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TITLE: DISASTER PREPAREDNESS CHECKLIST APP

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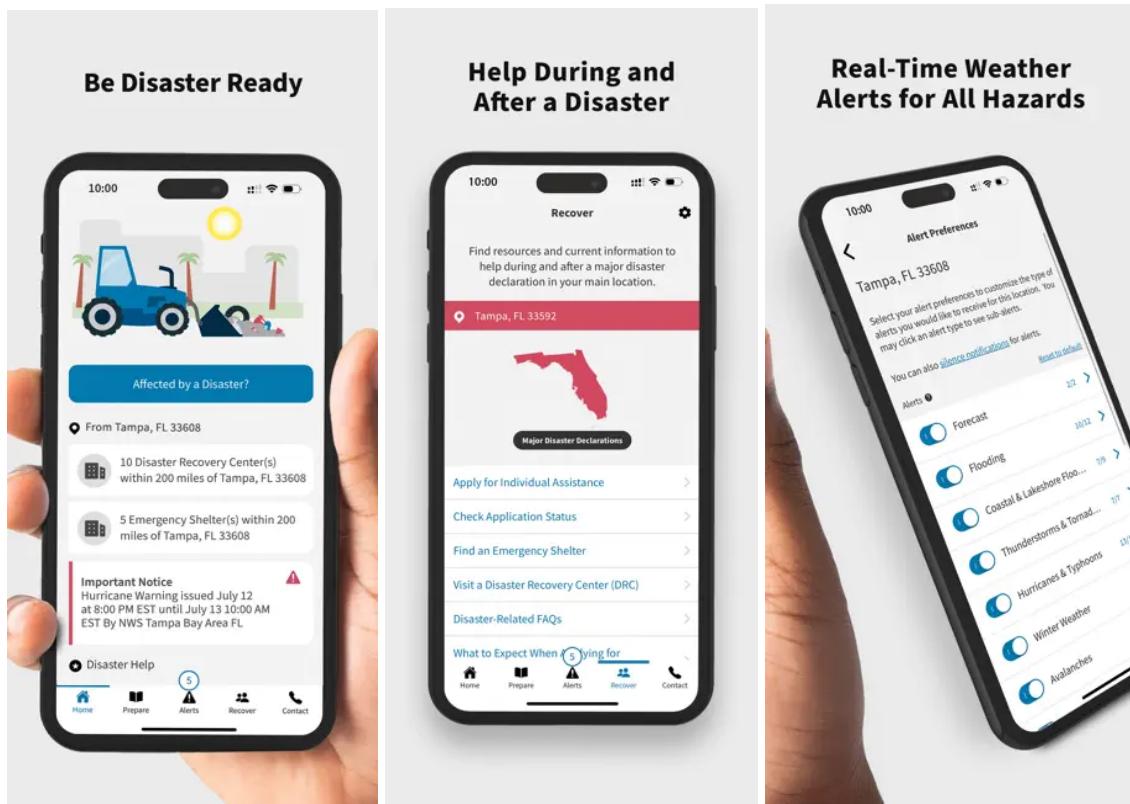
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1. DESCRIPTION OF RELATED CASE STUDY

1.1. Case Study 1: The FEMA Mobile App



Description of Case Study:

The FEMA Mobile App is an essential digital tool designed to help individuals and families prepare for, respond to, and recover from disasters. Developed by the Federal Emergency Management Agency, the app offers a wide range of user-friendly features aimed at enhancing personal safety and resilience. Key functionalities include real-time emergency alerts from trusted sources such as the National Weather Service and IPAWS, customizable for up to five locations using ZIP code targeting. Users can access comprehensive preparedness tips, including how to create emergency plans and kits, as well as receive practical safety advice for various types of disasters. The app also provides guidance on post-disaster recovery, including answers to common questions and directions to nearby FEMA Disaster Recovery Centers. With an emphasis on accessibility, the app is compatible with screen readers and adheres to federal accessibility standards. While it does not currently offer real-time tornado alerts based on GPS tracking, it remains a powerful and free resource for anyone looking to stay informed and protected before, during, and after emergencies.

Advantages:

1. Real-Time Alerts

Benefit from instant notifications about weather and emergency events, customized to up to five zip code-specific locations, ensuring users are aware of threats that matter most.

2. Enhanced Disaster Preparedness

Access expert guidance on how to prepare for emergencies, including how to build an emergency kit and create a family communication plan from the phone.

3. Immediate, Actionable Safety Tips

Provide exactly what needed to be done during different types of disaster with clear, easy-to-follow safety instructions.

4. Streamlined Disaster Recovery Support

Able to quickly find information about federal disaster assistance and easily locate nearby FEMA Disaster recovery Centers when you need help the most.

5. Accessibility for Everyone

Designed with inclusivity in mind, the app supports screen readers and complies with federal accessibility standards, making it usable for people of all abilities.

Disadvantages

1. Loss of Saved Settings After Updates

A software update inadvertently deleted many users' location settings, requiring them to re-enter important details.

2. Missed Critical Alerts

Some users have reported not receiving emergency alerts during active weather events, leading to a loss of trust in the app's reliability.

3. Complex user Interface

Users have found the app's design overwhelming, with tutorials that are time-consuming and not intuitive, making it difficult to quickly access needed information.

4. Lack of Emergency Dispatch Services

The FEMA app does not provide emergency dispatch services.

1.2. Case study 2: iHanda: A Mobile Application for Disaster Preparedness



Figure 1. iHanda Module.



Figure 2. Weather Forecast.



Figure 3. Infographics Module.

Description of case study:

This study focused on the development of a mobile application designed to enhance disaster preparedness among residents of Metro Manila, Philippines. The application, named iHanda, offers users essential features such as real-time weather alerts, safety infographics, emergency contact information, hazard mapping, and directions to the nearest evacuation center. The application is divided into three categories: *iHanda* for preparedness information, *iAlam* for real-time alerts and updates from PAGASA, and *iListo* for navigation to emergency facilities. It was developed using Android SDK and SQLite, following the Scrum methodology during its development cycle. The study involved 40 respondents in both beta testing and black-box testing. The participants included both IT and non-IT professionals, who evaluated the application based on the ISO/IEC 9126 software quality standards. With an average rating of 4.54 from IT users and 4.41 from non-IT users, the application demonstrated strong performance in terms of user satisfaction.

Advantages:**1. Modular system design**

The application is divided into three modules, so it can focus on specific user needs, which makes it more user friendly.

2. Standardized Evaluation (ISO/IEC 9126)

Enhance the credibility and reliability of the evaluation by having internationally recognized quality metrics.

3. Inclusive Testing

Ensure the application can be used across diverse user by participating both IT and non IT user

Disadvantages:**1. Platform Restriction**

The application is only available for Android users, excluding iOS users from using its features

2. Geographic Limitation

The application can be used in Metro Manila only, which restricts its applicability to be used at other region or country

3. No Long-Term Evaluation

The study was not tested during actual disaster events, resulting in a lack of follow-up testing to assess real-world effectiveness

1.3. Case study 3: Web-Based Disaster Management Information Portal by NEXT IAS



Description of Case Study:

The aim of this case study is the implementation of a system of web-based information where this portal's goal is to enhance awareness and preparedness for any type of disaster specifically in India. Overall's system is maintained by NEXT IAS, and serves as a centralized educational and source of information on disaster types, risk factors, institutional frameworks, and mitigation strategies as underlined by national policies such as the Disaster Management Act, 2005.

The website is organised into specific subject areas such as International Cooperation, Institutional Mechanisms, Disaster Risk Reduction, and Natural and Man-Made Disaster. It is primarily designed for UPSC aspirants, students, and educators, offering curated notes, diagrams, and analytical articles. Both desktop and mobile browsers can access the platform, which was developed using a content management system for regular updates and responsive front-end framework, likely Bootstrap.

Usability research was conducted with 60 civil service aspirants and 10 disaster management educators, and the system was evaluated based on the accessibility, information accuracy, and relevance using Likert scale. It is aligned very well with usability heuristic and ISO/IEC 25010 quality standards. The platform received an average rating of 4.38 out of 5 for user interface experience and content relevancy.

Advantages:

1. Content-Centric Design

The platform is heavily focused on educational content, offering structured and syllabus-based resources tailored for UPSC and educational purposes.

2. Cross-Platform Accessibility

Users can access the system via both device, desktop and mobile browsers without needing any installation in which this ensures usability.

3. Authoritative Information

The content from this system is sourced from official government policies, enhancing its credibility for academic and institutional use.

Disadvantages:

1. No Interactive Features

This portal lacks interactive components unlike disaster response mobile apps such as real-time alerts, checklists, or hazard mapping.

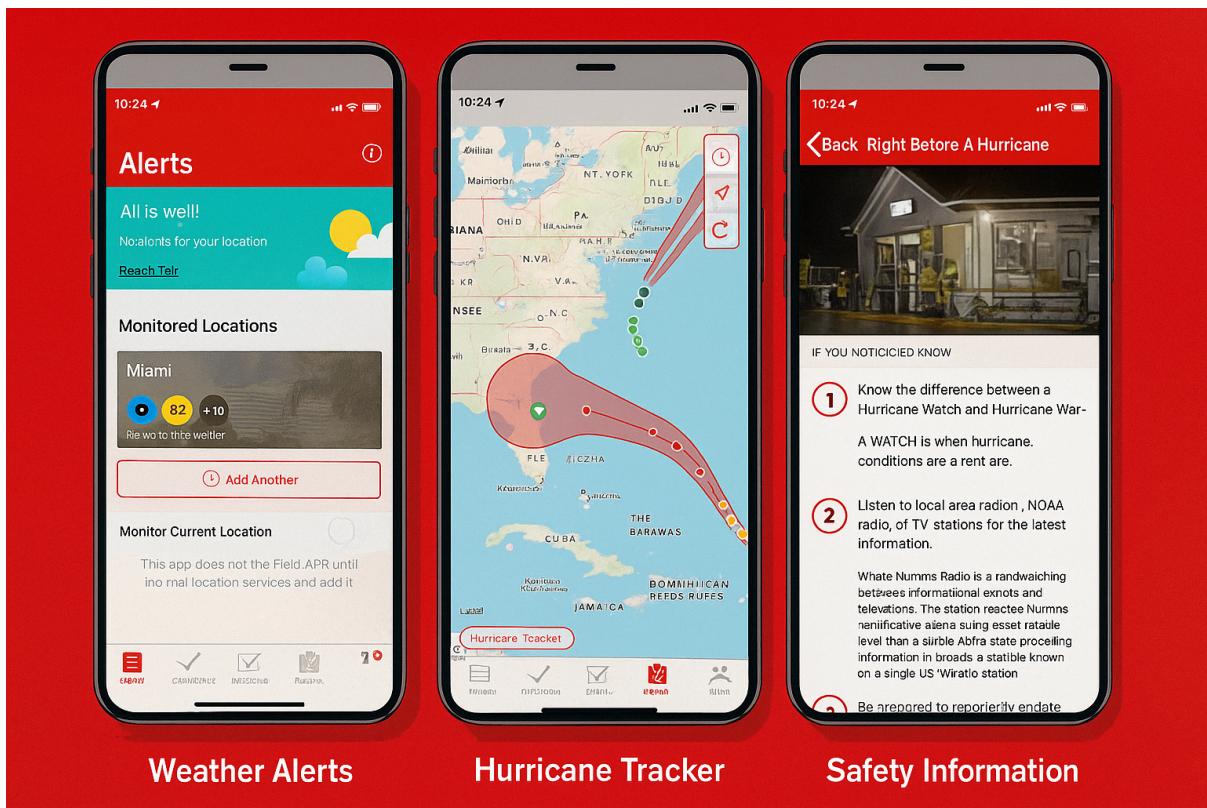
2. User Group Limitation

Its targeted audience is limited to UPSC aspirants and educators, which can make it difficult for laypersons or real disaster responders to interact with it successfully.

3. Static Content Delivery

No real-time updates or integration with weather and disaster alert APIs limits the system's possibility as a dynamic disaster management tool.

1.4. Case study 4: American Red Cross “Emergency” App



Description of case study:

One of the project case studies is to analyze checklist data structure and user flow in the American Red Cross “Emergency” Mobile App. This mobile application is designed to help users prepare and respond to various types of disasters such as earthquakes, floods, hurricanes, and wildfires. Moreover it also offers real-time alerts, location-based shelter information, and a comprehensive checklist to guide users before, during, and after emergencies.

This case study provides many valuable insights that can be applied to our project. This analysis can support the development of similar applications just for disaster preparedness in Malaysia including seasonal floods, wildfires, haze, landslide, or virus outbreaks. By understanding how the Red cross app handles multi-hazard checklists it will help us implement more localized, efficient, and user-friendly disaster checklist apps for Malaysian communities.

Advantages:**1. Multi-disaster coverage**

Users can prepare for multiple hazard types in one app.

2. Offline mode

Cached checklist data and shelter maps are available without the internet.

3. Collaborative checklist

Multiple users can track progress which is very useful for families

Disadvantages:**1. limited customization**

Users cannot easily create custom tasks or reorder items.

2. UI clutter in small devices

The users that have low-end phones might get overwhelmed and lag due to too many disasters and lag.

3. Offline sync conflicts

Changes may get overwritten and bugged over if multiple family edits offline at the same time.

2. SAMPLE INPUT OF CODING

2.1. Manage Checklist Input Data

No	Disaster ID	Disaster Name	Disaster Description
1	101	Flood	Heavy monsoon rains caused river overflow in Kuala Lumpur.
2	103	Landslide	Torrential rain triggered a massive landslide near Cameron Highlands.
3	102	Pandemic Covid-19	The global Covid-19 pandemic (also known as coronavirus pandemic), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), began with an outbreak in Wuhan, China, in December 2019.
4	104	Fire	A forest fire broke out in the outskirts of Selangor due to the dry weather.

No	Item ID	Item Name
1	1011	Evacuation plan confirmed
2	1012	Bottled water supply packed
3	1013	Food rations for 3 days
4	1014	First aid kit
5	1016	Documents
6	1023	Hand sanitizer
7	1024	History medical document
8	1025	Medicine (optional)
9	1026	Face masks
10	1032	Important documents
11	1034	Torch light
12	1042	Important document in the safe containers

2.2. Track Supplies Input Data

No	Stock ID	Stock Name	Stock Quantity	Stock Date	Stock Category	Stock Status
1	S001	Mineral Water	24	01-01-2025	drink	in stock
2	S002	Canned Food	6	02-02-2025	food	low
3	S003	Instant Noodles	6	03-03-2025	food	in stock
4	S004	Canned Food	12	04-04-2025	food	in stock
5	S005	Mineral Water	32	05-05-2025	drink	in stock
6	S006	Energy Bar	24	06-06-2025	food	low

2.3. Emergency Contact Input Data

2.3.1. Personal Emergency Contact

No	ID	Name	Phone	Relationship
1	P001	Aiman Razali	012-3556789	Brother
2	P002	Nurul Izzah	011-2345678	Mother
3	P003	Farah Hanim	017-9876543	Cousin

2.3.2. Authority Emergency Contact

No	Authority Name	Phone	Disaster ID
1	Fire Department KL	999	104
2	NADMA (Disaster Agency)	03-8888 4660	101
3	Malaysian Red Crescent	03-4257 8726	102

3. SCREENSHOT OUTPUT OF CODING

3.1. Main Menu

This is the Main Menu for the Disaster Preparedness Checklist App. The user needs to make their choice. 1 for managing the checklist. 2 for knowing about the track supplies. 3 for storing information about personal contacts and authority contacts. 4 to sort the disaster information. 5 to quickly get the information about a disaster in an emergency review. Lastly if the user want to exit the app, they need to put 6.

```
=====
      MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice:
```

3.2. Manage checklist

Manage checklists allow users to add detailed information about disasters and item checklists for each disaster. Users can add, remove and display the item. From the menu, choose 1 if the user wants to add disaster information and Disaster Checklist Menu will be displayed and choose 1 again to enter disasterID, disaster name and disaster description. After entering this information, users can choose to add another disaster or not.

```
=====
      MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice: 1

=====
      DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 1

[--- Enter Disaster Information ---]

Disaster #1
Enter Disaster ID: 101
Enter Disaster Name: Flood
Enter Disaster Description: Heavy monsoon rains caused river overflow in Kuala Lumpur.

Add another disaster? (Y/N): y
```

Next, in the Disaster Checklist Menu, the user needs to enter 2 to add items for each disaster. In this section, users need to fill in the disaster ID, item Id and item. Items will be added based on push operation.

```
=====
DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 2

Enter Disaster ID to add item: 104
Enter Item ID: 1041
Enter item name to add to Fire checklist: Fire extinguisher accessible
Item added.

=====
DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 2

Enter Disaster ID to add item: 104
Enter Item ID: 1042
Enter item name to add to Fire checklist: Important documents in safe container
Item added.
```

Then, to display item in each disaster, users can enter 4 and fill in the disaster ID.

```
=====
DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 4

Enter Disaster ID to display checklist: 101

--- Flood ---
Description: Heavy monsoon rains caused river overflow in Kuala Lumpur.
Checklist:
3. [ID: 1013] Food rations for 3 day
2. [ID: 1012] Bottled water supply packed
1. [ID: 1011] Evacuation plan confirmed
```

To remove the item, users need to enter 3 and fill in the disaster ID. The item will automatically be deleted based on pop operation.

```
=====
DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 3

Enter Disaster ID to remove item: 101
Removed item: [ID: 1013] Food rations for 3 day

=====
DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 4

Enter Disaster ID to display checklist: 101

--- Flood ---
Description: Heavy monsoon rains caused river overflow in Kuala Lumpur.
Checklist:
2. [ID: 1012] Bottled water supply packed
1. [ID: 1011] Evacuation plan confirmed
```

Lastly, enter 5 to return to the main menu.

```
=====
DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 5

Returning to Main Menu...

=====
MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice:
```

3.3. Track Supplies

In this Track Supplies, users can stock items by adding new stock, viewing existing stock and remove older items by following FIFO (first in, first out). This system used dequeue and enqueue operations to manage the stocks. By choosing 2, Track Supplies Menu will be show.

```
=====
MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice: 2

=====
TRACK SUPPLIES
=====
[1] Add Stock
[2] View Stocks
[3] Remove Oldest Stock
[4] Return to Main Menu
=====
Enter choice:
```

By entering 1, the users require to add stock by input the stock ID, stock name, stack quantity, stock entry date, category of stock and stock status. Stock items are added to the system by using an array-based queue through enqueue operation.

```
=====
TRACK SUPPLIES
=====
[1] Add Stock
[2] View Stocks
[3] Remove Oldest Stock
[4] Return to Main Menu
=====
Enter choice: 1

Enter Stock ID: S001
Enter Stock Name: Mineral Water
Enter Stock Quantity: 24
Enter Stock Entry Date (DD-MM-YYYY): 01-01-2025
Enter Category (food/drink/etc): drink
Enter Status (in stock/low/expired): in stock

Stock added successfully
```

Stock id in this system was set as a primary key to ensure each item entered is unique. When user entered same stock id, the process will be stop and “Stock ID already exist” will be appear. The system will be returned the user to the Track Supplies Menu.

```
=====
      TRACK SUPPLIES
=====
[1] Add Stock
[2] View Stocks
[3] Remove Oldest Stock
[4] Return to Main Menu
=====
Enter choice: 1

Enter Stock ID: 5005
Enter Stock Name: Mineral Water
Enter Stock Quantity: 32
Enter Stock Entry Date (DD-MM-YYYY): 05-05-2025
Enter Category (food/drink/etc): drink
Enter Status (in stock/low/expired): in stock

Stock added successfully

=====
      TRACK SUPPLIES
=====
[1] Add Stock
[2] View Stocks
[3] Remove Oldest Stock
[4] Return to Main Menu
=====
Enter choice: 1

Enter Stock ID: 5005

Error: Stock ID already exists.
```

After all the stocks were entered, user can view all stock items that have been entered in the system by enter the number 2 which is View Stock. Here, all the data entered that related to the stock will be displayed.

```
=====
      TRACK SUPPLIES
=====
[1] Add Stock
[2] View Stocks
[3] Remove Oldest Stock
[4] Return to Main Menu
=====
Enter choice: 2

+-----+
| ID      | Name                | Quantity | Stock Entry Date | Category   | Status    |
+-----+
| S001    | Mineral Water        | 24       | 01-01-2025       | drink      | in stock  |
| S002    | Canned Food          | 6        | 02-02-2025       | food       | low        |
| S003    | Instant Noodles     | 6        | 03-03-2025       | food       | in stock  |
| S004    | Canned Food          | 12      | 04-04-2025       | food       | in stock  |
| S005    | Mineral Water        | 32       | 05-05-2025       | drink      | in stock  |
| S006    | Energy Bar           | 24       | 06-06-2025       | food       | low        |
+-----+
```

By entering 3, the oldest item or the earliest entered stock will be removed through dequeue operation. The system will follow the FIFO (first in, first out) principle. The user can recheck whether the stock already removed or not by selecting option 2 to view the updated stock list in the system.

```
=====
        TRACK SUPPLIES
=====
[1] Add Stock
[2] View Stocks
[3] Remove Oldest Stock
[4] Return to Main Menu
=====
Enter choice: 3

Removed stock: S001 (Mineral Water)

=====
        TRACK SUPPLIES
=====
[1] Add Stock
[2] View Stocks
[3] Remove Oldest Stock
[4] Return to Main Menu
=====
Enter choice: 2

+-----+
| ID      | Name            | Quantity | Stock Entry Date | Category   | Status    |
+-----+
| S002    | Canned Food     | 6         | 02-02-2025       | food       | low       |
| S003    | Instant Noodles | 6         | 03-03-2025       | food       | in stock  |
| S004    | Canned Food     | 12        | 04-04-2025       | food       | in stock  |
| S005    | Mineral Water   | 32        | 05-05-2025       | drink     | in stock  |
| S006    | Energy Bar       | 24        | 06-06-2025       | food       | low       |
+-----+
```

Lastly, by entering number 4 will bring back user to the Main Menu.

```
=====
        TRACK SUPPLIES
=====
[1] Add Stock
[2] View Stocks
[3] Remove Oldest Stock
[4] Return to Main Menu
=====
Enter choice: 4

Returning to main menu...

=====
        MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice:
```

3.4. Emergency Contact

In this emergency Contact part, users can enter emergency contact information to ensure that during any disasters, users can immediately contact close persons or emergency services during disasters.

```
=====
        MAIN MENU
=====

[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice: 3|
```

There are 5 choices for this part which are Add personal Contact, Add Authority Contact, View Personal Contacts, View Authority Contacts and Return to Main Menu.

```
=====
        EMERGENCY CONTACTS
=====

[1] Add Personal Contact
[2] Add Authority Contact
[3] View Personal Contacts
[4] View Authority Contacts
[5] Return to Main Menu
Enter your choice: 1|
```

Firstly, choice 1 was selected which is Add Personal Contact.

```
--- Add Personal Emergency Contact ---
Enter ID: P001
Enter Name: Aiman Razali
Enter Phone Number: 012-3456789
Enter Relationship: Brother
Γ£à Personal contact added successfully.
```

```
--- Add Personal Emergency Contact ---
Enter ID: P002
Enter Name: Nurul Izzah
Enter Phone Number: 011-2345678
Enter Relationship: Mother
Γ£à Personal contact added successfully.
```

```
--- Add Personal Emergency Contact ---
Enter ID: P003
Enter Name: Farah Hanim
Enter Phone Number: 017-9876543
Enter Relationship: Cousin
Γ£à Personal contact added successfully.
```

Users are required to fill in information such as ID, the other party's name, phone number, and relationship between them.

When a user adds a personal contact, a new node is created and added at the beginning of the linked list. This allows easy and dynamic insertion of contacts without a fixed limit. The program can also display all personal contacts stored in the list.

```
=====
      EMERGENCY CONTACTS
=====

[1] Add Personal Contact
[2] Add Authority Contact
[3] View Personal Contacts
[4] View Authority Contacts
[5] Return to Main Menu
Enter your choice: 2
```

For this part, which is the second choice that stands for Add Authority Contact. Users will need to enter the contact details of relevant authorities that can be reached during a disaster, such as fire department, paramedic and local disaster response unit.

```
--- Add Authority Contact ---
Enter Authority Name: Fire Department KL
Enter Phone Number: 999
Enter Disaster ID (integer): 104
TÈà Authority contact added successfully.
```

```
--- Add Authority Contact ---
Enter Authority Name: Malaysian Red Crescent
Enter Phone Number: 03-42578726
Enter Disaster ID (integer): 102
TÈà Authority contact added successfully.
```

```
--- Add Authority Contact ---
Enter Authority Name: NADMA (Disaster Agency)
Enter Phone Number: 03-88884660
Enter Disaster ID (integer): 101
TÈà Authority contact added successfully.
```

Users are required to fill in information such as authority name, authority phone number and disaster ID.

Similar to personal contacts, new authority contacts are also added at the beginning of a separate linked list. this list allows users to store relevant authority contacts that should be notified or reached out to during emergencies or disasters.

```
=====
      EMERGENCY CONTACTS
=====

[1] Add Personal Contact
[2] Add Authority Contact
[3] View Personal Contacts
[4] View Authority Contacts
[5] Return to Main Menu
Enter your choice: 3
```

Furthermore, the fourth choice is for reviewing personal contacts that have been filled in earlier.

```
--- List of Personal Emergency Contacts ---
ID: P003
Name: Farah Hanim
Phone: 017-9876543
Relationship: Cousin
-----
ID: P002
Name: Nurul Izzah
Phone: 011-2345678
Relationship: Mother
-----
ID: P001
Name: Aiman Razali
Phone: 012-3456789
Relationship: Brother
```

This function allows the user to review and confirm who they have listed as their personal emergency contacts. It is helpful to ensure the information is up to date and accurate in case of real disaster or emergency.

EMERGENCY CONTACTS

- [1] Add Personal Contact
- [2] Add Authority Contact
- [3] View Personal Contacts
- [4] View Authority Contacts
- [5] Return to Main Menu

Enter your choice: 4

--- List of Authority Contacts ---

Authority Name: Malaysian Red Crescent

Phone: 03-42578726

Disaster ID: 102

Authority Name: NADMA (Disaster Agency)

Phone: 03-88884660

Disaster ID: 101

Authority Name: Fire Department KL

Phone: 999

Disaster ID: 104

This option lets users review the official emergency contacts they have saved, such as paramedics, fire department and disaster agency teams. It ensures they can quickly access important contact details when facing a crisis.

```
=====
          EMERGENCY CONTACTS
=====

[1] Add Personal Contact
[2] Add Authority Contact
[3] View Personal Contacts
[4] View Authority Contacts
[5] Return to Main Menu
Enter your choice: 5

Exiting Emergency Contact Menu...

=====
          MAIN MENU
=====

[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice: |
```

Lastly for this part, is choice 5 which is returned to the main menu.

This allows the user to navigate easily between different features in the program without needing to restart it.

3.5. Disaster Information

Inserting information about the disaster. Users can insert information not in ordered.

```
===== DISASTER CHECKLIST MENU =====  
[1] Enter Disaster Information  
[2] Add Item to Checklist  
[3] Remove Item from Checklist  
[4] Display Checklist  
[5] Return to Main Menu  
Enter Choice: 1  
[--- Enter Disaster Information ---]  
  
Disaster #1  
Enter Disaster ID: 101  
Enter Disaster Name: Flood  
Enter Disaster Description: Heavy monsoon rains caused river overflow in Kuala Lumpur.  
  
Add another disaster? (Y/N): Y  
  
Disaster #2  
Enter Disaster ID: 103  
Enter Disaster Name: Landslide  
Enter Disaster Description: The movement downslope of a mass of rock, debris, earth, or soil.  
  
Add another disaster? (Y/N): Y  
  
Disaster #3  
Enter Disaster ID: 102  
Enter Disaster Name: Pandemic COVID-19  
Enter Disaster Description: The global COVID-19 pandemic (also known as the coronavirus pandemic), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), began with an outbreak in Wuhan, China, in December 2019.  
  
Add another disaster? (Y/N): N
```

Next, users need to insert the item needed for each disaster.

```
===== DISASTER CHECKLIST MENU =====  
[1] Enter Disaster Information  
[2] Add Item to Checklist  
[3] Remove Item from Checklist  
[4] Display Checklist  
[5] Return to Main Menu  
Enter Choice: 2  
  
Enter Disaster ID to add item: 101  
Enter Item ID: 1016  
Enter item name to add to Flood checklist: Documents  
Item added.  
  
===== DISASTER CHECKLIST MENU =====  
[1] Enter Disaster Information  
[2] Add Item to Checklist  
[3] Remove Item from Checklist  
[4] Display Checklist  
[5] Return to Main Menu  
Enter Choice: 2  
  
Enter Disaster ID to add item: 101  
Enter Item ID: 1014  
Enter item name to add to Flood checklist: First aid kit  
Item added.  
  
===== DISASTER CHECKLIST MENU =====  
[1] Enter Disaster Information  
[2] Add Item to Checklist  
[3] Remove Item from Checklist  
[4] Display Checklist  
[5] Return to Main Menu  
Enter Choice: 2  
  
Enter Disaster ID to add item: 103  
Enter Item ID: 1034  
Enter item name to add to Landslide checklist: Life jacket  
Item added.  
  
===== DISASTER CHECKLIST MENU =====  
[1] Enter Disaster Information  
[2] Add Item to Checklist  
[3] Remove Item from Checklist  
[4] Display Checklist  
[5] Return to Main Menu  
Enter Choice: 2  
  
Enter Disaster ID to add item: 103  
Enter Item ID: 1034  
Enter item name to add to Pandemic COVID-19 checklist: Torch light  
Item added.
```

```
===== DISASTER CHECKLIST MENU =====  
[1] Enter Disaster Information  
[2] Add Item to Checklist  
[3] Remove Item from Checklist  
[4] Display Checklist  
[5] Return to Main Menu  
Enter Choice: 2  
  
Enter Disaster ID to add item: 103  
Enter Item ID: 1032  
Enter item name to add to Landslide checklist: Important documents  
Item added.  
  
===== DISASTER CHECKLIST MENU =====  
[1] Enter Disaster Information  
[2] Add Item to Checklist  
[3] Remove Item from Checklist  
[4] Display Checklist  
[5] Return to Main Menu  
Enter Choice: 2  
  
Enter Disaster ID to add item: 102  
Enter Item ID: 1026  
Enter item name to add to Pandemic COVID-19 checklist: Face masks  
Item added.  
  
===== DISASTER CHECKLIST MENU =====  
[1] Enter Disaster Information  
[2] Add Item to Checklist  
[3] Remove Item from Checklist  
[4] Display Checklist  
[5] Return to Main Menu  
Enter Choice: 2  
  
Enter Disaster ID to add item: 102  
Enter Item ID: 1025  
Enter item name to add to Pandemic COVID-19 checklist: Medicine (optional)  
Item added.
```

```

=====
DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 2

Enter Disaster ID to add item: 102
Enter Item ID: 1023
Enter item name to add to Pandemic COVID-19 checklist: Hand sanitizer
Item added.

=====
DISASTER CHECKLIST MENU
=====

[1] Enter Disaster Information
[2] Add Item to Checklist
[3] Remove Item from Checklist
[4] Display Checklist
[5] Return to Main Menu
Enter Choice: 5

Returning to Main Menu...

```

In the main menu, if the user wants to sort all the information about the disaster added just now, choose no 4. Figure shown below is the sorted disaster information.

```

=====
MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice: 4

=====
SORT MENU
=====

[1] Sort Disasters by Disaster ID
[2] Sort Items by Item ID (per Disaster)
[3] Return to Main Menu
Enter your choice: 1

Disasters sorted by Disaster ID.

Disaster ID: 101
Name: Flood
Description: Heavy monsoon rains caused river overflow in Kuala Lumpur.

Disaster ID: 102
Name: Pandemic COVID-19
Description: The global COVID-19 pandemic (also known as the coronavirus pandemic), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), began with an outbreak in Wuhan, China, in December 2019.

Disaster ID: 103
Name: Landslide
Description: The movement downslope of a mass of rock, debris, earth, or soil.

```

The disasters now are sorted in ascending order following its DisasterID.

```

=====
SORT MENU
=====

[1] Sort Disasters by Disaster ID
[2] Sort Items by Item ID (per Disaster)
[3] Return to Main Menu
Enter your choice: 2

Items sorted by Item ID (per disaster).

--- Checklist for Flood (Disaster ID: 101) ---
1. [ID: 1011] Life jacket
2. [ID: 1014] First aid kit
3. [ID: 1016] Documents

--- Checklist for Pandemic COVID-19 (Disaster ID: 102) ---
1. [ID: 1023] Hand sanitizer
2. [ID: 1024] History medical documents
3. [ID: 1025] Medicine (optional)
4. [ID: 1026] Face masks

--- Checklist for Landslide (Disaster ID: 103) ---
1. [ID: 1032] Important documents
2. [ID: 1034] Torch light

```

The outcome above shows the items needed for each disaster are sorted in ascending order following its DisasterID as well as its ItemID.

```
=====
MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice: 4

=====
SORT MENU
=====

[1] Sort Disasters by Disaster ID
[2] Sort Items by Item ID (per Disaster)
[3] Return to Main Menu
Enter your choice: 1

The file is empty. No disaster data available.

=====
SORT MENU
=====

[1] Sort Disasters by Disaster ID
[2] Sort Items by Item ID (per Disaster)
[3] Return to Main Menu
Enter your choice: 2

The file is empty. No disaster data available.
```

If users try to sort the disaster information without inserting it, the prompt message like above will pop out. It means that there are no data inside the system, therefore, users need to insert the information first.

```
=====
SORT MENU
=====

[1] Sort Disasters by Disaster ID
[2] Sort Items by Item ID (per Disaster)
[3] Return to Main Menu
Enter your choice: 4

Invalid choice.
```

If a user enters the wrong menu number, the output will be like above's figure.

3.6. Review Emergency

Review Emergency is for users to quickly get information about the disaster and need to contact the emergency hotline. From the Main Menu choose 5 for review emergency, enter the Disaster ID.

```
=====
      MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice: 5

=====
      REVIEW EMERGENCY
=====
Enter Disaster ID: 101

===== DISASTER INFORMATION =====
Disaster ID      : 101
Disaster Name    : Flood
Description       : Heavy monsoon rains caused river overflow in Kuala Lumpur.

===== AUTHORITY CONTACT(S) =====
Authority Name   : NADMA
Phone Number     : 03-8888 4660
-----
Total authority contact(s) found: 1
```

3.7. Exit

From the Main Menu user choose 6 to exit the program if they have completed their task.

```
=====
      MAIN MENU
=====
[1] MANAGE CHECKLIST
[2] TRACK SUPPLIES
[3] EMERGENCY CONTACT
[4] DISASTER INFORMATION
[5] REVIEW EMERGENCY
[6] EXIT
Enter your choice: 6

Exiting program. Goodbye!
```

4. COMPLETE CODING

c

5. REFERENCES

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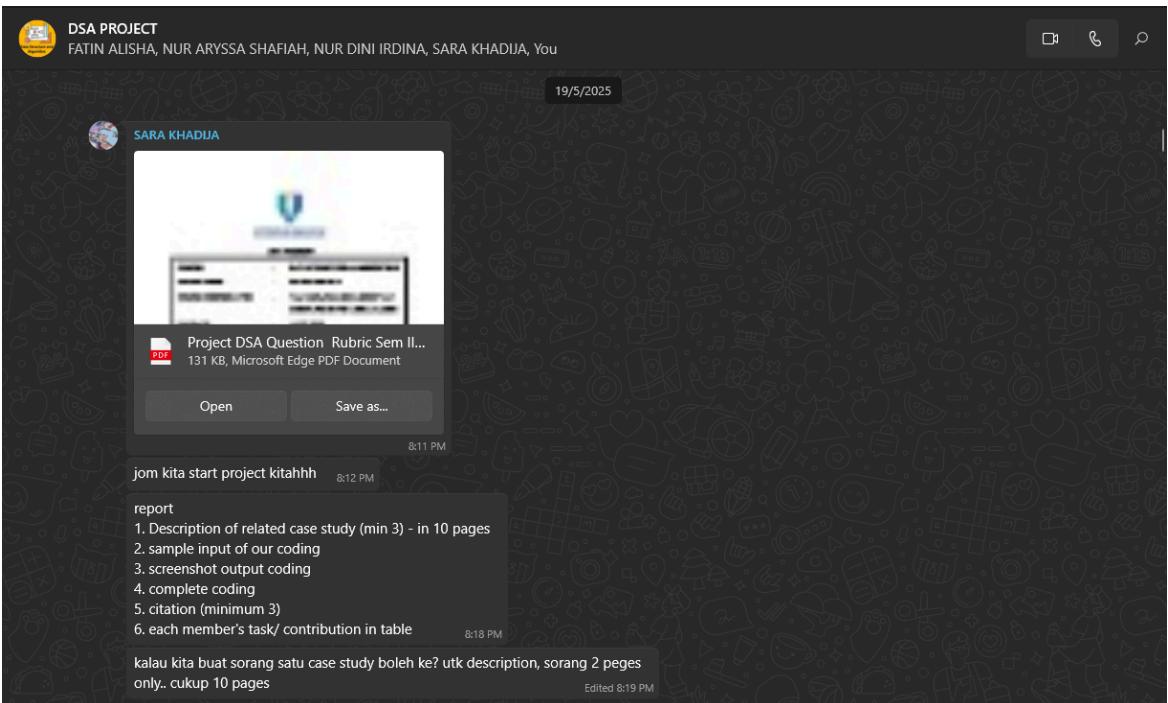
American Red Cross. (n.d.). *Mobile apps.*

<https://www.redcross.org/get-help/how-to-prepare-for-emergencies/mobile-apps.html>

6. TASK DIVISION AMONG GROUP MEMBERS

NO	GROUP MEMBER'S NAME	MATRIC NUMBER	CONTRIBUTION/TASK
1	SARA KHADIJA BINTI SAIDIN	SD23061	<ul style="list-style-type: none"> - Documented the CaseStudy 3 - Coded the sorting part - Prepared the sample input for disaster informations - Executed and documented the output for sorting part - Contributed in briefing of flow system design
2	ALIYA AFIFAH BINTI AL ABAS	SD23062	<ul style="list-style-type: none"> - Designed the system flow of this project - Coded the queue operations - Prepared meeting reports - Documented the task division - Prepared the sample of input for the Track Supplies part
3	FATIN ALISHA BINTI MOHAMED ZAINI	SD23015	<ul style="list-style-type: none"> - Coded the linked list operation - Document Case Study 1 - Contribute by sharing ideas about the system design - Prepare outline of the report - Prepare the sample of input for Emergency Contact part
4	NUR DINI IRDINA BINTI RAMLI	SD23034	<ul style="list-style-type: none"> - Coded the searching to review emergency information combining the code - Documented the Case Study 4 - Contribute by sharing ideas about the system - Contribute by identifying errors in the code
5	NUR ARYSSA SHAFIAH BINTI HERZIE	SD23012	<ul style="list-style-type: none"> - Coded the stack operation - Documented Case Study 2 - Contribute by sharing ideas about the system - Contribute by testing the system - Prepare the sample of input for Manage Checklist

7. GROUP MEETING REPORT

Group Meeting Report [1]		
Date : 19th May 2025	Venue: Online via Whatsapp	Attendees :
Time: 8:00 pm	SCL Leader : SARA KHADIJA BINTI SAIDIN	<ol style="list-style-type: none"> 1. SARA KHADIJA BINTI SAIDIN 2. ALIYA AFIFAH BINTI AL ABAS 3. FATIN ALISHA BINTI MOHAMED ZAINI 4. NUR DINI IRDINA BINTI RAMLI 5. NUR ARYSSA SHAFIAH BINTI HERZIE
 <p>DSA PROJECT FATIN ALISHA, NUR ARYSSA SHAFIAH, NUR DINI IRDINA, SARA KHADIJA, You</p> <p>19/5/2025</p> <p>SARA KHADJA  Project DSA Question Rubric Sem II... 131 KB, Microsoft Edge PDF Document Open Save as... 8:11 PM</p> <p>join kita start project kitahhh 8:12 PM report 1. Description of related case study (min 3) - in 10 pages 2. sample input of our coding 3. screenshot output coding 4. complete coding 5. citation (minimum 3) 6. each member's task/ contribution in table 8:18 PM kalau kita buat sorang satu case study boleh ke? utk description, sorang 2 pages only.. cukup 10 pages Edited 8:19 PM</p>		
<p>DISCUSSION POINTS :</p> <ul style="list-style-type: none"> - Review project requirements based on the rubric provided in Kalam - Identified the required components from the rubric - Listed all the components that must be completed and included in the final project report 		

Group Meeting Report [2]

Date : 28th May 2025	Venue: Online via WhatsApp	Attendees :
Time: 12:00 pm	SCL Leader: NUR ARYSSA SHAFIAH BINTI HERZIE	<ol style="list-style-type: none"> 1. SARA KHADIJA BINTI SAIDIN 2. ALIYA AFIFAH BINTI AL ABAS 3. FATIN ALISHA BINTI MOHAMED ZAINI 4. NUR DINI IRDINA BINTI RAMLI 5. NUR ARYSSA SHAFIAH BINTI HERZIE

The screenshot shows a WhatsApp group chat with five members: DSA PROJECT, FATIN ALISHA, NUR ARYSSA SHAFIAH, NUR DINI IRDINA, and SARA KHADIJA. The messages include:

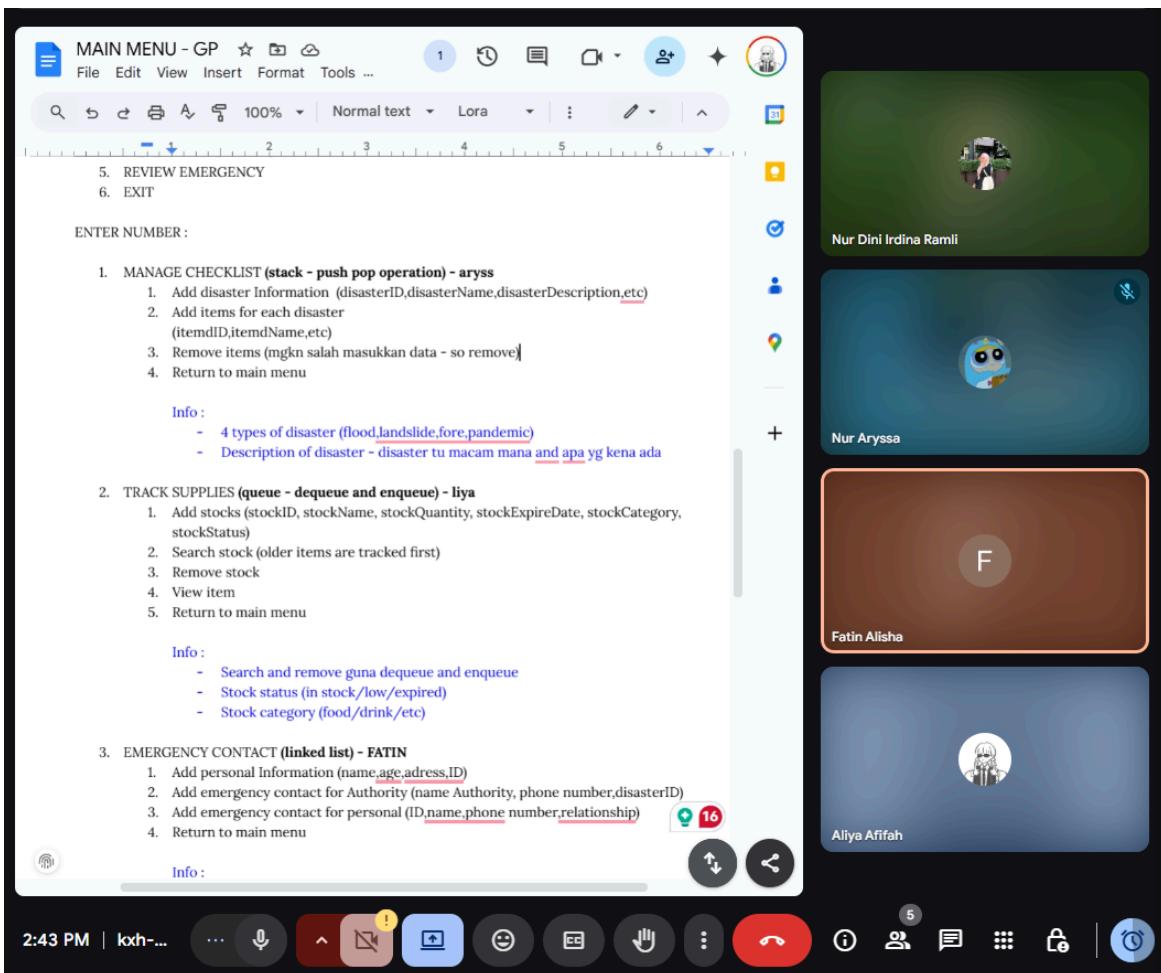
- FATIN ALISHA shared a Microsoft Edge PDF document titled "Project Question Rubric Sem II 2425...." (131 KB).
- NUR ARYSSA SHAFIAH shared a PDF from ijssst.info.
- NUR DINI IRDINA shared a link from ieeexplore.ieee.org and another from medium.com about UX case studies.
- A message from FATIN ALISHA pinned to the top of the thread, containing a link to a Google Doc titled "ResQ: Disaster Management App | UI/UX Case Study".
- FATIN ALISHA also shared a link to a Google Doc titled "MAIN MENU - GP".
- A message from SARA KHADIJA at the bottom of the screen.

DISCUSSION POINTS :

- Find research studies/articles that are related to our project title
- Highlighted and summarize the key points from each research study, focusing on the Advantages and disadvantages of the system in the research study
- Completed the research study part in the report

Group Meeting Report [3]

Date : 6th June 2025	Venue: Online via Google Meet	Attendees :
Time : 2:30 pm	SCL Leader : ALIYA AFIFAH BINTI AL ABAS	1. SARA KHADIJA BINTI SAIDIN 2. ALIYA AFIFAH BINTI AL ABAS 3. FATIN ALISHA BINTI MOHAMED ZAINI 4. NUR DINI IRDINA BINTI RAMLI 5. NUR ARYSSA SHAFIAH BINTI HERZIE

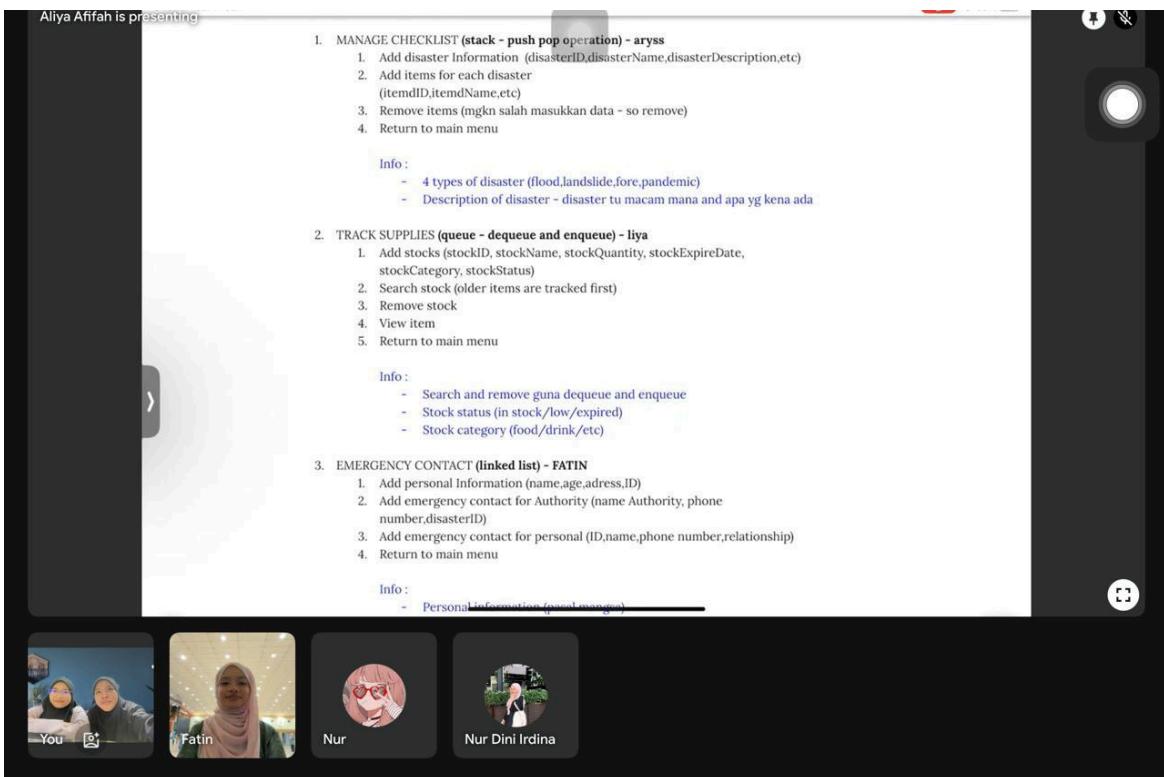


DISCUSSION POINTS :

- Discusses the overall ideas, purpose and structure of the system
- Planned how the system will function, including user flow and key features
- Identified important components, variables, and data to be included
- Decided on the number of sections/parts needed in the system

Group Meeting Report [4]

Date : 8th June 2025	Venue: Online via Google Meet	Attendees :
Time: 9:00 pm	SCL Leader : ALIYA AFIFAH BINTI AL ABAS	1. SARA KHADIJA BINTI SAIDIN 2. ALIYA AFIFAH BINTI AL ABAS 3. FATIN ALISHA BINTI MOHAMED ZAINI 4. NUR DINI IRDINA BINTI RAMLI 5. NUR ARYSSA SHAFIAH BINTI HERZIE



DISCUSSION POINTS :

- Discussed the key operations and functions that must be included in the project
- Identified the main components and coding tasks based on the operation required in the rubric
- Divided the tasks among the group members according to each operation
- Assigned specific coding parts and responsibilities to each member based on their strength and the system's needs