M1 Submission – Team 43
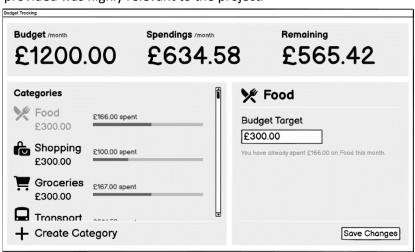
S1 Rankings

The team reviewed all submissions for S1, and each member of the team contributed by submitting a mockup, persona, evidence of git setup/commit, and relevant Kanban cards. There were no instances of incomplete or insufficient work.

The team evaluated each individual's contributions based on the established ranking criteria provided, by considering how well the mockups were aligned with the team's consensus on the concept and their potential to fulfil their intended purpose. The following are the rankings and justifications for each submission.
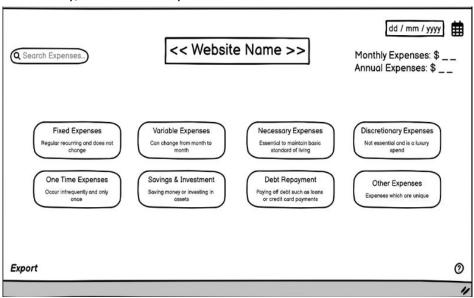
1. **Kylie Teh**
   The budget screen was identified as the most crucial feature of the web application and was ranked first in priority. Kylie's initial mock-up screen for the budget feature was adequate, but it required further refinement to improve conciseness and accessibility, which was addressed after group discussions. As a result, part of Kylie's second screen was promoted to the first screen, as it was deemed to provide a better user experience. Nonetheless, the persona she provided was highly relevant to the project.
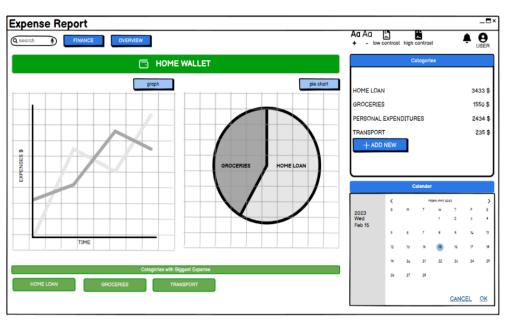
2. **Rohan Renganathan**

The Expenses Screen, which was ranked second by the team, covers all the aspects outlined in group meetings. The user interface is clear and concise, with monthly and annual spending presented in the top right corner, and each button labelled with a brief description underneath to facilitate ease of use. This ergonomic design adheres to research indicating that the top right corner is a natural focal point for users. Additionally, it features a search bar for specific expenses and an Export button in the corner, allowing for quick data exportation in a format suitable for tax purposes. Furthermore, a help button is conveniently located in the bottom corner, which can be read aloud for visually impaired users, providing a comprehensive description of the screen's purpose. Overall, this design prioritizes ease of use, accessibility, and functionality.

3. **Prabal Singh**

The user interface is clear with user accessibility features such as font size and theme selection on top right, expense report is shown by a graph and pie chart and each button is labelled with a brief description underneath to facilitate ease of use. Additionally, it features a search bar for specific expenses and a Finance button in the left corner. Furthermore, categories with biggest expenses are conveniently located in the bottom corner, which can be read aloud for visually impaired users. This mockup prioritizes accessibility.

4. **Oladapo Adeyanju**

This ranking received 4th signifying that it was a solid effort. We appreciated the design of the mockup and persona but felt they fell short in a few key areas. The dashboard was ranked based on user experience, aesthetics and functionality. For aesthetics, the mockup was evaluated on its use of colour, typography and layout. The persona was evaluated on its relevance to the product being designed, and how well it captured the user's motivations and frustrations. Feedback was given in these areas, with suggestions for improvement to enhance the overall design, functionality and usefulness of the dashboard and persona.

5. **Leila Shaibu**

The settings feature mock-up adheres to the agreed format and links well with the app. But it is not as essential as some of the other app features, being that the app can still function relatively well without it. While the design fulfils the basic requirements, it lacks creativity and innovation, and it is similar to already existing apps. Also, the aesthetics of the mock-up could be improved upon. Hence, the mock-up can be enhanced by including distinctive and exciting components that set it apart from competing apps in order to increase its user appeal.

6. **Anurag Tiwari**

The aesthetics could be improved with additional functionality features such as an option to enter tax information. Although, the feature was not deemed as important as managing budget and expenses, the mockup coheres to the agreed format allowing instant navigation to all other tabs and fits well within the team's agreed concept. However, strictly speaking, there aren't a great deal of innovative elements on this mockup that target user appeal. The ranking for this submission is justified since the mockup is not crucial for the application but is useful for the intended persona and with real user feedback there is scope to improve its design.

Many individuals find it difficult to manage their finances and have a hard time paying their bills. Hence, the idea we are creating a web-based finance tracker app. Our aim is simple; it is to simplify financial management. A finance tracker app can automate many financial tasks such as categorising expenses into different groups and generating reports and graphs enabling the user to view their entire financial status in just a glance. This can save a lot of time and make financial management a lot less overwhelming.

The idea of a web-based finance tracker may not be entirely original however, our app is different as we will have a clean and user-friendly user interface with each menu button clearly labelled providing a seamless transition from one screen to the next. This is in direct accordance with one of our client's, Jacob Martini's accessibility requirements. It will also incorporate customisable options to the user allowing them to change the contrast of colours and text size on the screen as we wanted to adhere to Olutosin Ajayi and Jacob Martini's requests. Additionally, the colours can be changed to cater for individuals who may be slightly visually impaired or colour blind. This was determined in precise alignment with our client, Steve Smith's preferences. Moreover, the app will also allow users to set personal financial goals tailoring the app specifically to their needs and requirements. The user's data is constantly backed up on the server reducing the chance of data loss whilst ensuring data integrity and security even in the unlikely case of a hardware failure.

This app will also allow users to set and achieve their financial goals and constantly be able to monitor their progress towards them. This can include goals such as paying off debt, saving for a down payment on a house, building an emergency fund or simply to save money. They can view all their previous expenses and see which is their primary expense category. This app will enable users to be able to make more informed decisions and facilitate wise spending.

As it is a browser-based app, only the internet is required to access it, enhancing usability and improving accessibility as it can be accessed from any device which has an internet connection and is not limited to a specific device. This makes it easier for users to stay on top of their finances and make informed financial decisions.

As our user base grows, it will be much easier to scale up to accommodate more users. This will allow us to expand our app's features to a wider market without having to worry about external factors such as compatibility issues or App Store approval issues, which may occur whilst scaling up a mobile app.

Our app will contain various screen interfaces for the user to navigate through. As soon as the user opens the app and logs in, they will be welcomed with the dashboard screen. This screen displays the user's income performance along with a brief overview of their income, expenses and budget. We have taken into Nadia Shanaa's requirements and ensured that the dashboard is designed in accordance with the brief. We have deliberately avoided any unnecessary complexities and have instead provided a simplistic user interface, ensuring ease of use for our client's end-users. To edit or view their information in greater detail, the user can press the appropriate buttons which are all neatly laid out on the left side of the screen interface. They can also enter the _Settings Screen_ from this screen.

In the _Settings Screen_ the user will be able to tailor the app to their preferences. For instance, they can control whether they wish to receive notifications as well as the theme of the app. Our application has been developed with accessibility in mind and is designed to accommodate

individuals who may be colour blind. Specifically, the entire colour scheme of the app can be modified in the settings to ensure that it is easily discernible for all users. Furthermore, the language of the app can also be altered catering to cater for non – English speaking individuals.

The user can also navigate to the *Budget Screen* from the dashboard. Here, they can set a budget for each category of expenses. They can click on the budget, and it will show them a diagram of how much of their budget they have dedicated towards the specified category.

The *Expenses Screen* is where the user can easily manage and stay on top of all their expenses. From this screen, the user will be able to quickly view their monthly and annual expenses. Additionally, the user will be able to add any expense they have. There are different types of expenses such as: *Fixed Expenses*, *Discretionary Expenses* and *Necessary Expenses* etc. To aid the user further, a small description of what each expense means is provided underneath.

After clicking on an *Expense button*, the user will be directed to another screen where they will be able to input this. From this screen, they will also be able to click on the *Report Screen* button. This will then take them to another screen which will display their chosen data in a graph format. This will make it much easier to view as more all their data can be viewed in a glance. This graph will split it by each category making it very clear which category the user is spending the most in and where they should cut down if required.

It is imperative that users with multiple streams of income, such as Sofia Martinez, are provided with the ability to view and manage all their income in one convenient location through the use of the Income feature. As research suggests that at least 47% of millennials have multiple streams of income, the implementation of such a feature is expected to greatly aid in understanding income trends and patterns over time. However, considering the current minimalistic functionality, we strongly encourage additional feedback in order to enhance the feature's utility. For instance, input on the incorporation of a frequency dropdown menu to enable users to select the frequency of each income source, and a tax withholding section related to their income, such as their tax filing status, number of allowances, and additional withholding amount, would undoubtedly garner positive responses.

All our personas are credible as we conducted thorough research prior to arriving at any conclusions. Whilst the individuals portrayed in our personas may not be real, we have conducted extensive research to identify the most common frustrations encountered by different age groups in their interactions with various applications. Subsequently, we have curated the most pertinent factors and incorporated them into our personas in order to ensure their relevance and applicability.

CI Pipeline Setup

SSH to VM

```
tiwar@AnuragHP MINGW64 ~ (master)
$ ssh ec2-user@13.41.185.146
The authenticity of host '13.41.185.146 (13.41.185.146)' can't be established.
ED25519 key fingerprint is SHA256:YecfM+e+Bh87szOL7DX5sCAIeEyby9vAJ3WQJr9eRb8.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '13.41.185.146' (ED25519) to the list of known hosts.
ec2-user@13.41.185.146: Permission denied (publickey,gssapi-keyex,gssapi-with-mi
c).

tiwar@AnuragHP MINGW64 ~ (master)
$
```

```
tiwar@AnuragHP MINGW64 ~ (master)
$ cd .ssh/

tiwar@AnuragHP MINGW64 ~/.ssh (master)
$ touch 1.pem

tiwar@AnuragHP MINGW64 ~/.ssh (master)
$ nano 1.pem

tiwar@AnuragHP MINGW64 ~/.ssh (master)
$ chmod 600 1.pem

tiwar@AnuragHP MINGW64 ~/.ssh (master)
$ ssh -i "1.pem" ec2-user@13.41.185.146

       __|  __|_  )
       _|  (     /   Amazon Linux 2 AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-118-44 ~]$
```

Register GitLab runner with repository.

```
[ec2-user@ip-172-31-118-44 ~]$ # Download the binary for your system
[ec2-user@ip-172-31-118-44 ~]$ sudo curl -L --output /usr/local/bin/gitlab-runner https://gitlab-runner-downloads.s3.amazonaws.com/latest/binaries/gitlab-runner-linux-a
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0# Give it permission to execute
sudo chmod +x /usr/local/bin/gitlab-runner

# Create a GitLab Runner user
sudo useradd --comment 'GitLab Runner' --create-home gitlab-runner --shell /bin/bash

# Install and run as a service
sudo gitlab-runner install --user=gitlab-runner --working-directory=/home/gitlab-runner
sudo gitlab-runner start
100 54.7M  100 54.7M    0     0  23.0M      0  0:00:02  0:00:02 --:--:-- 23.0M
[ec2-user@ip-172-31-118-44 ~]$
[ec2-user@ip-172-31-118-44 ~]$ # Give it permission to execute
[ec2-user@ip-172-31-118-44 ~]$ sudo chmod +x /usr/local/bin/gitlab-runner
[ec2-user@ip-172-31-118-44 ~]$
[ec2-user@ip-172-31-118-44 ~]$ # Create a GitLab Runner user
[ec2-user@ip-172-31-118-44 ~]$ sudo useradd --comment 'GitLab Runner' --create-home gitlab-runner --shell /bin/bash
useradd: user 'gitlab-runner' already exists
[ec2-user@ip-172-31-118-44 ~]$
[ec2-user@ip-172-31-118-44 ~]$ # Install and run as a service
[ec2-user@ip-172-31-118-44 ~]$ sudo gitlab-runner install --user=gitlab-runner --working-directory=/home/gitlab-runner
Runtime platform                                    arch=arm64 os=linux pid=8574 revision=d540b510 version=15.9.1
FATAL: Failed to install gitlab-runner: Init already exists: /etc/systemd/system/gitlab-runner.service
[ec2-user@ip-172-31-118-44 ~]$ sudo gitlab-runner start
Runtime platform                                    arch=arm64 os=linux pid=8580 revision=d540b510 version=15.9.1
[ec2-user@ip-172-31-118-44 ~]$ sudo gitlab-runner register --url https://git.cs.bham.ac.uk/ --registration-token GR1348941F2bv6EtBwumVbwEsjxs-
Runtime platform                                    arch=arm64 os=linux pid=8595 revision=d540b510 version=15.9.1
Running in system-mode.

Enter the GitLab instance URL (for example, https://gitlab.com/):
[https://git.cs.bham.ac.uk/]:
Enter the registration token:
[GR1348941F2bv6EtBwumVbwEsjxs-]:
Enter a description for the runner:
[ip-172-31-118-44.eu-west-2.compute.internal]: Team43 runner
Enter tags for the runner (comma-separated):

Enter optional maintenance note for the runner:

WARNING: Support for registration tokens and runner parameters in the 'register' command has been deprecated in GitLab Runner 15.6 and will be replaced with support for
hentication tokens. For more information, see https://gitlab.com/gitlab-org/gitlab/-/issues/380872
Registering runner... succeeded                     runner=GR1348941F2bv6EtB
Enter an executor: kubernetes, custom, docker+machine, parallels, shell, ssh, virtualbox, docker-ssh+machine, instance, docker, docker-ssh:
docker
```

CI/CD Pipeline setup

Variables

Variables store information, like passwords and secret keys, that you can use in job scripts. Each project can define a maximum of 200 variables. Learn more.

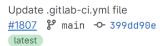Variables can have several attributes. Learn more.

- `Protected:` Only exposed to protected branches or protected tags.
- `Masked:` Hidden in job logs. Must match masking requirements.
- `Expanded:` Variables with `$` will be treated as the start of a reference to another variable.

> Environment variables are configured by your administrator to be protected by default.

Type	↑ Key	Value	Options	Environments	
File	RSA 🗐	***** 🗐	Expanded	All (default) 🗐	✎
Variable	VM 🗐	***** 🗐	Expanded	All (default) 🗐	✎
Variable	VM_USER 🗐	***** 🗐	Expanded	All (default) 🗐	✎

```
 97   Creating network "docker_default" with the default driver
 98   Pulling teamproject-postgresql (postgres:14.5)...
 99   14.5: Pulling from library/postgres
100   Digest: sha256:135c62a8134dcef829a1e4f5568bfae44bcfa2c75659ff948f43c7196436
      6aa4
101   Status: Downloaded newer image for postgres:14.5
102   Creating docker_teamproject-postgresql_1 ...
103   Creating docker_teamproject-app_1        ...
104   Creating docker_teamproject-postgresql_1 ... done
105   Creating docker_teamproject-app_1        ... done
107   Saving cache for successful job                              00:02
108   Creating cache main-non_protected...
109   .maven/: found 6585 matching artifact files and directories
110   Archive is up to date!
111   Created cache
113   Cleaning up project directory and file based variables       00:01
115   Job succeeded
```

✓ passed   Update .gitlab-ci.yml file
                #1807 ⅄ main ⦿ 399dd90e
⏱ 00:05:53   latest   ✓ ✓ ✓ ✓ ✓
🗓 2 minutes ago

```yaml
image: jhipster/jhipster:v7.9.3

variables:
  CI_IMG: "\"${CI_REGISTRY_IMAGE}:latest\""
  TP_URL: "${CI_PROJECT_NAMESPACE}.bham.team"
  TP_CONTACT: "${GITLAB_USER_EMAIL}"
cache:
  key: '$CI_COMMIT_REF_NAME'
  paths:
    - .maven/
stages:
  - check
  - build
  - test
  - analyze
  - package
  - release
  - publish
  - deploy
before_script:
  - export NG_CLI_ANALYTICS="false"
  - export MAVEN_USER_HOME=`pwd`/.maven

nohttp:
  stage: check
  script:
    - ./mvnw -ntp checkstyle:check -Dmaven.repo.local=$MAVEN_USER_HOME

maven-compile:
  stage: build
  script:
    - ./mvnw -ntp compile -P-webapp -Dmaven.repo.local=$MAVEN_USER_HOME
  artifacts:
    paths:
      - target/classes/
      - target/generated-sources/
    expire_in: 1 day

maven-package:
  stage: package
  script:
    - echo "jhipster" | sudo -S apt-get update
    - echo "jhipster" | sudo -S apt-get install -y chromium-browser
    - echo `whereis chromium-browser`
    - ./mvnw -ntp verify -Pprod -DskipTests -Dmaven.repo.local=$MAVEN_USER_HOME
  artifacts:
    paths:
      - target/*.jar
      - target/classes
    expire_in: 1 day

publish-docker:
    stage: publish
    services:
     - docker:dind
    variables:
      DOCKER_HOST: 'tcp://docker:2375'
```

```yaml
58        DOCKER_DRIVER: overlay2
59        DOCKER_TLS_CERTDIR: ""
60      dependencies:
61          - maven-package
62      script:
63          - echo "pushing ${CI_REGISTRY_IMAGE} ${CI_REGISTRY_USER} ${CI_REGISTRY_PASSWORD} ${CI_REGISTRY}"
64          - ./mvnw -ntp -e -X jib:build -DskipTests -Pprod -Djib.to.auth.username=${CI_REGISTRY_USER} -Djib.to.auth
65
66  #uncomment this once the $RSA $VM_USER@$VM are set in the repo - Setting -> CI/CD -> variables
67  #$RSA should be a private key file, $VM_USER is the VM user name (e.g. root or ec2) and $VM is the IP address of
68  #this assumes docker and SSH is installed on the $VM
69  deploy-git:
70    image: alpine:latest
71    stage: deploy
72    when: on_success
73    before_script:
74      - chmod og= $RSA
75      - apk update && apk add openssh-client
76      - ssh -o StrictHostKeyChecking=no -i $RSA $VM_USER@$VM "docker-compose -f ~/team-project-deployment/src/main,
77      - ssh -o StrictHostKeyChecking=no -i $RSA $VM_USER@$VM "docker rm -f $(docker ps -a -q) || true"
78      - ssh -o StrictHostKeyChecking=no -i $RSA $VM_USER@$VM "docker volume rm $(docker volume ls -q) || true"
79      - ssh -o StrictHostKeyChecking=no -i $RSA $VM_USER@$VM "rm -rf ~/team-project-deployment || true"
80      - ssh -o StrictHostKeyChecking=no -i $RSA $VM_USER@$VM "docker login -u $CI_REGISTRY_USER -p $CI_REGISTRY_PAS
81      - ssh -o StrictHostKeyChecking=no -i $RSA $VM_USER@$VM "docker pull ${CI_REGISTRY_IMAGE}:latest"
82    script:
83      - scp -o StrictHostKeyChecking=no -i $RSA -r . $VM_USER@$VM:~/team-project-deployment
84      - ssh -o StrictHostKeyChecking=no -i $RSA $VM_USER@$VM "sed -i '5s|teamproject|$CI_IMG|' ~/team-project-deplo
85      - ssh -o StrictHostKeyChecking=no -i $RSA $VM_USER@$VM "docker-compose -f ~/team-project-deployment/src/main,
```

Meeting Diaries

Date	9/02/2023
Time	12:30-1:30 pm
Venue	CS Building
Attendees	Anurag, Rohan, Prabal, Kylie, Oladapo, Leila
Discussions	-First group meeting together: introductions -discussed strengths and skills of everyone in the group -Talked through initial ideas: Workflow management, renting clothes application, YouTube transcript application and a personal finance tracker. -For each idea, we understood its viability and functionality and whether it can be made accessible to all.
Decisions made	-Finalized on personal finance tracker web application as project -Created a group chat on Teams for project discussions

Date	10/02/2023 **(Tutor Meeting with Wendy)**
Time	1pm –1:25 pm
Venue	CS Building
Attendees	Anurag, Rohan, Kylie, Oladapo, Leila
Discussions	-First meeting with project tutor -Understood project requirements in particular S1 criteria; how to create mockups using Balsamiq and write relevant personas -Got feedback on the project idea (finance tracker) -Taught on importance of following a vertical slicing framework instead of horizontal slicing when working with the tech stack -Asked questions on Kanban cards and git setup
Decisions made	-Deadlines given to create mockups & personas -Project template given to understand the requirements for S1 in more detail

Date	11/02/2023
Time	2-2:40 pm
Venue	CS Building
Attendees	Anurag, Rohan, Prabal, Kylie
Discussions	-Requirements for S1 -Personal finance features including what mockups, relevant personas
Decisions made	-Different screen interfaces finalised -Mockups allocated to everyone -Personas identified

Date	15/02/2023 **(Tutor Meeting with Wendy)**
Time	4-4:20 pm
Venue	Zoom online
Attendees	Anurag, Rohan, Kylie, Leila, Oladapo
Discussions	-Feedback given on mockups and personas -Identified changes to be made for M1 submission -Questions were asked about how to rank mockups
Decisions made	-Ranking criteria was outlined -Proposed changes: Kanban cards to be more detailed (i.e to who the task is assigned to for clarity), some modifications in mockup, including accessibility feature for visually impaired users of the app.

Date	16/02/2023
Time	11-12:15pm
Venue	CS Building
Attendees	Anurag, Rohan, Prabal, Kylie, Oladapo, Leila
Discussions	-Discussed all individual mockups and personas -identified any coherency issues with the mockups -discussed ranking criteria and initial plans on ranking the individual submissions
Decisions made	-After reviewing all mockups, identified changes that need to be made for better functionality -Will rank the mockups after proposed changes

Date	21/02/2023 **(Tutor Meeting with Wendy)**
Time	1:50-2:10 pm
Venue	CS Building room 225
Attendees	Anurag, Rohan, Kylie, Oladapo, Leila
Discussions	-Received feedback on M1 progress -Discussed CI/CD setup (lab group session) -Tasks for S2
Decisions made	-Went to labs for CI/CD pipeline setup -Delegated tasks for S2 -Created Kanban cards for the features

S2 Task Allocation and Planning

Open   🗂 8   +

Get user income (back end)- Anurag
`S2`
▣ #21

Income input fields (front end)- Anurag
`S2`
▣ #20   📅 Mar 8

Display recent income - Anurag
`S2`
▣ #19   📅 Mar 8

Search Expenses Search Bar - Rohan
`S2`
▣ #15

Display Website Name - Rohan
`S2`
▣ #16

Include today's date and calendar - Rohan
`S2`
▣ #17

Settings Feature - Leila
`S2`
▣ #22

Open   🗂 8   +

Dashboard feature - Oladapo
`S2`
▣ #14

Tech research report + dev prep - Oladapo
`S2`
▣ #18   📅 Mar 8

Open   🗂 12   +

Create Search bar - Prabal
`S2`
▣ #25

Display pie chart - Prabal
`S2`
▣ #24

Display line graph - Prabal
`S2`
▣ #23

Implement Budget Screen - Kylie
`S2`
▣ #28

Implement Budget Input Form - Kylie
`S2`
▣ #27

Implement budget calculation feature - Kylie
`S2`
▣ #26