

PROJECT REPORT

ON

CYBER-GUIDE SOFTWARE

(CYBERBULLYING DETECTION SYSTEM)

For the partial fulfillment of the Software Engineering lab

Semester IV



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CERTIFICATE

It is hereby certified that the Project Report of Software Engineering entitled "**CYBER-GUIDE, Cyberbullying Detection System**" is submitted by Ajay Kumar, Anushka Bahuguna, Deepak Kumar, and Monika Joshi, the students of B.Sc. (Hons.) Computer Science, Hansraj College (University of Delhi). It has been found satisfactory and hereby approved for submission.

Mr. Suyash Kumar

Date:

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1. INTRODUCTION

The Internet has been a great boon and bane for all of us. But while it is a great utility, it can also be used to commit various online misdeeds such as CYBERBULLYING.

"A person is being cyberbullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other persons."

1.1 PURPOSE

Cyberbullying can lead to anxiety and low self-esteem among people which may lead to self-harm or unhealthy addictions. Children, especially teenagers suffer a lot, the reason being that most of them are unaware of Cyberbullying and they accept what is being said about them or they even try to retaliate at times which is not good. They feel hesitant in sharing their problems with their parents and are therefore stuck in that problem. Not only children but, many times parents also feel helpless in deciding the solution for their child's problem.

Thus requiring an appropriate system by which both the child and the parent can become aware of Cyberbullying and its aspects. Cyberbullying can be detected through this software and parents can know if their child needs help, they can help their child in a better way. Hence our software will easily detect cyberbullying and reduce it to a great deal.

1.2 SCOPE

- Explicitly Defining Cyberbullying.
- Detecting Cyberbullying.
- Giving Support to the child.

Defining

People may be unaware of what may or may not come under cyberbullying. Hence it is necessary to make them understand Cyberbullying. Through this software, people will be able to know various things related to Cyberbullying which will give them a sense of clarity and eventually help them in overcoming such situations.

Detecting

Often the user tends to bully or get bullied without knowing the context of the messages received or sent. Our product will track such inappropriate messages and searches using data mining and artificial intelligence. It will alert the child in case someone bullies him/her on the internet. Moreover, if the child tries to bully someone on the internet, it will advise him/her not to do so. Thus, it will help the children to be alert and also teach them not to bully someone.

Support

Parents support their children in the ways no one does. Our software will make it easy for the children to share their situation indirectly with their parents as our software will notify them if someone Cyber Bullies their child. And, the child may take advice from their parents. Thereby, it will help build up the Child-Parent interaction. With our software, the child will have the additional support of a Counsellor as well.

1.3 DEFINITION, ACRONYMS, AND ABBREVIATIONS

Following abbreviations have been used throughout this document:

- 1. SRS:** Software Requirements Specification
- 2. AI:** Artificial intelligence
- 3. FAQs:** Frequently Asked Questions
- 4. ID:** Identity Document
- 5. OTP:** One-Time Password
- 6. API:** Application Programming Interface
- 7. GPS:** Global Positioning System
- 8. GUI:** Graphical user interface
- 9. OS:** Operating System
- 10. HTTP/HTTPS:** Hypertext Transfer Protocol Secure
- 11. XML:** Extensible Markup Language
- 12. MCQs:** Multiple-choice Questions
- 13. ATQS:** Answer The Questions

1.4 REFERENCES

- [Cyberbullying Wikipedia](#): For information about cyberbullying and its forms.

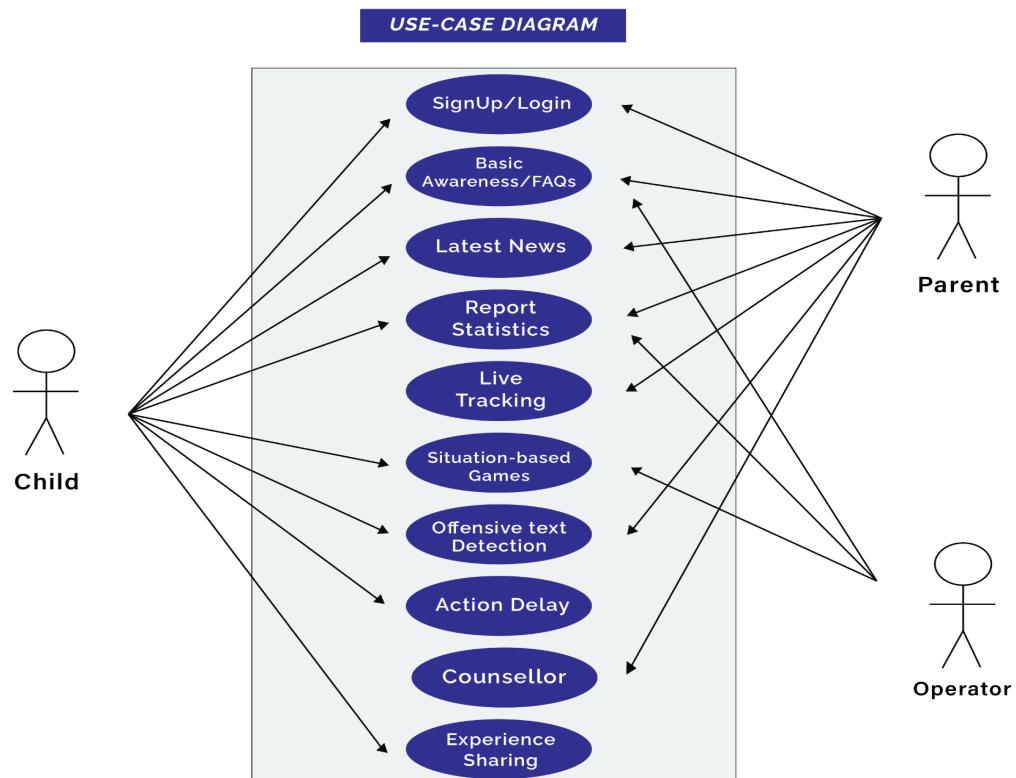
- Books: Software Engineering Practitioner's Approach by Roger S. Pressman, Software Engineering by KK Aggarwal.
- Research papers:
 - Common Sense Reasoning for Detection, Prevention, and Mitigation of Cyberbullying.
 - Detecting Online Harassment in Social Networks.

1.5 OVERVIEW

Cyberbullying is as much a threat to the viability of online social networks for youth today as spam once was to email in the early days of the Internet. Recent surveys on the prevalence of cyberbullying have shown that almost 70% of teens were subjected to cyberbullying at some point. To tackle this problem to some extent, we have reached a consensus to develop a software-based cyberbullying detection system. The system will not only help detect cyberbullying but also educate people for the same.

The rest of this SRS document describes the various system requirements, interfaces, features, and functionalities in detail.

1.6 USE-CASE Diagram



1.7 REQUIREMENT ELICITATION BASED ON USE-CASE DIAGRAM

The components of our use case diagram are as follows:

1.7.1 Actors

- (a) Child
- (b) Parent
- (c) Operator

1.7.2 Use-Cases

(a) Signup/ Login (by PARENT/CHILD):

Initial Signup and Login provided for the new users to use the software through username, password, email, etc. Maintains the Authentication and Authorization of the software.

The child's user ID will be connected to his/her Parent's user ID with proper Synchronization.

(b) Basic Awareness/FAQs (by PARENT/CHILD/OPERATOR):

A page portal that provides basic information related to Cyberbullying. This Feature gives a clear idea to the user about Cyberbullying, Cyber laws, Effects of Cyberbullying on children, Action to be taken to tackle Cyberbullying, And the ways this Software is useful for users. User may ask a query related to Cyberbullying and also see the Frequently Asked Questions (FAQs)

(c) Latest News (by PARENT/CHILD):

Know the latest news regarding cyberbullying in one place. This would be helpful for the user in knowing the current happenings.

(d) Report Statistics (by PARENT/CHILD/OPERATOR):

Collected from verified websites and organizations, this data report will help parents and students know various sort of things such as: How widespread this issue is, the General Public's Point of View regarding this issue, why this issue is too common, Myths and Truth about it, how it affects a person's Mental and Physical health, etc.

(e) Live Tracking (by PARENT):

GPS Location tracking, this feature would track the live location of the child and share it with their Parents. This might help the Parents in case their child is out somewhere and facing some issues.

(f) Situation-Based Games (by CHILD/APP/OPERATOR):

By giving situations related to Cyberbullying in the form of User-friendly Games, users can better prepare and gain the confidence to analyze the situation in real life.

(g) Offensive/Inappropriate Text Detection (by PARENT/CHILD):

The Software will contain a prominent Feature that works on AI and will detect any offensive / inappropriate text received on the User [Child]’s phone Screen.

It will send a report of the case to their parent’s phone which will appear on their dashboard interface.

(h) Action Delay (by CHILD/APP):

Consists of giving a 10-second wait to the user to reconsider sending any offensive messages.

(i) Counsellor [Optional] (by PARENT):

Parents will get access to the contact details of Counsellors based on their location and other preferences. This is an *optional feature* that parents could avail only if they wish to.

(j) Experience sharing [Optional] / FAQs (by CHILD/PARENT):

Provides a safe space for users (Both Child and Parent) to share (anonymously) their experiences of cyberbullying (anonymously) if they are willing to. This is an Optional feature. The user would be able to read the Experiences / FAQs shared by other users (anonymously).

1.7.3 Relationships

They are represented by straight lines in the use case diagram among different entities and use cases.

1.7.4 Detailed Analysis

1. Login/Signup

A. Introduction:

This use case describes the flow of signup i.e., create a new account or log in to their existing account in the Cyber Guide Application.

B. Actors:

- Child
- Parent

C. Pre-Condition:

The user should be registered with the App to log in.

D. Post Condition:

If the use case is successful, the actor will be successfully logged into the application. If not, the state of the application is unchanged.

E. Basic Flow:

This use case starts when the Cyber Guide Application will give the user an option to choose if he wants to sign up with the application or wants to login into some existing account.

- Sign up:

- ❖ The application requests the actor to sign up with his email and phone number.
- ❖ The application provides a username to the actor based on the mode(CHILD/PARENT) he/she chooses and requests to create a valid password.
- ❖ After validating the entered username and password, OTP (valid for 15 mins) will be sent to the entered number/email for verification.
- ❖ The application requests the actor to enter the OTP.
- ❖ After verification of the phone number/email, an account of the actor will be created in the application.

- ❖ The application requests the actor to sync his/her account to his/her parents' account or vice-versa.
 - ❖ The system sends a request to the respective account for synchronization. The user accepts the request on the other side and accounts are successfully synchronized.
- Login:
 - ❖ The application will request the user to enter a username and password.
 - ❖ After validation, if found correct, the user will be logged into his/her respective account.

F. Alternative Flows:

1. Entering an invalid phone number while signing up: If the actor enters the wrong number while signing up, OTP will not be generated. It generates a message to enter a valid number. The actor can choose either to return to the beginning of the basic flow or cancel the Sign up (use case will then end here).
2. Entering incorrect OTP while signup: If the actor enters the wrong OTP. The application generates the message to enter a valid one. The actor can choose either to regenerate the OTP or cancel the Sign up (use case will end at this point).
3. Not entering OTP within 15 minutes while signing up: If the actor does not enter the OTP within 15 minutes. The application generates a message regarding time. The actor can choose either to regenerate the OTP or cancel the Sign up (use case will end at this point).
4. Entering incorrect username or password while login: If the actor enters the wrong username or password while logging in. The application generates the message to enter valid account details. The actor can choose either to return to the beginning of the basic flow or cancel the Login(use case will end at this point).

5. Synchronization Request Declined: If the request is denied during the synchronization then the basic flow ends.

G. Special Requirements: None

H. UseCase Relationships: None

2. Basic Awareness & FAQs

A. Introduction:

This Use Case will provide Basic Information related to Cyberbullying and allow the User to write a query and read FAQs.

B. Actors:

- Child
- Parent
- Operator

C. Pre-Condition:

The User must be logged onto the system before this Use Case begins.

D. Post Condition:

- If the Use Case is successful, Information is displayed/Query is registered. Otherwise, the system state remains unchanged.
- The Sub Flow / Use Case ends if the user chooses to quit

E. Basic Flow:

Starts when the user is willing to: Know Information /Write a query/ Read FAQs or more about Cyberbullying.

- The system will request to the user to specify what he/she would like to open from the Options displayed on the system
 - ❖ Cyberbullying & Its Aspects
 - ❖ CYBER-GUIDE as a Utility
 - ❖ FAQs
 - ❖ Read more

- The system will execute one of the four Sub Flow as per the user's selection

□ **Cyberbullying & Its Aspects:**

- The system will play the slides which will contain Information about Cyberbullying & its various aspects
- The user will be allowed to go back and forth in slides if he/she wants.
- The System, once the slideshow is finished asks the user to select one of the following things: Replay/Next
The sub-flow will restart from the beginning when Replay is selected.
- The System will direct onto the Next Sub Flow when Next is selected. This Sub Flow ends at the point Next sub-flow starts executing.

□ **CYBER-GUIDE as a Utility:**

- The system will play the slides which will contain information about the application CYBER-GUIDE and its Usefulness in tackling Cyberbullying
- The user will be allowed to go back and forth in slides if he/she wants.
- The System, once the slideshow is finished asks the user to select one of the following things: Replay/Next
The sub-flow will restart from the beginning when Replay is selected.
- The System will direct onto the Next Sub Flow when Next is selected. This Sub Flow ends at the point Next sub-flow starts executing.

□ **FAQs:**

- The System will display Frequently Asked Questions (FAQs) for the user to read.
- The System will also display a comment box within which the user can write his/her Query.
- The user will be asked to submit his/her query once he/she is done with the write-up.
- The query will be compared with the content in the database.
- The system will show the relevant answers if already available otherwise, the system will request the user to wait (one week time) for the query to be resolved.
The query is resolved by the Operator's Side.
- The resolved query appears below the comment box.

- The System will display a direct link at the end of the page to the user. The user may select that link which will lead the user to the Read More section (thereby ending current Sub Flow)

Read More:

- The system will display the following two options and requests the user to choose one of them:
 - (a) Report Statistics
 - (b) Latest News
- When this sub-flow is executed, the system redirects the user to a different Use Case (a/b) as per the user's choice.
- Thereby this Use Case ends.

F. Alternative Flow: None

G. Special Requirements: None

H. UseCase Relationships:

- Use Case “Basic Awareness” is linked to another Use Case i.e., “Report Statistics”. The user will be redirected to it through a sub-flow “Read more”.
- Use Case “Basic Awareness” is linked to another Use Case i.e., “Latest News”. The user will be redirected to it through a sub-flow “Read more”.

3. Latest News

A. Introduction:

This use case will provide Latest News regarding Cyberbullying to the user.

B. Actors:

- Child
- Parent

C. Pre-Condition:

The User must be logged onto the system before this Use Case begins.

D. Post Condition:

- When this UseCase is successful, Latest News is shown to the user. Otherwise, the system state remains unchanged.
- This UseCase ends at the point the user quits.

E. Basic Flow:

The system collects relevant News of Cyberbullying through API.

- This use case starts when the user is willing to read Current Happenings / Latest News related to Cyberbullying.
- The System displays a column of Current Headlines as an interface on the screen. The user reads Headlines.
- The user is provided with a button if he/she wants to read the news in detail. The user is shown a page of detailed News.
- The System allows the user to Star-Mark any Headline to read it at any later time. The Starred Headlines appear on a Bar at the top of the screen interface.

F. Alternative Flow:

In Case, the system fails to load the Latest news data, then the pre-loaded News (cache) will be shown to the user as a matter of information.

G. Special Requirements: None

H. UseCase Relationships:

This use case is linked to another UseCase “Basic Awareness & FAQs “via a Sub Flow “Read More”. The user is redirected here by the system.

4. Report Statistics

A. Introduction:

With data Collected from verified websites and organizations, this UseCase will help parents and students know various sort of things such as: How widespread this issue is, the General Public’s Point of View regarding this issue, why this issue is too

common, Myths, and Truth about it, how it affects a person's Mental and Physical health, etc.

B. Actors:

- Child
- Parent
- Operator

C. Pre-Condition:

The User must be logged onto the system before this Use Case begins.

D. Post Condition:

- When this UseCase is successful, Report Stats are shown to the user. Otherwise, the system state remains unchanged.
- This UseCase ends at the point the user quits.

E. Basic Flow:

This use case starts when the user is willing and choose to read the Report Stats

- The Operator collects data from the Internet, filters it, and displays the relevant data to the user through this UseCase.
- The System displays a column of Reports as an interface on the screen. The user reads the Reports by choosing one at a time.
- The System allows the user to Star-Mark any Stat to read it later.
- The Star appears on the bar at the top of the screen.
- The user is provided with a search bar to search any statistics. The user searches the Content. The system shows the 'matched content'.

F. Alternative Flow:

- In Case, the system fails to load the data at a new time, then the pre-loaded data (cache) will be shown to the user as a matter of information.
- If in Basic Flow, the system finds 'zero' results for the user's search, it shows 'No match found.'

G. Special Requirements: None

H. UseCase Relationships:

This use case is linked to another UseCase “Basic Awareness & FAQs” via a Sub Flow “Read More”. The User is redirected here by the system.

5. Live Tracking

A. Introduction:

This Use Case tracks the Location of the Child’s device and shares it with their Parent’s device.

B. Actors:

- Child
- Parent

C. Pre-Condition:

- The actors must be logged in to the system for the Use Case to begin.
- The Child’s user ID must be synchronized with Parent’s user ID.
- The Child must allow permission to the system to access his/her device(phone)’s Location Services.

D. Post Condition:

If this Use Case is successful, Child’s Live-Location is shared with his/her Parents. Otherwise, the system state remains unchanged.

E. Basic Flow:

- The system requests the Child to turn on his device’s Location.
- The system receives the Live-Location of the Child’s device and shares it on the Parent’s device.

F. Alternative Flow:

If the Location Services on a Child’s device are turned OFF, the Parent’s device receives a notification regarding it. The system confirms the Parent to re-request the Child for his/her Location. The Basic Flow restarts at the point parents make a confirmation. Otherwise, Basic Flow ends.

G. Special Requirements: None

H. UseCase Relationships: None

6. Situation-Based Games

A. Introduction:

By giving situations related to Cyberbullying in the form of User-friendly Games, this UseCase helps users to better prepare and gain the confidence to analyze the situation in real life.

B. Actors:

- Child
- Operator

C. Pre-Condition:

The User must be logged in to the system before this UseCase begins.

D. Post Condition:

- If this UseCase is successful, the game is played by the user and a result is generated by it. Otherwise, the system state remains unchanged.
- The use case ends at the point the user quits.

E. Basic Flow:

- This use case starts when the child chooses to play Situation-Based Games.
- This Game includes Questions that are based upon different Situations of Cyberbullying. The Questions along with their possible answers are updated every week by the Operator.
- The system requests the user to select a week of which he/she wants to view questions.
- The System displays questions type to the user (multiple choice/answer the questions).
- The user is requested to answer these questions on their understanding by how they tackle the situation.
- The user inputs the answers.

- The user is requested to submit the responses.
- The system collects the user's responses.
- The system generates results through AI and shows them on the Child's device as a report.

F. Alternative Flow:

If in Basic flow, the user wishes to quit the game, his/her responses or answers go unsaved. Basic Flow ends at this point.

G. Special Requirements: None

H. UseCase Relationships: None

7. Offensive Text Detection

A. Introduction:

This UseCase detects inappropriate/offensive words (which indicate an act of bullying) received on the Child's device.

B. Actors:

- Child
- Parent

C. Pre-Condition:

- The user must be logged in to the system before this UseCase begins.
- The child's device should be synchronized with Parent's device.
- The Child must allow permission to the system to scan for offensive texts on the screen of his/her device.

D. Post Condition:

If this UseCase is successful, inappropriate or offensive words/statements are detected on Child's device. Otherwise, the system state remains unchanged.

E. Basic Flow:

- The Basic Flow starts working whenever a word/statement is received on Child's device.
- The text is scanned by the system through AI-Detection.
- The System alerts the Child with a notification regarding the inappropriate text detected on his/her device's screen.
- A report of the same is forwarded to Parent's device by the system. The dashboard on the parent's device displays the report.

F. Alternative Flow:

If in Basic Flow, the system fails to detect any inappropriate word or statement through AI, then the user is always provided with an option to report by himself through a shortcut. Further, AI adds the scanned text into its database for future detection.

G. Special Requirements: None

H. UseCase Relationships: None

8. Action Delay

A. Introduction:

This UseCase gives a warning to the user along with a period to review the words/statements typed by him/her on the device.

B. Actors:

- Child

C. Pre-Condition:

- The user must be logged in to the system before this UseCase begins.
- The Child must allow permission to the system to scan for offensive texts on the screen of his/her device.

D. Post Condition:

- If this UseCase is successful, an action delay is given to the user. Otherwise, the system state remains unchanged.
- The Use Case ends if the user chooses to quit

E. Basic Flow:

- The System alerts the Child generating a warning (along with a 10-second delay) regarding the inappropriate text typed on his/her device's screen. (At the instant the user types some inappropriate text)
- The user is requested to Review his/her typed text before it is sent, and he/she is given two choices for 10 seconds:

Rephrase/Rewrite the statement:

- ❖ The user rewrites/rephrases the statements appropriately. Basic Flow starts again.

Delete the statement:

- ❖ The user deletes the entire statement.

F. Alternative Flow:

- If the user does not choose any of the two options before the timer runs out, then by default the message gets deleted.
- Action delay is limited to five times every twenty minutes. Hence after five times, the limit is exceeded and the app stops monitoring the messages for the next twenty minutes.

G. Special Requirements: None

H. UseCase Relationships: None

9. Counsellor

A. Introduction:

This Use Case will help the actor (whenever he/she is willing) to find and approach a Counsellor.

B. Actors:

- Parent

C. Pre-Condition:

- The actor must be logged onto the system before the Use Case begins.

D. Post Condition:

- If this Use Case is successful, the user gets a list of nearby Counsellors and can appoint one. Otherwise, the system remains unchanged.
- The Use Case ends at the point the user quits.

E. Basic Flow:

- When this Use Case begins, the system shows a map as an interface on the user's phone screen.
- The system requests the user to allow permission to access the phone's Location Services.
- Once the system receives the user's location, it displays a map of the user's current/selected location along with a list of nearby Counsellors.
- The user has access to see the Location of the Counsellors on that list.
- The user may choose a Counsellor from the list whom he/she prefers to appoint.
- The system provides the Contact details of the selected Counsellor.
- Basic Flow ends at this point.

F. Alternative Flow:

If the user denies permission to use the Location Services required by the system, then the user is provided with a Location - Search Bar within which he/she is requested to enter his/her nearby Location manually. Hereafter, the Basic Flow continues.

G. Special Requirements: None

H. UseCase Relationships: None

10. Experience Sharing

A. Introduction:

This use case allows the users to share their experiences of Cyberbullying [anonymously]. Also, the user can read other user's experiences.

B. Actors:

- Child
- Parent

C. Pre-Condition:

The user must be logged in to the system before this UseCase begins.

D. Post Condition:

- If this UseCase is successful, the user reads the experiences/the user's experience is shared. Otherwise, the system state remains unchanged.
- The Use Case ends if the user chooses to quit.

E. Basic Flow:

- The Basic Flow starts when the user is willing and chooses to share/read experiences of Cyberbullying.
- The system shows a column of Written Experiences (with anonymous as an Identity) as an interface on the screen. The user reads the experiences.
- The system allows the user to '*Star-Mark*' any experience.
- The user is provided with a comment box within which he/she shares their experiences. The user's Write-Up passes through a Checkup, AI-system deletes the content having any inappropriate comment in it and the content is then shared with other users.

F. Alternative Flow:

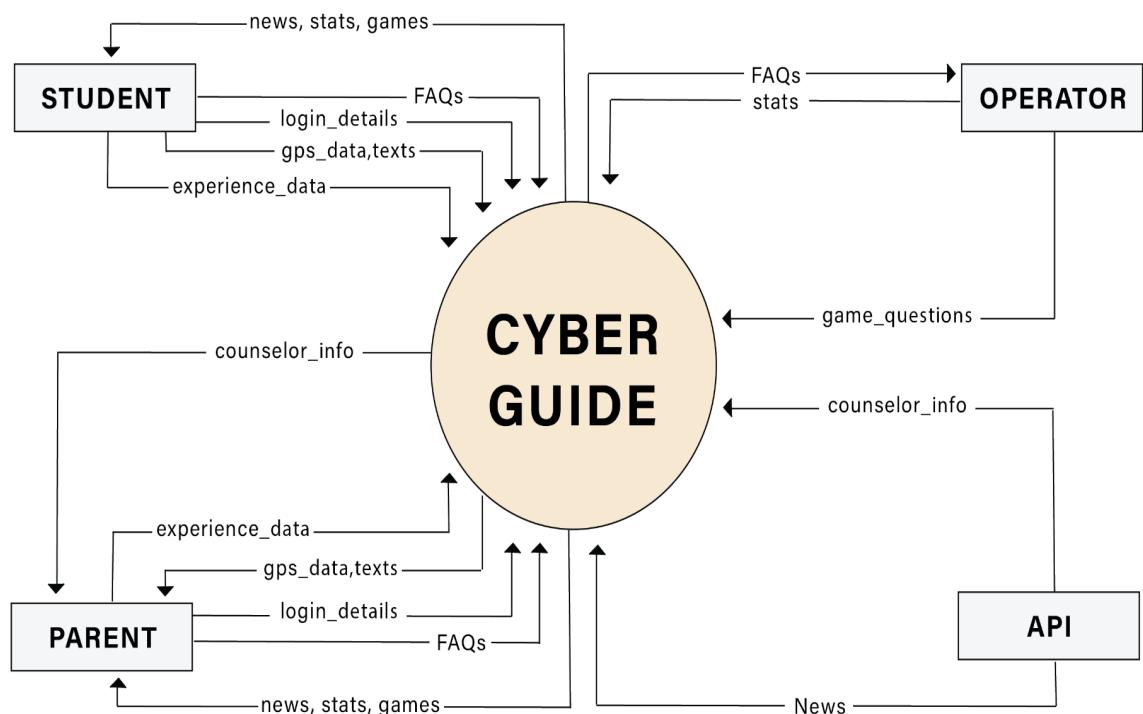
- If in Basic Flow, the user chooses to quit in between his Write-Up, then the content goes unsaved. Basic Flow ends here.
- In Case, the System fails to load the Latest data, then the pre-loaded data (cache) will be shown to the user.

G. Special Requirements: None

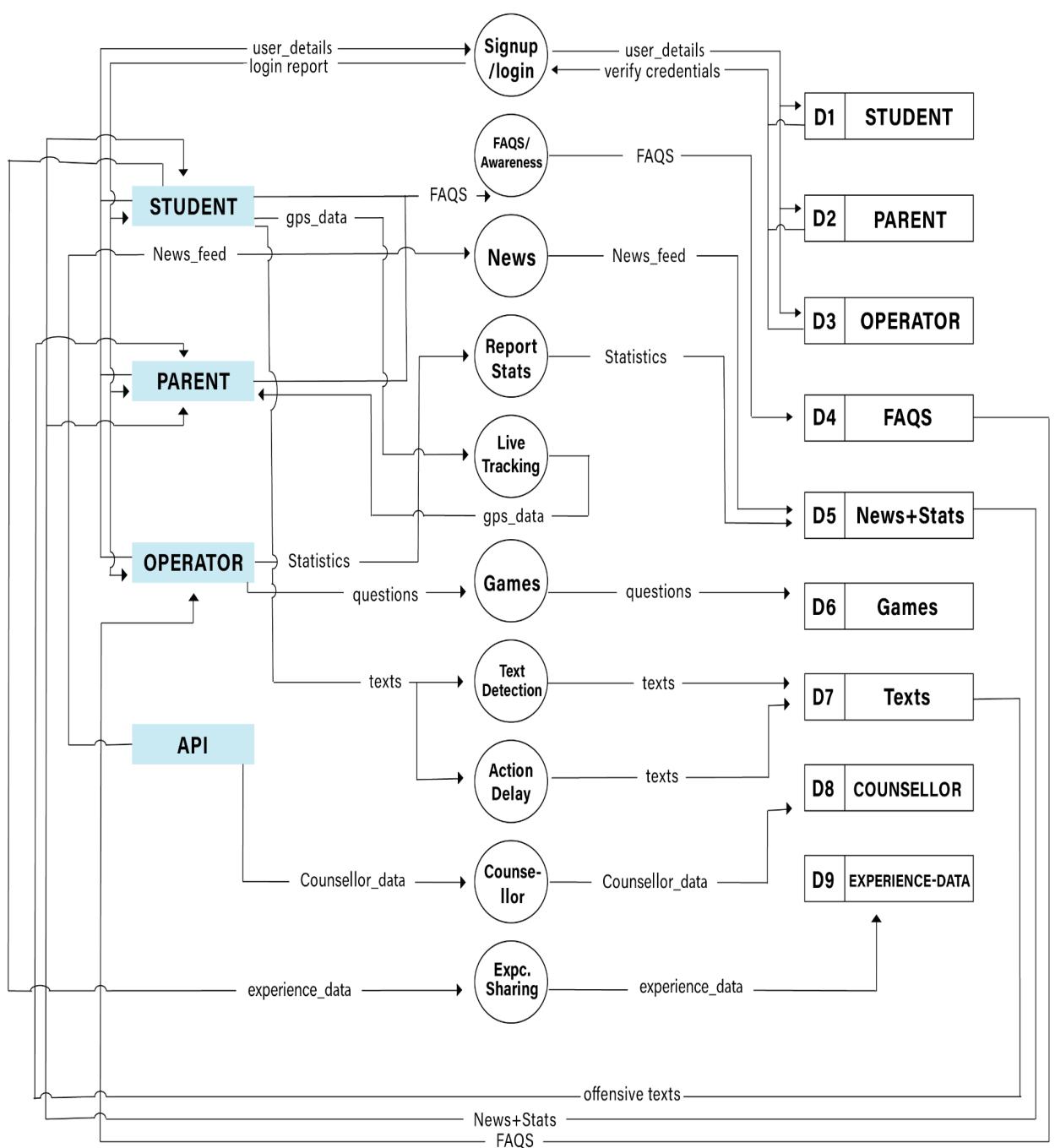
H. UseCase Relationships: None

1.8 Data Flow Diagram

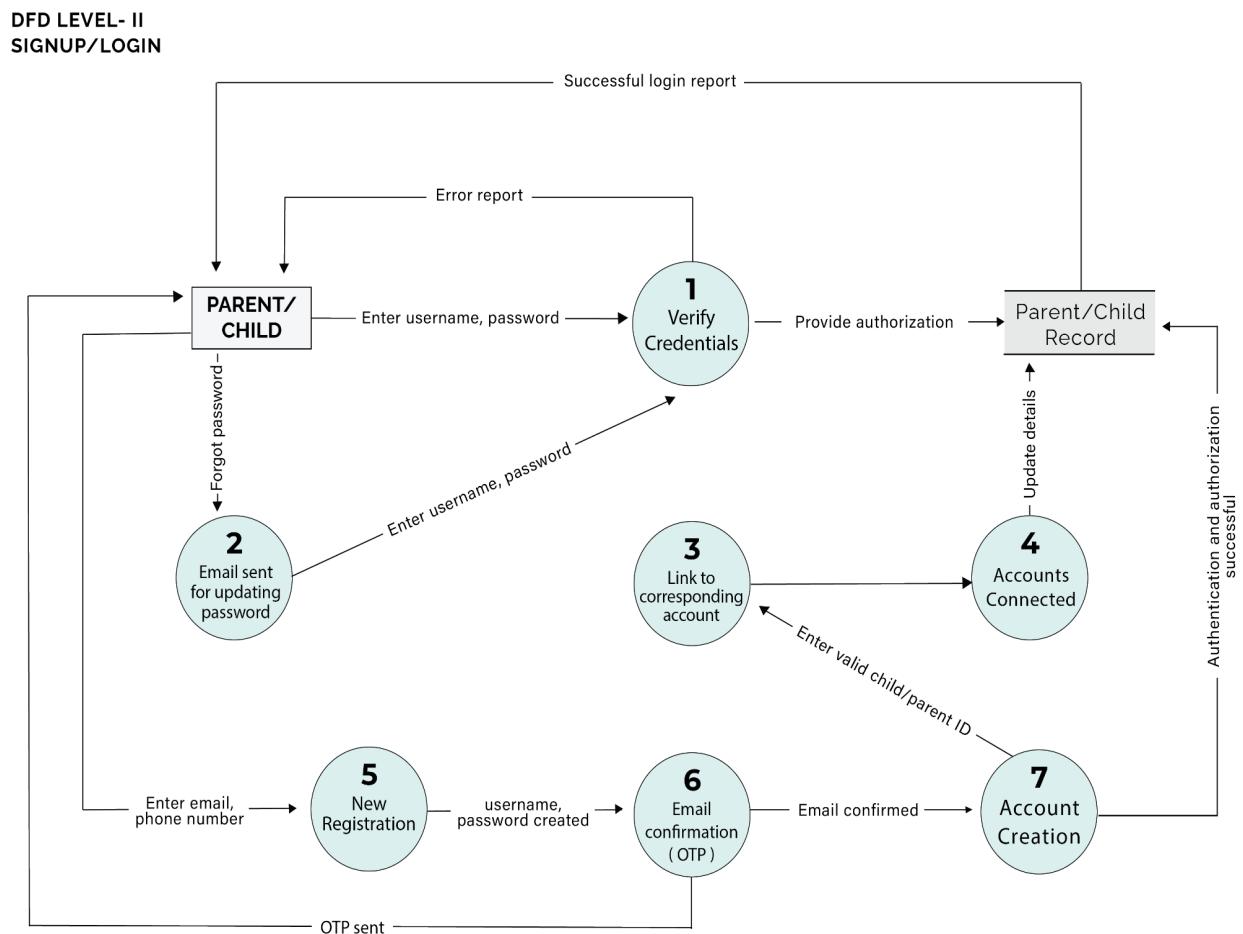
1.8.1 Context level Diagram



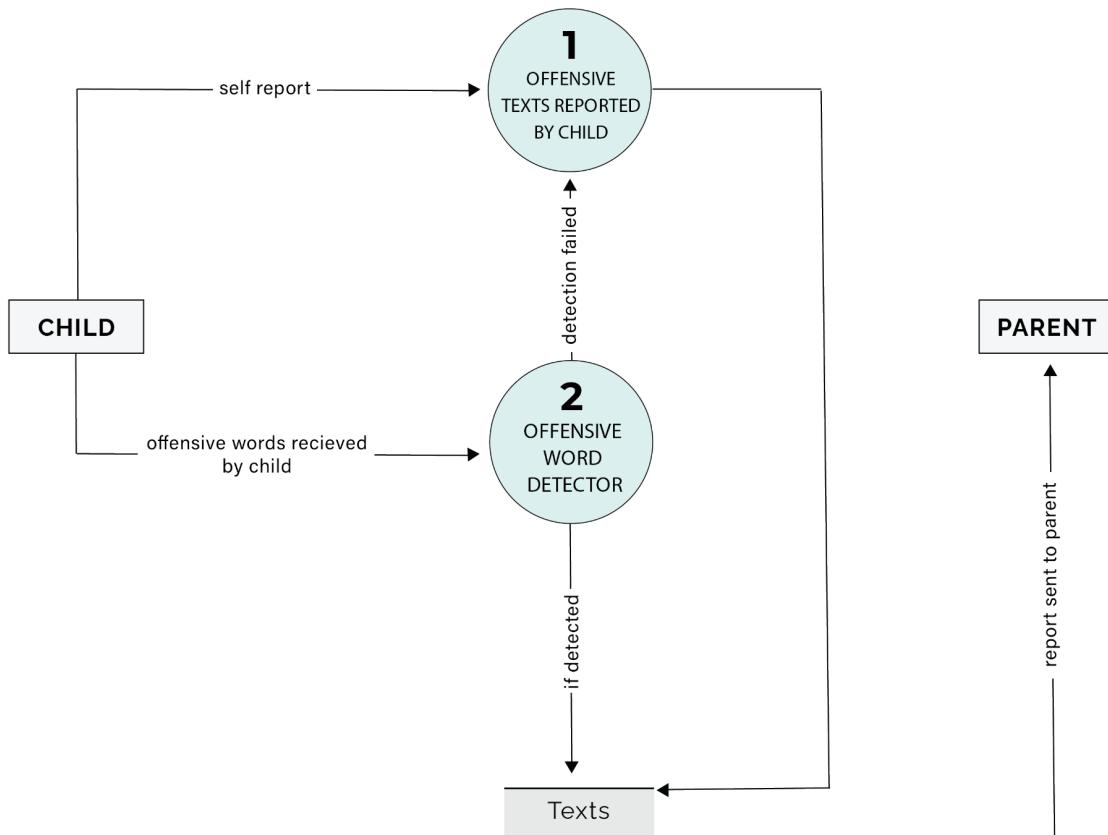
1.8.2 First level Diagram



1.8.3 Second level Diagram



DFD LEVEL- II
OFFENSIVE TEXTS



2. OVERALL DESCRIPTION

In today's world which has been made smaller by technology, new age problems have been born. No doubt technology has a lot of benefits; however, it also comes with a negative side. It has given birth to cyberbullying. To put it simply, cyberbullying refers to the misuse of information technology to harass others.

The application 'Cyber-Guide' deals with the problems that some teenagers nowadays face as they are being bullied on internet platforms, specifically social media.

This application is aimed to detect any inappropriate texts/statements which are being sent/received via the user's device, thereby sharing a report of same with parents. The application

introduces an option for parents to appoint a Counsellor for their child. This application also helps the user in making him/her aware of Cyberbullying providing basic information, the latest news, and Report statistics. This application helps the parents to track their child's location. It provides a good space for the user to ask queries and read FAQs, moreover, read and share experiences of Cyberbullying.

2.1 PRODUCT PERSPECTIVE

The application will be an android-based, self-contained and independent software product.

2.1.1 System Interfaces

User-friendly GUI screens. The user inputs data via GUI based application. The actual program that will perform the operations is written in Java. The data will be stored in the backend in the ‘SQLite’ database.

2.1.2 User Interfaces

- I. A login screen for entering the username & password will be provided. Access to different screens will be based upon the user's role.
- II. A screen for registering for the app by taking essential information based on the user's role will be provided.
- III. A screen for displaying Basic information regarding Cyberbullying will be provided. The user may also ask and view his/her queries and read FAQs on this screen.
- IV. A screen will display the Latest News of Cyberbullying, collected through internet servers via API.
- V. There will be a screen that will display Reports, Statistics of Cyberbullying collected by the Operator.
- VI. There will be a screen for the parent's device that will display the Live location of the Child's device.
- VII. A screen where the Child will be given an option to play the situation-based game and view the results generated by AI.
- VIII. An AI-based screen-text detector will be working on the child's device to detect and alert for any inappropriate texts. The text reports are displayed on the dashboard of the parents' side screen.
- IX. An Action Delay screen will be provided to the Child in case he/she types inappropriate texts/statements.

- x. There will be a screen that will provide an option for parents to appoint a Counsellor for their child.

xl. A screen where the user may read and share the experiences of Cyberbullying.

The following report will be generated:

- a. Query Report: A report will be generated when a query asked by any user is resolved by the Operator.
- b. Game Report: A report will be generated by AI which analyses the user's responses to the questions asked in the game.
- c. Text-Report: For any inappropriate text received on the child's device, a short report will be generated and shared by the system to the parent's device. The child may self-generate the report in an alternative case through a shortcut.

2.1.3 Hardware Interfaces

a) Server-side:

The mobile application will be hosted on a web server that is listening on the web standard port, port 80.

b) Client-side:

Mobile screen: The software shall display information to the user via the screen. The resolution should at least be 1536×864 for better readability and responsiveness.

2.1.4 Software Interfaces

I) Server-side: The web server will accept all requests from the client and respond accordingly. A database will be hosted centrally using SQLite.

II) Client-side: An OS(Android) which is capable of running the app efficiently and access to Google Play Store.

2.1.5 Communication Interfaces

A network-based smartphone to connect the Android mobile app with the online server. The HTTP or HTTPS protocol(s) will be used to facilitate communication between the client and server.

2.1.6 Memory Constraints

None

2.1.7 Operations

The product shall have operations to protect the database from being corrupted or accidentally altered during a system failure. A backup will always be maintained in case the system crashes.

2.1.8 Site Adaptation Requirements

The terminals at the client site will have to support the hardware and software interfaces specified in the above sections.

2.2 PRODUCT FUNCTIONS

The system will allow access only to authorized users with specific roles (Child, Parent, Operator). Depending upon the user's role, he/she will be able to access only specific modules of the system.

A summary of the major functions that the software will perform:

- A log-in facility for enabling only authorized access to the system.
- User (with the role 'Parent/Child') can:
 - Register themselves in the app by submitting necessary information followed by verification.
 - Access a Cyberbullying awareness portal. Users can ask their questions in the 'FAQS' section and view Query reports.
 - Access the latest news and statistics contained in the database.
 - Share and read experiences via a safe portal.
- An AI-based function will detect inappropriate texts sent/received via the user (with role Child)'s device.
- User (with the role 'Parent') will be able to:
 - Track the live location of the User (with the role 'Child') provided the latter permits it.
 - Review reports of texts received by the User (with the role 'Child').

- Counsellor information.
- User (with the role ‘Child’) will be able to:
 - Write for action delay.
 - Play situation-based games.
- User (with the role ‘Operator’) can:
 - respond to queries in the ‘FAQS’ section.
 - add/modify/delete report statistics.
 - add/modify/delete questions for situation-based games.

2.3 USER CHARACTERISTICS

- **Educational Level:** User with the role of Operator must be at least a graduate, a user with the role of the child can be a teenager student. The user with the role of parents should be comfortable with the English language.
- **Experience:** User with the role of Operator should be well-experienced in handling the data updation.
- **Technical Expertise:** The user should be comfortable using general-purpose applications on a smartphone. The user with the role of Operator should have a basic technical awareness.

2.4 CONSTRAINTS

Users will have to implement a security policy to safeguard unauthorized users to register as Parents/Child (through gaining access to the backend database).

2.5 ASSUMPTIONS AND DEPENDENCIES

- I) Both Parent’ and Child’s devices remain synchronized at all times.
- II) The Operator doesn’t change in a year.
- III) Some features of the system heavily depend on third-party APIs

2.6 APPORTIONING OF REQUIREMENTS

The ‘Offensive texts’ module may be upgraded with Linguistic Inquiry Word Count (LIWC) in future versions.

3. SPECIFIC REQUIREMENTS

This Section contains the software requirements to a level of detail sufficient to enable designers to design the system, and testers to test the system.

3.1 EXTERNAL INTERFACE REQUIREMENTS

3.1.1 User Interfaces

The following screens will be provided:

I) Login Screen:

This will be the first screen that will be displayed. It will allow the user to access different screens based upon the user's role. Various fields available in this screen will be:

- i. Username: Alphanumeric, length up to 10 characters.
- ii. Password: Alphanumeric, length up to 8 characters.

It also allows the user (in case he/she forgets the password) to reset the password. For that, it will ask the user to enter a One-Time-Password (OTP) received on his/her email/phone.

II) Signup Screen:

A screen for registering for the app by taking and verifying essential information based on the user's role. Various fields available in this screen will be:

- i. Name: Alphabetical
- ii. Age: Numerical, length of 2 characters
- iii. Email: Alphanumeric with special characters, length up to 20 characters.
- iv. Phone-Number: Numerical, length up to 10 characters.
- v. OTP: Numerical, length of 4 characters

III) Basic Awareness & FAQs Screen:

A screen for displaying Basic information/FAQs related to Cyberbullying will be provided. If the user wants to raise a query, the screen will allow the user to enter

the query in the comment box. The reports of resolved queries will also be displayed.

It will allow the user with role Operator to respond to query & add/modify/delete FAQs.

IV) Latest News Screen:

There will be a screen that will display the Latest News of Cyberbullying.

It will also allow the user to star-mark any news. The Starred news will be displayed when the user opens the star bar.

V) Report Statistics Screen:

There will be a screen that will display Report statistics to the user. It will also allow the user to star-mark any stat. The starred content will be displayed when the user opens the star bar.

It will allow the user with the role Operator to add/modify/delete Stats.

VI) Live Location Screen:

There will be a screen only accessible to the user with the role of Parent. It will display the Child's location by retrieving his/her device's location.

VII) Situation-Based Games:

A screen where the user with role Child will be allowed to play games by adding answers as a response. The result report will also be displayed on the screen.

It will allow the user with role Operator to add/modify/delete games in the database.

VIII) Offensive Text Detection Screen:

This Screen will have a different interface as per the user's role.

There will be a screen on Child's device which displays an alert whenever he/she receives/enters any inappropriate text on his/her device screen. It will also allow the user with the role child to self-report by a shortcut.

A Screen showing a dashboard of the text reports will be displayed on Parent's device.

IX) Action Delay:

This Screen will only be accessible to the Child; displayed in case the child is typing any inappropriate statement.

It will allow the child to review and modify his/her statement on the screen within the set time.

X) Counsellor:

This Screen will only be accessible to the user with the role of Parent. It will allow the user to enter a nearby location to view and appoint a Counsellor. The list of nearby Counsellors with their respective details will be displayed.

XI) Experience Sharing:

The screen will allow the user to add/modify/delete any of his/her experiences of Cyberbullying. The screen will also display the experiences to other users.

It will allow the user to star mark any experience. The starred content will be displayed when the user opens the star bar.

3.1.2 Hardware Interfaces

As stated in Section 2.1.3

3.1.3 Software Interfaces

As stated in Section 2.1.4

3.1.4 Communication Interfaces

As stated in Section 2.1.5

3.2 SYSTEM FEATURES

3.2.1 Login/Signup

A. Description:

The system will maintain the information of various users who will be able to access the system. The following information will be maintained:

User's Name, Username, Password, Email, Phone Number

B. Validity Checks:

- The user's Name cannot be blank.

- The username cannot be blank.
- The username will be unique for every user.
- Password cannot be blank.
- Email cannot be blank.
- The phone cannot be blank.
- Entered OTP should be correct.

C. Sequencing Information:

The User account for a particular user will be created for the system to be accessible to the user. The existing account user will have to enter the account details for login to access the system.

The user will have to confirm with an OTP before resetting the password for the account.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.2 Basic Awareness & FAQs

A. Description:

The system will maintain information regarding Cyberbullying.

The following information will be maintained:

Basic Information, FAQs, Queries.

B. Validity Checks:

- The query field cannot be blank.
- Only the user with the role Operator will have the authorization to respond to queries.

C. Sequencing Information:

Users can directly access this module after getting authorized. Queries that are given by the users will be searched through the database and shown, else it will be solved within one week.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.3 Latest News

A. Description:

The system will maintain the information regarding the News of Cyberbullying. The following information will be maintained:

Username, Cached News, Starred-Content.

B. Validity Checks:

Only the authorized users will have access to this module.

C. Sequencing Information:

Users can directly access this module after getting authorized. App will load the latest news headlines.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.4 Report Statistics

A. Description:

The system will maintain the information related to the Reports, Statistics of Cyberbullying. The following information will be maintained.

Username, Cached-Reports, Starred-Content.

The system will allow the user with role Operator to create/modify/delete new/existing Information related to Reports and stats.

B. Validity Checks:

Only the authorized users will have access to this module.

C. Sequencing Information:

Users can directly access this module after getting authorized. If the user wishes to view stats related to a particular topic, they will have to enter the same in the search bar provided on the screen.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.5 Location Tracking

A. Description:

The system will maintain the information regarding the location of the child's device.

The following information will be maintained:

Current Location, Date, Time, User's name.

B. Validity Checks:

- Only the user with the role of Parent will be authorized to access the child's current location.
- The user with the role child will have to allow the System to access the device's location.

C. Sequencing Information:

The location of the child's device will only be shared when the user with the role Parent sends a request to the child's device through the system.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.6 Situation-Based Games

A. Description:

The system will maintain information regarding the Situation-based Game.

The following information will be maintained:

User's name, Weekly Questions along with their respective [probable] answers,
User's response.

The system will allow the user with role Operator to create/modify/delete new/existing Information related to the Game. The system will also have the ability to list all the questions and their respective answers.

B. Validity Checks:

- Only the user with the role Child shall play the Games.
- Only the user with the role Operator will have the authorization to access the Games Module.
- The user's response cannot be blank.
- The user will have to submit a response to view the result.

C. Sequencing Information:

The system will present the questions of the game which will be played by the user. The answers as a response will have to be entered and submitted to view the result.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.7 Offensive Text detection

A. Description:

The system will maintain the information regarding the inappropriate texts/statements received on the device's screen.

The following information will be maintained:

Inappropriate Text received/already in the database, Date, Time, User's Name, Screen (App)'s Name, Text Report.

B. Validity Checks:

- Only the user with the role child has the access to the feature of text detection for his/her device.
- A word or statement is present on the screen to be scanned.
- Only the text which is visible on the screen is scanned.
- Only inappropriate texts will be taken into consideration.

C. Sequencing Information:

An inappropriate text/statement should have to be received on the screen to raise notify the user and generate the text report.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.8 Action Delay

A. Description:

The system will maintain the information regarding the texts/statement entered during the time delay.

The following information will be maintained:

User's Name, Time, Text entered by the user

B. Validity Checks:

- Only the user with the role child has access to this feature.
- A word or statement is present on the screen to be scanned.
- Only the text which is visible on the screen is scanned.

- Only inappropriate texts will be taken into consideration.
- The time delay will be a 10 second period.
- Action delay will only work 5 times every 20 minutes.

C. Sequencing Information:

An inappropriate text/statement typed on the screen will cause an action delay.

The user will have to review the message before the time delay ends.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.9 Counsellor

A. Description:

The system will maintain the information regarding the nearby Counsellors.

The following information will be maintained

User's Name, Date, Time, User's Location, Counsellors' Name, Counsellor's Contact-no., Counsellor's Address

The system will also have the ability to list all the nearby Counsellors along with their respective contact details.

B. Validity Checks:

- Only the user with the role of Parent can access this feature.
- Location Services will have to be enabled.
- Search Box cannot be empty if the user wants to enter Location manually.

C. Sequencing information:

The user will have to enter the nearby Location to locate the Counsellors in the nearby area.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.10 Experience sharing

A. Description:

The system will maintain information about the experiences of users of Cyberbullying.

The following information will be maintained:

User's Name, Date, Time, Experiences-Data, Starred-Content

B. Validity Checks:

- Only the authorized users can access this feature.
- Comment Box cannot be empty.
- Content cannot contain any inappropriate statements
- The minimum word limit is 20

C. Sequencing information:

The user will have to submit the write-up to share it with other users.

D. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.11 Text report Generation

I. Description:

The system will generate a Text report for the inappropriate text received on the child's device:

Offensive Message Report

Date	Time
App Name	
Sender's Name : _____	
Sender's Contact : _____	
Message : _____	
<input type="checkbox"/> Do you consider this message offensive?	
★ Mark this report as important .	

II. Validity Checks:

- Only the user with the role ‘Parent’ can access the Text report.
- The report cannot be empty.

III. Sequencing Information:

The Text report will be generated by the system only if an offensive/inappropriate text is received on the child's device.

IV. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.12 Query Report

I. Description:

The system will generate a Query report of the resolved query.

Query Report

We have resolved your query .

Question :

Answer :

Do you find the answer useful?

yes no

II. Validity Checks:

- The report cannot be empty.
- Only the dedicated user will receive the report.

III. Sequencing information:

The Query Report will be generated only when the user raises the query and the same is resolved by the Operator.

IV. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.2.13 Game Report

I. Description:

The system will generate a report showing the result and analysis of the game played by the user.

Game Report

Your Score :	<hr/> <hr/>
Performance :	
Your Analysis:	
Tips and Tricks:	
Download report	Play Again

II. Validity Checks:

- Only the user with the role Child will have access to the report.
- The report cannot be empty.

III. Sequencing Information:

The Game Report will be generated only after the user submits the response to the Questions.

IV. Error Handling:

If any of the above validations/sequencing flow does not hold, appropriate error messages will be prompted to the user for doing the needful.

3.3 PERFORMANCE REQUIREMENTS

- I. The system should support at least 100 concurrent users. This provides a general sense of reliability when the system is under load due to third-party API calls (probability being low).
- II. In the case of repeated ‘action delays’ (Action Delay module), the system should be able to handle 10-15 Action delays in 30 minutes and should work smoothly thereafter.

3.4 DESIGN CONSTRAINTS

- I. The communication between the software and the database will be in SQLite.
- II. All layouts will be produced with XML.
- III. The product will be written in Java.
- IV. The source code must follow the coding conventions of Java.
- V. The operator must have access to comprehensive documentation and a particular part of the database.

3.5 SOFTWARE SYSTEM ATTRIBUTES

3.5.1 Security

- I. Passwords will be saved encrypted in the database to ensure the user's privacy.
Only authorized users will have access to the application.
- II. The user's IP will be logged.
- III. User's (with the role ‘Child’) location will only be given to the User (with the role ‘Parent’).
- IV. The system will be protected against vulnerabilities such as SQL injection attacks.

3.5.2 Maintainability

- I. SQLite is used for maintaining the database. In case of any failure, a re-initialization of the program is recommended.
- II. The operator will also handle the updates and errors of the system.

3.5.3 Portability

- I.** The application should be compatible with any Android system. Node.js and SQLite programs are practically independent of the OS system with which they will communicate.
- II.** The end-user part is fully portable and any android system with Play Store should be able to get access to all the future updates of the application.

3.6 LOGICAL DATABASE REQUIREMENTS

The following information will be stored in the database:

- User Accounts and Profiles (username, email, phone number, password, particular child/parent id)
- Experience-sharing data (Experience, date, likes, comments)
- FAQs (question, username)
- Cached News and report statistics (title, description, tags) (stats, year, tags)
- Game questions (questions, level, options)
- Inappropriate texts/statements (typed, received)

The database allows concurrent access and will always be kept consistent, requiring a good database design.

3.7 OTHER REQUIREMENTS

None.

4. TESTING

Now we find out the complexity of the module to determine the possible independent paths and hence develop test cases.

4.1 Situation-Based Games

Pseudocode:

```
/* SITUATION BASED GAMES SCREEN after CHILD logged in */
```

```
games () {
```

displays week list: // [1]

“This Week”

“Week 16”

“Week 15”

....

user selects a week // let it be w, // [1]

searches in database // [2]

if (w opened earlier) { // [3]

 print “You have already performed for this particular week.

 Do you wish to Re-perform? Yes/No” // [4]

 if (yes selected) { // [5]

 perform (); // [6]

 }

 else {

 return; // [21]

 }

}

 else {

 perform (); // [6]

}

 perform () {

displays game-type options: // [7]

“MCQs”

“ATQs” // Answer-the-questions

user selects a type // [7]

if(mcq) { // [8]

displays mcqs // [9]

user ticks the answers

user submit the answers // [10]

checks for any question left unticked // [11]

if(unticked) { // [12]

shows popup: It seems you missed a question. Tick all the answers and submit to see your performance. // [13]

user ticks the answers and submits the response

while(unticked) {

shows popup: It seems you missed a question. Tick all the answers and submit to see your performance. // [13]

user ticks the answers and submits the response

}

}

generate result // let it be res, [14]

report(res); // [15]

}

else if(atq) {

```

    displays questions and answer-fields // [22]

    user fills the answers

    user submits the answers // [23]

    checks for any answer-field left empty // [24]

    if(empty) {// [25]

        show popup: You left a question unanswered. Fill the answer and
        submit to know your score. // [26]

        user fills the field and submits the response

        while(empty) {

            show popup: You left a question unanswered. Fill the
            answer and submit to know your score. // [26]

            user fills the field and submits the response

        }

    generate result // let it be res2, [27]

    report(res2); // [15]

}

report (res or res2) { // [15]

    display report // [16]

    display option: // [17]

    “Download Report”

    “Play Again”

```

```
user selects an option // [17]

if(download) { // [18]

    copy of report saved in storage // [19]

}

else if(replay) {

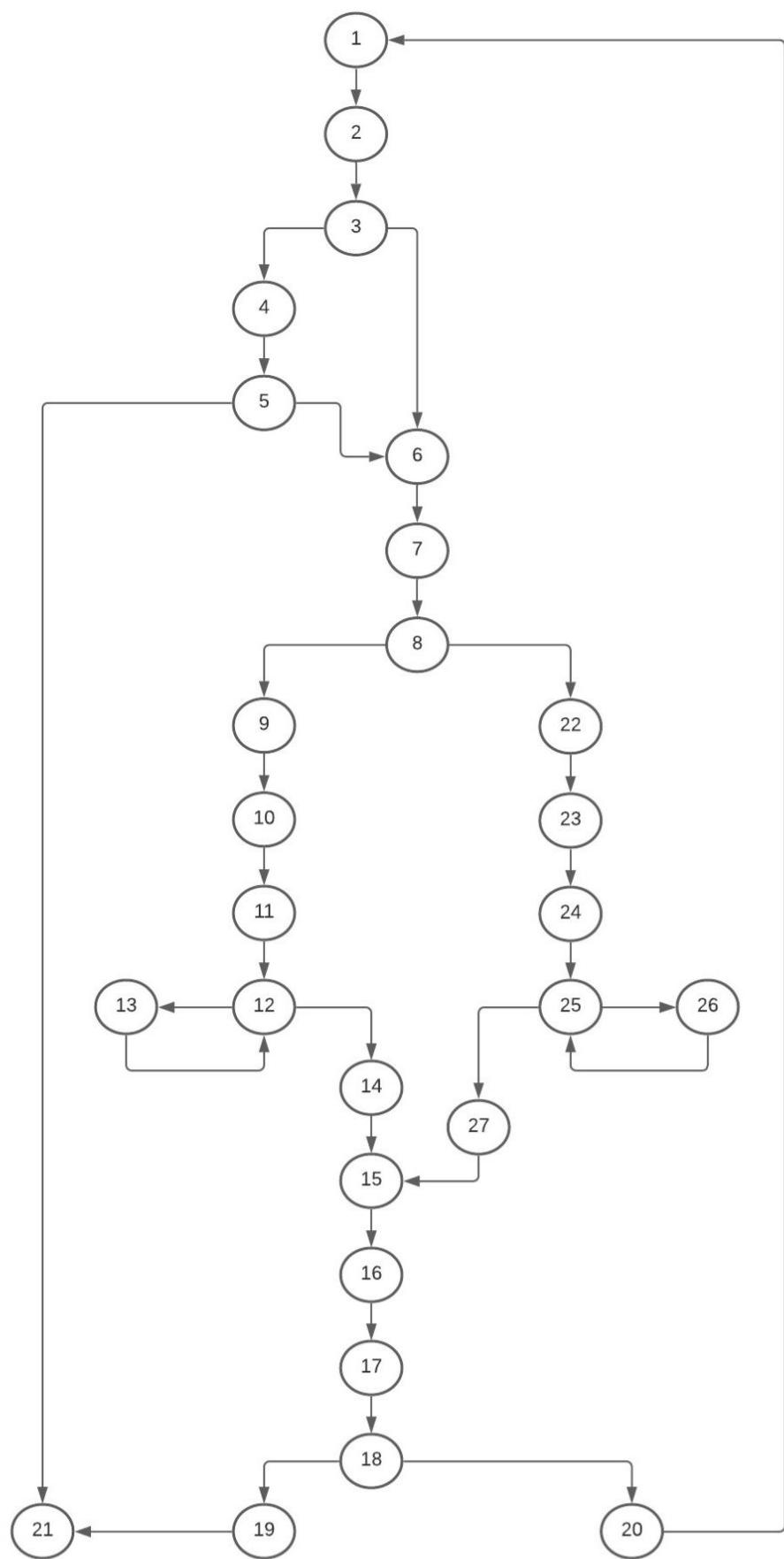
    games (); // [20]

}

return; // [21]

}
```

FLOW GRAPH:



CYCLOMATIC COMPLEXITY:

Regions: $6+1 = 7$

E-V+2: $32-27+2 = 7$

Predicate nodes +1: $6+1 = 7$

=> Complexity = 7

Independent Paths:

- 1-2-3-4-5-21
- 1-2-3-6-7-8-9-10-11-12-14-15-16-17-18-19-21
- 1-2-3-4-5-6-7-8-9-10-11-12-14-15-16-17-18-19-21
- 1-2-3-4-5-6-7-8-22-23-24-25-27-15-16-17-18-19-21
- 1-2-3-4-5-6-7-8-22-23-24-25-27-15-16-17-18-20....
- 1-2-3-4-5-6-7-8-22-23-24-25-26....
- 1-2-3-4-5-6-7-8-9-10-11-12-13....

4.2 Live Tracking

Pseudocode:

```
/* LIVE TRACKING SCREEN after PARENT logged in */
```

```
live () {
```

```
    request for location sent to CHILD's device // [1]
```

```
    if (request accepted) { // [2]
```

```
        display location // [3]
```

```
}
```

```
    else {
```

```

print "unable to retrieve the location! Do you want to re-request?"  

// [4]  

user selects a choice: "Yes or No" // [4]  

if (yes is selected) { // [5]  

    re-request is made // [1]  

}  

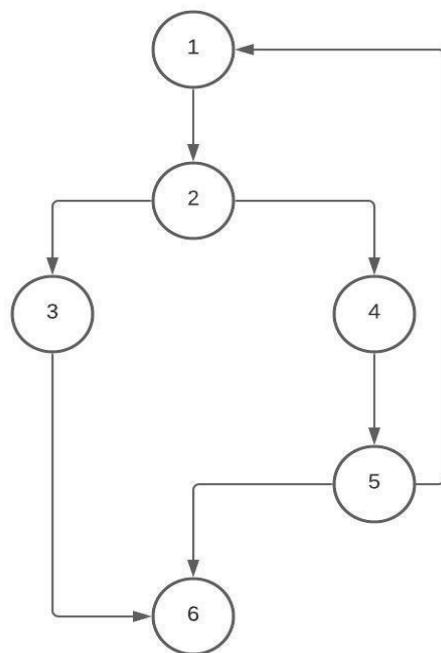
else {  

    return; // [6]  

}
}

```

FLOW GRAPH:



CYCLOMATIC COMPLEXITY:

Regions: $2+1 = 3$

$E-V+2: 7-6+2 = 3$

Predicate nodes +1: $2+1 = 3$

=> Complexity = 3

Independent Paths:

- 1-2-3-6
- 1-2-4-5....
- 1-2-4-5-6

4.3 Counsellor

Pseudocode:

```
counsellor () {  
    displays map // [1]  
    current () {           checks for current location // let it be cl      [3]  
        if (location turned ON) {} // [4]  
        details(cl); // [5]  
    }  
    else {  
        search (); // [11]  
    }  
    search () {
```

```

print "Your location is OFF! Kindly turn it ON or use search-bar to search your
location" // [12]

checks for searched location, current location // [12]

if (location turned ON) {      // [13]

    current (); // [2]

}

else if (location is searched) {

    check for validity // [14]

    if (sl is valid) { // [15]

        details(sl); // [5]

    }

    else {

        print "INVALID Location! We're unable to fetch your location, do
you wish to Retry or Exit?" // [16]

        user selects an option

        if (Retry is selected) { // [17]

            counsellor (); // [18]

        }

        else if (Exit) {

            return; // [10]

        }

    }

}

```

```
    }
```

```
    current(); // [2]
```

```
    details (cl or sl) { // [5]
```

```
        display the map of fetched location // [6]
```

```
        display the list of counsellors // [7]
```

```
        if (user selects a counsellor) { // [8]
```

```
            display the details of the counsellor // [9]
```

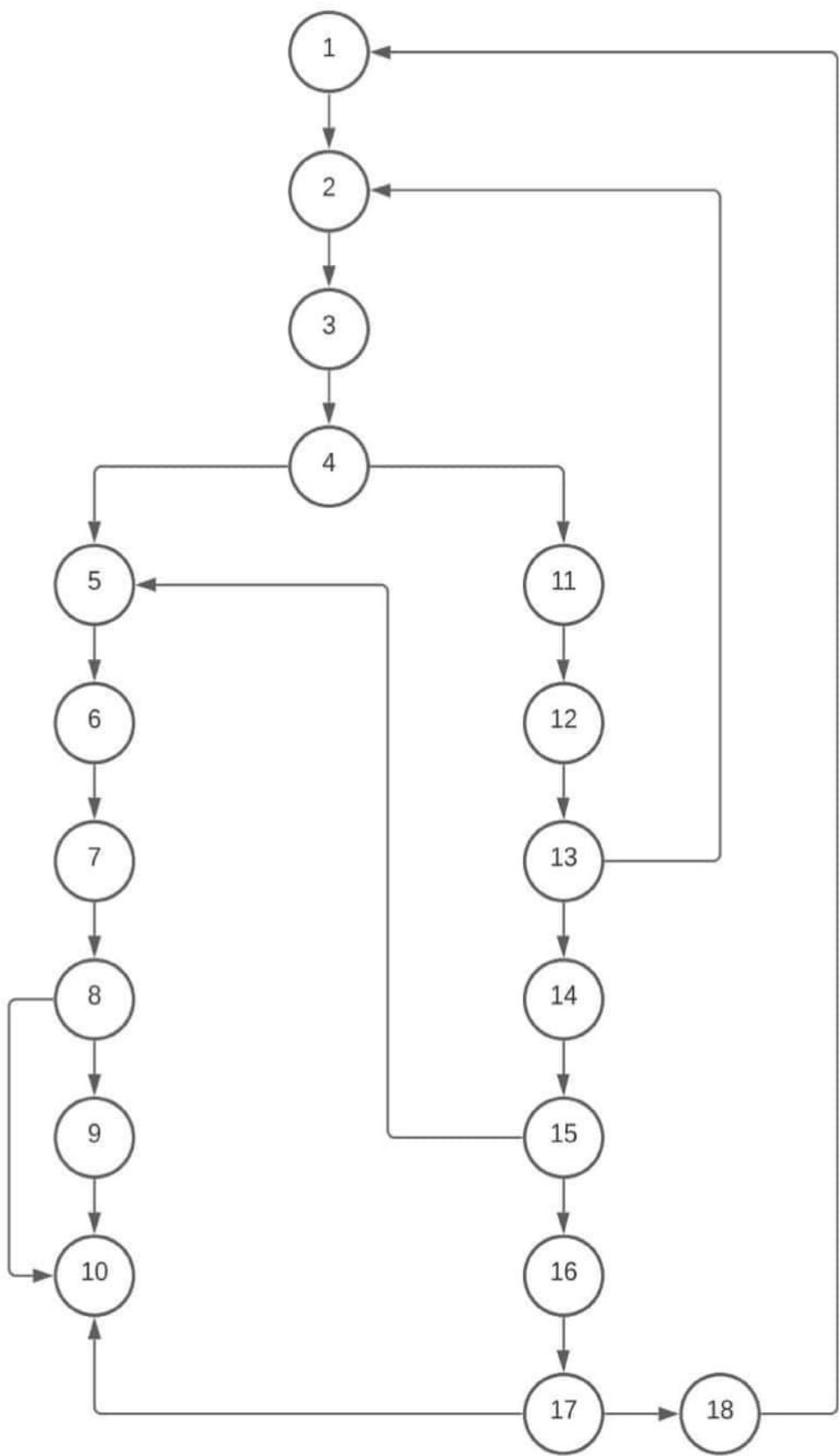
```
        }
```

```
    }
```

```
    return; // [10]
```

```
}
```

FLOW GRAPH:



Cyclomatic Complexity:

Regions: $5+1 = 6$

$E-V+2: 22-18+2 = 6$

Predicate nodes +1: $5+1 = 6$

=> Complexity = 6

Independent Paths:

- 1-2-3-4-5-6-7-8-9-10
- 1-2-3-4-5-6-7-8-10
- 1-2-3-4-11-12-13-14-15-5-6-7-8-9-10
- 1-2-3-4-11-12-13-14-15-16-17-10
- 1-2-3-4-11-12-13-14-15-16-17-18....
- 1-2-3-4-11-12-13....

4.4 TEST CASES

4.4.1 Situation-based Games Screen

Situation-based Games Screen	
TEST CASE ID-01	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Games Screen and Report Generation	EXECUTION HISTORY:
PRE CONDITIONS: The user must be logged in to the application as CHILD	RESULT: As Expected
INPUTS: Week Option, "This Week"	IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: Proceeds to Game-Type	ANY OTHER OBSERVATION:
POST CONDITIONS: The game is played	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-02	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Games Screen and Report Generation	EXECUTION HISTORY:
PRE CONDITIONS: The user must be logged in to the application as CHILD	RESULT: As Expected
INPUTS: Week Option, "Week 10"	IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: Displays pop-up to re-perform for that week	ANY OTHER OBSERVATION:
POST CONDITIONS: None	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-03	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Games Screen and Report Generation	EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as CHILD	RESULT: As Expected
INPUTS: Game-Type "MCQ"	IF FAILS, ANY POSSIBLE REASON(OPTIONAL): Questions for the week has not been uploaded yet by the operator
EXPECTED OUTPUT: The game is played	ANY OTHER OBSERVATION:
POST CONDITIONS: Result is generated	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-04	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Games Screen and Report Generation	EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as CHILD	RESULT: As Expected
INPUTS: Game-Type "ATQ"	IF FAILS, ANY POSSIBLE REASON(OPTIONAL): Questions for the week has not been uploaded yet by the operator
EXPECTED OUTPUT: The game is played	ANY OTHER OBSERVATION:
POST CONDITIONS: Result is generated	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-05	

SECTION I (BEFORE EXECUTION)		SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Games Screen and Report Generation		EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as CHILD		RESULT: As Expected
INPUTS: MCQs, My Option is "A"		IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: Result is generated		ANY OTHER OBSERVATION:
POST CONDITIONS: Game Report is generated and displayed		ANY SUGGESTION: The user may choose not to answer a question
WRITTEN BY: Ajay Kumar		RUN BY: Monika Joshi
DATE: 16 April 2021		DATE: 17 April 2021
TEST CASE ID-06		
SECTION I (BEFORE EXECUTION)		SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Games Screen and Report Generation		EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as CHILD		RESULT: As Expected
INPUTS: ATQs, My Answer is "Keep Calm"		IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: Result is generated		ANY OTHER OBSERVATION:
POST CONDITIONS: Game Report is generated and displayed		ANY SUGGESTION: The user may choose not to answer a question
WRITTEN BY: Ajay Kumar		RUN BY: Monika Joshi
DATE: 16 April 2021		DATE: 17 April 2021
TEST CASE ID-07		
SECTION I (BEFORE EXECUTION)		SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Games Screen and Report Generation		EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as CHILD		RESULT: As Expected
INPUTS: MCQs, My Option is " "		IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: Displays pop-up to answer the questions left unattempted		ANY OTHER OBSERVATION:
POST CONDITIONS: None		ANY SUGGESTION: Serial number of the missed question should be given
WRITTEN BY: Ajay Kumar		RUN BY: Monika Joshi
DATE: 16 April 2021		DATE: 17 April 2021
TEST CASE ID-08		
SECTION I (BEFORE EXECUTION)		SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Games Screen and Report Generation		EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as CHILD		RESULT: As Expected
INPUTS: ATQs, My Answer is " "		IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: Displays pop-up to fill the empty answer fields		ANY OTHER OBSERVATION:
POST CONDITIONS: None		ANY SUGGESTION: Serial number of the missed question should be given
WRITTEN BY: Ajay Kumar		RUN BY: Monika Joshi
DATE: 16 April 2021		DATE: 17 April 2021

4.4.2 Counsellor Screen

Counsellor Screen	
TEST CASE ID-01	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Counsellor Screen	EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as PARENT	RESULT: As Expected
INPUTS: Location = "Rajouri Garden"	IF FAILS, ANY POSSIBLE REASON(OPTIONAL): Network Error in loading the Map
EXPECTED OUTPUT: Displays map of the location searched	ANY OTHER OBSERVATION:
POST CONDITIONS: Displays a list of Counsellors at the location	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-02	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Counsellor Screen	EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as PARENT	RESULT: As Expected
INPUTS: Location = "Nowganpur"	IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: Displays pop-up to enter a valid location	ANY OTHER OBSERVATION:
POST CONDITIONS: None	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-03	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Counsellor Screen	EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as PARENT	RESULT: As Expected
INPUTS: Location - Current	IF FAILS, ANY POSSIBLE REASON(OPTIONAL): Unable to fetch user's current location through GPS
EXPECTED OUTPUT: Displays map of the location searched	ANY OTHER OBSERVATION:
POST CONDITIONS: Displays a list of Counsellors at the current location	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-04	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Counsellor Screen	EXECUTION HISTORY:
PRE CONDITIONS: User must be logged in to the application as PARENT	RESULT: As Expected
INPUTS: Counsellor, "Dr. Vishwa"	IF FAILS, ANY POSSIBLE REASON(OPTIONAL): Contact Details might not be provided by the Counsellor
EXPECTED OUTPUT: Name - Dr. Vishwa, Address - Dwarka, Phone - XXXXXXXX909	ANY OTHER OBSERVATION:
POST CONDITIONS: Displays the details of the Counsellor	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021

4.4.3 Live Tracking Screen

Live Tracking Screen	
TEST CASE ID-01	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Live Tracking Screen	EXECUTION HISTORY:
PRE CONDITIONS: Users must be logged in to the application as PARENT	RESULT: As Expected
INPUTS: Location "REQUESTED" by PARENT, "ACCEPTED" on CHILD's device	IF FAILS, ANY POSSIBLE REASON(OPTIONAL): Server unable to load the map data
EXPECTED OUTPUT: Location is displayed	ANY OTHER OBSERVATION:
POST CONDITIONS: Displays location of CHILD	ANY SUGGESTION:
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-02	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of Live Tracking Screen	EXECUTION HISTORY:
PRE CONDITIONS: Users must be logged in to the application as PARENT	RESULT: As Expected
INPUTS: Location "REQUESTED" by PARENT, "DENIED" on CHILD's device	IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: Displays pop-up of failure in retrieving the location of CHILD's device	ANY OTHER OBSERVATION:
POST CONDITIONS: Pop-up for re-request is displayed	ANY SUGGESTION: Display the last fetched location of CHILD in such a case
WRITTEN BY: Ajay Kumar	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021

4.4.4 Latest News Screen

Latest News Screen	
TEST CASE ID-01	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of News Screen	EXECUTION HISTORY:
PRE CONDITIONS: Users must be logged in to the application as PARENT/CHILD	RESULT: As Expected
INPUTS: Opening a News Headline	IF FAILS, ANY POSSIBLE REASON(OPTIONAL): Network Error or API issue
EXPECTED OUTPUT: The link is opened and News is displayed	ANY OTHER OBSERVATION:
POST CONDITIONS: Full News-article is displayed	ANY SUGGESTION:
WRITTEN BY: Anushka Bahuguna	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021
TEST CASE ID-02	
SECTION I (BEFORE EXECUTION)	SECTION II (AFTER EXECUTION)
PURPOSE: Checking the functionality of News Screen	EXECUTION HISTORY:
PRE CONDITIONS: Users must be logged in to the application as PARENT/CHILD	RESULT: As Expected

INPUTS: News Headline is STARRED "☆"	IF FAILS, ANY POSSIBLE REASON(OPTIONAL):
EXPECTED OUTPUT: News Headline is starred and saved	ANY OTHER OBSERVATION: Starring a Headline twice removes the Headline from Star-List
POST CONDITIONS: Headline appears in Star-Section	ANY SUGGESTION:
WRITTEN BY: Anushka Bahuguna	RUN BY: Monika Joshi
DATE: 16 April 2021	DATE: 17 April 2021

5. SCHEDULING

WORK TASKS	Week 1 (04-01-2021 – 11-01-2021)	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16
Initial Idea / Introduction / Description / Overview / Problem Statement	●															
Requirement Gathering / Feasibility Study		●														
Requirement Analysis / Questionnaires			●													
Use Case and Diagram				●	●	●										
Data Flow Diagrams						●	●									
Software Requirement Specification								●	●	●						
Pert Chart											●					
Module Implementation											●	●				
Pseudocodes and Test Cases													●	●		
Functional Points and Efforts Estimation															●	

6. ESTIMATIONS

6.1 FUNCTION POINTS

Value Adjustment Factors (VAFs):

FACTOR	VALUE
Backup and Recovery	4
Data Communication	3
Distributed Processing Functions	2
Critical Performance	5
Performance is existing and heavily utilized Environment	5
Online Data Entry	3
Input Transaction Built over multiple screens	1
ILFS updated online	3
Inputs, Outputs, Files Complexity	4
Internal Processing Complex	5
Reusable Code	5
Conversion and installation Included	3
Multiple Installations	4
Change and Ease of Use	5
TOTAL	52

PARAMETERS	COUNT	SIMPLE	AVERAGE	DIFFICULT	TOTAL
External Input	57	25 X 3	22 X 4	10 X 6	223
External Output	52	25 X 4	15 X 5	12 X 7	259
External Enquiry	11	1 X 3	2 X 4	8 X 6	59
Internal Logical Files	7	1 X 7	3 X 10	3 X 15	82
External Interface Files	4	1 X 5	1 X 7	2 X 10	32

COUNT TOTAL: $223 + 259 + 59 + 82 + 32$

: 655

$$\begin{aligned}
 \text{FUNCTION POINTS} &= \text{COUNT} \times [0.65 + 0.01 \times \Sigma(\text{VAFs})] \\
 &= 655 \times [0.65 + 0.01 \times 52] \\
 &= 655 \times [1.17] \\
 &= \mathbf{766.35}
 \end{aligned}$$

6.2 EFFORTS

Using COCOMO II Model:

Object Type	Complexity Weight			
	Simple	Medium	Difficult	Total
Screen	10 X 1	6 X 2	20 X 3	82
Report	1 X 2	0 X 5	2 X 8	18
3GL Component	-	-	24 X 10	240

Object Points: $82 + 18 + 240$

= 340

REUSABILITY: 40 %

PRODUCTIVITY RATE (PROD) = 14 (NOMINAL)

$$\begin{aligned}
 \text{New Object Points (NOP)} &= [\text{object points X } (100 - \text{Reusability})/100] \\
 &= 340 \times 0.6 \\
 &= \mathbf{204}
 \end{aligned}$$

EFFORT: NOP/PROD

$$\begin{aligned}
 &= 204 / 14 \\
 &= 14.5714 \\
 &= 15 \text{ person months (Approx)}
 \end{aligned}$$

The following values are taken as reference in the calculations:

PARAMETERS	SIMPLE	AVERAGE	DIFFICULT
External Input	3	4	6
External Output	4	5	7
External Enquiry	3	4	6
Internal Logical Files	7	10	15
External Interface Files	5	7	10

Object Type	Complexity Weight		
	Simple	Medium	Difficult
Screen	1	2	3
Report	2	5	8
3GL Component	-	-	10

7. APPENDIX

The method of requirement elicitation chosen by us is “SURVEY” in the form of “QUESTIONNAIRES” (ONLINE-FORMS).

Following are the questionnaires taken up by Students(teenagers) and Parents along with their responses:

7.1 Questionnaire (Students)

Project 'CYBER-GUIDE' (Survey for Students)

Hello Ji !!

As we all Know, presently Internet is a very a great source of information and a very fine place for entertainment too. But unfortunately, it is being misused by few nasty people who try to spread negativity around the users and make them feel unpleasant by doing awful things like bullying.

Our Project 'CYBER-GUIDE' basically would help users to tackle CyberBullying and also reduce this issue to a great extent. For our Project, we request you to take a few minutes and fill this Survey form with honest answers.

Your contribution would be truly appreciated.
Thank You.

* Required

1. Email address *

2. Name

Few Lines related to CyberBullying

When someone, typically a teenager, intentionally humiliate another person by sending, posting, or sharing negative, harmful, false, or mean content about them on the internet and in other digital spaces, particularly on social media sites, it is regarded as CyberBullying.

Hurtful teasing/trolling, name-calling, threatening comments, spreading negative rumors, sending nasty messages via the Internet, etc. are some of the examples of Cyberbullying.

3. Are you already aware of Cyberbullying ? *

Mark only one oval.

- Yes
- Little bit
- No

4. Have you ever encountered any of the above examples on the Internet?

Mark only one oval.

- Yes
- No
- Don't really Remember

5. How often do you think people face these cases on the internet? *

Mark only one oval.

- Very Often
- Often
- Sometimes
- Never

6. Do you use social media platforms to share your OPINIONS on things? If yes, How frequently ? *

7. People usually tend to feel uncertain while sharing their Views or Personal Experiences on social media. What do you think the reason could be ? *

Check all that apply.

- They are anxious, someone could tease/troll them for their posts
- They feel frightened, they might get negative comments or threatening messages
- They are worried, they would be targeted if they share their views on any topic

Other: _____

8. In most cases, the person who is being cyberbullied either SUFFERS or tends to RETALIATE. Do you think it will be helpful to do either of the two things ? What can be done to improve upon the situation ? *

9. When a person feels distressed due to being cyberbullied, they may need someone who can CONSOLE them and HELP them out with the situation. Whom do you think they should approach - their parents / their friends / both ? Your reason for it ? *

10. Cyberbullying affects few people adversely. The reason for it might be that : *

Check all that apply.

- They are unaware of the situation and accept what others are saying
 They might not know what to do when they are being bullied

Other: _____

11. Nowadays, Cyberbullying may go Undetected. Moreover, people even try to Overlook it. Do You agree ? Your views regarding it ?

12. Do you feel that Cyberbullying is indeed a negative thing and it need to be STOPPED ? *

Mark only one oval.

- Yes
 Maybe

13. Do you think that a software might help users in the matter of Cyberbullying? If yes, then what essential features would you like to see in that software ? *

Responses to the above questionnaire are:

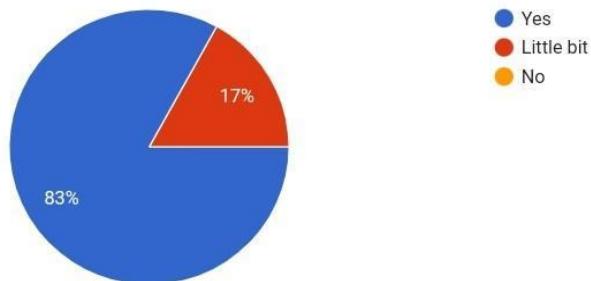
	A	B	C	D	E	F	G	H	I
1	Timestamp	Username	Name	Are you already aware of Cyberbullying ?	Have you ever encountered any of the above examples on the Internet?	How often do you think people face these cases on the internet?	Do you use social media platforms to share your OPINIONS on things? If yes, How frequently ?	People usually tend to feel uncertain while sharing their Views or Personal Experiences on social media. What do you think the reason could be ?	In most cases, the person who is being cyberbullied either SUFFERS or tends to RETALIATE. Do you think it will be helpful to do either of the two things ? What can be done to improve upon the situation ?
2	2021/02/02 2: sreejithjc2001	Sreejith C	Yes	No	Very Often	Don't use.	They feel frightened, they might get neg	Try to ignore and believe upon yourself.	
3	2021/02/02 2: mudgiharsh Harsh	Yes	Yes	Very Often	Yes, frequently	They are anxious, someone could tease	Ignoring them		
4	2021/02/02 2: ishikabhard Ishika	Yes	Don't really Remember	Often	Yes, once in a month	They are anxious, someone could tease	I do not think so. Perhaps, we can normalize the socia		
5	2021/02/02 2: parasharpar Paras Par	Yes	No	Often	Rarely	They are anxious, someone could tease	No rather than that there are cyber cells in almost all i		
6	2021/02/02 2: priyanka.davps1008@g	Yes	No	Very Often	Not too much a bit depends	They are anxious, someone could tease	I think the only solution to this is too straight a way re		
7	2021/02/02 2: himanshu91 Hemant	Yes	No	Sometimes	Rarely	They are worried, they would be targeted	To seek guidance from the parents		
8	2021/02/02 2: venkumj1234 B Venkat	Yes	Yes	Very Often	Sometimes	They are anxious, someone could tease	Speak Out Bravely		
9	2021/02/02 2: jahanveegar Jahanvee	Yes	Don't really Remember	Very Often	No	They are anxious, someone could tease	Neither of the option is helpful.		
10	2021/02/02 2: rawatjyoti26 Jyoti Raw	Yes	No	Often	Very less	They are worried, they would be targeted	Just take help from cyber police and awareness is must		
11	2021/02/02 3: varnikachhil Varnika	Yes	Yes	Often	Sometimes	They are anxious, someone could tease	Awareness programme should be conducted.		
12	2021/02/02 3: saquibever2 Saquib	Little bit	Yes	Sometimes	Very often	They feel frightened, they might get neg	Create awareness		
13	2021/02/02 3: hevi@driver. Hevi drive	Yes	Yes	Often	I don't really share my opinio	They are anxious, someone could tease	Ignorance can at times be useful. Although, if the thre		
14	2021/02/02 3: Shivan0305 Shivani	Little bit	Don't really Remember	Often	Sometimes	They are anxious, someone could tease	Spread awareness		
15	2021/02/02 3: nancytayal20 Nancy Tay	Yes	Yes	Very Often	No	They are anxious, someone could tease	In current scenario it is more advisory to ignore such p		
16	2021/02/02 3: yadavbenika7@gmail.	Little bit	No	Sometimes	Yes I do, but not often	They are anxious, someone could tease	It's definitely not helpful to suffer, and for the second		
17	2021/02/02 3: jaiswalneha Neha	Yes	Yes	Often	Not much.	All of the above.	Strengthening of cyber laws is need of the hour to imp		
18	2021/02/02 3: pardyumyad Pardymu	Yes	Yes	Sometimes	I used to, 3-4 years ago but I	They are anxious, someone could tease	changes in personality of the person being affected,		
19	2021/02/02 4: abhishekssri Abhishek	Yes	No	Often	Yes, I share my opinions qui	They are anxious, someone could tease	No, not at all..The best thing they should do is to infor		
20	2021/02/02 4: shreyan0906 Shreya N	Yes	Yes	Very Often	Yes I rarely use social media	They are anxious, someone could tease	Personally, both suffering and retaliation would not s		
21	2021/02/02 4: prenaasiwi Prema	Yes	No	Very Often	No	They are worried, they would be targeted	None of the above will make any difference to the pre		
22	2021/02/02 4: id.ishikadal Ishika	Yes	Yes	Often	Rarely	They are anxious, someone could tease	I think he/she should not be afraid and should definit		
23	2021/02/02 4: khushbooda Khushboc	Yes	No	Often	No	They are anxious, someone could tease	No it's not helpful.To improve such a situation the per		
24	2021/02/02 4: lakshtakind Lakshtia	Yes	Don't really Remember	Often	Yes	They feel frightened, they might get neg	I think social media should bring some changes to ma		
25	2021/02/02 4: uttu123a@gr Utkarsh	V Yes	Often	I don't actually share my opi	They are anxious, someone could tease	Don't take life too seriously,no one's gonna rememb			
26	2021/02/02 5: tanmaybharti Tanmay	Yes	No	Very Often	Not really	They feel frightened, they might get neg	If u will ur being bullied or anything just report it . If u		
27	2021/02/02 5: jyotiisrivasta Jyoti Sriva	Yes	Yes	Very Often	Yes.	They are anxious, someone could tease	Suffering is obviously not helpful. Retaliation		
28	2021/02/02 5: souravatri16 Souravat	Little bit	Don't really Remember	Very Often	No !!	They are anxious, someone could tease	I thinks it's a better option to retaliate than to suffer!!		
29	2021/02/02 5: khush.jmk@Khushboc	Yes	Yes	Often	Not really	They are anxious, someone could tease	Both of these can lead the victim to disturbed mental p		
30	2021/02/02 5: ujjwalkumar Ujjwal Ku	Yes	No	Often	Yes...seldom, weekly and mo	They are anxious, someone could tease	It should be reported immediately instead and cyber b		
31	2021/02/02 5: srikanti2001@Srikant Ku	Yes	Yes	Often	No, not often.	They feel frightened, they might get neg	First of all, the people being bullied or even cyberbulli		
32	2021/02/02 5: nickysaini30 Nikita Sai	Yes	Yes	Often	No	They are anxious, someone could tease	To be more cautious ,aware about cyber bullying and e		
33	2021/02/02 6: ritikaaawasth Ritika Aw	Yes	No	Very Often	Not much	They are anxious, someone could tease	No , no way. Suffering or retaliating both should be av		
34	2021/02/02 6: rishi8860327 Rishi kum	Yes	No	Very Often	After any incident i share my	They are anxious, someone could tease	I would like to increase the awareness		
35	2021/02/02 6: pankajyotan Pankaj Ta	Yes		Often	Sometimes	They are worried, they would be targeted	Reporting the troller		
36	2021/02/02 8: anjalija070@Anjali Jos	Little bit	No	Very Often	No	They are anxious, someone could tease	Yeah, the person might suffer or tend to retaliate. They		
37	2021/02/02 8: sharmasahil Sahil sha	Yes	Yes	Often	No	They are worried, they would be targeted	Very simple. People mostly threaten or bully others by		
38	2021/02/02 9: ishikachopri Rishika	Yes	Yes	Often	No I share my opinions on sc	They are anxious, someone could tease	Spread more positivity on social media		
39	2021/02/02 10: aryanrautela Aryan Rai	Yes	Yes	Often	No	They are anxious, someone could tease	Retaliation is not the correct response		
40	2021/02/03 2: aanshgupta Aansh Gu	Yes	Don't really Remember	Often	Very rarely	They are anxious, someone could tease	Not helpful and tbh idk		
41	2021/02/03 7: cosmoslens Subrat Sh	Yes	Yes	Very Often	I don't use much social medi	They feel frightened, they might get neg	No, none of them helps. It would be better to consult		
42	2021/02/03 9: nakul191020 Nakul sin	Yes	Don't really Remember	Often	No	They are worried, they would be targeted	To spread awarness		
43	2021/02/03 9: mansisharma91324@g	Little bit	Don't really Remember	Often	No	They are worried, they would be targeted	Those messages should be blocked and case should b		
44	2021/02/03 9: paotinmang L Paotin	Little bit	Don't really Remember	Often	Not really, no.	They feel frightened, they might get neg	No, cyberbullying is like a disease, we don't cure a dis		
45	2021/02/03 9: byiasminalb Manish	Little bit	Yes	Very Often	Sometimes	They are worried, they would be targeted	Inform parents or Report cyberbullies to the Police		
46	2021/02/03 9: nishantpal2 Nishant p	Yes	No	Sometimes	Yes I am active on social me	They are worried, they would be targeted	No. None of them helpful for anyone.		
47	2021/02/03 10: wakeup0041 Darshan	Yes	Yes	Very Often	No, I don't (now)	They are anxious, someone could tease	No		
48	2021/02/03 10: chauhanhim Himanshi	Yes	Yes	Often	yes	They are worried, they would be targeted	block the contact		
49	2021/02/03 10: revahukkerikar@gmail	Yes	No	Very Often	Alot.	They are anxious, someone could tease	Stringent cyber laws.		
50	2021/02/03 10: bhavyaa200 Bhavyaa	Yes	No	Sometimes	Yes, sometimes	They feel frightened, they might get neg	First the person shouldn't suffer alone and share their		
51	2021/02/03 10: dikshasharm Diksha Sh	Yes	Yes	Very Often	No	They are anxious, someone could tease	No it will not help open up and fight back		
52	2021/02/04 1: swamiaabis Abhishek	Little bit	Yes	Very Often	Yes, sometimes	They feel frightened, they might get neg	One should complain to cyber branch in such case		
53	2021/02/04 4: saara.ug20@Saara pra	Yes	No	Sometimes	No, not much	They feel frightened, they might get neg	We should retaliate		
54	2021/02/06 11: kumariprem Prema .	Yes	No	Very Often	Nope not really!	They are anxious, someone could tease	He/she should talk to anyone about this rather than ju		

	J	K	L	M	N
1	When a person feels distressed due to being cyberbullied, they may need someone who can CONSOLE them and HELP them out with the situation. Whom do you think they should approach - their parents / their friends / both ? Your reason for it ?	Cyberbullying affects few people adversely. The reason for it might be that :	Nowadays, Cyberbullying may go Undetected. Moreover, people even try to Overlook it. Do You agree ? Your views regarding it ?	Do you feel that Cyberbullying is indeed a negative thing and it need to be STOPPED ?	Do you think that a software might help users in the matter of Cyberbullying? If yes, then what essential features would you like to see in that software ?
2	Both. Parents know them better than their friends and vice versa.	They might not know what to do when they are being bullied	Yes		Multiple languages.
3	With people they are comfortable with	They are unaware of the situation and accept what others are	Yes		No
4	Both	They might not know what to do when they are being bullied	Yes		Yaa sure
5	Parents are probably the best	They are unaware of the	Yes it goes undetected under the gu	Yes	FAQ on it
6	I feel consulting both will be good. Again this depends on one's Parents	They are unaware of the situation and accept what others are	Yes		I think proper privacy of the user and pro
7	Parents	They are unaware of the situation and accept what others are	Yes		Yes softwares can help ,we should inclu
8	Parents and friends both.	They are unaware of the	The Information and Technology Act Yes		An AI to look after negative comments ar
9	It depends whom should one approach. I go to my sister because They can approach both	They might not know whi	Yes, I agree that people sometimes Yes		Yeah definitely, a software can help in th
10		They are unaware of the	Yes		Security,
11	They should approach their parents as they are elders and know	They are unaware of the situation and accept what others are	Yes		A helpline number where the victim can
12	Someone you trust	They are unaware of the situation and accept what others are	Yes		Spread awareness
13	Might sound like out of the blue but, I would say why not make yo	They might not know whi	It must definitely be addressed. De	Yes	Informing them of 1) things which count
14	Both.	They are unaware of the situation and accept what others are	Yes		No
15	According to me such a person should reach out to the individual	They might not know whi	Yes, it has become so normalised t	Yes	Maybe, the most essential feature is to
16	Both , as many don't have understanding parents and many don't	They might not know whi	Yes, mostly people overlook it	Yes	It should have a feature that aware peo
17	Aa per their choice since this depends on the situation he/she's	They might not know whi	Up.	Yes	Yes. By making people aware of the step
18	Sometimes we are not very much open with our parents in	They might not know whi	sometimes. There is a very thin	Yes	It should include tips how to strengthen
19	Their parents bcoz they are the only one to whom we can blindly	They are unaware of the	Cyberbullying is really a grave situat	Yes	It could be if it is made and maintained
20	Firstly the person should seek help from their parents or close fr	They are unaware of the	No, these types of bullying shoul	Yes	In my opinion, the software should give p
21	First they should try to make things better in their own. It depend	They are unaware of the	situation and accept what others are	Yes	A section where the sufferer can share
22	I think they should approach both of them because it's better get	They might not know whi	I agree. Now-a-days cyberbullying h	Yes	I think that software should immediate
23	They should approach both the parents and the friends.	They might not know what to do when they are being bullied	Yes		No ,a software can't really help users in
24	I think they should approach their parents or trustworthy friends	They might not know what to do when they are being bullied	Yes		Yes
25	Friends and parents who can basically understand the situation	They might not know whi	A person usually doesn't shares the	Yes	Yes
26	They should console with parents and friends both	They might not know whi	Nowadays , people don't react to th	Yes	May be a software can help to an extent
27	Anyone who they feel comfortable with.	They are unaware of the	I agree.	Yes	Yes. A complete guide on privacy, laws, p
28	I think reaching out to the family is the best option in case its so	They might not know what to do when they are being bullied	Yes		Yes !!
29	I think they should approach their friends because they are fami	They might not know whi	Yes, cyber bullying in general is ove	Yes	It can include features to track the
30	Their trustworthy friends first and then parents/siblings	They might not know whi	Shouldn't be overlooked and ignore	Yes	Parental controls and should minimize t
31	The parents . Because not only parents have lived the way as a ch	They might not know whi	Yes. It is being overlooked in real li	Yes	Advanced sentiment analysis might help
32	Parents bcoz they are elders and can guide than our same age fri	They are unaware of the	Yes because of poor implementatio	Yes	Yes, software should cover all aspects o
33	Obviously friends first as they can understand better , this social	They are unaware of the	Maybe	Yes	threatening or vulgar comments and
34	Both. No specific reason	They are unaware of the	situation and accept what others are	Yes	Not sure about that
35	Friends	They might not know what to do when they are being bullied	Maybe		No
36	According to me they should go to friends as they are of same ag	They are unaware of the	Yeah, often people overlook it.	Maybe	Yes, it will be helpful.
37	Both. To know what to do in that situation. Obviously	They might not know what to do when they are being bullied	Yes		Identity and adress
38	Both	They are unaware of the	Yes some people tend to take it ver	Yes	Posting quotes related to self confidenc
39	Anyone they are comfortable with, so it is easier for them to talk	They might not know whi	Yes. People don't care much about a	Yes	Yes
40	Friends first (but not stupid ones) then parents/family, its easier	They are unaware of the	People tend to overlook it, they can	Yes	It might help depending on what the fea
41	Depends upon who they have a closer bonding with	They might not know whi	Yes, people do not not what it is cle	Yes	Yes it can if it has the feature to tell peo
42	Their parents bcz parents really understand us	They are unaware of the	situation and accept what others are	Yes	To block those who are trying to make fu
43	Both parents and friends should be approached because they kn	They are unaware of the	situation and accept what others are	Yes	Yes it may help and the most important
44	Any one who can comfort and advice them.	They are unaware of the	Yes, it could happen.	Yes	No clue about this.
45	They can approach any of them it just depends on the kinda rela	They might not know whi	Yeah people do overlook it but it sh	Yes	Privacy
46	I think firstly they should be approach to their parents because t	They are unaware of the	Yes I am agree with this.	Yes	No. I don't think that any software can p
47	We should approach our parents as well as friends too .	They are unaware of the	Yes		Yes
48	both	They might not know what to do when they are being bullied	Yes		It should tell us whether the id is fake o
49	Both.	They might not know what to do when they are being bullied	Yes		AI
50	Friends, because they can easily relate with your grief, but if thin	They are unaware of the	situation and accept what others are	Yes	Maybe, one feature may can be like to t
51	Both ..may be someone help them out	They are unaware of the	situation and accept what others are	Yes	Yes it can...
52	Both and person who have knowledge about cyber aspects	They are unaware of the	It should be abolished	Yes	The app should provide tips and measu
53	Parents	They might not know what to do when they are being bullied	Yes		Yess
54	Both. As there are things which can't be shared with parents and	They are unaware of the	situation and accept what others are	Yes	Getting the real identity of the cyberbul

Following are the graphical results of the conducted survey made to make the requirement elicitation and analysis process easy and more understandable:

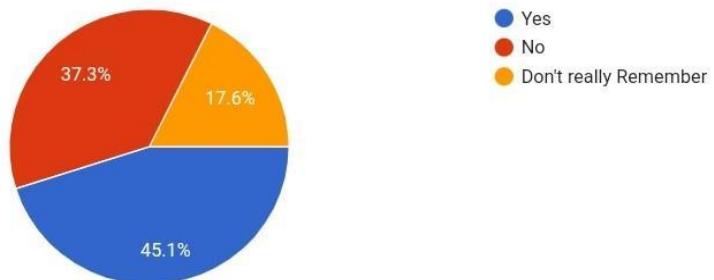
Are you already aware of Cyberbullying ?

53 responses



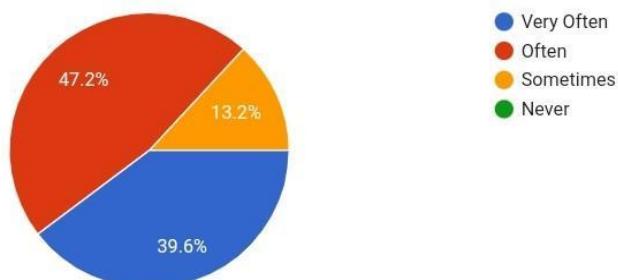
Have you ever encountered any of the above examples on the Internet?

51 responses



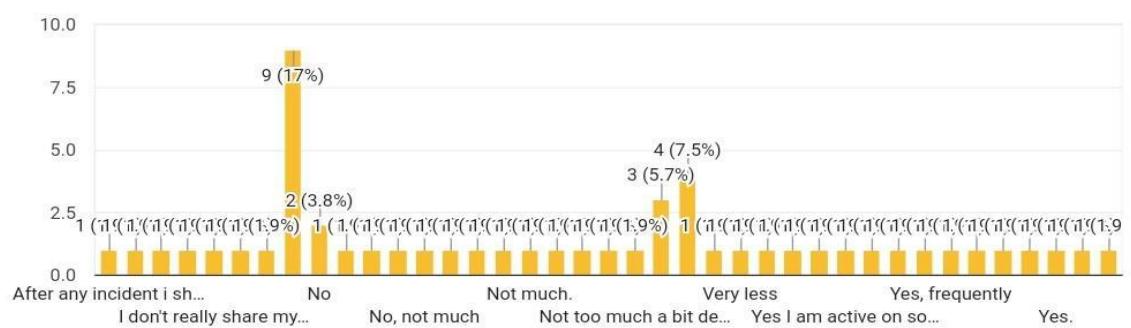
How often do you think people face these cases on the internet?

53 responses



Do you use social media platforms to share your OPINIONS on things? If yes, How frequently ?

53 responses



Do you feel that Cyberbullying is indeed a negative thing and it need to be STOPPED ?

53 responses



7.2 Questionnaire (Parents)

Project 'CYBER-GUIDE' (Survey for Parents)

Hello Ji !!

As we all Know, presently Internet is a very a great source of information and a very fine place for entertainment too. But unfortunately, it is being misused by few nasty people who try to spread negativity around the users and make them feel unpleasant by doing awful things like bullying.

Our Project 'CYBER-GUIDE' basically would help users to tackle CyberBullying and also reduce this issue to a great extent. For our Project, we request you to take a few minutes and fill this Survey form with honest answers.

Your contribution would be truly appreciated.

Thank You.

* Required

1. Name

Few Lines related to CyberBullying

When someone, typically a teenager, intentionally humiliate another person by sending, posting, or sharing negative, harmful, false, or mean content about them on the internet and in other digital spaces, particularly on social media sites, it is regarded as CyberBullying.

Hurtful teasing/trolling, name-calling, threatening comments, spreading negative rumors, sending nasty messages via the Internet, etc. are some of the examples of Cyberbullying.

2. Are you already aware of Cyberbullying ? *

Mark only one oval.

Yes

Little bit

No

3. Have you ever faced Cyberbullying / Have you ever noticed someone being bullied on the Internet?

Mark only one oval.

Yes

No

Don't really Remember

4. Do you feel that Bullying (specifically CyberBullying) is a wrong thing as it may affect a person's sentiments OR do you think people tend to overreact to things ?

5. Do you agree with the point that CyberBullying is becoming increasingly common ?

*

Mark only one oval.

Absoutely , Yes

Maybe

Don't Know

6. How often does your child stay active on the Internet? *

Mark only one oval.

Very Often

Sometimes

Rarely

7. Does your child ever behave gloomily or feel distressed after browsing the Internet / Social Media? *

Mark only one oval.

Yes, Usually

Yes, Sometimes

Yes, but Rarely

No, Never

8. Do you find it difficult to make your child feel free and happy when they are distressed ?

Mark only one oval.

No, it seems easy

Yes, sometimes it's quite difficult

Yes, sometimes we too feel helpless

9. Whom do you think will your child be more comfortable sharing their experiences and seeking HELP & ADVICES with : their friends / you / both ? What is the reason you feel ?

10. If in case, few parents feel ignorant regarding the situation, what advice would you give to them if their children are victims of Cyberbullying ? *

Mark only one oval.

- They themselves should approach a counsellor, then give advice to their children
 Appoint a counsellor directly for their children
 Other: _____

11. These days, the Internet is being misused with many forms of cyberbullying coming up on the Internet, and children (especially teenagers) fall victim to it. Do you feel that a software could help users in handling it? *

Mark only one oval.

- Yes
 Maybe
 Not Necessary
 Don't Know

Responses to the above questionnaire are:

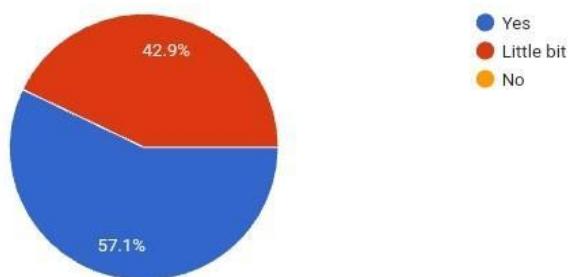
	A	B	C	D	E	F	G	H	I
1	Timestamp	Username	Name	Are you already aware of Cyberbullying ?	Have you ever faced Cyberbullying / Have you ever noticed someone being bullied on the Internet?	Do you feel that Bullying (specifically CyberBullying) is a wrong thing as it may affect a personal sentiments OR do you think people tend to overreact to things ?	Do you agree with the point that CyberBullying is becoming increasingly common ?	How often does your child stay active on the Internet?	Does your child ever behave gloomily or feel distressed after browsing the Internet / Social Media?
2	2021/02/03 9	manikasha	Shalini sh	Yes	Yes	Of course its a wrong thing . It not only affect	Absolutely , Yes	Very Often	Yes, Sometimes
3	2021/02/03 9	horrorhars	Amarjit M	Yes	Yes	Yes it affects	Maybe	Rarely	No, Never
4	2021/02/03 9	mansisharma91324@	Little bit	Don't really Remember			Absolutely , Yes	Sometimes	No, Never
5	2021/02/04 9	rupschatto	Rupayaan	Yes	No	Yeah, i feel it's wrong and sometime people ai	Maybe	Very Often	No, Never
6	2021/04/13 10:40:31 PM	GMT+5:30	Yes	Yes	Yes , it is a wrong thing as it can have adverse	Maybe	Very Often	Yes, but Rarely	
7	2021/04/13 11:09:25 PM	GMT+5:30	Little bit	Don't really Remember	Yes it is a wrong thing.	Maybe	Sometimes	Yes, but Rarely	
8	2021/04/14 11:32:44 AM	DayaJoshi	Little bit	Don't really Remember	It can affect sentiments	Maybe	Sometimes	Sometimes	No, Never

	J	K	L	M	N
1	Do you find it difficult to make your child feel free and happy when they are distressed ?	Whom do you think will your child be more comfortable sharing their experiences and seeking HELP & ADVICES with : their friends / you / both ? What is the reason you feel ?	If in case, few parents feel ignorant regarding the situation, what advice would you give to them if their children are victims of Cyberbullying ?	These days, the Internet is being misused with many forms of cyberbullying coming up on the Internet, and children (especially teenagers) fall victim to it. Do you feel that a software could help users in handling it?	According to you, what features should be added to the software to help detect and decrease cyberbullying ?
2	Yes, sometimes it's quite difficult	Both	They themselves should approach a counse	Maybe	I think software should have a feature of a strict pri
3	No, it seems easy	Both he is open about everything	They themselves should approach a counse	Don't Know	
4	Friends		Appoint a counsellor directly for their child	Maybe	Tracking the ip address
5	No, it seems easy	A child should share all his problems with his/her	They themselves should approach a counse	Yes	The software AI should be smart enough so that wh
6	No, it seems easy		Should talk it out with the child once and if	Maybe	
7	Yes, sometimes it's quite difficult		They themselves should approach a counse	Yes	
8	No, it seems easy	Both	Appoint a counsellor directly for their child	Yes	Software should be user friendly

Following are the graphical results of the conducted survey made to make the requirement elicitation and analysis process easy and more understandable:

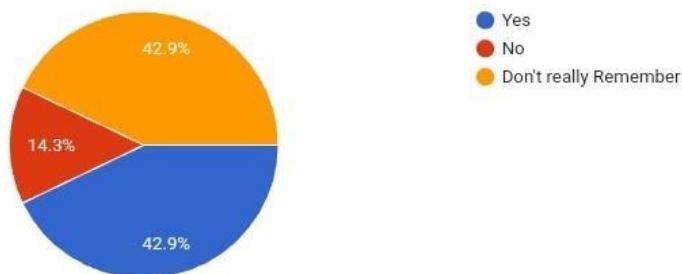
Are you already aware of Cyberbullying ?

7 responses



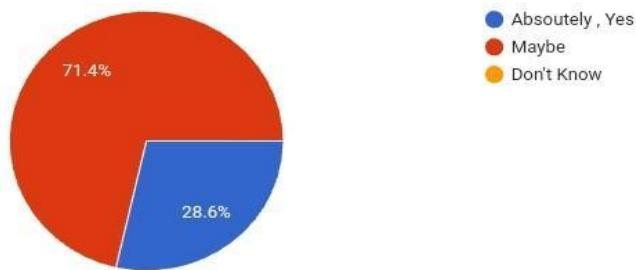
Have you ever faced Cyberbullying / Have you ever noticed someone being bullied on the Internet?

7 responses



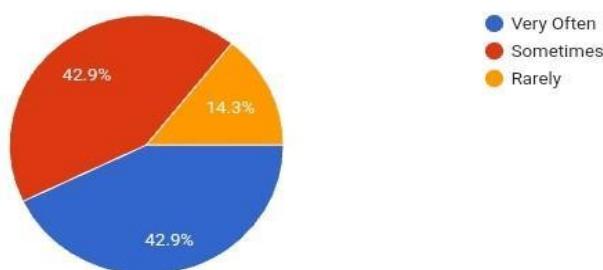
Do you agree with the point that CyberBullying is becoming increasingly common ?

7 responses



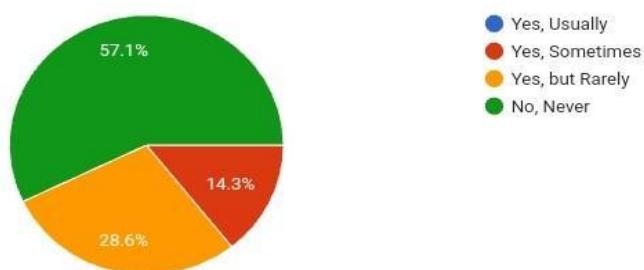
How often does your child stay active on the Internet?

7 responses



Does your child ever behave gloomily or feel distressed after browsing the Internet / Social Media?

7 responses



Do you find it difficult to make your child feel free and happy when they are distressed ?

6 responses



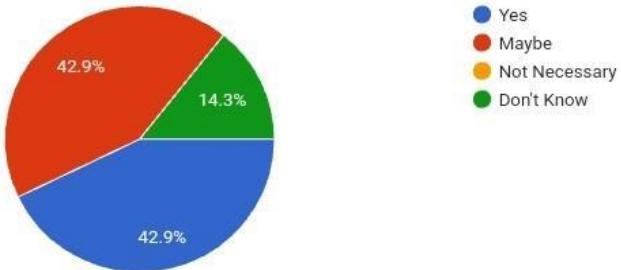
If in case, few parents feel ignorant regarding the situation, what advice would you give to them if their children are victims of Cyberbullying ?

7 responses



These days, the Internet is being misused with many forms of cyberbullying coming up on the Internet, and children (especially teenagers) fall victim to it. Do you feel that a software could help users in handling it?

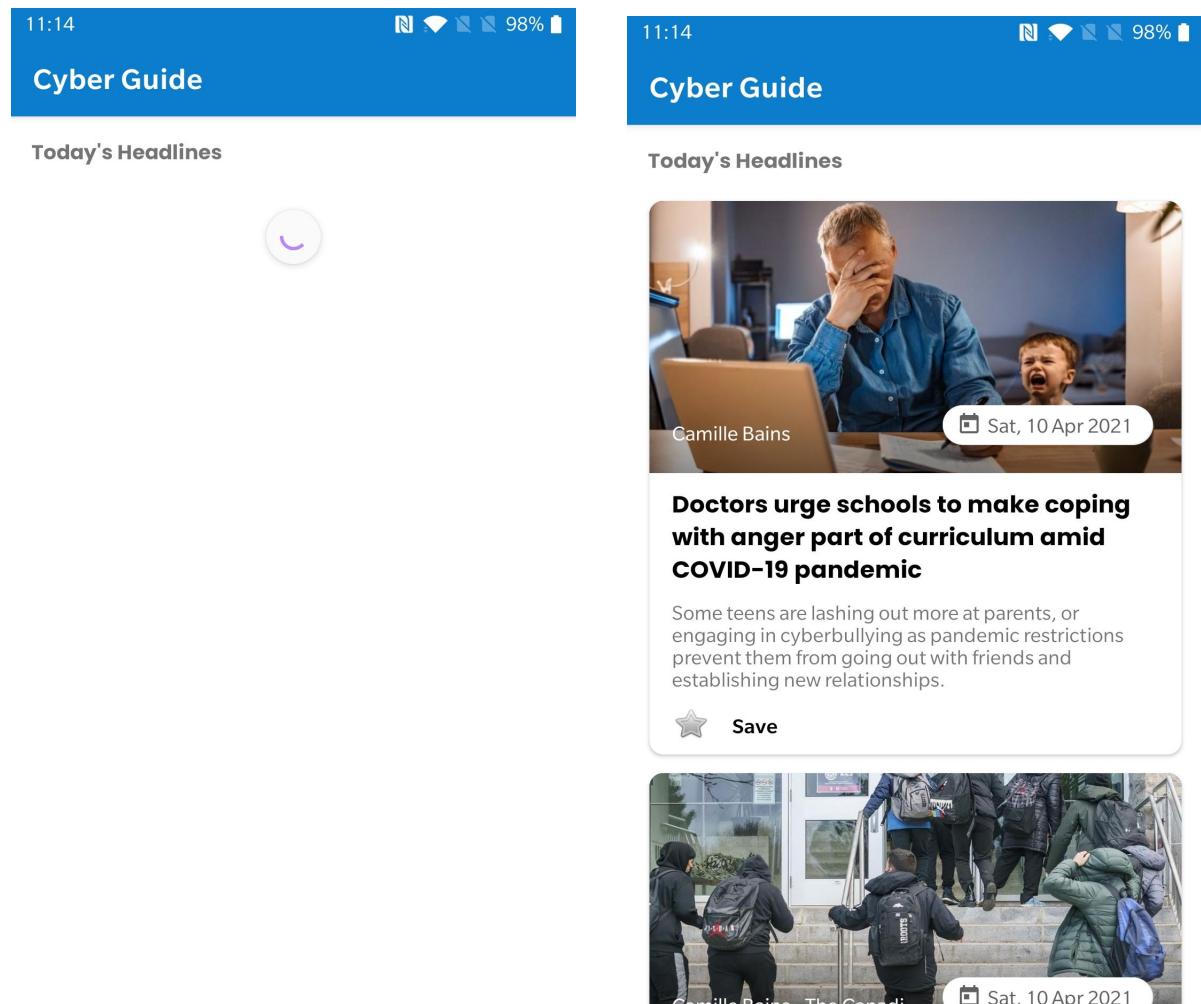
7 responses



8. MODULE IMPLEMENTATION

8.1 Latest News

On selecting the option **Latest News**, a new screen gets loaded which refreshes to fetch the latest news related to cyberbullying. The news is sorted according to the date.



The user also has the option to star mark a news article for future reference.

The image displays two side-by-side screenshots of a mobile application interface, likely a news aggregator or social media feed. Both screens show a blue header bar with the text "Cyber Guide".

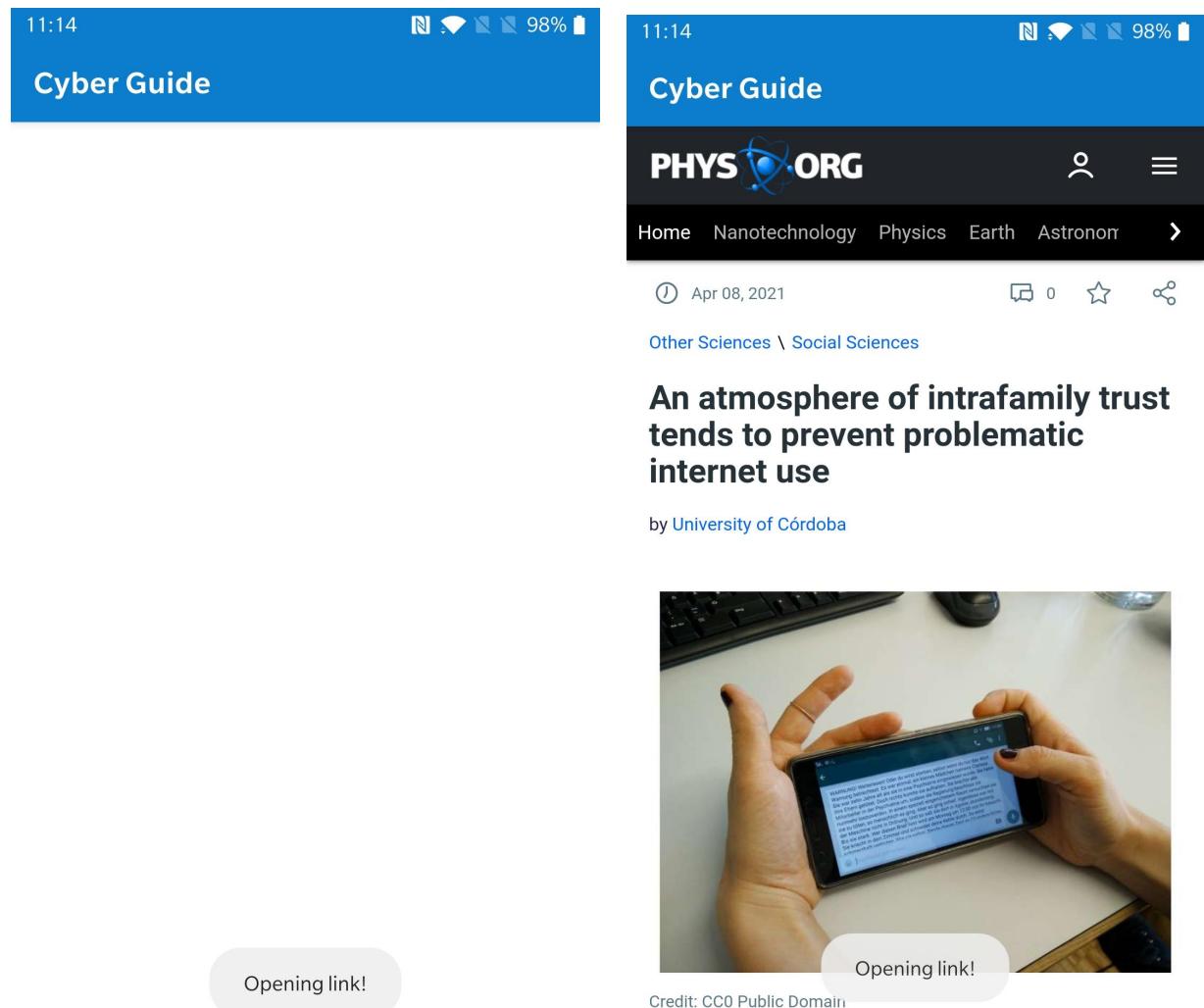
Left Screen (Fri, 9 Apr 2021):

- Article 1:** Headline: "Social media takes centre stage at Reel 2 Real Film Festival for Youth". Author: Dana Gee. Date: Fri, 9 Apr 2021. Preview: "The German film MySELFie is a wonderful and soul-quenching look at a teen's search for self." Save button: "Saved".
- Article 2:** Headline: "Klopp on social abuse: Companies must do more". Author: Aramide Oladipo. Date: Fri, 9 Apr 2021. Preview: "Liverpool boss Jurgen Klopp has called on social media companies to do more in the battle to eradicate abuse sent online." Save button: "Save".

Right Screen (Sun, 11 Apr 2021):

- Article 1:** Headline: "Stuart Broad would support social media boycott as racist abuse continues online". Author: PA Media: Sport. Date: Sun, 11 Apr 2021. Preview: "Some football teams and players have taken a break from social media." Save button: "Save".
- Article 2:** Headline: "Opening link". Author: ELLIS GIACOMELI. Date: Sun, 11 Apr 2021. Preview: A blurred image of a person in a dark suit. Save button: "Save".

Lastly, the user can click on any news article to know more information about it.



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