Table of Contents

1: INTRODUCTION

The Public Health Enhancement Survey project is a comprehensive initiative designed to assess and improve the overall state of public health within a specific region or community. This project typically involves the collection of data and information related to various aspects of public health, including healthcare access, disease prevalence, health behaviours, and the quality of healthcare services.

The primary goal of the Public Health Enhancement Survey project is to gain a better understanding of the health needs and challenges facing a particular population. By collecting and analysing data, the project aims to identify areas where improvements can be made and develop evidence-based strategies for enhancing public health outcomes. These strategies may encompass a wide range of interventions, such as targeted health education campaigns, improved healthcare infrastructure, and policy changes that promote healthier lifestyles.

1.1: Project Overview

Public Health Enhancement Survey is a comprehensive research project aimed at assessing, understanding, and improving various aspects of public health within a specific geographic area or community. This survey serves as a valuable tool for gathering information on the health status, needs, and behaviours of the population, as well as the quality and accessibility of healthcare services. The project typically includes the following key components:

Data Collection: The foundation of a Public Health Enhancement Survey is data collection. This involves gathering information through a variety of methods, such as surveys, interviews, health examinations, and the analysis of existing health records. Data may be collected from a representative sample of the population to ensure accuracy.

Health Indicators: The survey assesses various health indicators, including but not limited to:

Prevalence of diseases and health conditions.
1)Health behaviours like smoking, diet, exercise, and substance use.
2)Healthcare utilization and access to medical services.
3)Socioeconomic factors affecting health, such as income, education, and housing.
4)Environmental factors impacting health, such as air and water quality.

Data Analysis: The collected data is rigorously analysed to identify trends, disparities, and areas where public health can be enhanced. Advanced statistical techniques are often used to draw meaningful conclusions from the data.

Recommendations: Based on the analysis, the project generates recommendations for public health interventions and policies. These recommendations may include strategies to improve healthcare infrastructure, promote healthier behaviours, reduce health disparities, and enhance access to healthcare services.

Policy Development: The survey's findings and recommendations often serve as the basis for the development of public health policies and programs. These policies may be created by government agencies, community organizations, or healthcare institutions to address the identified issues.

Community Engagement: Engaging with the community is a crucial aspect of a Public Health Enhancement Survey. It involves communicating survey findings to the public, seeking input and feedback, and involving community members in the design and implementation of health improvement initiatives.

Monitoring and Evaluation: After implementing interventions, ongoing monitoring and evaluation are conducted to assess their effectiveness and make necessary adjustments. The survey may be repeated periodically to measure progress and adapt strategies accordingly.

1.2 Purpose

The purpose of a Public Health Survey Project is multifaceted and encompasses several key objectives:

Assessment of Health Status: The primary purpose is to assess the health status and well-being of a specific population or community. This includes identifying prevalent diseases, health conditions, and risk factors, as well as understanding the overall health behaviours of the population.

Identification of Health Disparities: The project aims to uncover disparities in health outcomes and access to healthcare services within the target population. It helps identify groups or communities that may be at a disadvantage in terms of health, often due to socioeconomic, geographic, or demographic factors.

Data Collection and Analysis: Public Health Survey Projects collect data on a wide range of health-related factors. The analysis of this data helps public health officials and policymakers to make informed decisions regarding resource allocation, program development, and policy formulation.

Public Health Policy Development: Survey findings are used to inform the development and implementation of public health policies, initiatives, and programs. These policies can be tailored to address specific health issues and improve health outcomes.

Resource Allocation: The data gathered in the survey aids in the allocation of resources for healthcare infrastructure, services, and interventions. It helps ensure that resources are directed to areas and communities with the greatest health needs.

Health Promotion and Education: Survey results provide insights into health behaviours and risk factors. This information can be used to design targeted health promotion campaigns and

educational initiatives aimed at encouraging healthier lifestyles and reducing risk factors.

Monitoring and Evaluation: Public Health Survey Projects often have an ongoing component, where data is periodically collected and analysed to assess the impact of interventions and to track progress in improving public health outcomes.

Community Engagement: The survey process can engage the community and promote community involvement in health improvement efforts. Community input and collaboration are vital for the success of public health initiatives.

Evidence-Based Decision-Making: The data and insights generated by the survey support evidence-based decision-making in the field of public health. Policymakers and healthcare professionals can use this information to make informed choices about where to allocate resources and how to design effective interventions.

Health Equity: Public Health Survey Projects often have a strong focus on promoting health equity, which means ensuring that all individuals have a fair and just opportunity to achieve their highest health potential, regardless of their background or circumstances.

2. LITERATURE SURVEY

2.1 Existing problem

Underreporting and Nonresponse: Inaccurate or incomplete data can result from people choosing not to participate or not providing truthful answers due to concerns about privacy, social stigma, or distrust of authorities.

Sampling Bias: If the survey sample is not representative of the entire population, it can lead to biased or ungeneralizable results. Reaching certain demographics, such as marginalized or hard-to-reach groups, can be particularly challenging.

Data Quality and Accuracy: Inadequate quality control and validation measures can result in errors in data collection, entry, and analysis. Poor data quality can undermine the validity of survey findings.

Survey Fatigue: Respondents may experience survey fatigue if they are frequently asked to participate in surveys, which can result in lower response rates and decreased data quality.

Privacy Concerns: The collection of sensitive health information raises privacy concerns, and ensuring data security and confidentiality is a significant challenge, particularly in the era of electronic health records and data breaches.

Resource Limitations: Public Health Surveys require substantial resources in terms of funding, manpower, and technology. Resource limitations can impact the scope and frequency of surveys.

Changing Demographics: Populations are not static, and demographic shifts, such as immigration or population aging, can make it challenging to maintain accurate and up-to-date survey samples.

Cultural and Language Barriers: Language and cultural differences can affect the ability to effectively survey diverse populations, and translation and cultural competence are vital in mitigating these barriers.

Data Collection Methods: The rapid evolution of technology and changes in communication methods require continuous adaptation of survey methodologies to ensure they remain effective and relevant.

Health Literacy: Inadequate health literacy can affect a person's ability to understand survey questions or provide accurate responses, potentially leading to biased data.

Bias in Self-Reporting: Self-reported data on health behaviours, such as diet, exercise, and substance use, may be subject to recall bias or social desirability bias, leading to inaccurate

information.

Data Overload: Collecting vast amounts of data can lead to data overload, making it challenging to extract meaningful insights and prioritize the most critical issues.

2.2 References

"Principles of Epidemiology in Public Health Practice" by the Centres for Disease Control and Prevention (CDC)

"Health Survey Research Methods: A Guide for First-Time Researchers" by Robert M. Kaplan and Martha E. B. Coulter

"Survey Research Methods" by Floyd J. Fowler

"Introduction to Public Health" by Mary-Jane Schneider

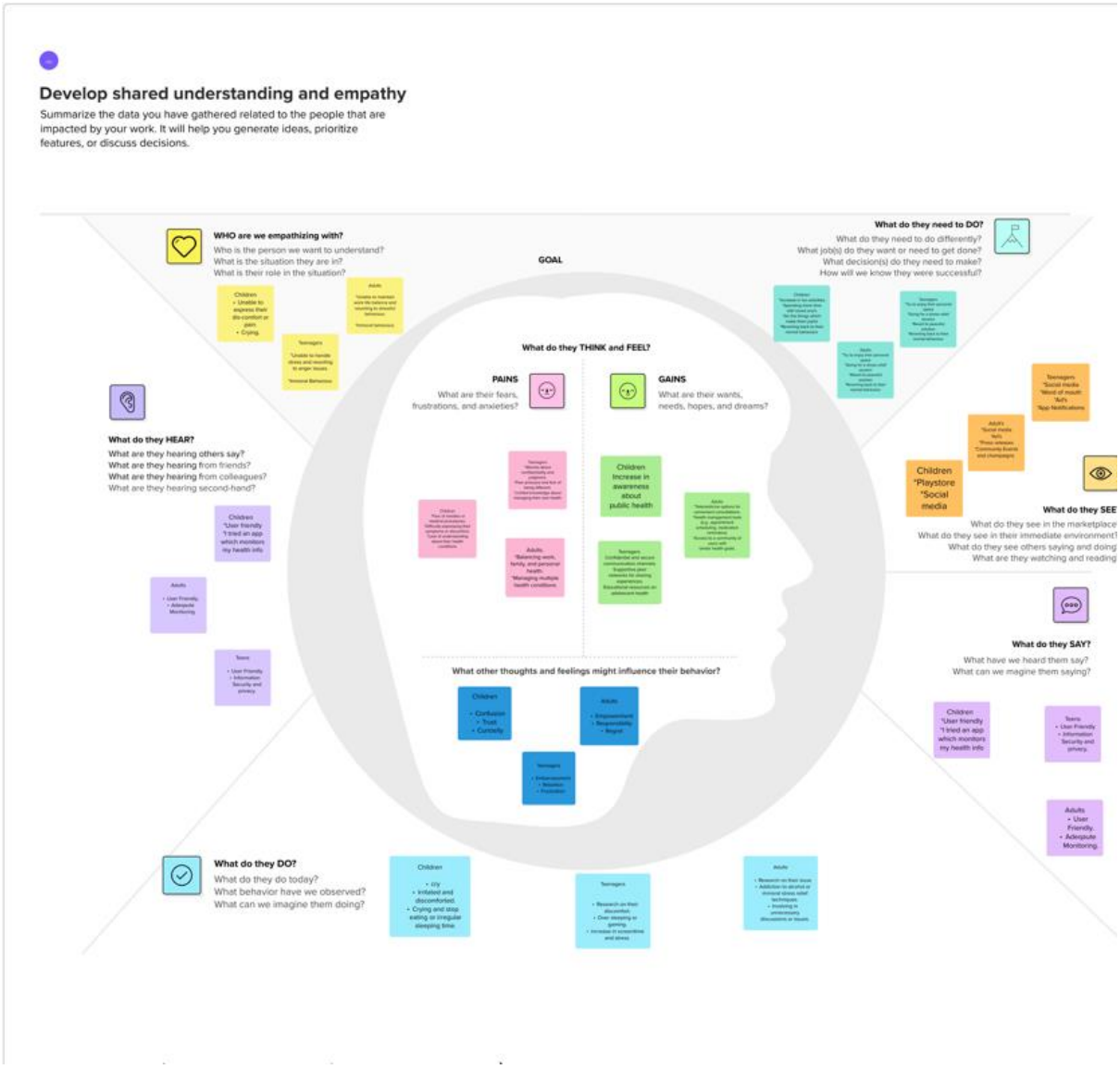
The World Health Organization (WHO) website

2.3 Problem Statement Definition

"Despite advancements in healthcare, our community continues to experience significant health disparities and suboptimal health outcomes. There is a lack of comprehensive data on the determinants of these disparities, making it challenging to develop evidence-based interventions and policies for improving public health. To address this issue, a Public Health Survey Project is necessary to systematically collect, analyse, and interpret data on the health status, behaviours, and access to healthcare services within our community. This project aims to identify the root causes of health disparities, guide targeted interventions, and ultimately enhance the overall well-being of our population."

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming

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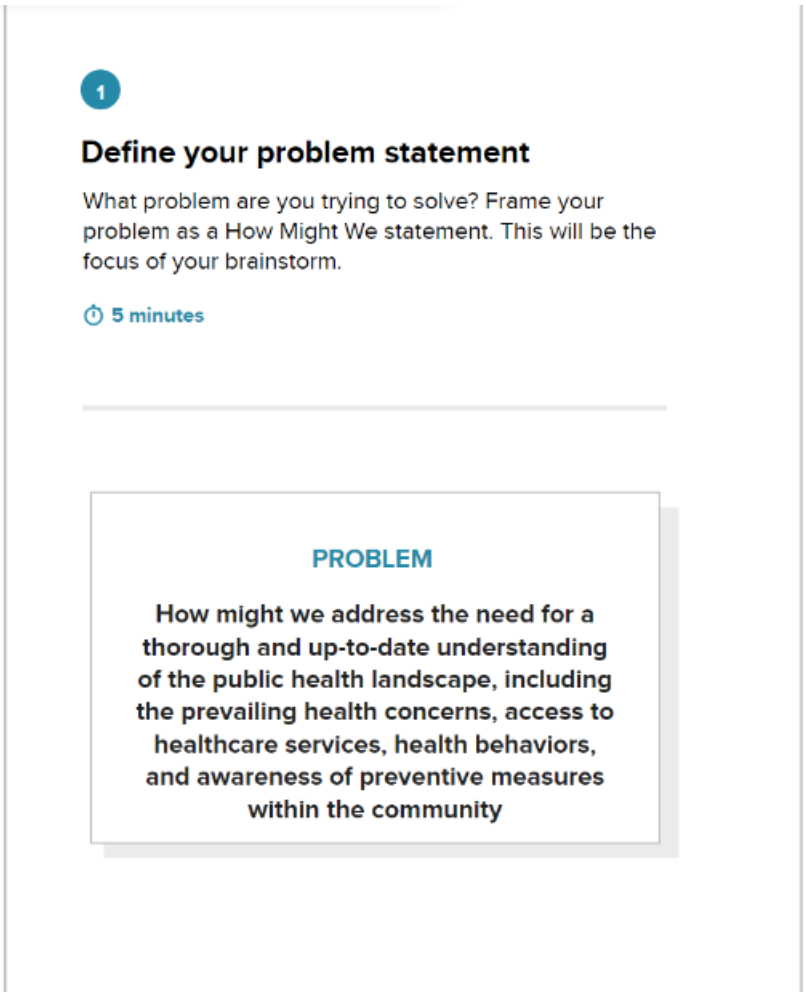


Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

Person 1

- Host health education workshops and seminars on topics identified such as nutrition, exercise, mental health, and more.

- Create informative and engaging content on prioritized health topics for social media, websites, and blogs

- Involve local healthcare professionals and experts to lead these sessions.

- Utilize infographics, videos, and interactive quizzes to make learning about health fun and accessible.

- Make these events accessible and free to encourage participation.

- Organize health fairs that offer free health screenings, vaccinations, and consultations.

Person 2

-Promote these events through various channels to attract a diverse audience.

- Partner with educational institutions to integrate health education into their curriculum.

-Include booths and displays from local healthcare providers and public health organizations

-Organize health-themed competitions or projects for students to increase their engagement

-Offer scholarships or incentives for students who excel in promoting public health awareness.

-Establish mobile health clinics to provide healthcare services in underserved or remote areas.

Person 3

-Advocate for policies that address specific barriers , such as reducing healthcare costs, improving transportation options, or expanding healthcare facilities.

-Offer services such as vaccinations, check-ups, and health education.

-Promote the schedule and locations of these clinics through local media and community announcements.

- Create partnerships with local transportation services to provide affordable transportation to healthcare facilities.

- Develop an online platform or mobile app that allows residents to access information about local health initiatives, find nearby healthcare services, and even schedule appointments.

- Raise awareness about the benefits of telemedicine and health apps through informational campaigns.

Person 4

-Partner with local healthcare providers to offer telemedicine services, especially for those with limited access to healthcare facilities.

- Commission public art installations that convey health messages and promote healthy living.

- Launch awareness campaigns using billboards, posters, and public service announcements.

- Establish a feedback mechanism to collect suggestions and ideas from the community on public health improvement.

- Engage local artists and influencers to endorse public health initiatives.

- Regularly review survey responses and community feedback to adapt and enhance public health initiatives.

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Community Workshops and Seminars:

- Host health education workshops and seminars on topics identified, such as nutrition, exercise, mental health, and more
- Involve local healthcare professionals and experts to lead these sessions
- Make these events accessible and free to encourage participation.

Online Health Education Campaigns:

- Create informative and engaging content on prioritized health topics for social media, websites, and blogs.
- Utilize infographics, videos, and interactive quizzes to make learning about health fun and accessible.
- Share success stories and testimonials from those who have benefited from public health initiatives.

Community Health Fairs:

- Organize health fairs that offer free health screenings, vaccinations, and consultations.
- Include booths and displays from local healthcare providers and public health organizations.
- Promote these events through various channels to attract a diverse audience.

Collaboration with Schools and Colleges:

- Partner with educational institutions to integrate health education into their curriculum.
- Organize health-themed competitions or projects for students to increase their engagement.
- Offer scholarships or incentives for students who excel in promoting public health awareness.

Mobile Health Clinics:

- Establish mobile health clinics to provide healthcare services in underserved or remote areas.
- Offer services such as vaccinations, check-ups, and health education.
- Promote the schedule and locations of these clinics through local media and community announcements.

Healthcare Accessibility Improvement:

- Advocate for policies that address specific barriers mentioned such as reducing healthcare costs, improving transportation options, or expanding healthcare facilities.
- Create partnerships with local transportation services to provide affordable transportation to healthcare facilities.

Community Engagement Platforms:

- Develop an online platform or mobile app that allows residents to access information about local health initiatives, find nearby healthcare services, and even schedule appointments.
- Encourage user-generated content and community discussions on health-related topics.

Promote Telemedicine and Health Apps

- Raise awareness about the benefits of telemedicine and health apps through informational campaigns.
- Partner with local healthcare providers to offer telemedicine services, especially for those with limited access to healthcare facilities

Public Art and Awareness Campaigns

- Commission public art installations that convey health messages and promote healthy living.
- Launch awareness campaigns using billboards, posters, and public service announcements.
- Engage local artists and influencers to endorse public health initiatives.

Feedback and Continuous Improvement:

- Establish a feedback mechanism to collect suggestions and ideas from the community on public health improvement.
- Regularly review survey responses and community feedback to adapt and enhance public health initiatives.

4

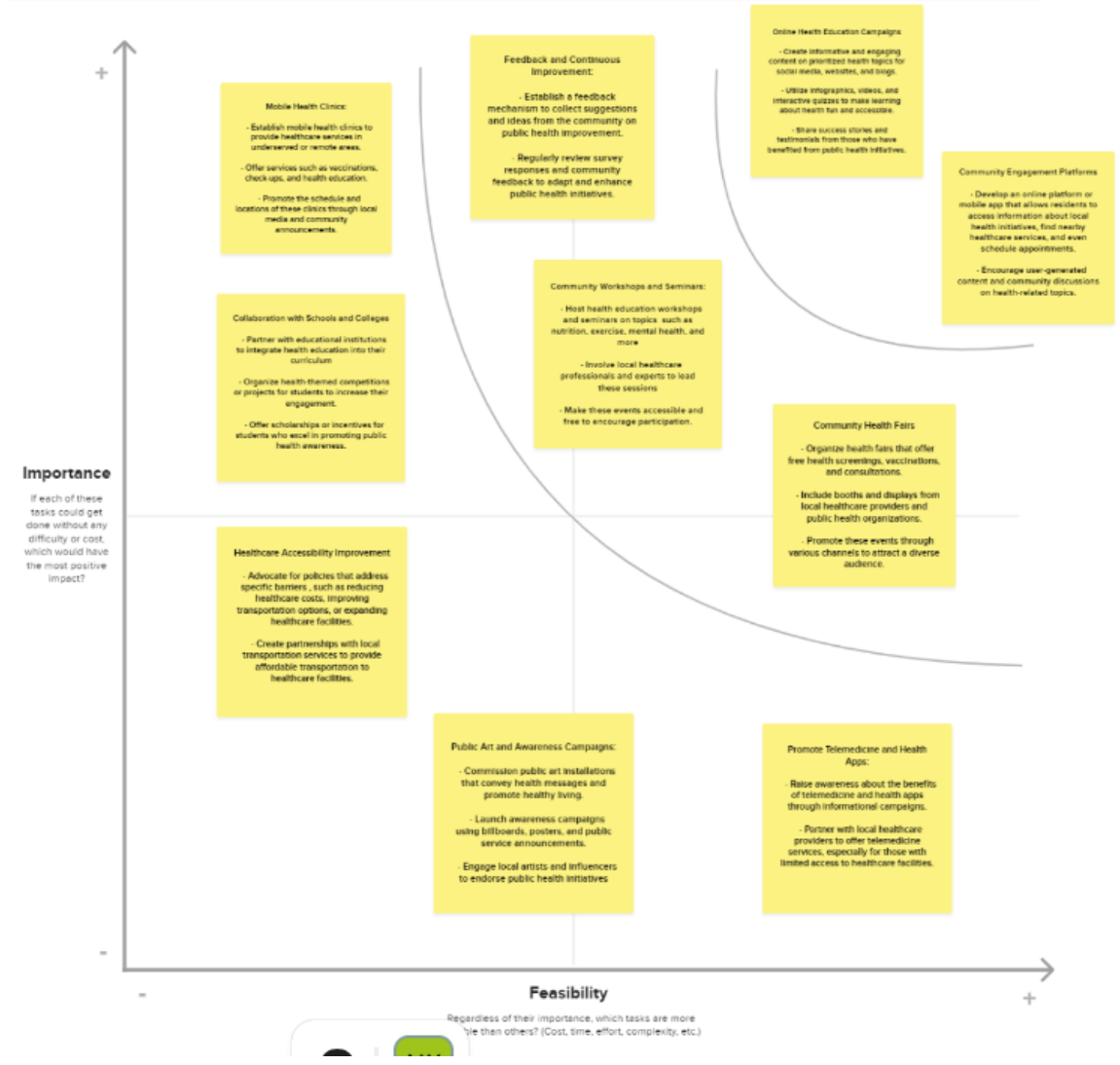
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H key** on the keyboard.



4. REQUIREMENT ANALYSIS

4.1 Functional requirement

User Registration and Authentication:
Users should be able to create accounts with secure authentication mechanisms.
Different user role, such as survey administrators may be needed.

Survey Design and Management:
Support for questionnaires with multiple question formats (e.g., multiple-choice, open-ended, Likert scale).
Survey version control and the ability to update survey questions.

Data Validation and Quality Control:
Data validation rules to ensure data accuracy and completeness.
Automated data checks and alerts for erroneous or inconsistent entries.

Data Storage and Encryption:
Secure storage of collected data with encryption to protect sensitive health information.
Compliance with data privacy regulations, such as Digital Personal Data Protection (DPDP) Act

Security and Access Control:
Role-based access control to ensure data privacy.
Encryption of data at rest and in transit.

Scalability:
Ability to handle a growing volume of surveys and data as the project expands.

Compliance:
Adherence to relevant data protection laws and regulations.
Compliance with industry standards for health data security.

Mobile Access:
Our application is compatible with android phones as we have developed in android studio.

Audit Trails:
Logging of all user actions and changes to survey data for traceability and accountability.

4.2 Non-Functional requirements

Performance:
Response Time: The app should respond promptly to user actions, with minimal delay in data entry and retrieval.

Scalability: It should be able to handle a growing number of users, surveys, and data without significant performance degradation.

Usability:

User-Friendly Interface: The app should have an intuitive and user-friendly interface, making it easy for users to complete surveys and navigate the application.

Reliability:
The app should be highly reliable, minimizing downtime or data loss.
Backup and Recovery: Implement regular data backups and a reliable recovery process in case of data loss or system failure.

Security:
Data Encryption: All data, both in transit and at rest, should be encrypted to protect sensitive health information.
Authentication and Authorization: Implement strong authentication and authorization mechanisms to control access to the app and data.
Compliance: Ensure compliance with relevant data protection regulations, such as Digital Personal Data Protection (DPDP) Act

Data Privacy:
Protect user privacy by anonymizing and de-identifying data as necessary.
Data retention policies should be clearly defined to manage data securely.

Scalability:
The app should be designed to scale as the volume of surveys and data increases, ensuring that it can handle larger workloads efficiently.

Auditability:
Implement comprehensive audit trails to log user actions, changes to data, and system events for traceability and accountability.

Availability:
The app should be available and accessible to users 24/7, with minimal scheduled downtime for maintenance.

Performance Monitoring:
Implement monitoring tools to track system performance, identify bottlenecks, and proactively address issues.

Compliance with Industry Standards:
Ensure adherence to industry standards and best practices for healthcare information systems.

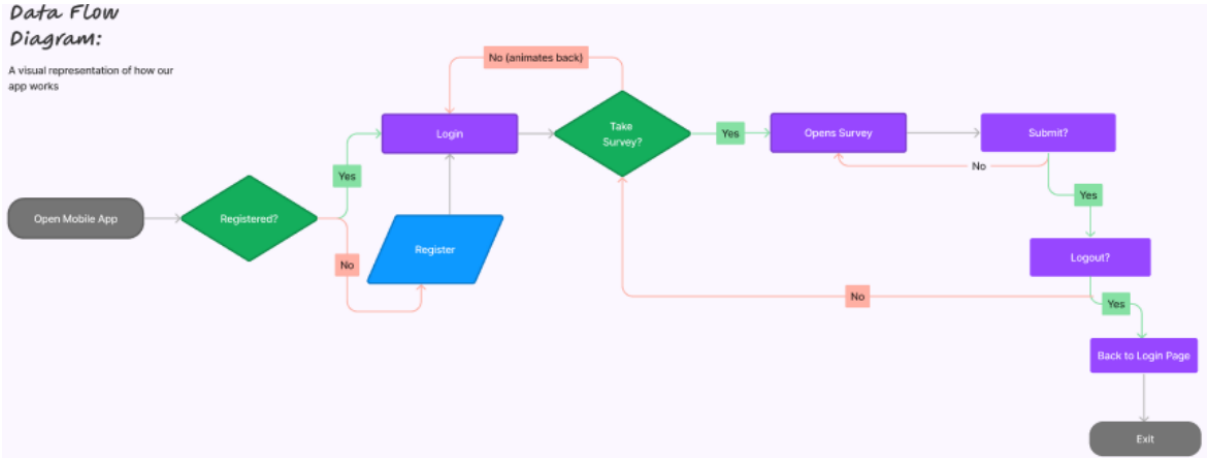
Mobile Responsiveness:
Ensure that the app is responsive and functions well on various screen sizes and mobile devices.

Load Testing:
Conduct load testing to determine the app's capacity under heavy usage conditions and ensure it can perform adequately.

5. PROJECT DESIGN

5.1 Data Flow Diagrams & User Stories

Data Flow:



User Stories:

User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my first name, last name, email, phone number and password.	I can access my account / dashboard.	High	Sprint-1
		USN-2	As a user, I will receive confirmation via a pop-up message once I have registered for the application.	I can receive confirmation via pop-up and start using the app.	High	Sprint-2
		USN-3	As a user, I can easily log out by clicking the logout button.		Medium	Sprint-3
		USN-4	As a user, I get automatically redirected to the first survey page to logout after my survey is submitted.		Medium	Sprint-3
	Login	USN-5	As a user, I can log into the application by entering email & password.	I can successfully use the application after logging in.	High	Sprint-1
	Validation	USN-6	As a user, I have to fill in all the questions that are required.	I can only progress to the next step after entering all the required details in that particular page.	High	Sprint-2

5.2 Solution Architecture

Structure:

1. Architecture Client- Side (Frontend)

• User Interface (UI) The frontend is responsible for the app's user interface. It provides the defences, forms, and rudiments that users interact with. In a health check app, the UI should be user-friendly, intuitive, and accessible.

• User Interaction- It handles user input, including responses to health check questions and relations with the app's features.

• Data Presentation- The frontend displays data to users in a readable and accessible format. This includes showing check questions, health recommendations, and health data visualization.

2. Garçon- Side (Backend)

• Operation sense- The backend processes user requests, manages data, and performs the core operation sense. For a health check app, this includes handling user registrations, managing health checks, and assaying health data.

• Database Management- It stores and retrieves health data, user lives, and check results. The database should be designed to handle the storage and recovery of health- related information efficiently.

• Security- The backend ensures the security of user data, with features like user authentication, encryption, and access control to act up with healthcare data.

3. User operation

• User Registration and Authentication- This element manages user accounts, registration, and login processes. It ensures that only authorized users can pierce the app.

4. Scalability and Performance

- With the help of firebase our application automatically scales.
- With regard to the performance of our application, firebase takes care of that too as each time an instance of our app runs a monitored process, the associated trace also automatically collects attributes data for that app instance.

Database:

We are using Fire Base Database for storing the data. Below are some features of fire Base data base:

1. Realtime Database-

Firebase Database is designed for real-time data synchronization. It allows multiple clients to listen for changes and updates to data in real-time. When data changes on the server, connected clients are immediately notified.

2. Data Synchronization-

Firebase Database automatically handles data synchronization across devices and platforms. This simplifies the development of real-time collaborative applications like chat apps and collaborative document editing.

3. Offline Capabilities-

Firebase Database provides offline support. Clients can continue to read and write data even when they are offline. Once connectivity is restored, changes are synchronized with the server.

4. Security Rules-

You can define security rules to control who can read and write data in your Firebase Database. This ensures data security and compliance with access control requirements.

5. Scalability-

Firebase Database is hosted in the cloud, so it can handle a large number of concurrent users and scale as your application grows.

Characteristics:

1. **User Interface (UI)- Login/Registration Screen-**
   - Users are greeted with a login or registration screen. New users can create accounts, while returning users can log in.

2. Survey page-
   - After logging in, users are presented with questions regarding the survey. The survey is divided into a total of 5 pages.

3. Data Input-
   - There are data input fields for users to enter information regarding the survey and can only proceed to the next page when they have entered all the data fields.

4. Logout-

- There's a logout option in the first page of the survey for users to logout. After submitting the survey users will be redirected to the first page of the survey to either give another entry or to logout from their respective account.

5. Accessibility and Usability-

- The UI should be designed to be accessible to users with various abilities and should follow best practices for usability, with clear labels, fonts, and intuitive navigation.

6. Security and Privacy-

•Security features such as secure authentication and data encryption should be implemented and clearly communicated to users.

7. Performance:

1) Responsiveness- The app should be responsive and loading quickly.
2) User Experience (UX)- The app is intuitive and user-friendly interface. Users are able to easily navigate through the survey questions and submit their responses without confusion.
3) Data Security- The app is implemented with robust security measures to protect user data, including encryption, secure data storage, and compliance with relevant data protection regulations (e.g., HIPAA in the United States).
4) Scalability- The app is able to handle a growing number of users and surveys without significant performance degradation.
5) Response Time- The time it takes for the app to process and save survey responses is fast.

8. Compatibility-

1) Device Screen Sizes and Resolutions:

Design the app's user interface to be responsive, adapting to various screen sizes and resolutions. This ensures that users can comfortably access and use the app on both small smartphone screens and larger tablet or desktop displays.

2) Network Environments:

Ensure that the app functions in different network environments, including 3G, 4G, and WIFI, as users may have varying levels of internet connectivity.

Structured Database- Health data is stored in a structured database, which is often implemented as part of the app's backend. We are using firebase here for storing the data provided by the user.

- Data Modelling- Health data is organized and structured within the database, with defined tables or collections for different types of data (e.g., patient profiles, survey

responses). Each
table or collection may have specific fields to store relevant information, such as user IDs, and health metrics.

- Secure Storage- Since we are using firebase to store our data, it encrypts data in transit using HTTPS and logically isolate customer data.

- Maintenance and Updates-

The app will be receiving updates every 4 months, the bugs will be fixed by the feedback of the users and the new features will be added with the feedback that we receive and by also continuous monitoring of our app.

Features, Development Phases, and Solution Requirements:

The development of this health surveying application will be executed in several phases, which include-

Phase 1: Planning and Design

Define the project scope, objectives, and requirements.

Create wireframes and mock-ups for the user interface.

Establish data security and privacy requirements.

Phase 2: Development

Build the core application logic, including survey creation and management features.

Develop user authentication and data validation components.

Implement the data storage and management layer, along with survey response collection.

Phase 3: Reporting and Analytics

Develop real-time data analysis and reporting features.

Implement data visualization tools and export functionality.

Conduct usability testing and refine the user interface.

Phase 4: Security and Compliance

Strengthen security measures, including encryption and access controls.

Ensure compliance with relevant data protection regulations.

Phase 5: Scaling and Performance Optimization

Test the application's performance under heavy load.

Specifications for Solution Definition, Management, and Delivery

The solution will be defined, managed, and delivered according to the following specifications:

Detailed project documentation, including project scope, requirements, and design specifications.

- Regular progress monitoring and reporting to project stakeholders.
- Compliance with industry best practices and regulations, such as HIPAA for healthcare data.
- Ongoing support and maintenance to address issues and refine the application based on user feedback.

This comprehensive solution architecture aims to address existing business problems by providing an efficient and secure platform for health surveys, meeting the needs of both users and stakeholders.

1. Defining the Solution:

• Objective-
The primary goal is to create a user-friendly health survey app that allows individuals to answer the survey questionnaire which can be used for various other uses such as developing new
policies and running campaigns for general awareness.

• Features-

1) User Registration and Login

2) Survey Questionnaires

3) Health Data Input

4) Data Privacy and Security

User Profile and data Security- Strengthen security measures, including encryption and access controls.

• Ensure compliance with relevant data protection regulations.
• Scalability- Firebase's cloud infrastructure is designed to scale automatically. As the demand for your app increases, Firebase can allocate additional resources, such as server capacity, to handle the increased load without downtime

2. Managing the Solution:

•Project Plan- Develop a project plan that outlines timelines, milestones, and responsibilities for app development.
•Development Team- We as a team of four are the development team for this application.
•Quality Assurance- Implement a testing and quality control process to identify and rectify issues during development.
•Data Management- Define how health data will be collected, stored, and processed, adhering to

data protection regulations.
•Compliance- Ensure the app complies with all relevant healthcare and data privacy regulations.

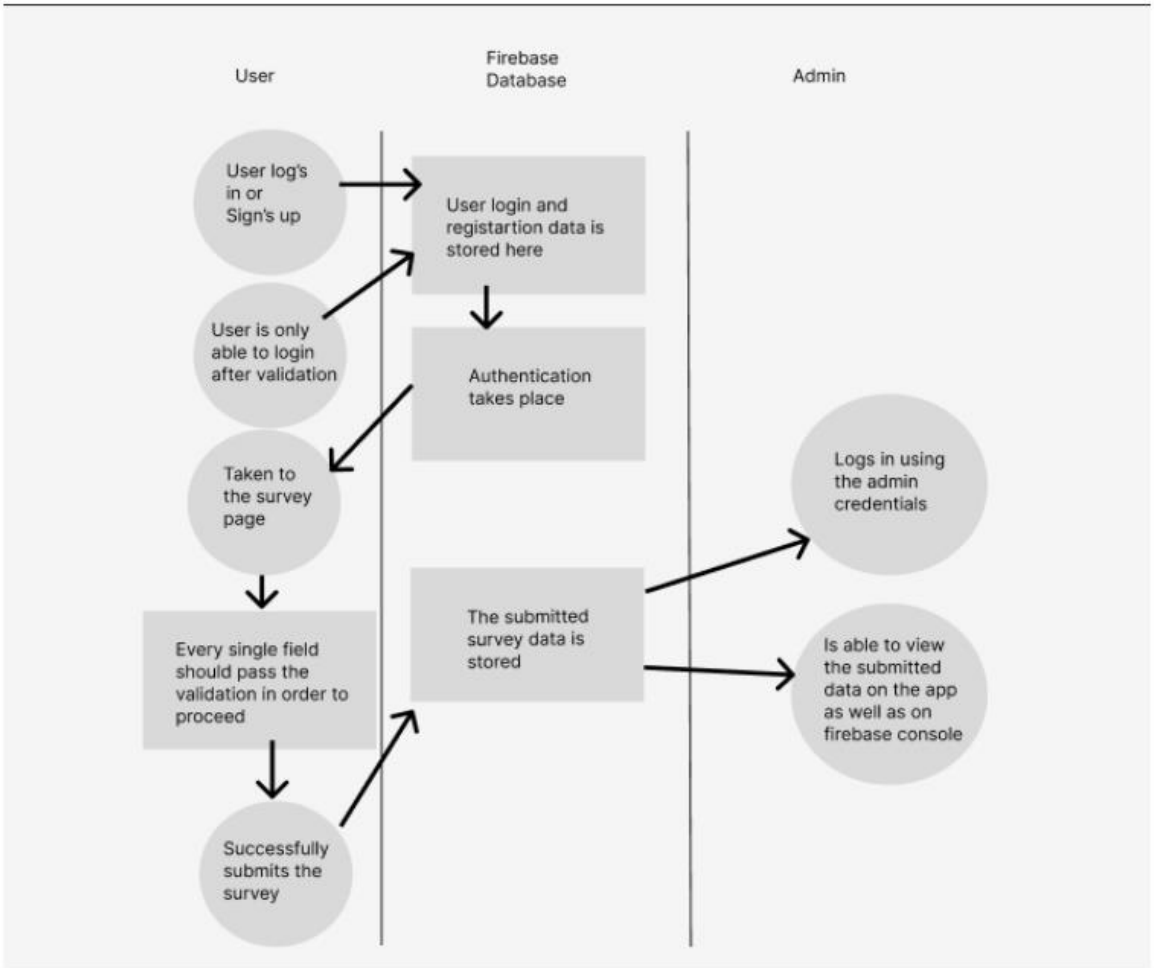
3. Delivering the Solution:

•Development- Build the health survey app according to the specifications, with a user-friendly and responsive design.
•Testing- Rigorously test the app for usability, functionality, and security, addressing any issues found.
• Deployment- Launch the app on Android and ensure it's accessible to the target users.
•User Training and Support- Provide training to users, including healthcare professionals, and establish a support system for addressing user questions and issues.
•Continuous Improvement- Plan for ongoing app updates, addressing user feedback, and keeping the app up to date with changing healthcare guidelines and technologies.

6. PROJECT PLANNING & SCHEDULING

6.1 Technical Architecture

Technical Architecture:



6.2 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my first name, last name, email, phone number and password.	2	High
Sprint-2	Pop up message	USN-2	As a user, I will receive confirmation via a pop-up message once I have registered for the application as well as after I submit the survey.	1	High
Sprint-3		USN-3	As a user, I can easily log out by clicking the logout button.	2	Medium
Sprint-3		USN-4	As a user, I get automatically redirected to the first survey page to logout after my survey is submitted.	3	Medium
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password.	2	High
Sprint-2	Validation	USN-6	As a user, I have to fill in all the questions that are required and only after that will I be able to proceed to the next page. I also want user input validation and authentication.	3	High

6.3 Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	2 Days	11 Oct 2023	13 Oct 2023	20	15 Oct 2023
Sprint-2	20	4 Days	14 Oct 2023	17 Oct 2023	20	19 Oct 2023
Sprint-3	20	4 Days	18 Oct 2023	21 Oct 2023	20	24 Oct 2023

7. CODING & SOLUTIONING

7.1 Feature 1- Easy user login and registration

As you open our app the first screen will be the login screen, here our user who has already registered can enter their email they used for registration and enter their password to login to the app.

If this is a new user then they can go to the registration page and enter the required details and the registration is quickly done. After this a user can proceed to the survey and answer the questions.

If a user has forgotten their password or wants to change it for some reason they can always click on the forgot password which is located on the login screen. In the forgot password page they are asked to enter the email address and have to click on the reset password button. A mail is sent to the specified email where a link is provided to change the password. After this the user can login using the new credentials.

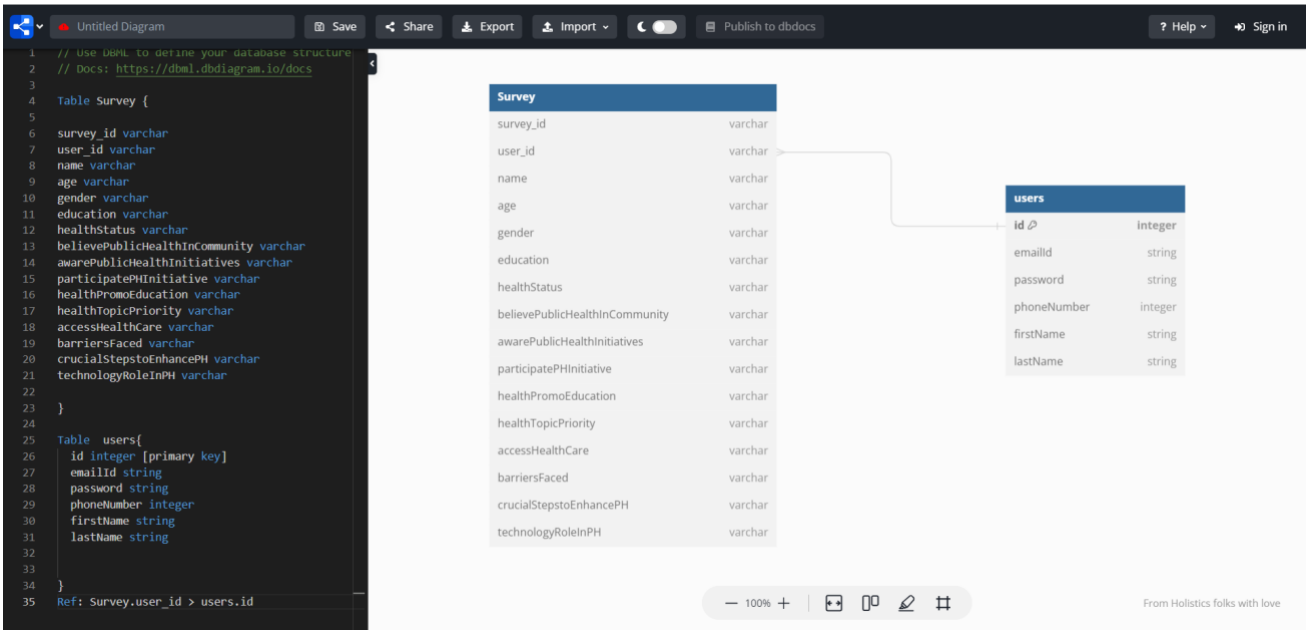
7.2 Feature 2-Input text validation

Input text validation is very important for our app. First in the login screen the registered user needs to enter the correct email along with the appropriate password that was entered at the time of registration. Otherwise error messages will be shown.

Same with the registration screen where every field has a criteria that needs to be met before a user can sign up as a user for our app such as in the first name text field the text entered should only be letters and should be at least 3 letters long, in the email address field no special characters can be added and 'example@email.com' must be followed, the password must contain special characters, capital letter(s), numbers and must be at least 8 characters long and so on. More details are available in the demo video.

Coming to the survey page, the user needs to fill every field in the screen otherwise the message "please choose an option to proceed" will appear beneath the radio buttons. In the case of text fields it turns red whenever nothing is specified inside them.

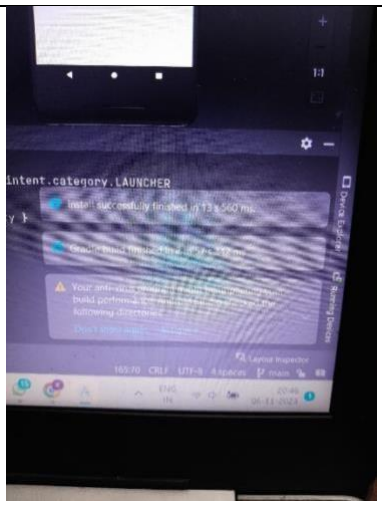
7.3 Database Schema



8. PERFORMANCE TESTING

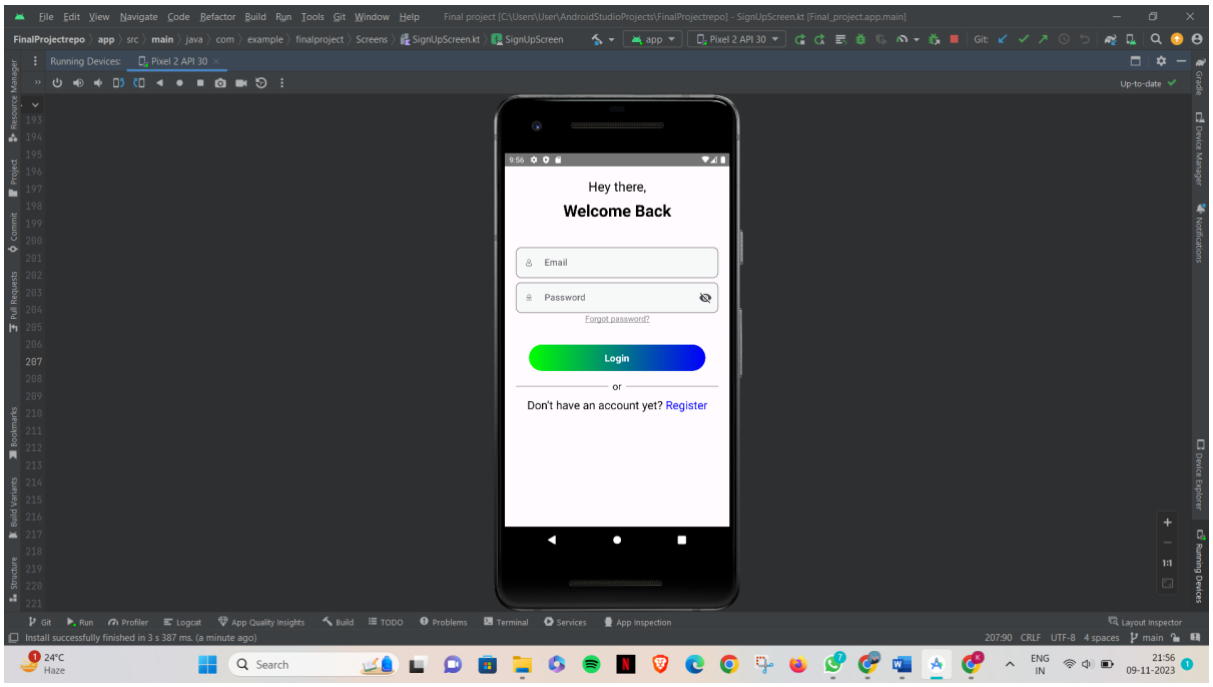
8.1 Performance Metrics

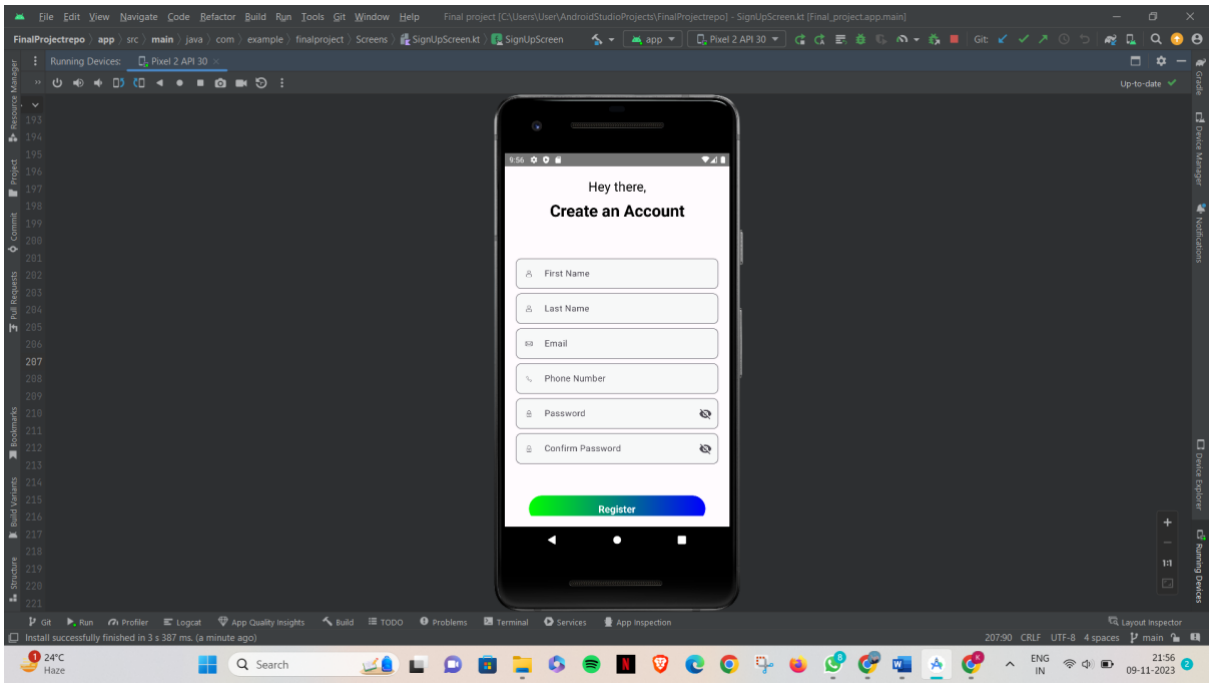
Model Performance Testing:

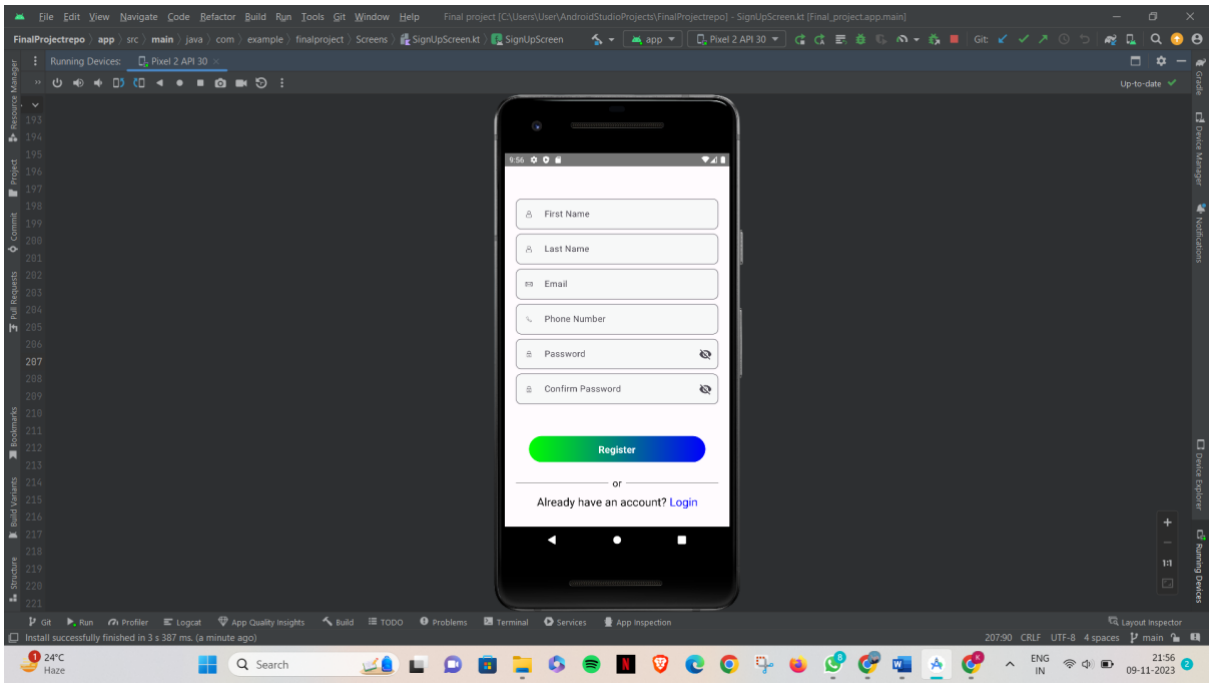
S.No.	Parameter	Values	Screenshot
1.	Metrics	App Launch Time-6,000ms-13,000ms Screen Render Time-500ms-1000ms Code Quality- https://github.com/smartinternz02/SI-GuidedProject-587234-1696999080/tree/main/FinalProject repo	
2.	Usage	App Size-Around 18.7mb Customer Experience-Feedback is good	
3.	Performance	Error and Crash Rates-0 Database Query Performance- The data is taken up in a matter of seconds and it is saved in the firebase database	

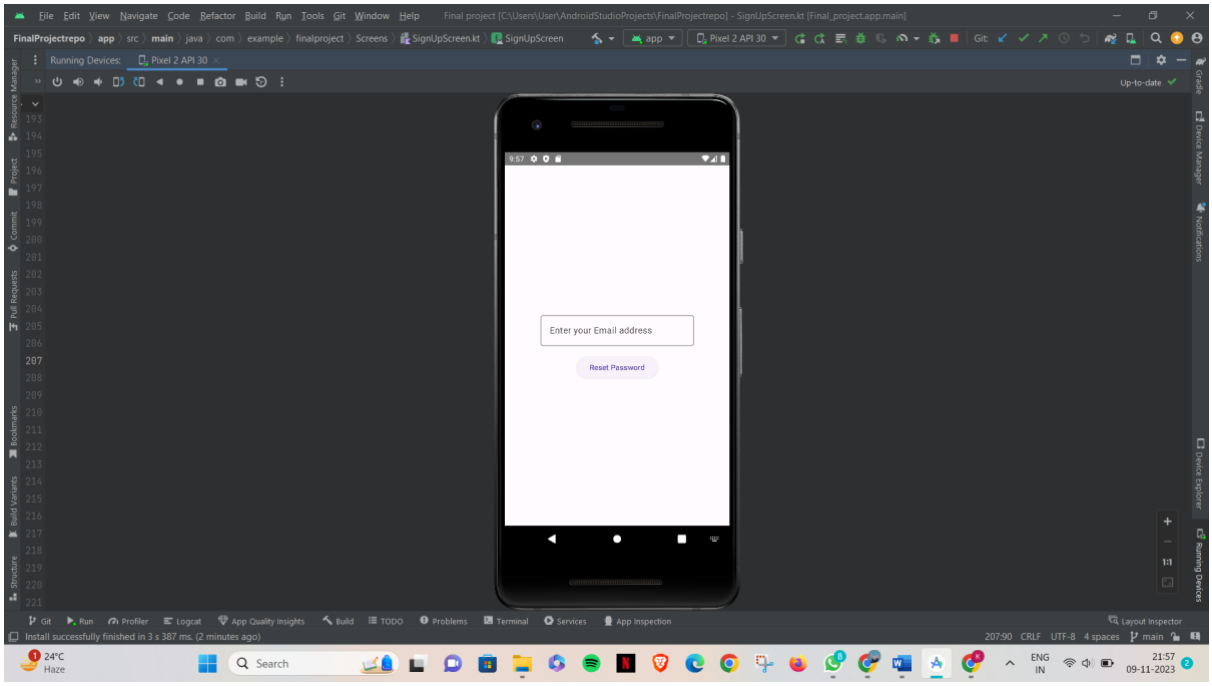
9. RESULTS

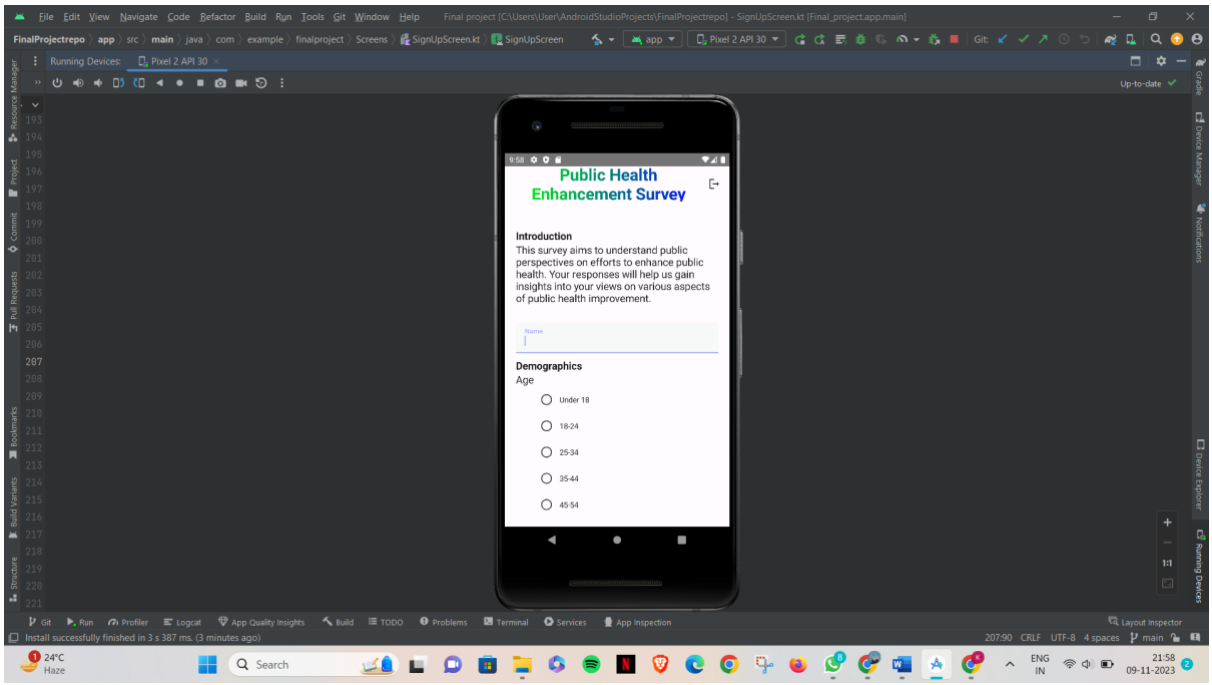
9.1 Output Screenshots

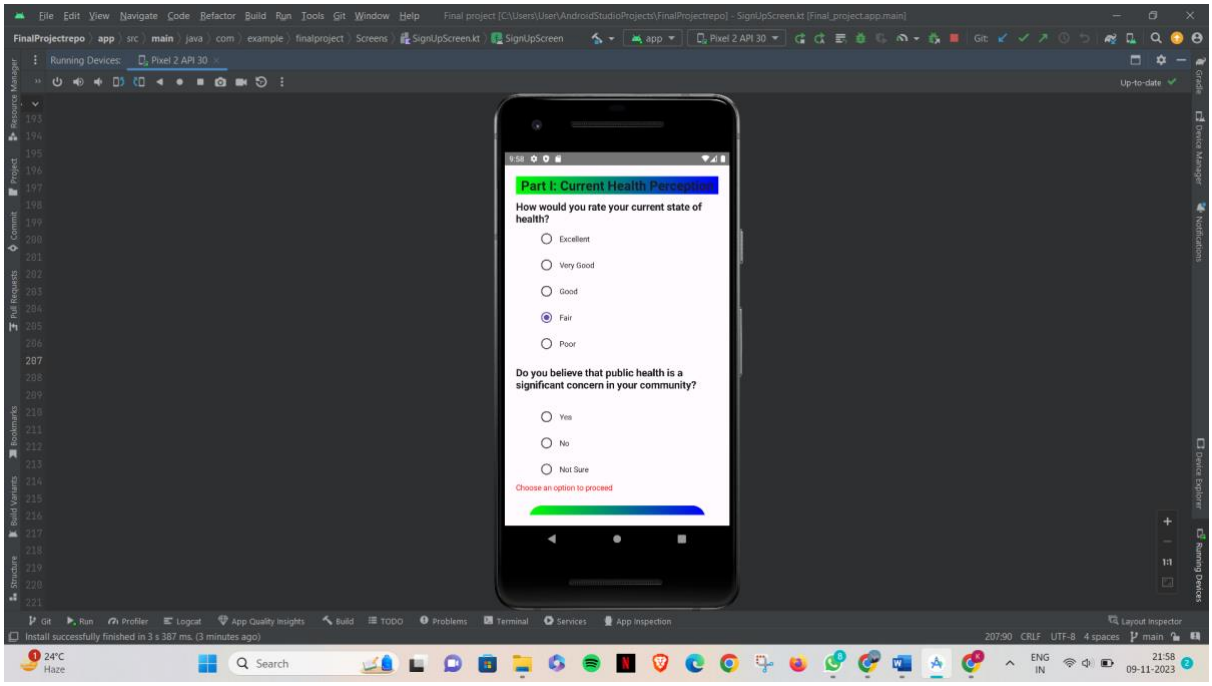


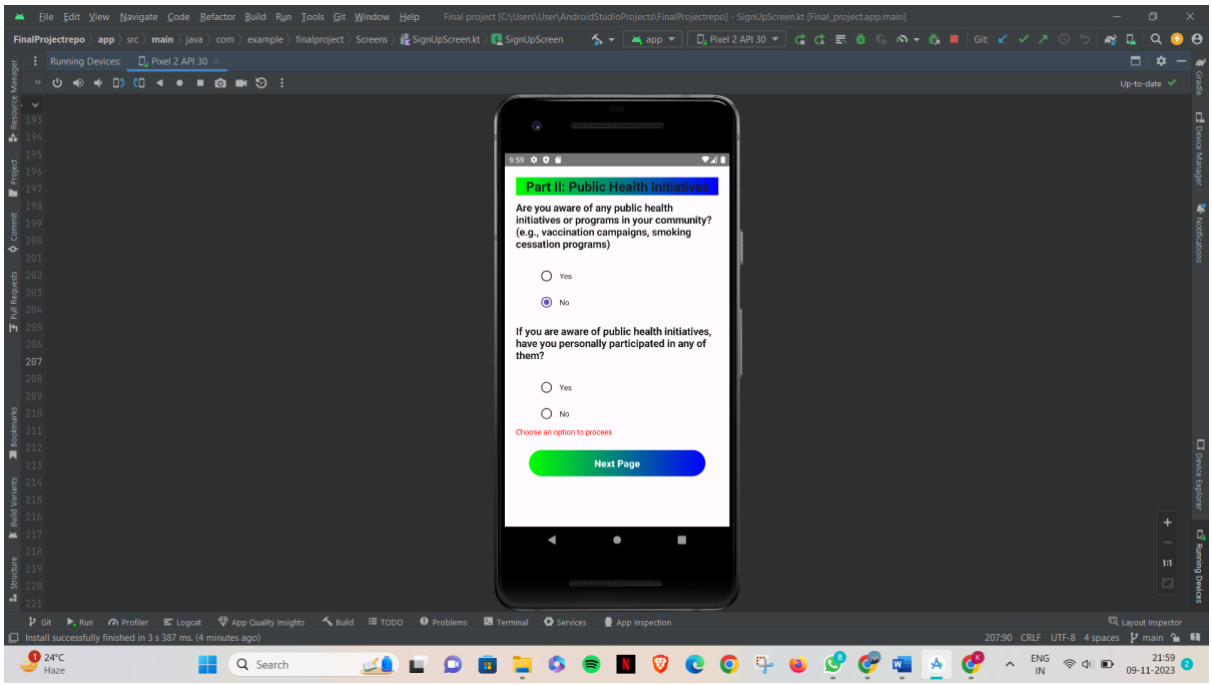


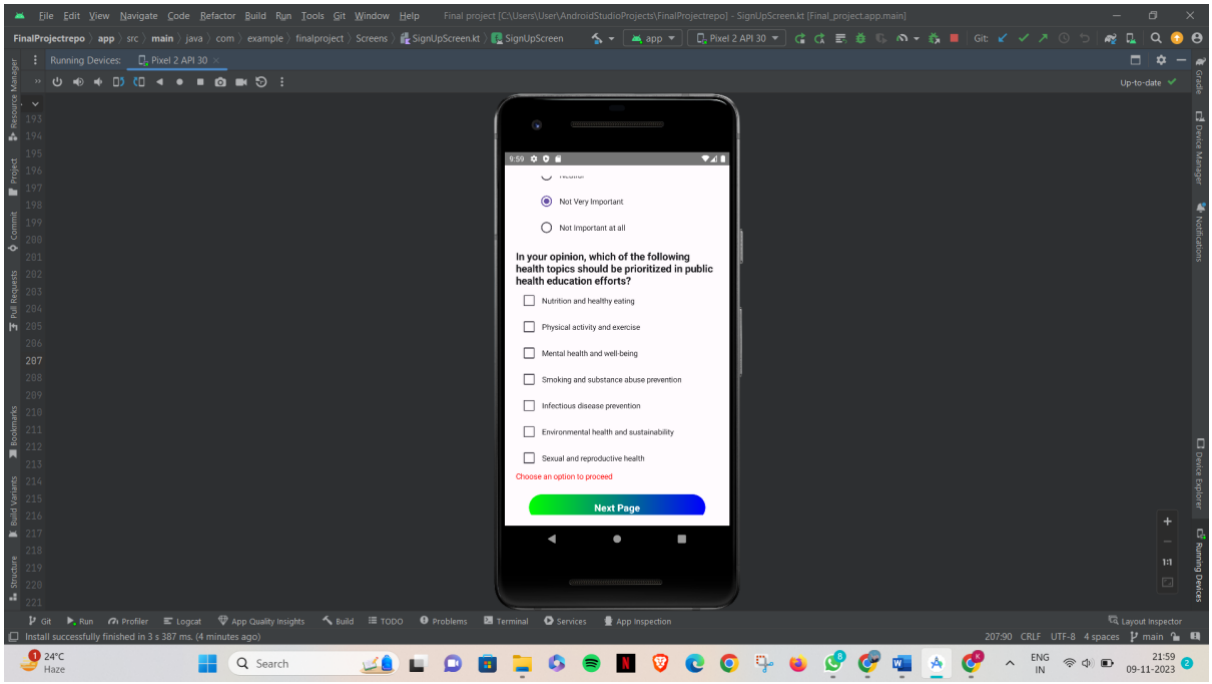

First Name
Last Name
Email
Phone Number
Password
Confirm Password
Register
or
Already have an account? Login

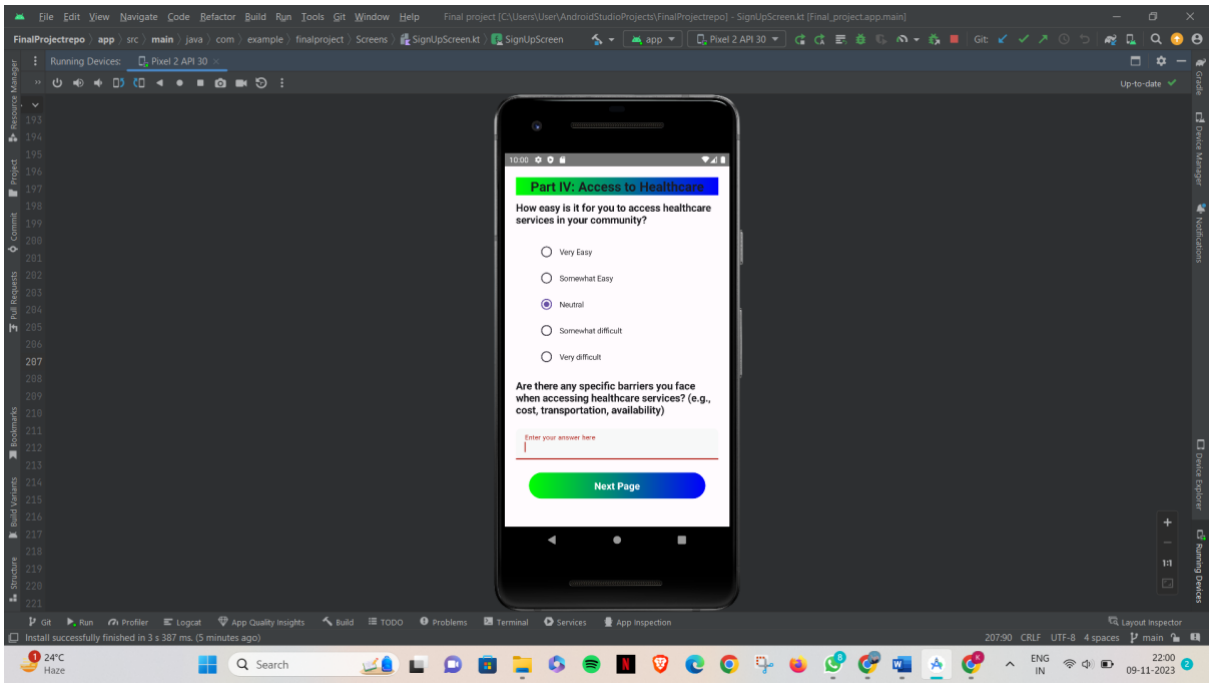

Enter your Email address
Reset Password

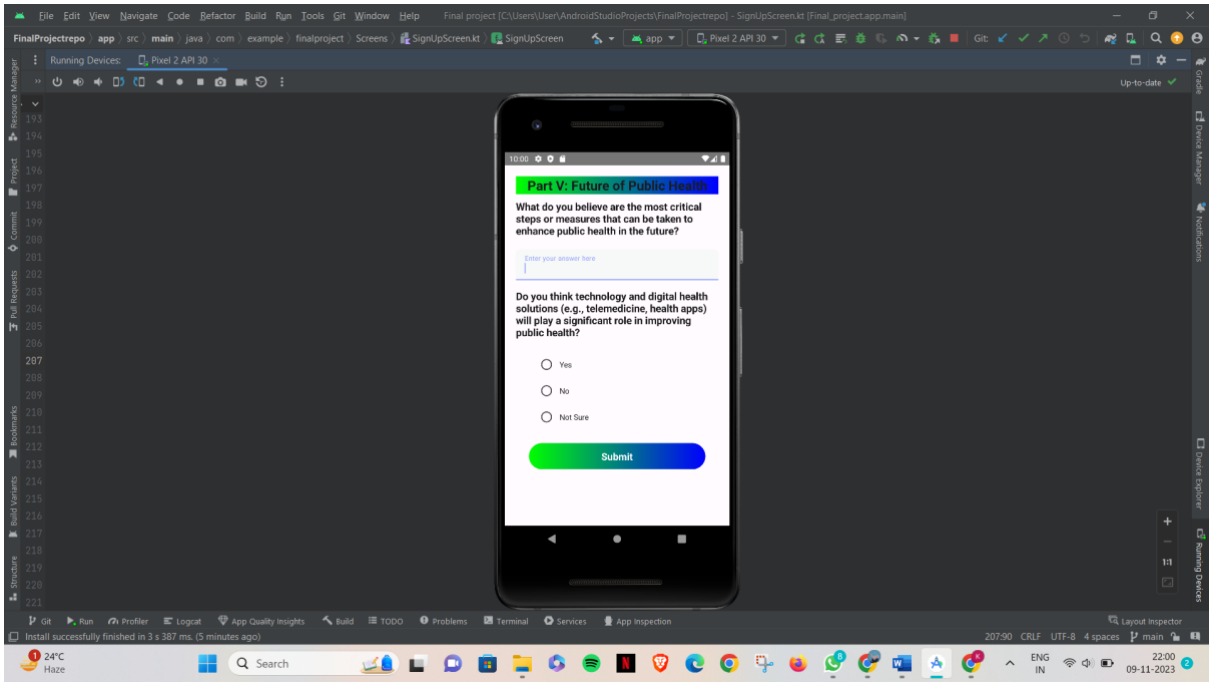

Public Health
Enhancement Survey
Introduction
This survey aims to understand public perspectives on efforts to enhance public health. Your responses will help us gain insights into your views on various aspects of public health improvement.
Name
Demographics
Age
Under 18
18-24
25-34
35-44
45-54

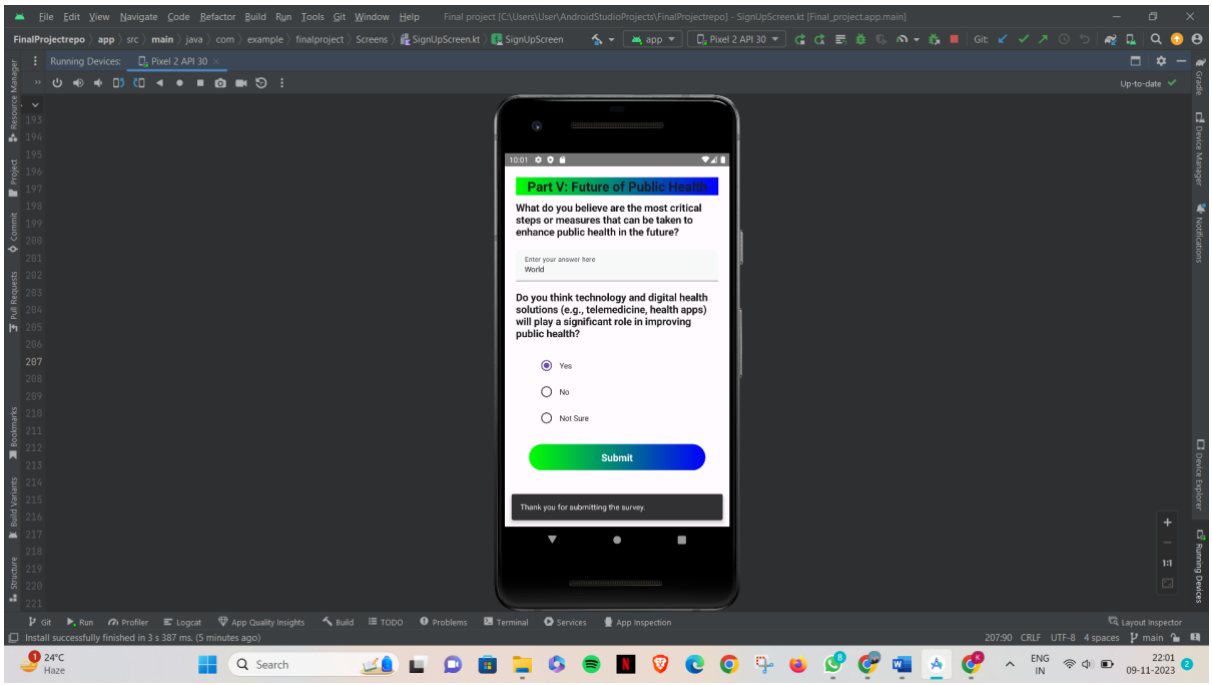

Part I: Current Health Perceptions
How would you rate your current state of health?
Excellent
Very Good
Good
Fair
Poor
Do you believe that public health is a significant concern in your community?
Yes
No
Not Sure
Choose an option to proceed

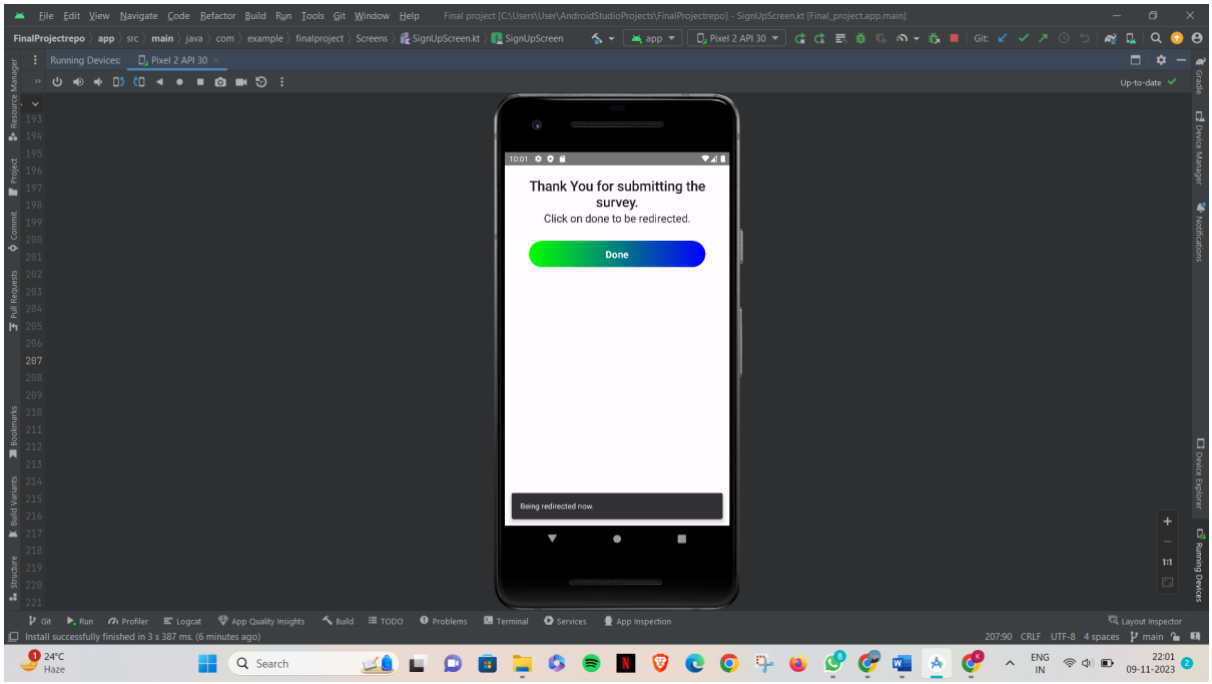

Part II: Public Health Initiatives
Are you aware of any public health initiatives or programs in your community? (e.g., vaccination campaigns, smoking cessation programs)
Yes
No
If you are aware of public health initiatives, have you personally participated in any of them?
Yes
No
Choose an option to proceed
Next Page

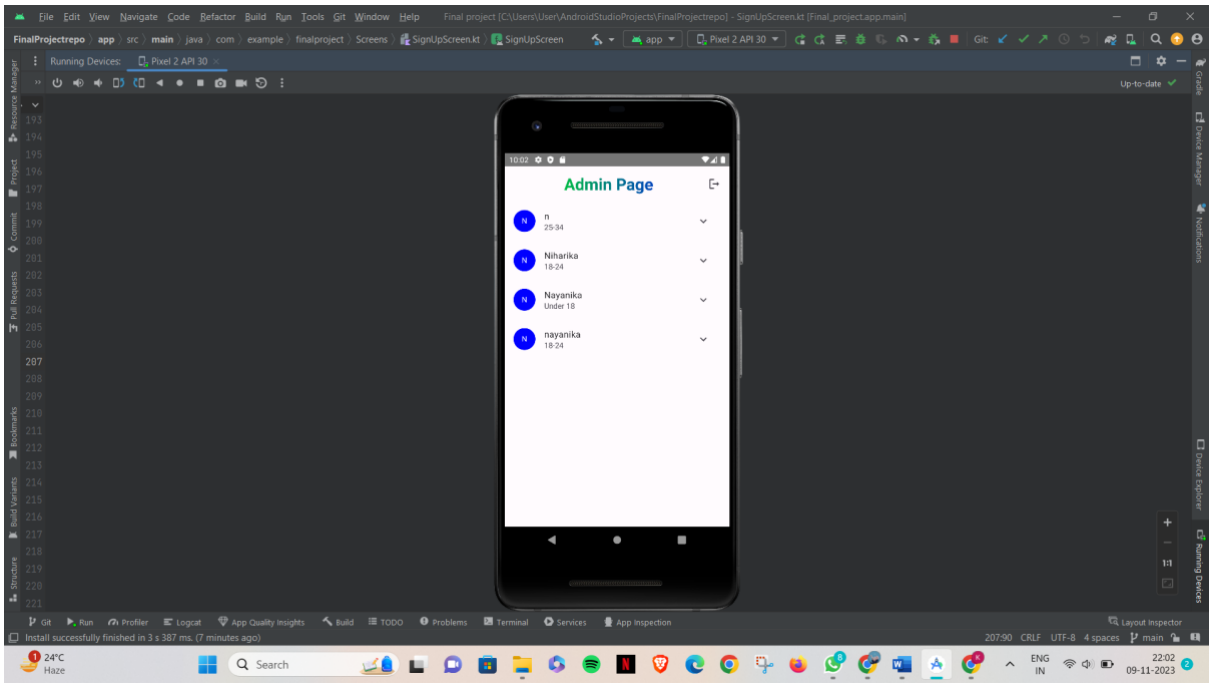

Not Very Important
Not Important at all
In your opinion, which of the following health topics should be prioritized in public health education efforts?
Nutrition and healthy eating
Physical activity and exercise
Mental health and well-being
Smoking and substance abuse prevention
Infectious disease prevention
Environmental health and sustainability
Sexual and reproductive health
Choose an option to proceed
Next Page

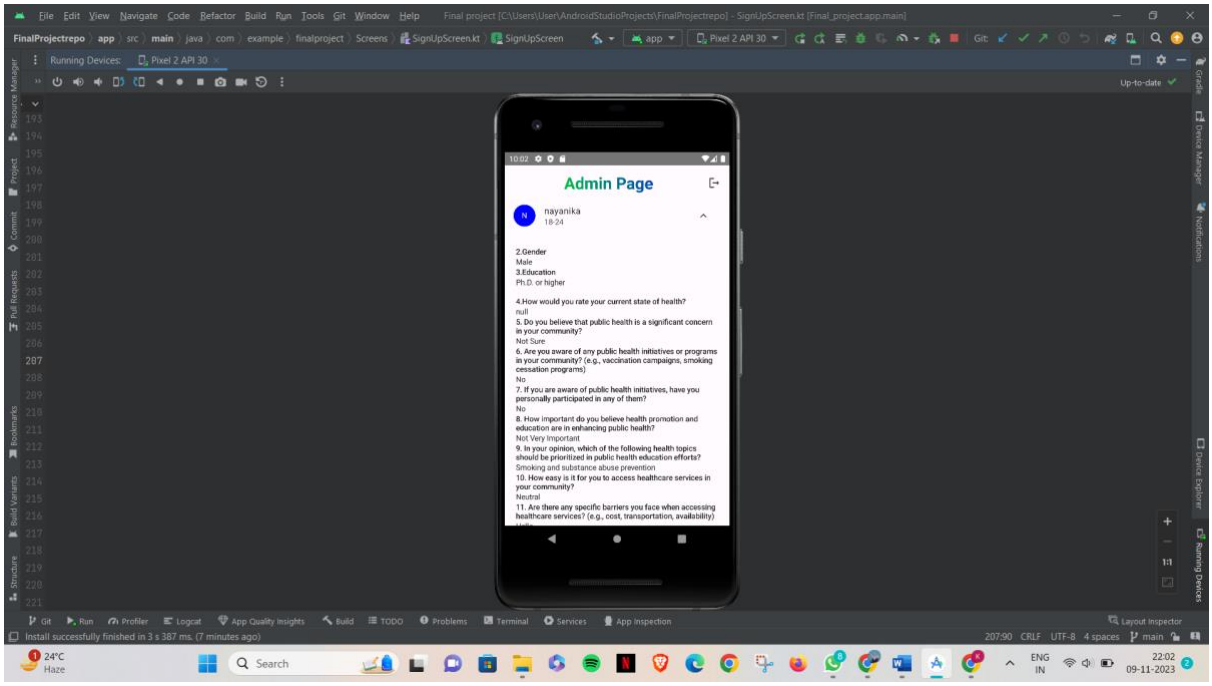

Part IV: Access to Healthcare
How easy is it for you to access healthcare services in your community?
Very Easy
Somewhat Easy
Neutral
Somewhat difficult
Very difficult
Are there any specific barriers you face when accessing healthcare services? (e.g., cost, transportation, availability)
Enter your answer here
Next Page

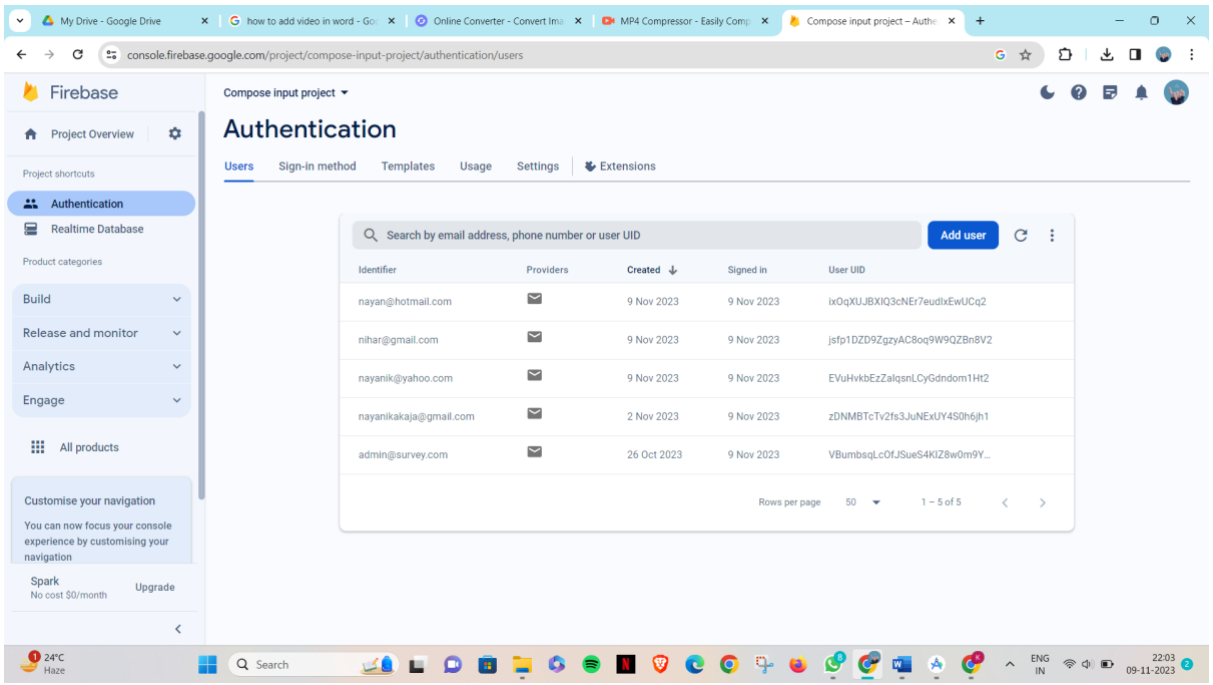

Part V: Future of Public Health
What do you believe are the most critical steps or measures that can be taken to enhance public health in the future?
Enter your answer here
Do you think technology and digital health solutions (e.g., telemedicine, health apps) will play a significant role in improving public health?
Yes
No
Not Sure
Submit


Part V: Future of Public Health
What do you believe are the most critical steps or measures that can be taken to enhance public health in the future?
Enter your answer here
World
Do you think technology and digital health solutions (e.g., telemedicine, health apps) will play a significant role in improving public health?
Yes
No
Not Sure
Submit
Thank you for submitting the survey.


Thank You for submitting the survey.
Click on done to be redirected.
Done
Being redirected now.


Admin Page
n
25-34
Niharika
18-24
Nayanika
Under 18
nayanika
18-24


Admin Page
nayanika
18-24
2.Gender
Male
3.Education
Ph.D. or higher
4.How would you rate your current state of health?
null
5. Do you believe that public health is a significant concern in your community?
Not Sure
6. Are you aware of any public health initiatives or programs in your community? (e.g., vaccination campaigns, smoking cessation programs)
No
7. If you are aware of public health initiatives, have you personally participated in any of them?
No
8. How important do you believe health promotion and education are in enhancing public health?
Not Very Important
9. In your opinion, which of the following health topics should be prioritized in public health education efforts?
Smoking and substance abuse prevention
10. How easy is it for you to access healthcare services in your community?
Neutral
11. Are there any specific barriers you face when accessing healthcare services? (e.g., cost, transportation, availability)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Firebase
Compose input project
Project Overview
Project shortcuts
Authentication
Realtime Database
Product categories
Build
Release and monitor
Analytics
Engage
All products
Customise your navigation
You can now focus your console experience by customising your navigation
Spark
No cost $0/month
Upgrade
Authentication
Users
Sign-in method
Templates
Usage
Settings
Extensions
Search by email address, phone number or user UID
Add user
Identifier
Providers
Created
Signed in
User UID
nayan@hotmail.com
9 Nov 2023
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ixOqXUJBXIQ3cNEr7eudIxEwUCq2
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9 Nov 2023
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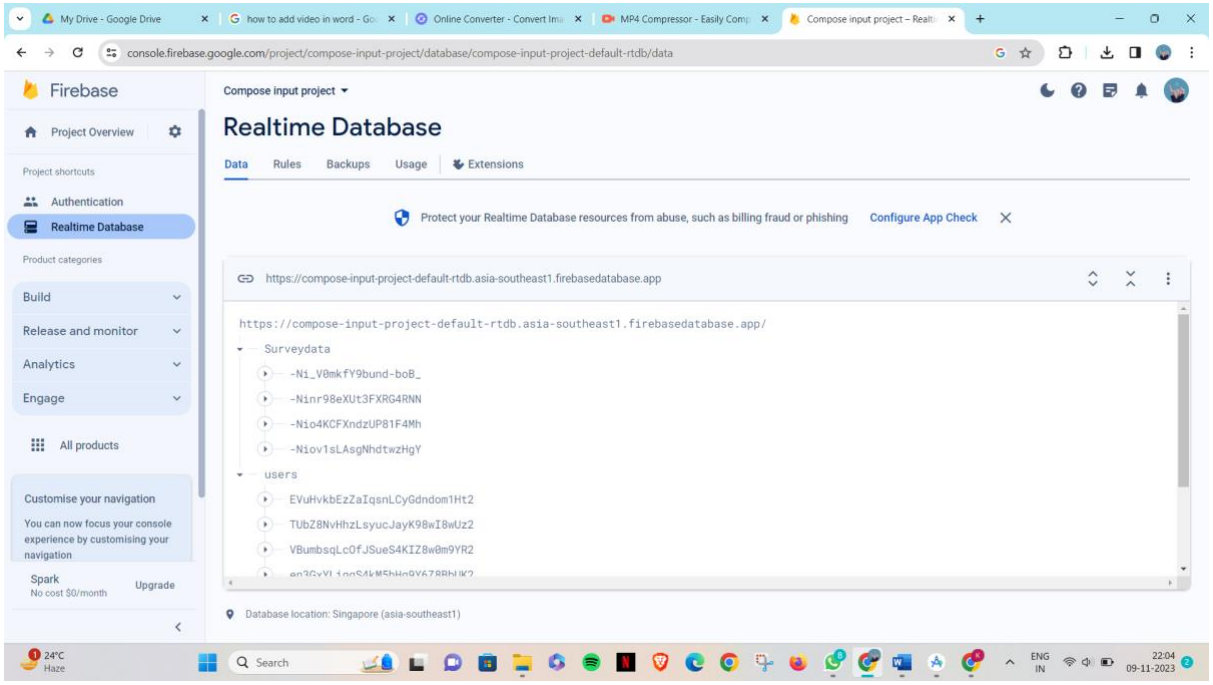
console.firebase.google.com/project/compose-input-project/database/compose-input-project-default-rtdb/data
Firebase
Compose input project
Project Overview
Project shortcuts
Authentication
Realtime Database
Product categories
Build
Release and monitor
Analytics
Engage
All products
Customise your navigation
You can now focus your console experience by customising your navigation
Spark
No cost $0/month
Upgrade
Realtime Database
Data
Rules
Backups
Usage
Extensions
Protect your Realtime Database resources from abuse, such as billing fraud or phishing
Configure App Check
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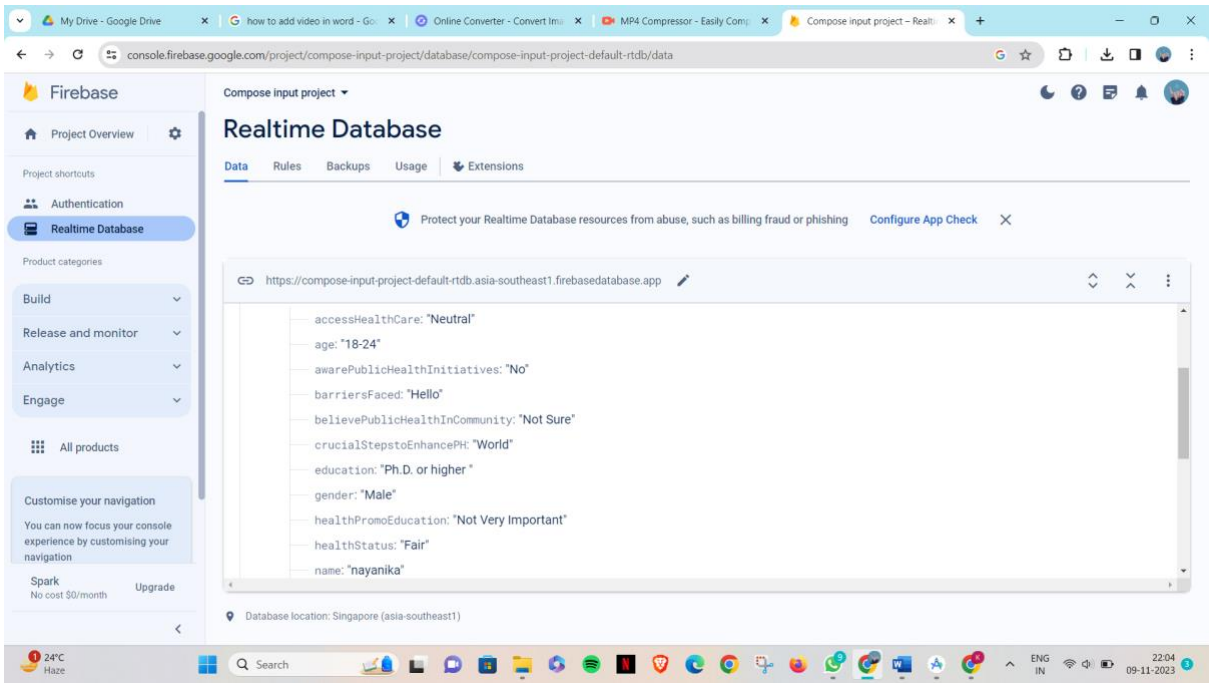
My Drive - Google Drive
how to add video in word - Go
Online Converter - Convert Ima
MP4 Compressor - Easily Comp
Compose input project – Realti
console.firebase.google.com/project/compose-input-project/database/compose-input-project-default-rtdb/data
Firebase
Project Overview
Project shortcuts
Authentication
Realtime Database
Product categories
Build
Release and monitor
Analytics
Engage
All products
Customise your navigation
You can now focus your console experience by customising your navigation
Spark
No cost $0/month
Upgrade
Compose input project
Realtime Database
Data
Rules
Backups
Usage
Extensions
Protect your Realtime Database resources from abuse, such as billing fraud or phishing
Configure App Check
https://compose-input-project-default-rtdb.asia-southeast1.firebasedatabase.app
accessHealthCare: "Neutral"
age: "18-24"
awarePublicHealthInitiatives: "No"
barriersFaced: "Hello"
believePublicHealthInCommunity: "Not Sure"
crucialStepstoEnhancePH: "World"
education: "Ph.D. or higher "
gender: "Male"
healthPromoEducation: "Not Very Important"
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name: "nayanika"
Database location: Singapore (asia-southeast1)
24°C
Haze
Search
ENG
IN
22:04
09-11-2023

10. ADVANTAGES & DISADVANTAGES

Advantages:

Efficiency-

Time-Saving: Public Health Survey apps can streamline data collection, reducing the time required to gather, enter, and analyse data.
Real-Time Data: Data is available instantly, allowing for quicker decision-making and response to public health issues.

Accuracy-

Reduced Human Error: Automated data entry minimizes the risk of transcription errors, leading to more accurate data.
Validation Checks: Apps can include validation rules to ensure data quality and completeness.

Cost-Effective-

Paperless: Eliminating paper-based surveys reduces printing and storage costs.
Lower Administrative Overheads: Automation reduces the need for manual data entry and processing.

Data Security-

Encryption:

Public Health Survey apps can encrypt data, enhancing the security and confidentiality of health information.

Access Control-

Role-based access control restricts data access to authorized personnel.

Real-Time Analysis-

Data analysis tools and visualization features allow for quick identification of health trends and issues. Timely interventions and policy changes can be made based on real-time data.

Customization-

Survey design can be customized to fit the specific needs of a project, including different question types and branching logic.

Disadvantages:

Digital Divide-

Some populations may lack access to smartphones or computers, making it challenging to reach certain demographics.

Data Security Risks-

Data breaches and cyberattacks can compromise the security of sensitive health information, potentially leading to privacy violations.

Technology Challenges-

Users and data collectors may face challenges related to the use of technology, such as device compatibility, connectivity issues, and software glitches.

Costs-

The development, maintenance, and training costs for Public Health Survey apps can be significant, which might not be feasible for all organizations.

Privacy Concerns-

Concerns about data privacy and consent may arise, especially if individuals are uneasy about sharing their personal details on the internet.

Data Validity-
Public Health Survey apps are still subject to issues related to the validity of self-reported data, such as recall bias or social desirability bias.

Regulatory Compliance-
Ensuring that the app complies with relevant healthcare data protection laws and regulations is critical but can be complex and resource-intensive.

Training-
Users and administrators need training to effectively use the app and understand its features.

Data Overload-

The ease of data collection can lead to an overwhelming amount of data that may be challenging to manage and analyse effectively.

11. CONCLUSION

In conclusion, public health applications provide a valuable and innovative approach to the collection, management and analysis of public health data. These applications have the potential to revolutionize the collection and use of health data, offering many benefits to public health professionals and researchers. However, a balanced assessment of their benefits and challenges is necessary to effectively exploit their full potential. Benefits of public survey applications include increased efficiency, accuracy, cost-effectiveness, accessibility and data security

They offer the ability to collect and manage health data in a seamless and technologically advanced manner that leads to better informed decision making and more timely action. Real-time data and spatial information capabilities can significantly improve public health strategies and operations.

However, these applications also have several challenges and disadvantages. These include concerns about the digital divide, information security risks, technology issues, costs, privacy considerations, data accuracy, technical support requirements, regulatory compliance and training needs. Addressing these challenges is critical to the successful implementation of public health applications and to maintaining the integrity and security of sensitive health data.

Considering the pros and cons, public health apps should be considered powerful tools that can transform public health research and interventions if properly implemented. They have the potential to promote more effective and evidence-based public health initiatives that ultimately lead to better health outcomes for communities and populations. Careful planning, strong security measures, effective user training, and ongoing support are essential to maximizing the benefits and mitigating challenges of public health surveys.

Public health organizations and agencies should carefully consider the specific needs and circumstances of their projects when deciding whether to adopt these applications and integrate them into their data collection and analysis workflows. When used effectively, public health survey applications can be a significant asset for improving public health and health services.

12. FUTURE SCOPE

As a student exploring the future of public health research applications, I am excited about the potential and positive impact of innovation on public health. Here are some key areas that I see as the future scope of these applications.

Advanced data analysis and AI integration: Future applications of public health research are likely to include advanced data analytics and artificial intelligence (AI) to provide deeper insights into health trends, predictive modelling and personalized health recommendations. AI algorithms can help identify patterns and correlations in health data that lead to more effective interventions and policies.

Telehealth Integration: Integration of telehealth services into public health research applications may become more common. It would allow users to hold virtual consultations with healthcare providers and specialists, expanding access to healthcare and enabling real-time health assessments.

Health monitoring and wearables: Public health survey applications can be integrated with mobile devices and IoT sensors to continuously monitor health indicators such as heart rate, sleep patterns and physical activity. This real-time data can be valuable for both individual health management and population-level understanding. Community involvement and social factors: Future applications may focus more on the social determinants of health by involving communities in the data collection process. This may include participatory data collection and community-based health initiatives. Global Health Initiatives: Applications of public health research can expand their scope to address global health problems. They could be used for disease surveillance, vaccination campaigns and health education in low-resource settings.

Accurate Public Health: Precision public health aims to tailor interventions and policies to the specific needs of individuals and communities. Public health survey applications can play a key role in collecting detailed data for accurate public health initiatives. Environmental Health

Monitoring: As environmental health concerns increase, these applications can collect and analyse data on air and water quality, the effects of climate change, and their impact on public health.

Machine learning for early detection: Machine learning models can be used for early detection of disease outbreaks or health crises, allowing for faster response and response initiatives.

Information exchange and interoperability: Efforts to standardize data transfer formats and ensure interoperability between different health systems and applications can improve the seamless flow of health information.

Interdisciplinary collaboration: Public health survey applications can facilitate collaboration between public health professionals, data scientists, epidemiologists, and health care providers, leading to a more holistic and data-driven approach to public health challenges. Behavioural and Mental Health Focus: In the future, there may be an even greater emphasis on gathering information related to mental health and well-being when dealing with stress, anxiety and depression.

Security blockchain: Blockchain technology can be used to improve data security and ensure the privacy and integrity of health information. Education and health literacy: Public health survey apps can be educational platforms that provide users with information and resources to improve health literacy and make informed decisions about their own well-being. In summary, the future of public health research applications holds promise for changes in public health research and practice. The integration of cutting-edge technology, a focus on holistic health and a commitment to user safety and education are expected

to shape the next generation of these apps. As a student, I look forward to being a part of this exciting journey to a healthier and more informed world.

Source Code-

https://drive.google.com/drive/folders/1Bep8RxTnAzIJzcJt5rmW4-pOC5RQKpnE?usp=sharing

https://github.com/smartinternz02/SI-GuidedProject-587234-1696999080/tree/main/FinalProjectrepo

Project demo link-

https://drive.google.com/file/d/1agN_6T-1qW7V18MSCQLxsY7f6_rGqfuT/view?usp=sharing