



Software engineering group project

Deliverable 4 - Increment 3

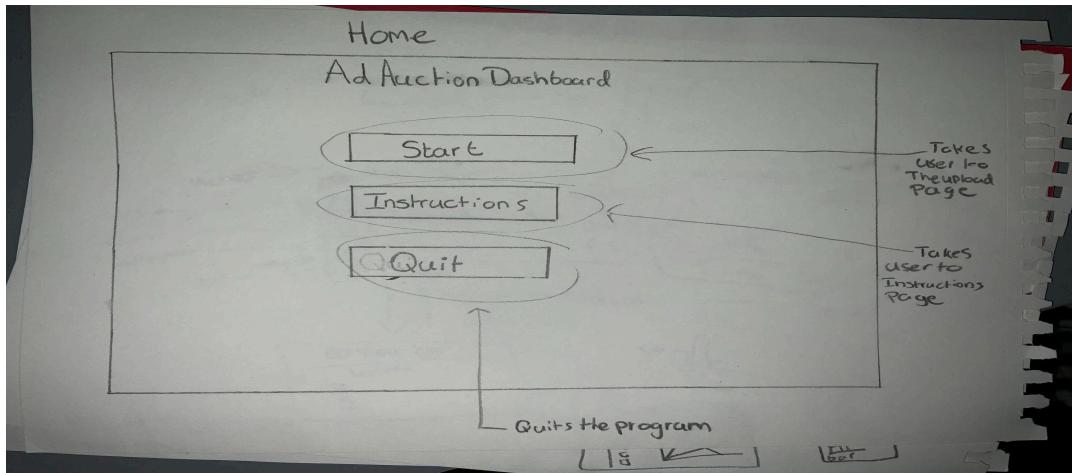
	Name	ID
1	Marwan Altamimi	32489005
2	Juzheng Bai	32410964
3	Henry York	33113556
4	Jack Breslin	33055521
5	Aditya Bansal	33335052

Supervised by
Gerasim Tsonev

Project Design & Planning

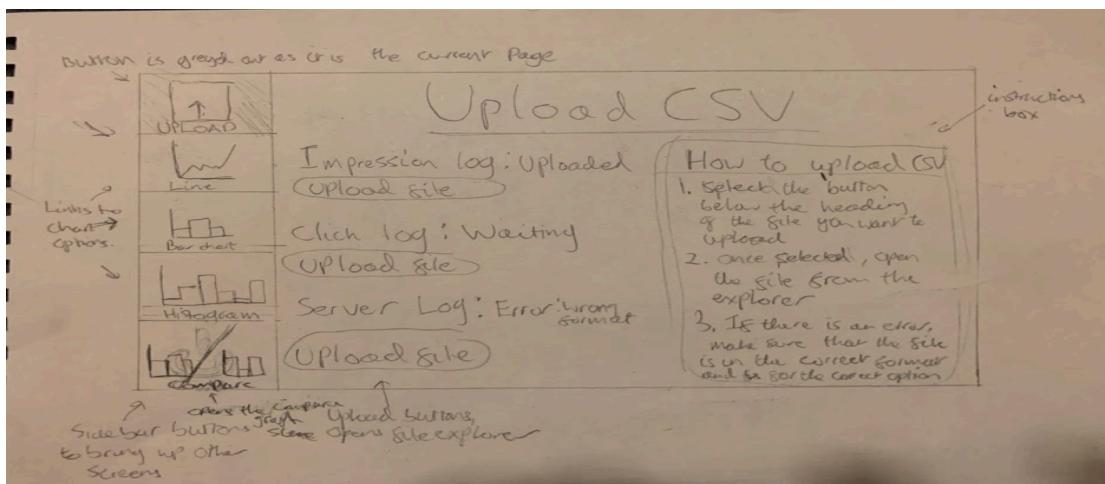
Storyboards

Figure 1 - Home screen



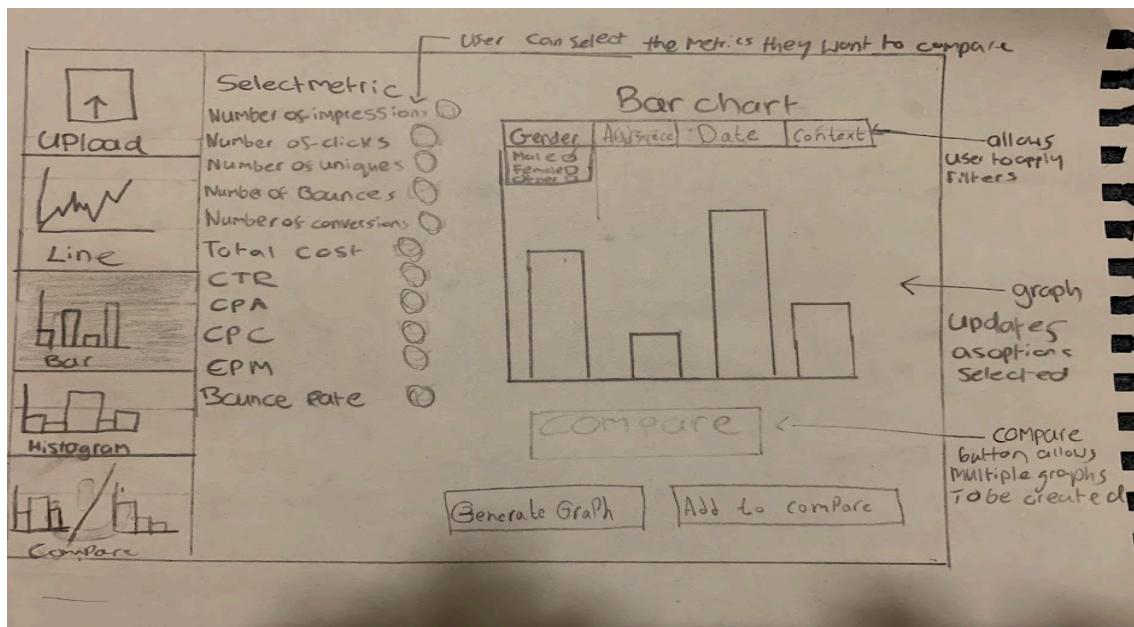
(Figure1)

Figure 2 - Upload Screen



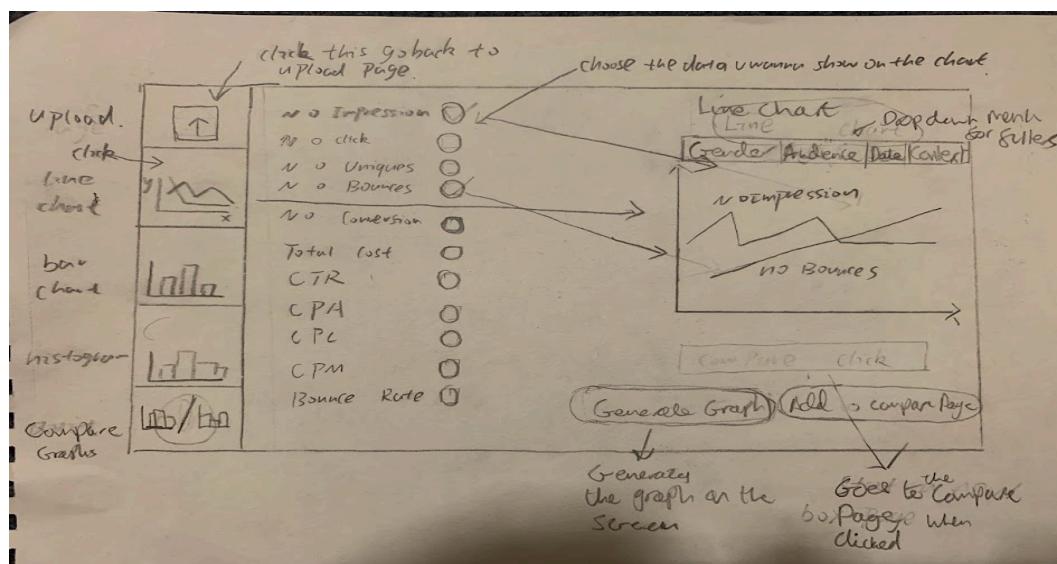
(Figure2)

Figure 3 - Bar Chart Screen



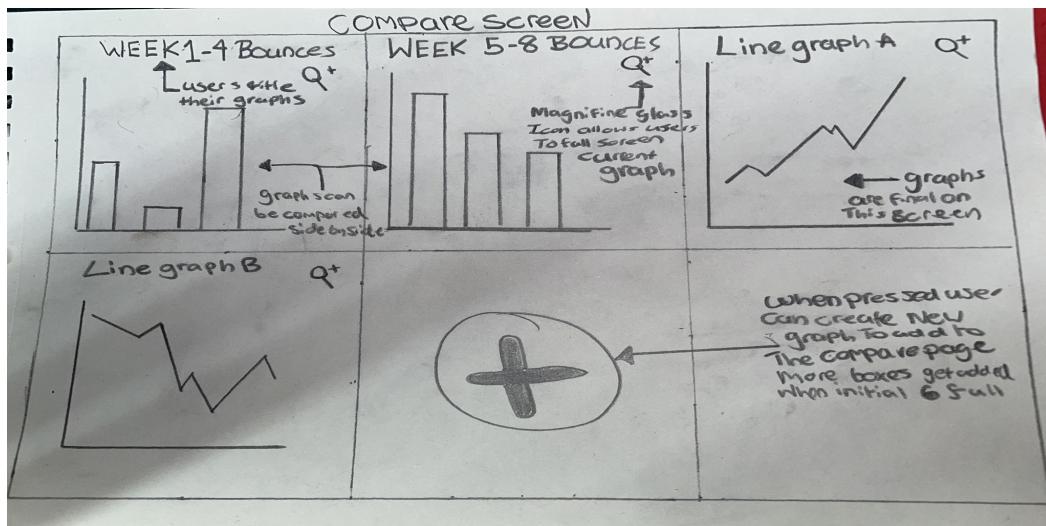
(Figure3)

Figure 4 - Line Chart Screen



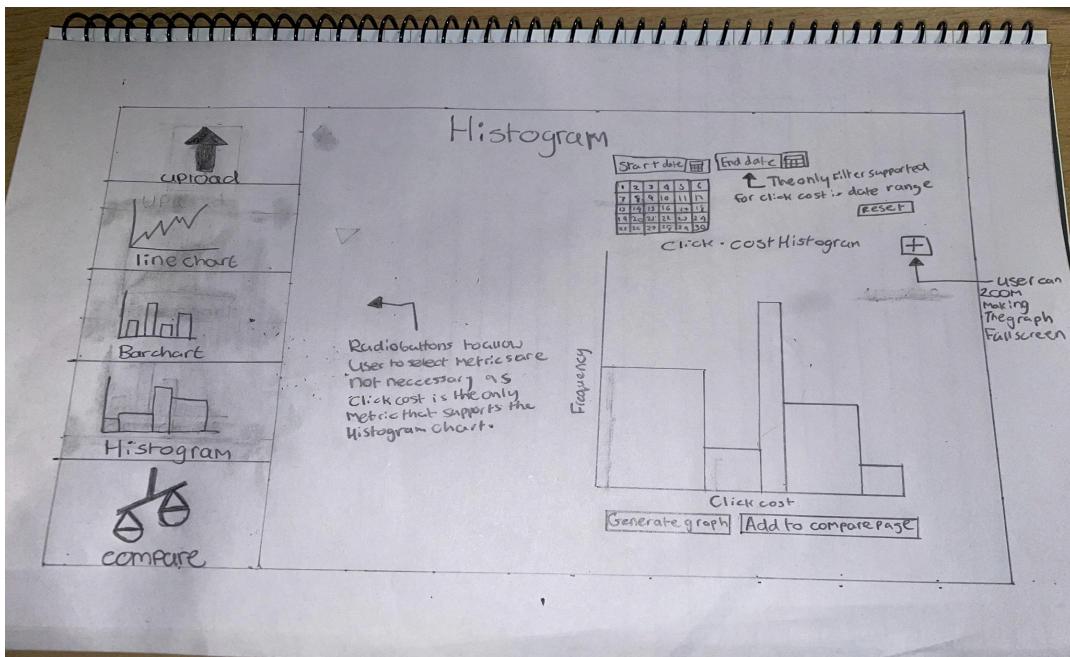
(Figure4)

Figure 4 - Compare Screen



(Figure5)

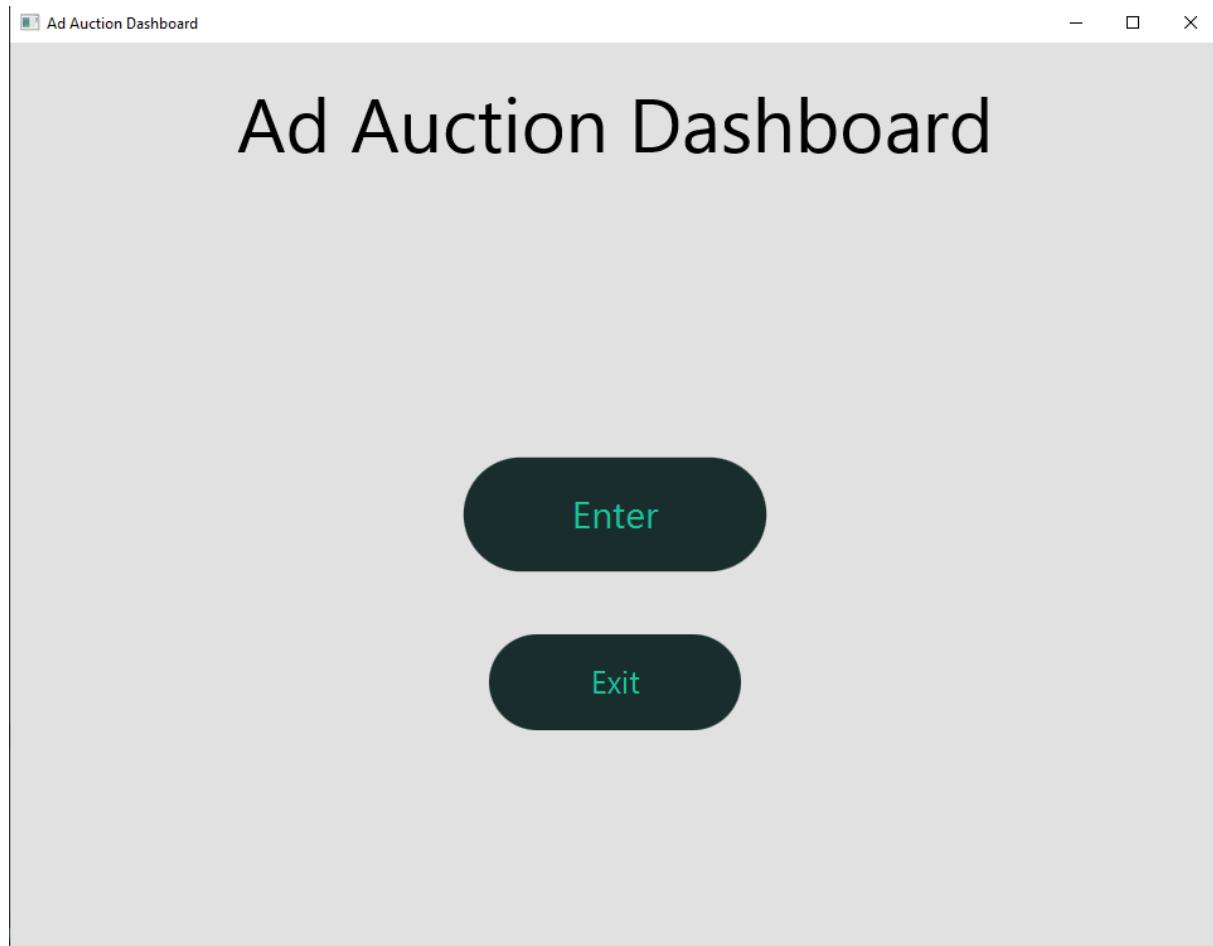
Figure 4 - New Histogram Screen



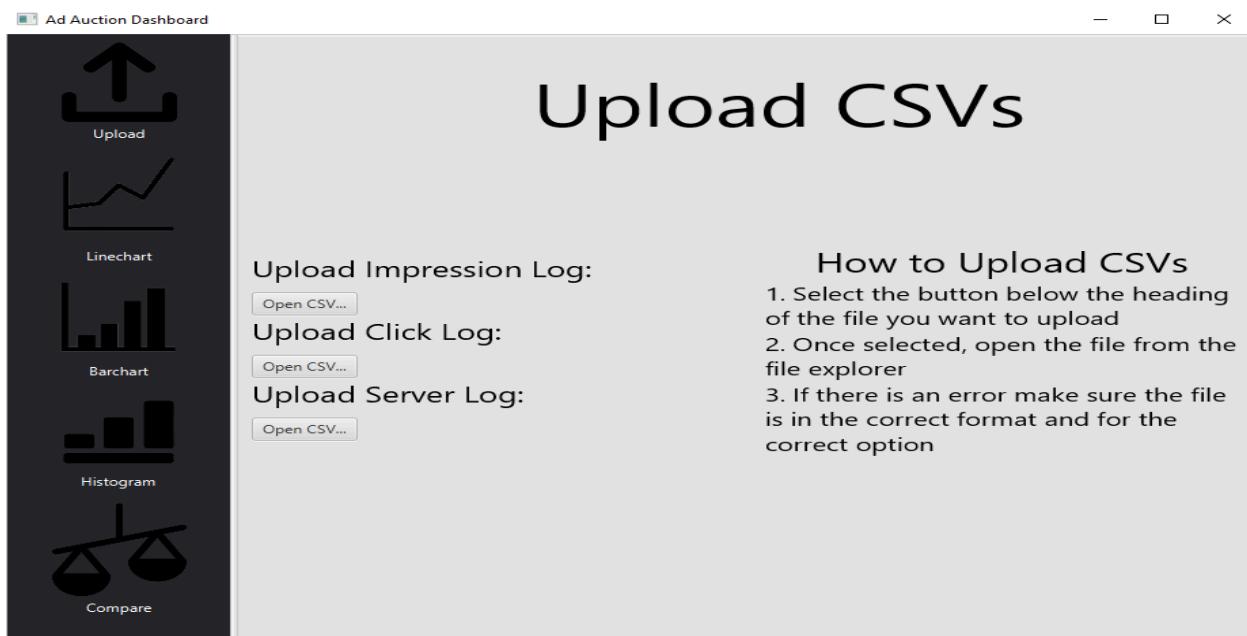
(Figure6)

Storyboard Comparisons

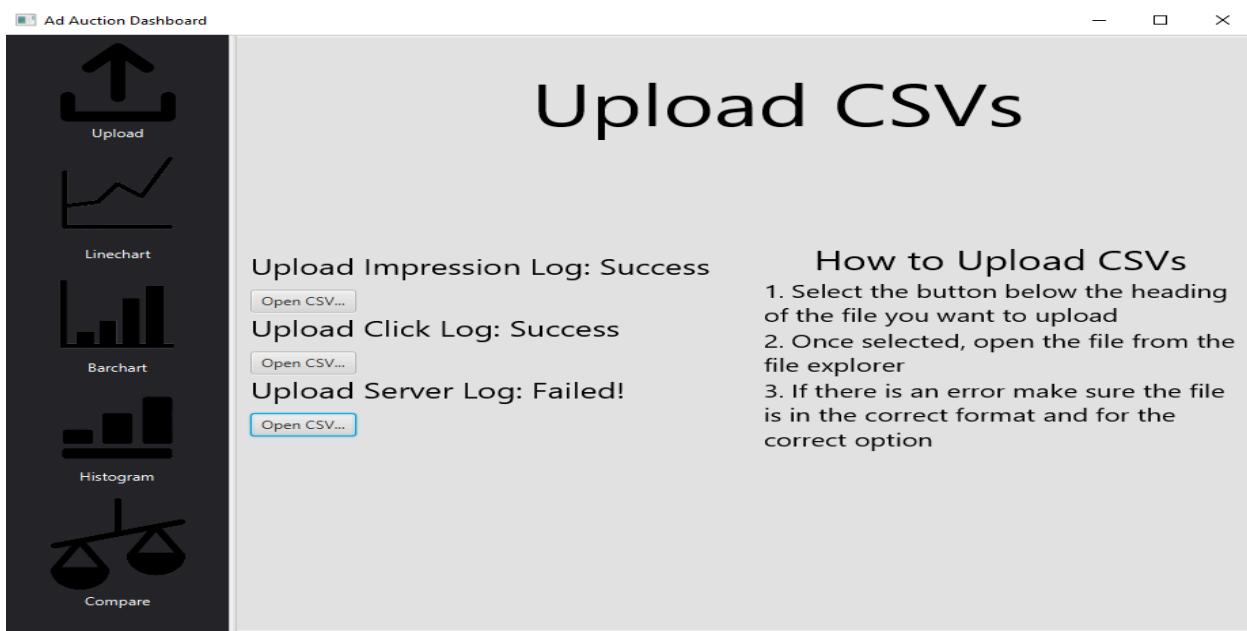
Main Menu



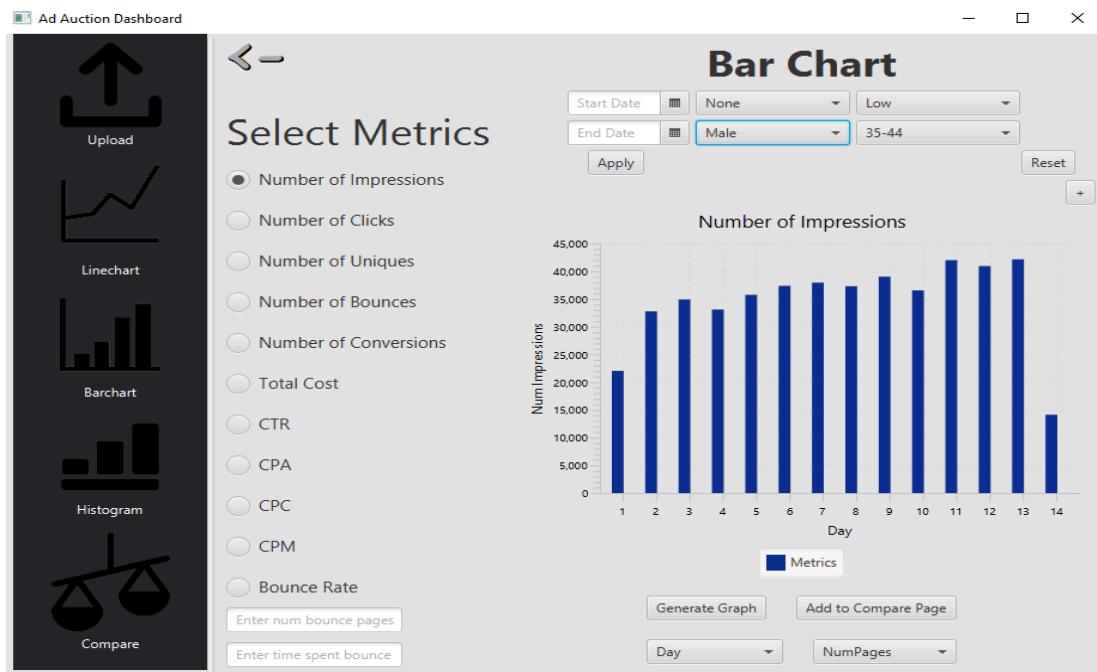
Upload Screen



Upload Screen with uploaded files

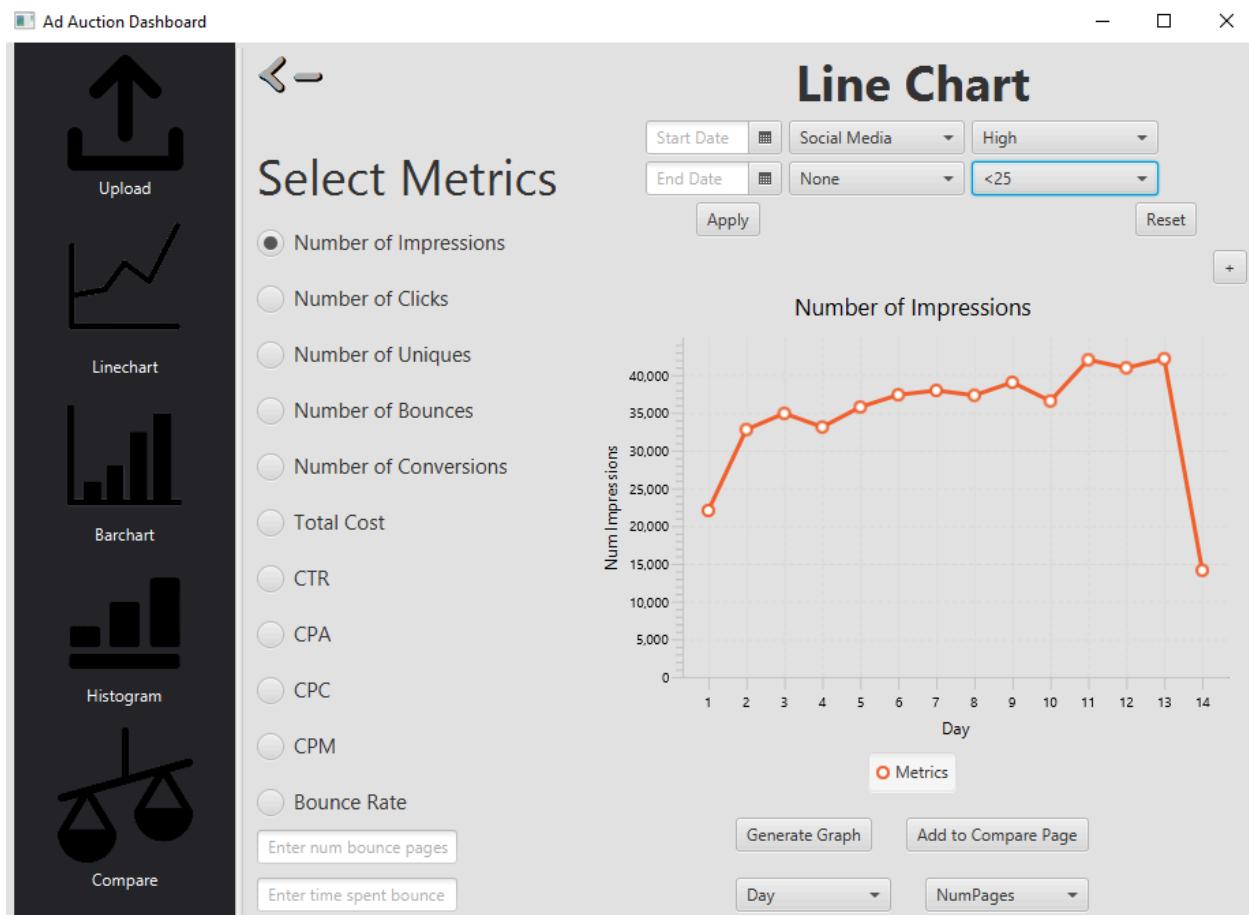


Bar chart Screen



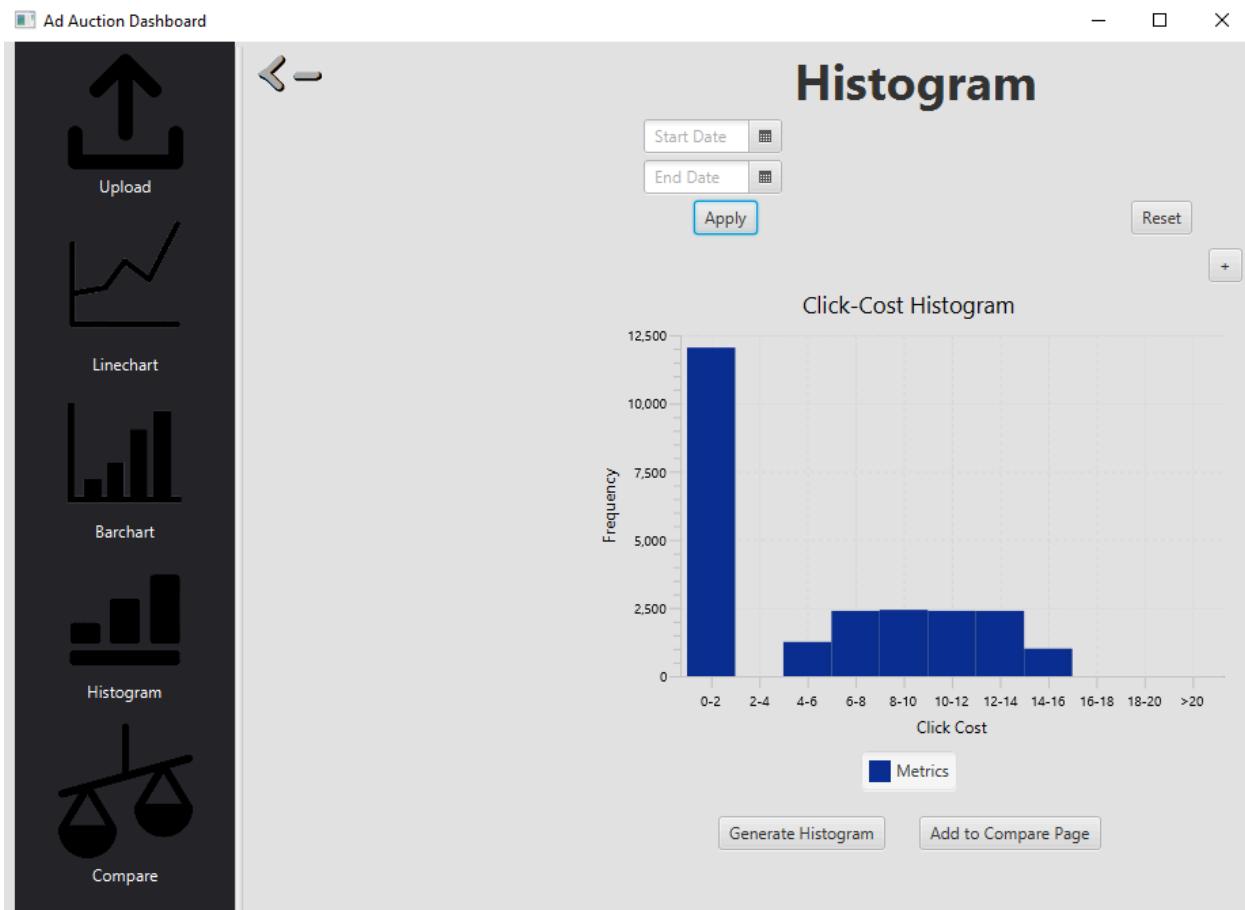
In this increment the bars were changed to have a darker colour as we think it fits the design of the system better. We also have added audience segment filters alongside the context filters, and a zoom button for the graph.

Line Chart Screen



Changes made are similar to the bar graph page, with audience segment filters and a zoom button.

Histogram Screen

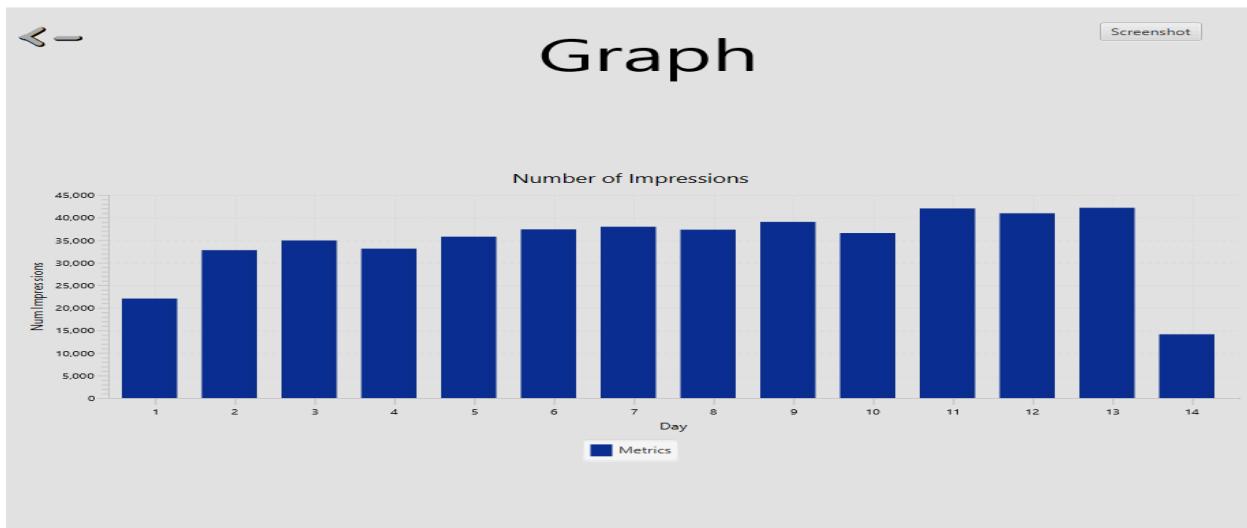


Compare Screen



The most notable difference here is the change of having 6 graph slots to compare in the storyboards while we have implemented four. We did this as we think any more than 4 will make the graphs hard to read and clutter the screen. Instead of a slot to add more graphs, placeholder graphs are simply put in the grid, and the user can navigate to add more graphs by pressing the back button. Additionally we added a reset graphs button so the user can remove the currently compared graphs and add new ones as they generate a new set.

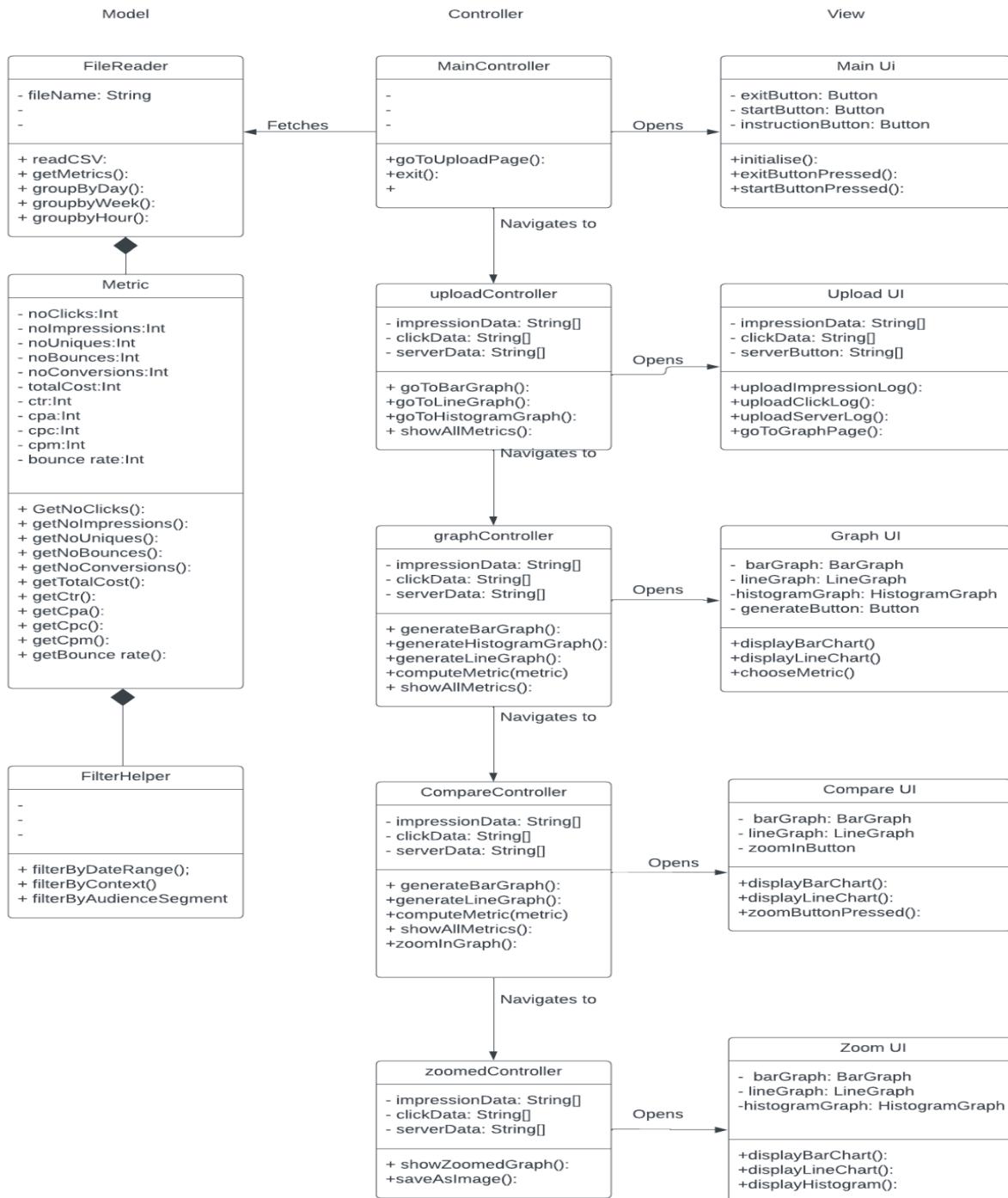
Zoom In Graph



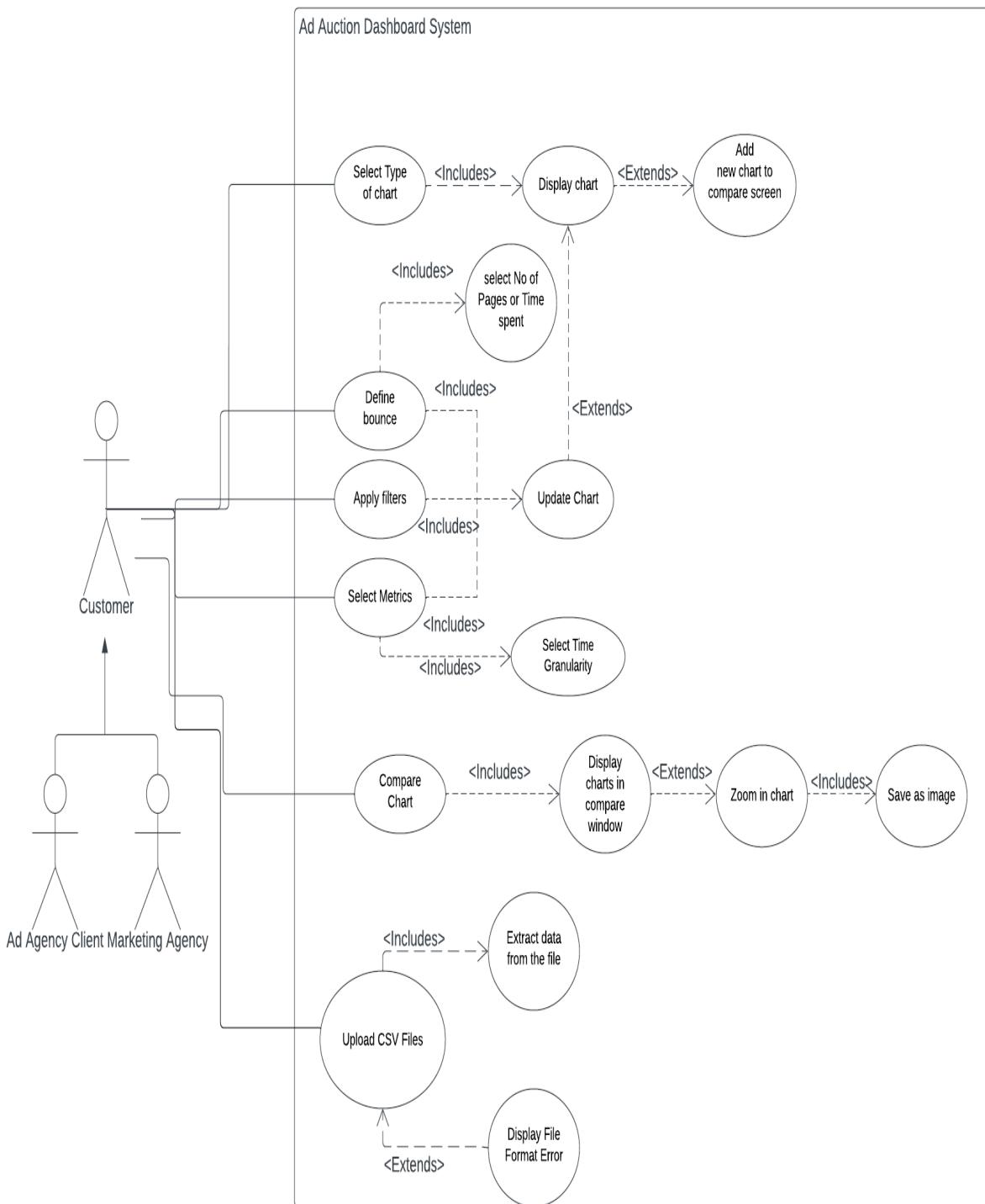
The zoomed in graph from the compare page allows one to see one of the graphs in more detail. This was not shown in the storyboards. We have also updated it to have a screenshot button which allows the user to save an image of the graph to their device.

UML Diagrams

Class Diagram - Changed slightly to support our change in design



Use Case Diagram - Changed slightly to support our change in design



Scenarios

Scenario 1: Ad agency Client - Brian

1. Brian opens the application and presses the start button
2. He selects his logs from the latest ad campaign and uploads them to the system on the upload screen
3. He navigates to the bar chart and selects the number of impressions metric
4. He selects two date range filters to only include data from the first 4 days and clicks apply.
5. A bar graph is displayed showing 4 bars for each day
6. He then wishes to compare the graph with data from other weeks and adds the graph to the compare page.
7. He titles the original graph “Data for 1-4 days” and then he clicks the back icon on the compare page and adds a new graph for data from 5-9 days.
8. He compares the data from both of these graphs and then notes down some conclusions he deduces from them.



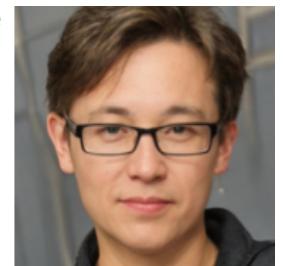
Scenario 2: Marketing Agency - Joyce

1. Joyce starts the system and navigates through the home screen to the upload screen.
2. She uploads three CSV files, The impressions, clicks and server log.
3. She navigates to the line chart screen and selects the number of impressions metric.
4. In the filters section she selects from the audience segments drop down boxes “Male” for Gender, “Low” for income, and “35-44” for age range.
5. She selects the apply button, and the data is filtered and displayed on the graph.



Scenario 3: Software developer

1. Marwan is alerted of a bug in the application by a client when they try to update their bounce rates classifications.
2. He tries to replicate the bug in his development application.
3. After locating the bug, he spends some time fixing it.
4. Once he is sure it is fixed and there are no side effects, he deploys the new code to the live application and tells the client it is fixed.



Scenario 4: Ad agency Client - Brian

1. Brian opens the application and presses the start button
2. He selects his logs from the latest ad campaign and uploads them to the system on the upload screen
3. He navigates to the histogram page and generates a histogram
4. He clicks the zoom in button and is shown a larger version of the histogram.
5. He navigates back with the back button and selects the screenshot button which saves the histogram as an image.



Response to Feedback

Application Feedback

According to the feedback given, we added the zoom button feature that was previously only on the compare page to the bar chart, line chart and histogram pages so that all screens have the ability to zoom in on the graphs that appear on the pages.

We have also limited the amount of dates that can be selected for the date range filter to prevent dates without data on being selected.

We have also adjusted the screen scaling to make it more flexible for different sized screens.

Testing feedback

We have included the screenshots for the scenario testing according to feedback given. By using screenshots as part of our testing process, this makes our testing process clearer and demonstrates each step as we tested them.

Planning Feedback

We have added bullet points to describing the value given to the customer to make it clearer and more concise.

Value to customer in final increment

- Users can now navigate to the histogram page and generate a click-cost histogram
- A zoom button to enlarge the graphs on each graph page has been implemented to easier viewing of the graphs the user generates
- Age range, gender and income audience segment filters have been added to the bar graph and line graph pages, giving more ways to filter the log data
- Produced graphs can be screenshotted and saved to the user's device

Sprint backlog for increment 3

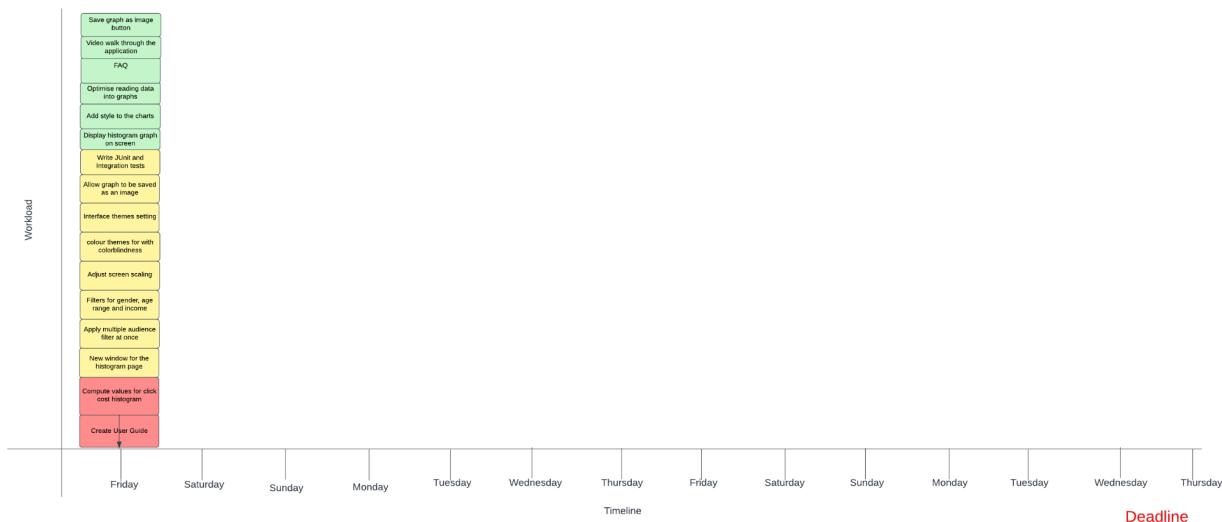
ID User stories	Task	Member doing task	Hour Estimate	Actual Hours
All	Create User Guide	Aditya	3	2
6	Compute values for click cost histogram	Marwan	3	3
6	New window for the histogram page	Juzheng Bai	2	2
22	Apply multiple audience filter at once	Aditya	2	1
18	Filters for gender, age range and income	Henry	2	1
19	Adjust screen scaling	Juzheng Bai	2	#
23	Colour themes for with colorblindness	Juzheng Bai	2	#
23,20	Interface themes setting	Jack	2	#
25	Allow graph to be saved as an image	Marwan	2	3
ALL	Write JUnit and Integration tests	Jack	2	2
6	Display histogram graph on screen	Juzheng Bai	1	1
24	Add style to the charts	Henry	1	2
17	Optimise reading data into graphs	Aditya	1	1
All	FAQ	Henry	1	2
All	screenshots-based walkthrough	Jack	1	1
25	Save graph as image button	Marwan	1	1

Revised Sprint backlog for last Increment

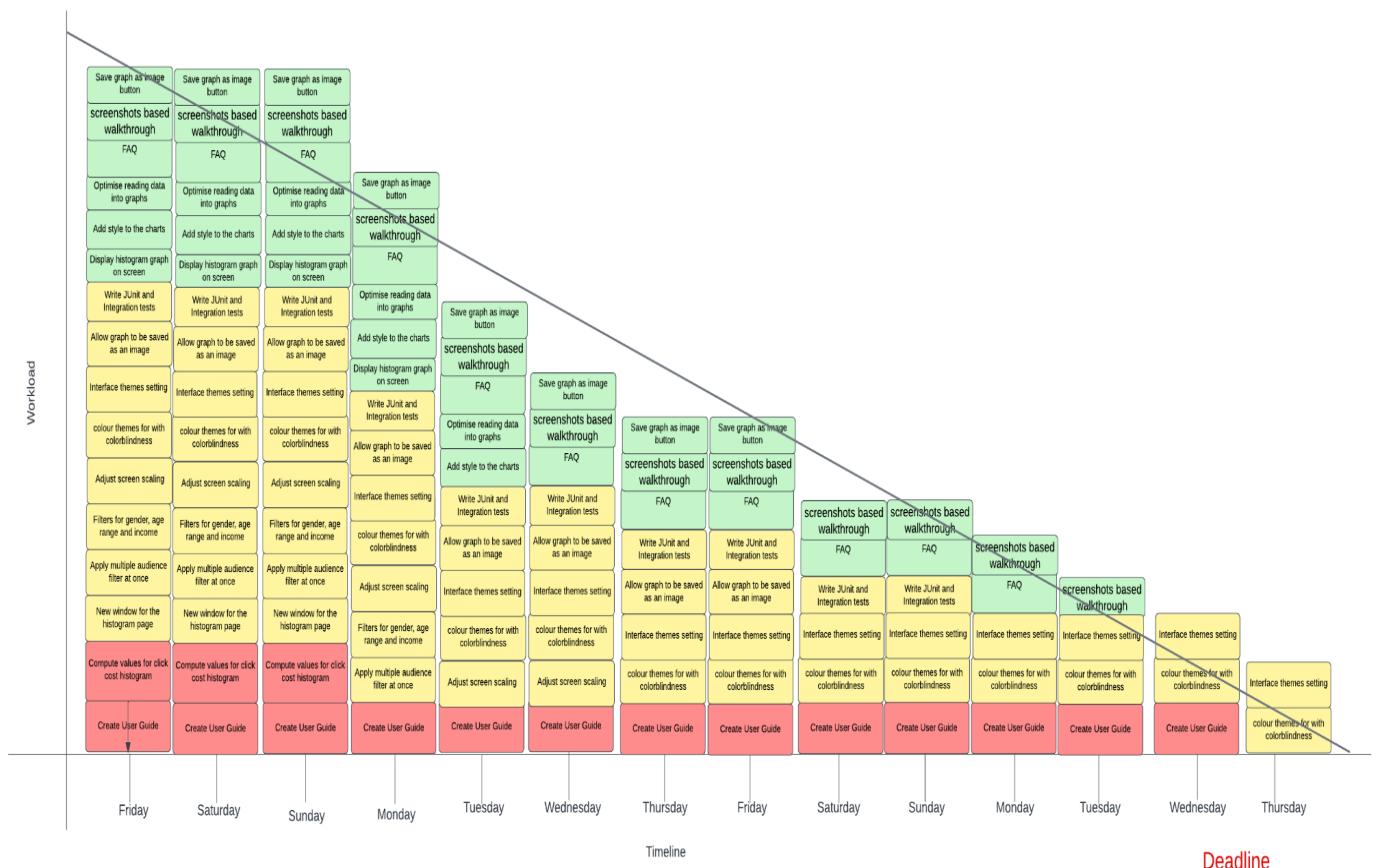
Due to the time constraints we were unable to include all the features, and decided to not include some features which did not change the program's functionality if not included. Such as allowing the user to customise the application colours and themes, and to modify the screen scaling. We instead prioritised features such as saving graphs as an image.

ID User stories	Task	Member doing task	Hour Estimate	Actual Hours
All	Create User Guide	Aditya	3	2
6	Compute values for click cost histogram	Marwan	3	3
6	New window for the histogram page	Juzheng Bai	2	2
22	Apply multiple audience filter at once	Aditya	2	1
18	Filters for gender, age range and income	Henry	2	1
25	Allow graph to be saved as an image	Marwan	2	3
ALL	Write JUnit and Integration tests	Jack	2	2
6	Display histogram graph on screen	Juzheng Bai	1	1
24	Add style to the charts	Henry	1	2
17	Optimise reading data into graphs	Aditya	1	#
All	FAQ	Henry	1	2
All	screenshots-based walkthrough	Jack	1	1
25	Save graph as image button	Marwan	1	1

Third Increment Burndown Chart



Final Burndown Chart



Project Testing

Scenario Testing

For our scenario testing we ran through each step of our new scenarios and simulated it in the actual program, ticking off the steps as we went along.

Scenario ID	Steps Matched
2	<ol style="list-style-type: none">1. Joyce starts the system and navigates through the home screen to the upload screen. ✓2. She uploads three CSV files, The impressions, clicks and server log. ✓3. She navigates to the line chart screen and selects the number of impressions metric. ✓4. In the filters section she selects from the audience segments drop down boxes "Male" for Gender, "Low" for income, and "35-44" for age range. ✓5. She selects the apply button, and the data is filtered and displayed on the graph. ✓
4	<ol style="list-style-type: none">1. Brian opens the application and presses the start button ✓2. He selects his logs from the latest ad campaign and uploads them to the system on the upload screen ✓3. He navigates to the histogram page and generates a histogram ✓4. He clicks the zoom in button and is shown a larger version of the histogram. ✓5. He navigates back with the back button and selects the screenshot button which saves the histogram as an image. ✓

Scenario ID 2 Screenshots

Ad Auction Dashboard

The screenshot shows the 'Upload' section of the Ad Auction Dashboard. On the left sidebar, there are five icons: 'Upload' (up arrow), 'Linechart' (line graph), 'Barchart' (bar chart), 'Histogram' (histogram), and 'Compare' (scales). The main area has a large 'Upload CSVs' heading. Below it are three sections: 'Upload Impression Log:' with an 'Open CSV...' button, 'Upload Click Log:' with an 'Open CSV...' button, and 'Upload Server Log:' with an 'Open CSV...' button.

Upload CSVs

Upload Impression Log:
Open CSV...

Upload Click Log:
Open CSV...

Upload Server Log:
Open CSV...

How to Upload CSVs

1. Select the button below the heading of the file you want to upload
2. Once selected, open the file from the file explorer
3. If there is an error make sure the file is in the correct format and for the correct option

Ad Auction Dashboard

The screenshot shows the 'Upload' section of the Ad Auction Dashboard after successful CSV uploads. The 'Upload Impression Log' section now says 'Success'. The 'Upload Click Log' and 'Upload Server Log' sections also show 'Success' with their respective 'Open CSV...' buttons.

Upload CSVs

Upload Impression Log: Success
Open CSV...

Upload Click Log: Success
Open CSV...

Upload Server Log: Success
Open CSV...

How to Upload CSVs

1. Select the button below the heading of the file you want to upload
2. Once selected, open the file from the file explorer
3. If there is an error make sure the file is in the correct format and for the correct option

Ad Auction Dashboard

Select Metrics

- Number of Impressions
- Number of Clicks
- Number of Uniques
- Number of Bounces
- Number of Conversions
- Total Cost
- CTR
- CPA
- CPC
- CPM
- Bounce Rate

Enter num bounce pages
Enter time spent bounce

Line Chart

Start Date: None End Date: None

Apply Reset

Generate Graph Add to Compare Page

Day NumPages

Day	Impressions
1	550
2	800
3	900
4	850
5	900
6	900
7	900
8	900
9	850
10	850
11	1100
12	950
13	950
14	350

Ad Auction Dashboard

Select Metrics

- Number of Impressions
- Number of Clicks
- Number of Uniques
- Number of Bounces
- Number of Conversions
- Total Cost
- CTR
- CPA
- CPC
- CPM
- Bounce Rate

Enter num bounce pages
Enter time spent bounce

Line Chart

Start Date: None End Date: Male

Low 35-44

Apply Reset

Generate Graph Add to Compare Page

Day NumPages

Day	Impressions
1	550
2	800
3	900
4	850
5	900
6	900
7	900
8	900
9	850
10	850
11	1100
12	950
13	950
14	350

Ad Auction Dashboard

Select Metrics

- Number of Impressions
- Number of Clicks
- Number of Uniques
- Number of Bounces
- Number of Conversions
- Total Cost
- CTR
- CPA
- CPC
- CPM
- Bounce Rate

Enter num bounce pages
Enter time spent bounce

Line Chart

Start Date: None End Date: Male

Low 35-44

Apply Reset

Number of Impressions

NumImpressions

Day

Metrics

Generate Graph Add to Compare Page

Day NumPages

Day	Impressions
1	550
2	800
3	900
4	850
5	900
6	900
7	900
8	900
9	850
10	850
11	1100
12	950
13	950
14	350

Scenario ID 4 Screenshots

Ad Auction Dashboard

The screenshot shows the 'Ad Auction Dashboard' window. On the left sidebar, there are five icons: 'Upload' (up arrow), 'Linechart' (line graph), 'Barchart' (bar chart), 'Histogram' (histogram), and 'Compare' (scales). The main area has a large 'Upload CSVs' heading. Below it, there are three sections: 'Upload Impression Log:' with an 'Open CSV...' button, 'Upload Click Log:' with an 'Open CSV...' button, and 'Upload Server Log:' with an 'Open CSV...' button. A back arrow is located at the top left of the main content area.

Upload CSVs

Upload Impression Log:
Open CSV...

Upload Click Log:
Open CSV...

Upload Server Log:
Open CSV...

How to Upload CSVs

1. Select the button below the heading of the file you want to upload
2. Once selected, open the file from the file explorer
3. If there is an error make sure the file is in the correct format and for the correct option

Ad Auction Dashboard

The screenshot shows the 'Ad Auction Dashboard' window. The sidebar and main area are identical to the previous screenshot, but the 'Upload' section now displays success messages: 'Upload Impression Log: Success', 'Upload Click Log: Success', and 'Upload Server Log: Success'. Each message is followed by an 'Open CSV...' button. A back arrow is located at the top left of the main content area.

Upload CSVs

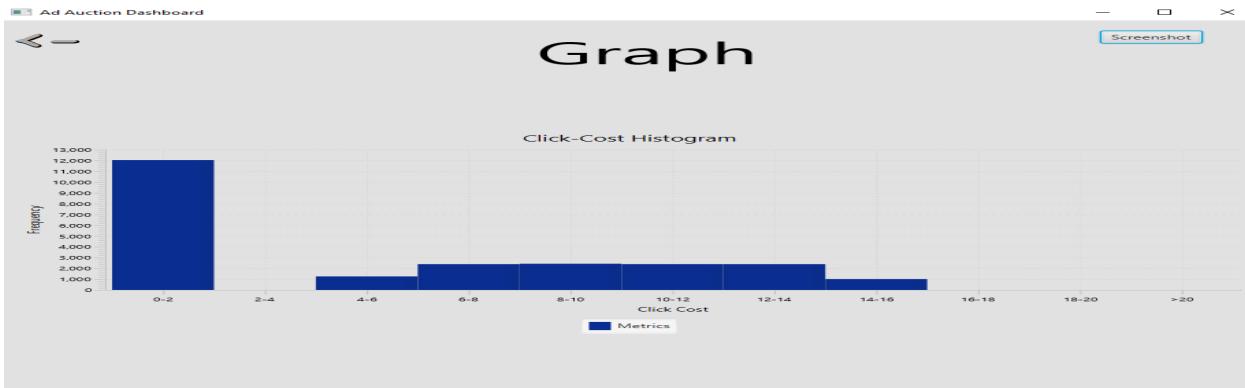
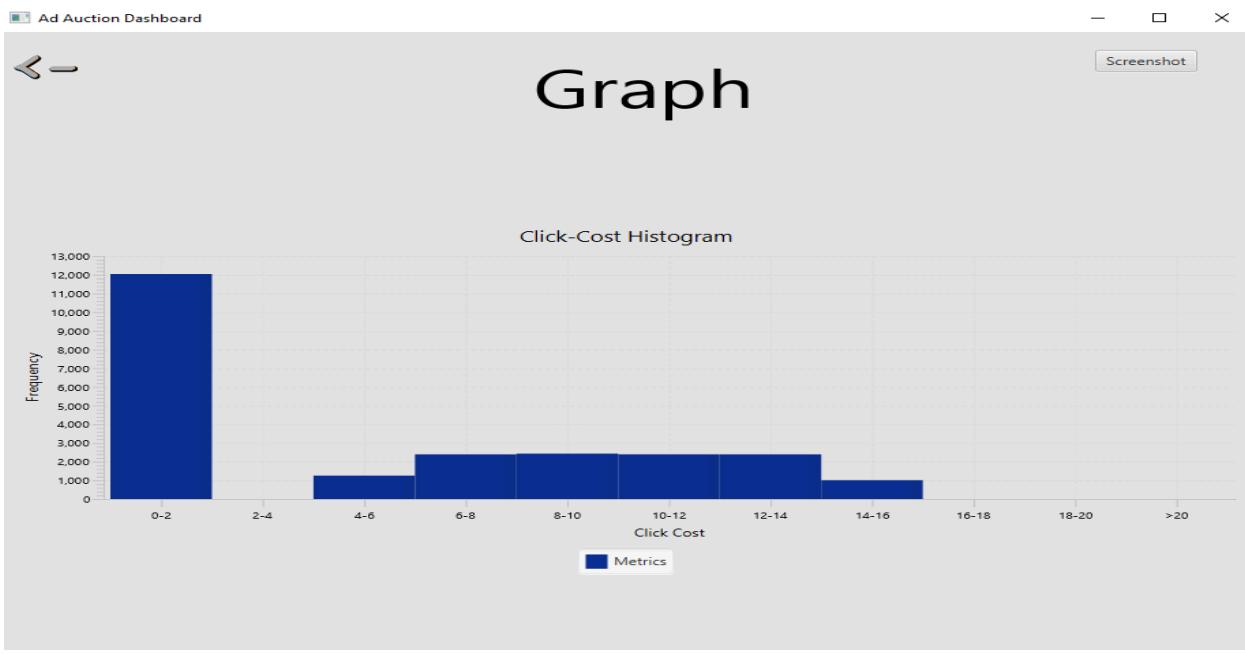
Upload Impression Log: Success
Open CSV...

Upload Click Log: Success
Open CSV...

Upload Server Log: Success
Open CSV...

How to Upload CSVs

1. Select the button below the heading of the file you want to upload
2. Once selected, open the file from the file explorer
3. If there is an error make sure the file is in the correct format and for the correct option



User Story Acceptance Testing

Tests code: Green - Passed, Yellow - Ongoing, Red - Failed

User Story ID	Test Criteria for User story	Expected Outcome	Actual Outcome
6	Can we get the value for click cost histogram?	The user needs to be able to get the value for click cost histogram	The user can get the value of histogram
6	Is there a histogram page?	There should be a histogram page when the user click the button	If the button is clicked there will be a histogram window showing up.
22	Can they apply multiple audience filter at once	It can apply different filter such as gender, age , range at the same time	The user would be able to apply those filter at the same time
10	Can user adjust the screen scales	The user should be able to adjust the size of screen	The user could change the size of the screen by slide the mouse
25	Can user save the graph as an image	The user should able to save the graph as an image	User could click the button screenshot and it will help the user save the graph as an image.

Acceptance Tests

JUnit Tests

Tests for the histogram data and audience segments

The screenshot shows a Java code editor with two test classes:

```
no usages new *
@Test
void filterByAudienceSegments() {
    ArrayList<String[]> filteredData = filterHelper.filterByAudienceSegment(testArray, ageRange: "<25", gender: "Female", income: "Medium");
    assertEquals (expected: 1,filteredData.size(), message: "Incorrect Number of social media records");
}
```



```
no usages new *
@Test
void getHistogramData() {
    ArrayList<Integer> histogramArray = fileReader.getHistogramData(clickArray);
    assertEquals( expected: 4,histogramArray.get(0), message: "Incorrect frequency");
}
```

Below the code, the terminal output shows the execution of the tests:

```
C:\Program Files\Java\jdk-17.0.1\bin\java.exe ...
4 1 0 0 0 0 0 0 0 0
Process finished with exit code 0
```

At the bottom, the test results are summarized:

```
✓ FileReaderHelperTest (com.example.addashboardcw) 23 ms
  ✓ getHistogramData() 23 ms
    4 1 0 0 0 0 0 0 0 0
    Process finished with exit code 0

✓ FilterHelperTest (com.example.addashboardcw) 37 ms
  ✓ filterByAudienceSegments() 37 ms
    Filtering
    Line: Medium, chosen = Medium
    [INFO ] 2023-05-02 17:43:03.113 [main] FilterHelper - Size 1
    Process finished with exit code 0
```

Integration Testing

To integrate new parts of our code into the main application, we manually tested the application to ensure that it worked as intended alongside the new code components. For example, when adding the new audience segment filters to our graphs we made sure that the graphs still can be filtered by context and be produced as expected.