maths to calculate.

Debt Calculator

Personal Loan

Debt Amount

Debt Interest Rate (APR)
★ calculated using 5% APR if no value is entered

Debt Term in months
★ calculated over 24 months if no value is entered

Debt Calculator Results

Your debt is in the form of a **Personal Loan**
You borrowed £8000.00 at 5% APR interest over 60 months.
In total, you will repay **£10,000.00** back to the lender



Submit

Chipin

Site Statistics Savings Calculator Dashboard

Debt Calculator Results

Which is better for you ?

The **Debt Stack Approach** is to pay off the debt with the **highest interest** first.

Debt Stack - cheaper!

BNPL, £1200.00 with 45%APR, repayments of £35 paid by 35 months (2 years)	Overdraft, £850.00 with 26%APR, repayments of £10 paid by 85 months (7 years)	BNPL, £1200.00 with 45%APR, repayments of £35 paid by 112 months (9 years)
Personal Loan, £8000.00 with 3%APR, repayments of £250 paid by 82 months (6 years)	Personal Loan, £8000.00 with 3%APR, repayments of £250 paid by 140 months (11 years)	Overdraft, £850.00 with 26%APR, repayments of £10 paid by 40 months (3 years)

The **Debt Snowball Approach** is to pay off the **smallest debt** first.

Debt Snowball - easier!

The **Debt Avalanche Approach** is to pay off the **biggest debt** first.

Debt Avalanche - faster!

```
debt snowball.sort(key = lambda debt:  
debt[0])  
# sorted by loan size  
debt stack = sorted(debt nested list,  
key=lambda debt: debt[2], reverse=True)  
# sorted by interest rate
```

- Names: Monica Geller and Chandler Bing
- Occupations: Chef (Monica) and Data Analyst (Chandler)
- Summary information: Chandler and Monica are a hardworking married couple who have just had baby twins. They have big plans for new milestones including a new home and saving money for their children.



Monica and Chandler love our savings calculator

With this tool, they can see how much of their income can be saved for their future and any emergencies that come with being a growing family.

Savings Calculator

- uses a responsive layout to combine a form with a carousel
- the form uses placeholder text and boolean checks to insert default values
- has a python driven calculator to calculate overall savings if...
- uses in-page formatting to display the returned value nicely as a currency

How much could my savings be worth?

Saving is tough, try these tips to help:
[Check your pension details](#)

Many people leave this for way too late. Locate all your pension information, login, monthly contributions or if it's deducted from your salary.

Ask Martin Lewis, the money saving expert

Savings Calculator

Initial Lump Sum

Monthly amount saved ★ calculated using £50. If no value is entered

Savings Interest Rate (APR) ★ calculated using 5% APR if no value is entered

Savings Term in Years ★ calculated using 10 years if no value is entered

My Savings Goal

£{ ('%.2f' % savings_data[1]) }

if not savings_lump:

Chipin

Simple Savings Calculator

Your results

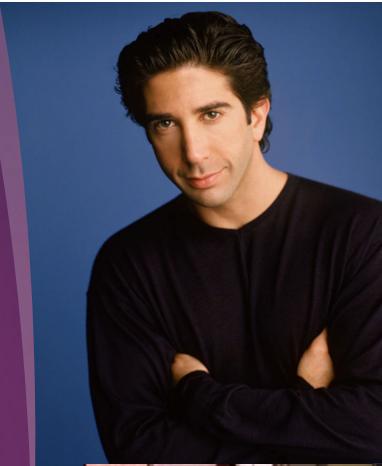
Your lump sum investment of £100.00 to save for a rainy day, saving £50.00 each month:
If you saved £50.00 at 5% APR interest over 5 years

In total, your investment would be worth approximately £3,125.00



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- Names: Ross Geller and Joey Tribbiani
- Occupations: Paleontologist (Ross) and Actor (Joey)
- Summary information: Ross and Joey are the two bachelors of the Friends group. They both work full-time and like to monitor how they are doing with their personal finances as well as national figures.



Ross loves our site statistics

Ross is a very analytical person and appreciates knowing what budgeting information is popular/trending in interest.

Site Statistics

- Queries the whole database to generate count and average data
- Recasts the returned decimal object as an integer in a responsive table format
- Also generates a .txt file to return that information in a report

The screenshot shows a mobile view of the ChipIn website. At the top, there's an orange header bar with the ChipIn logo. Below it, the main content area has a light gray background. The title "Site Statistics" is centered at the top of the content area, with "Debt Calculator" underneath it. A paragraph of text follows, stating: "When people visit our site they use our debt calculator to find out how much they will repay in total over the repayment period. The average amount of personal debt that people visiting our site have investigated is £18,910.00. Those debts are usually in the form of a Personal Loan." Below this text is a table with two columns: "Type of loan investigated" and "Number of calculations". The table data is as follows:

Type of loan investigated	Number of calculations
Personal Loan	15
Overdraft	5
Mortgage	4
Car Loan	4
BNPL	4
Credit Card	2

uses python code to display that nicely on an html page

```
avg =  
f" {average_savings :,.02f } "
```

```
SELECT debt_source, COUNT(*) AS  
frequency FROM debt GROUP BY  
debt_source ORDER BY frequency DESC
```

Joey loves our main dashboard feature

He can compare his spending with both the UK average as a whole and with the average for people in his own income bracket who are renting their home. He can see instantly how much he benefits by eating Monica's food instead of buying his own.

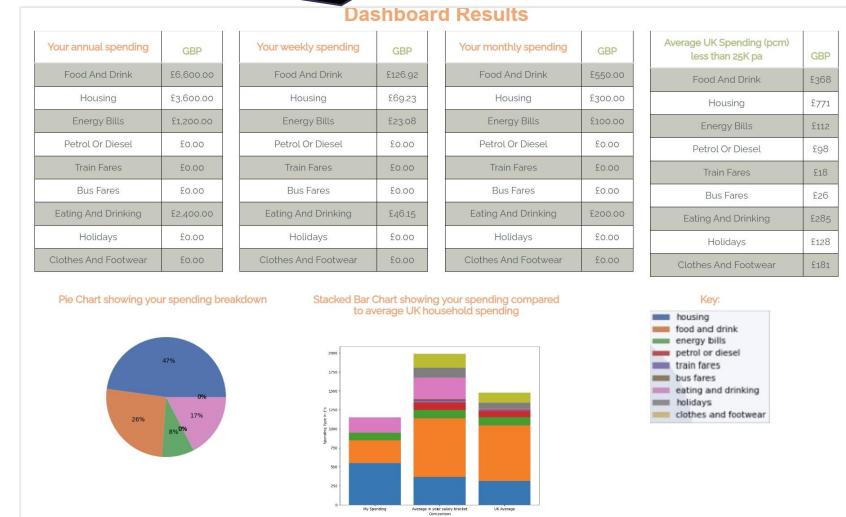
Dashboard

- starts with an accordion form
- data is stored and retrieved from the database using the username

```
user_data = [f'{(abs(num)*12)/52:.02f}' for num in user_data]
weekly_user_data = {key:value for key, value in zip(headers_list,
user_data)}
```

Dashboard Results Page

- A breakdown of UK spending for your income bracket based on homeownership according to ONS figures
- A python generated pie chart
- A python generated stacked bar chart
- Your Spending Breakdown calculated by week, month and year





- ▶ Each member of the Friends group also find our articles helpful and informative!

ChipIn Site Statistics Savings Calculator Dashboard Debt Calculator Stack or Snowball Articles Benefits ▾



Debt and Mental Health

Authors: Eyasmin Basher and Michelle Quaye, April 8th 2023

50% of adults have ill mental-health linked to the stresses of debt (Royal College of Psychiatrists, 2010). Debt has been shown to have an impact on:

- Emotional regulation
- Personal relationships
- Self-esteem
- Social inclusion

(Mind, 2023)

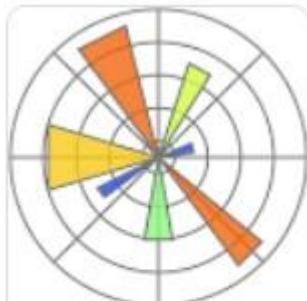
So what is being done to help people going through ill mental health due to debt? (Mind, 2023)

- **Money Advice Liaison Groups:** These are forums created to provide an empathetic service with information and advice. These groups also provide guidance to financial organisations on how to communicate clearly and with more understanding to customers via 'Good practice mental health guidelines' (2009).
- **Credit Crunch Stressline:** This is an NHS helpline for people experiencing emotional distress due to issues with debt and wider financial difficulties. This helpline provides support and advice.
- **The Lending Code:** This is a protocol created by The British Banking Association (2005) on how creditors should treat customers experiencing financial problems alongside associated mental health conditions.

Extra Requirements.txt



pandas: an open source data analysis
and manipulation tool



Matplotlib

Matplotlib is a cross-platform, data visualization and graphical plotting library for Python and its numerical extension NumPy



Seaborn is a library for making statistical graphics in Python. It builds on top of matplotlib and integrates closely with pandas data structures - it makes the matplotlib graphs look more presentable.



The pytest framework makes it easy to write small, readable tests, and can scale to support complex functional testing for applications and libraries.

Retrospective

Challenges Overcome:



Communication



Writing pytests to
test unwritten
code



Writing task tickets
for our Kanban
board – this got
better over time

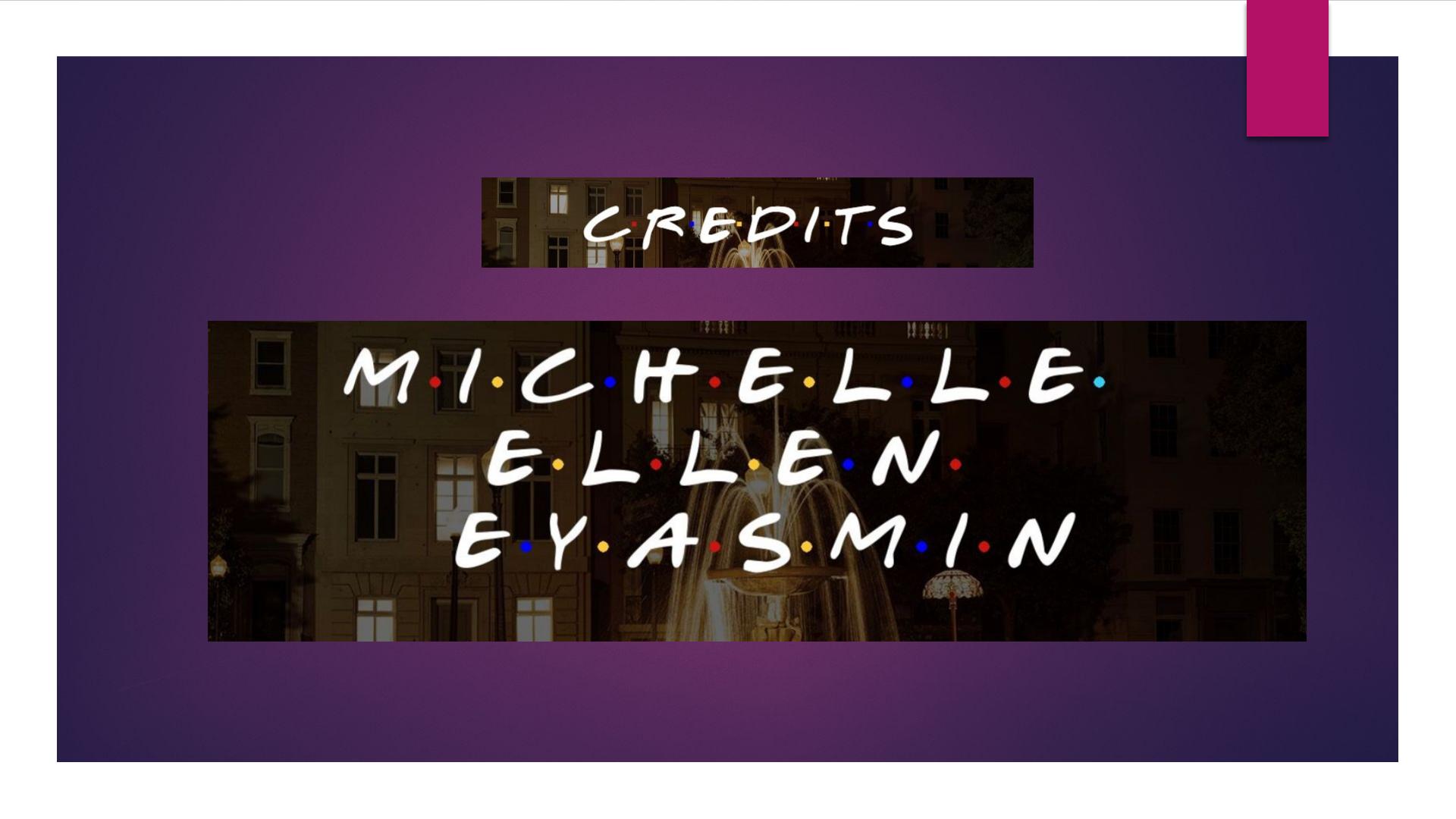
What would we have done differently?



MORE SHARED
RESPONSIBILITY



MORE
COMPREHENSIVE
PLANNING



CREDITS



M·I·C·H·E·L·L·E·
E·L·L·E·N·
E·Y·A·S·M·I·N