MAHENDRA COLLEGE OF ENGINEERING

Approved by AICTE and Affiliated by Anna University, Chennai
NAAC Accredited – Recognized U/S 2 (F) & 12 (B) of UGC Act 1956
Salem-Chennai Highway NH 79, Minnampalli, Salem-636106

DEPARTMENT OF INFORMATION TECHNOLOGY

CCS370 – UI AND UX DESIGN LABORATORY

RECORD NOTE BOOK

YEAR/SEMESTER: II I YEAR/ VI SEMESTER

MAHENDRA

COLLEGE OF ENGINEERING

NAAC Accredited

Approved by AICTE and Affiliated by Anna University, Chennai

Salem-Chennai Highway NH 79, Minnampalli, Salem-636106

Department of

_____

_____

LABORATORY RECORD

Certified to be the bonafide of work done by

Name: _____ Register No: _____

Class: _____ Branch: _____

Laboratory Name: _____

HEAD OF THE DEPARTMENT
DATE:

STAFF-IN-CHARGE

Submitted for the University Practical Examination on

_____

INTERNAL EXAMINER

EXTERNAL EXAMINER

S.NO	DATE	TITLE	PAGE NO	MARK	SIGN

INTERNAL MARK

STAFF INCHARGE

MAHENDRA COLLEGE OF ENGINEERING

SALEM-CAMPUS, ATTUR MAIN ROAD, MINNAMPALLI, SALEM -636 106.

DEPARTMENT OF INFORMATION TECHNOLOGY

DEPARTMENT VISION AND MISSION

VISION

To become a department, producing graduates with good technical skills in emerging areas of Information Technology, through value based education and research.

MISSION

- To provide exposure to students to the emerging technologies in Hardware and Software.
- To inculcate students with sound application knowledge.
- To establish strong Industry- Institute Interaction.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

To ensure graduates

- Have proficiency in programming skills to design, develop and apply appropriate techniques, to solve complex engineering problems.
- Have knowledge to build, automate and manage business solutions using cutting edge technologies.
- Have excitement towards research in applied computer technologies

PROGRAM OUTCOMES (POs)

1. **Engineering knowledge**

Apply the knowledge of mathematics science engineering fundamentals and mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis**

Identify, formulate, review research literature and analyze complex engineering problems researching substantiated conclusion using first principles of mathematics, natural sciences and engineering sciences.

3. **Design/develop of solution**

Design solutions for complex engineering problems and design systems components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations.

4. **Conduct investigation of complex solutions**

Use research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**

Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineering and society**

Apply reasoning informed by the contextual knowledge to asses societal, health, safety and legal and cultural issues and the consequent responsibilities legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development and need for sustainable development.

8. **Ethics**

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work**

Function effectively as an individual and as a member or leader in diverse teams and in diverse teams and individual, and in multidisciplinary settings.

10. **Communication**

Communication effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give receive clear instructions.

11. **Project management and finance**

Demonstrate knowledge and understanding of the engineering and knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

CCS370 – UI AND UX DESIGN LABORATORY

COURSE OBJECTIVES:

1. To provide a sound knowledge in UI & UX
2. To understand the need for UI and UX
3. To understand the various Research Methods used in Design
4. To explore the various Tools used in UI & UX
5. Creating a wireframe and prototype

LIST OF EXPERIMENTS:

1. Designing a Responsive layout for an societal application
2. Exploring various UI Interaction Patterns
3. Developing an interface with proper UI Style Guides
4. Developing Wire flow diagram for application using open source software
5. Exploring various open source collaborative interface Platform
6. Hands on Design Thinking Process for a new product
7. Brainstorming feature for proposed product
8. Defining the Look and Feel of the new Project
9. Create a Sample Pattern Library for that product (Mood board, Fonts, Colors based on UI principles)
10. Identify a customer problem to solve
11. Conduct end-to-end user research - User research, creating personas, Ideation process (User stories, Scenarios), Flow diagrams, Flow Mapping
12. Sketch, design with popular tool and build a prototype and perform usability testing and identify identify improvements

TOTAL: 60 PERIODS

SOFTWARE AND HARDWARE REQUIREMENTS:

Software Requirements	CSS,HTML
Hardware Requirements	Desktop Computer

COURSE OUTCOMES:

On completion of the course, the students will be able to:

CO1: Build UI for user Applications

CO2: Evaluate UX design of any product or application

CO3: Demonstrate UX Skills in product development

CO4: Implement Sketching principles

CO5: Create Wireframe and Prototype

CO's-PO&PSO'sMAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	1	1	3	1	-	-	-	3	3	2	1	3	3	1
2	2	3	1	3	2	-	-	-	1	2	2	2	1	2	2
3	1	3	3	2	2	-	-	-	2	3	1	2	1	3	3
4	1	2	3	3	1	-	-	-	3	2	1	3	3	3	3
5	1	2	3	2	1	-	-	-	2	1	1	1	3	2	2
Avg.	1.6	2.2	2.2	2.6	1.4	-	-	-	2.2	2.2	1.4	1.8	2.2	2.6	2.2

1-low, 2-medium, 3-high, '-'-no correlation

Ex.No:1	DESIGNING A RESPONSIVE LAYOUT FOR A SOCIETAL APPLICATION
Date:	

Aim:

To design a responsive layout for a societal application.

Algorithm:

1. HTML and CSS Setup:

- Create an HTML5 document with character encoding and viewport settings.
- Use internal CSS to style the layout components.

2. Reset Default Styles:

- Reset margins, padding, and specify a font-family for better control.

3. Style Header, Navigation, Content, and Footer:

- Apply back ground colors, text colors, and alignment to the header, navigation, and footer.
- Style navigation links as in line elements with spacing.
- Center-align text in header, navigation, and footer.

4. Implement Responsive Design:

- Use a media query for screens upto 768px wide.
- Adjust navigation form obile display (block-level elements with margin).

5. Add Content:

- Place your application's content with in the .container div.

PROGRAM

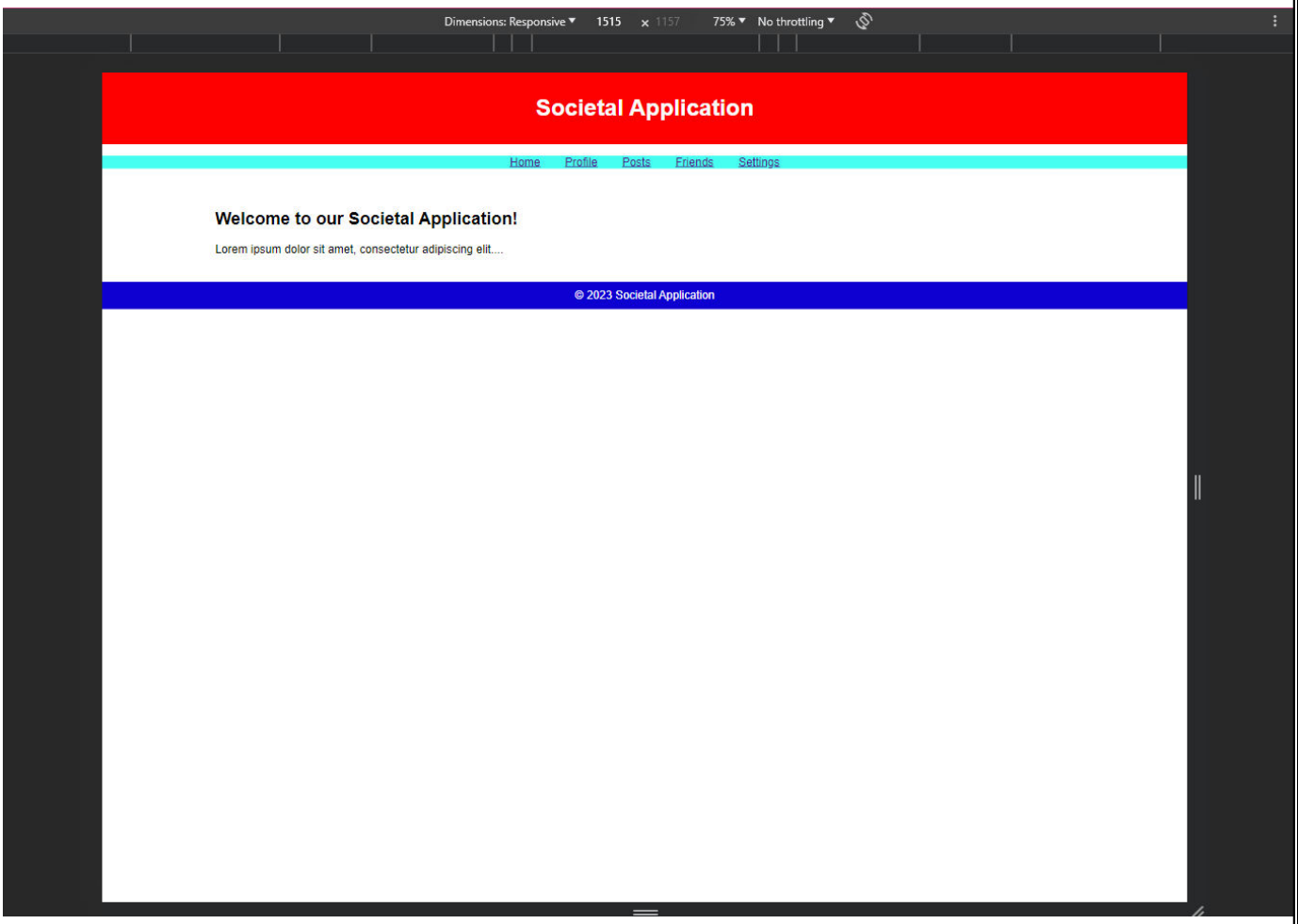
```
<!DOCTYPEhtml>
<htmllang="en">
<head>
    <metacharset="UTF-8">
    <metaname="viewport"content="width=device-width,initial-  scale=1.0">
    <title>SocietalApplication</title>
    <style>
        /*Resetsomedefaultstyles*/ body, html {
            margin:0;
            padding:0;
            font-family:Arial,sans-serif;
        }

        /*Headerstyles*/ header {
            background-color:#ff0000; color: #fff;
            padding: 10px; text-
            align:center;
        }

        /*Navigationstyles*/ nav {
            background-color:#47fff0; color: #fff;
            text-align:center;
        }

        navul{
            list-style:none; padding: 0;
        }

        navli{
            display:inline; margin: 0
            15px;
        }
```

```
        /*Maincontentstyles*/
        .container{
            max-width:1200px; margin:
            0 auto; padding: 20px;
        }

        /* Responsive design */ @Media(max-
        width:768px){
            nav {
                display: block; text-
                align:center;
            }
            navli{
                display:block;
                margin:10px0;
            }
        }

        /*Footerstyles*/ footer {
            background-color:#0e00d1; color: #fff;
            text-align:center; padding:
            10px;
        }
    </style>
</head>
<body>
    <header>
        <h1>SocietalApplication</h1>
    </header>
    <nav>
        <ul>
            <li><ahref="#">Home</a></li>
            <li><ahref="#">Profile</a></li>
            <li><ahref="#">Posts</a></li>
```

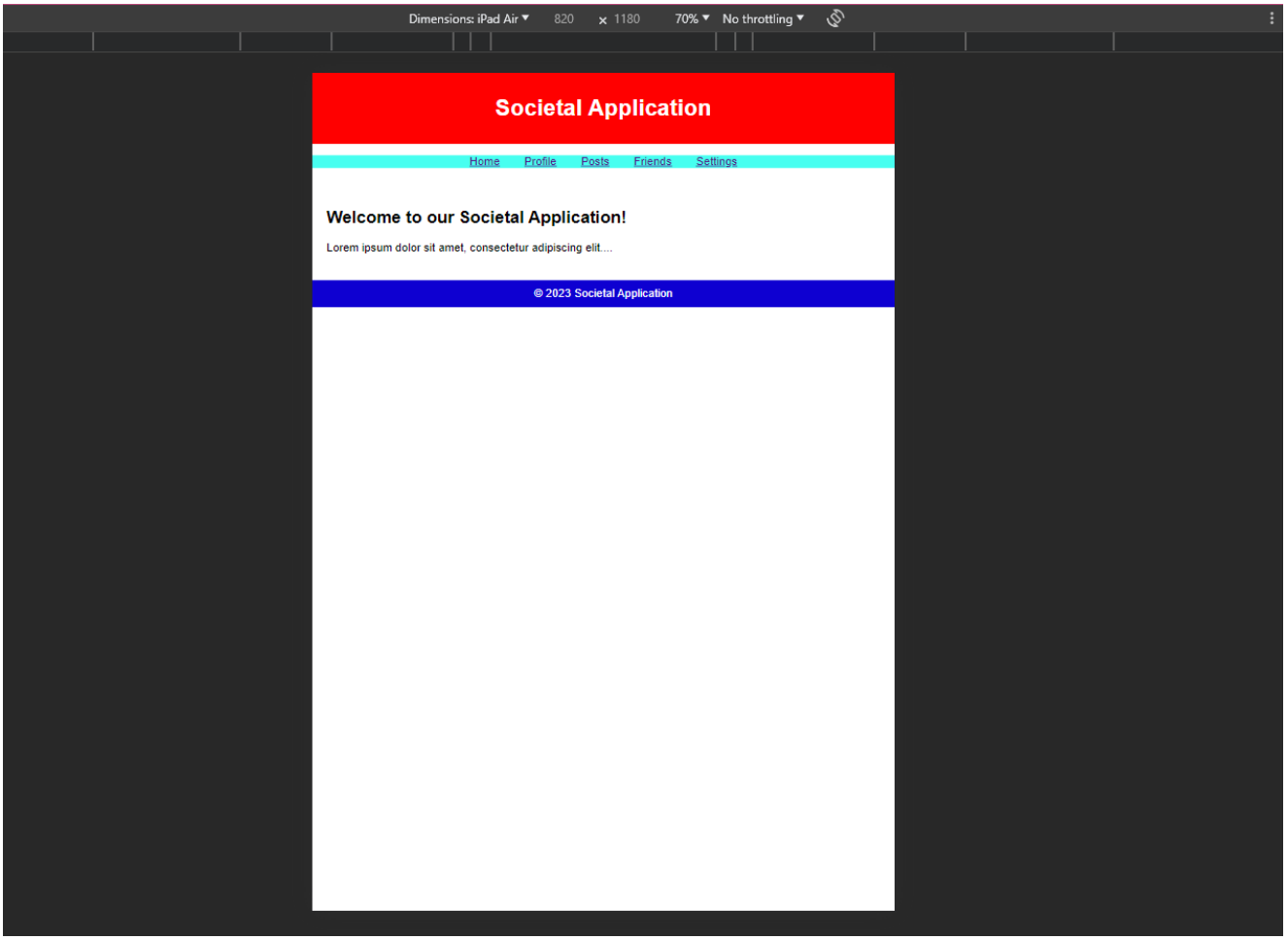
```
                <li><ahref="#">Friends</a></li>
                <li><ahref="#">Settings</a></li>
            </ul>
        </nav>
        <divclass="container">
            <!--Yourcontentgoeshere-->
            <h2>WelcometoourSocietalApplication!</h2>
              <p>Lorem ipsum dolor sit amet, consectetur adipescent elite        </p>
        </div>
        <footer>
            &copy;2023SocietalApplication
        </footer>
</body>
</html>
```

OUTPUT:

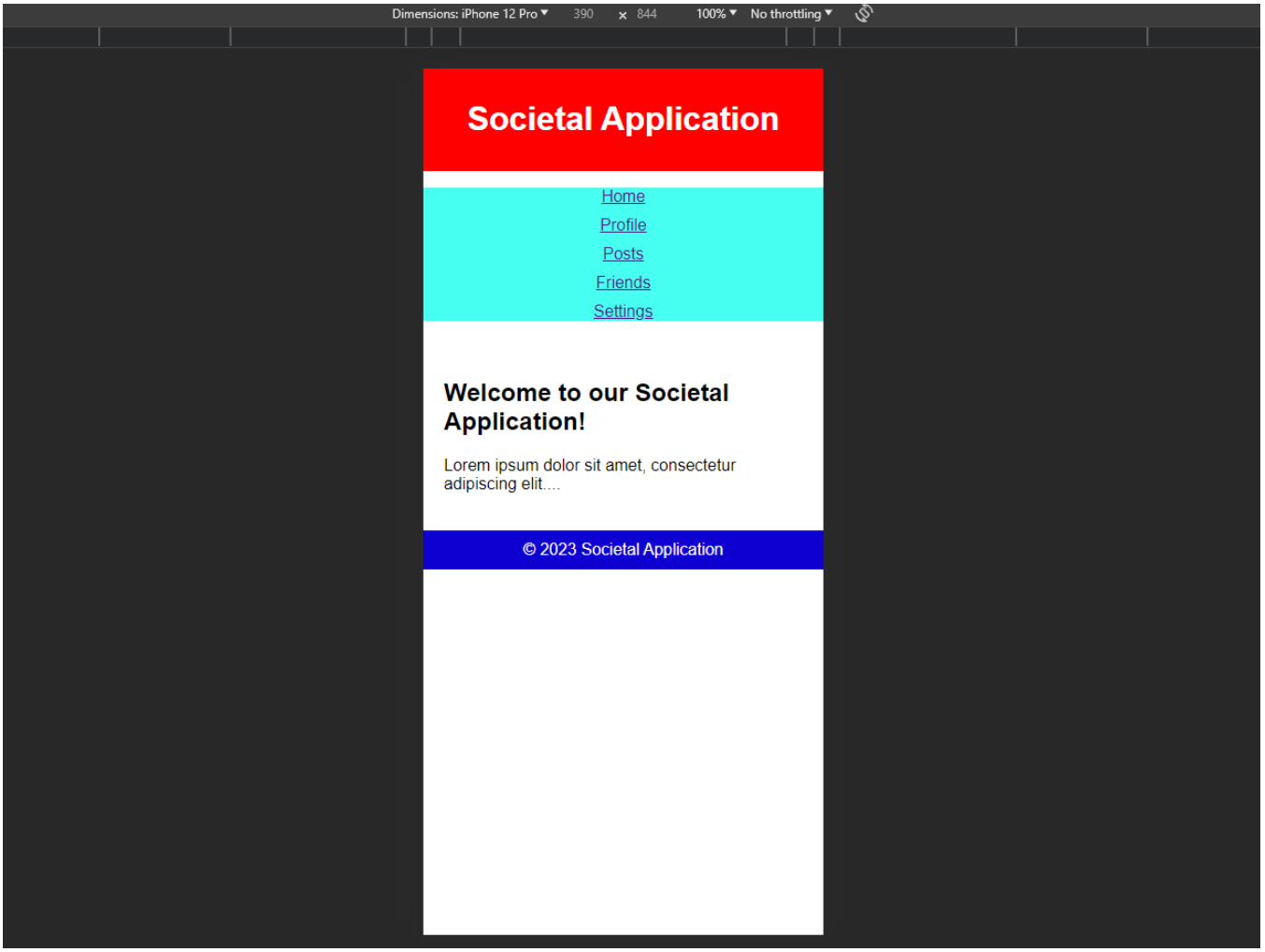
DESKTOP VIEW:



TABLET VIEW:


Dimensions: iPad Air 820 x 1180 70% No throttling
Societal Application
Home Profile Posts Friends Settings
Welcome to our Societal Application!
Lorem ipsum dolor sit amet, consectetur adipiscing elit....
© 2023 Societal Application

PHONE VIEW:


Dimensions: iPhone 12 Pro 390 × 844 100% No throttling
Societal Application
Home
Profile
Posts
Friends
Settings
Welcome to our Societal Application!
Lorem ipsum dolor sit amet, consectetur adipiscing elit....
© 2023 Societal Application

Figma:

Aim:

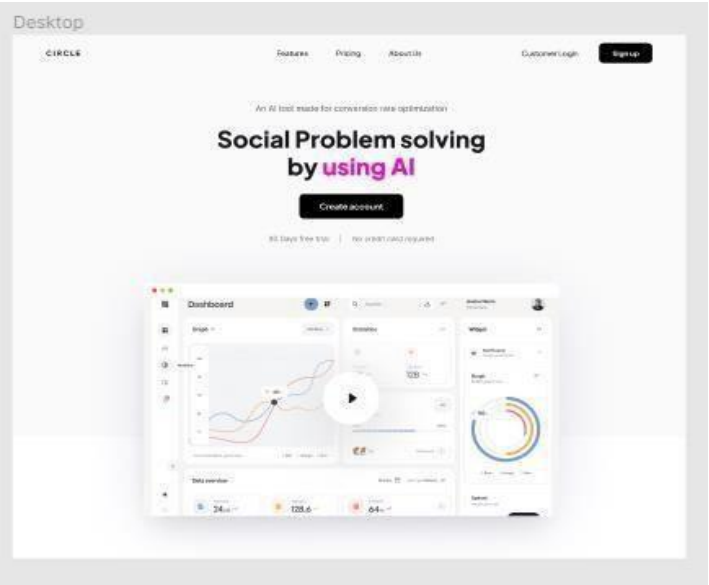
To design a responsive layout for a societal application.

Algorithm/Procedure:

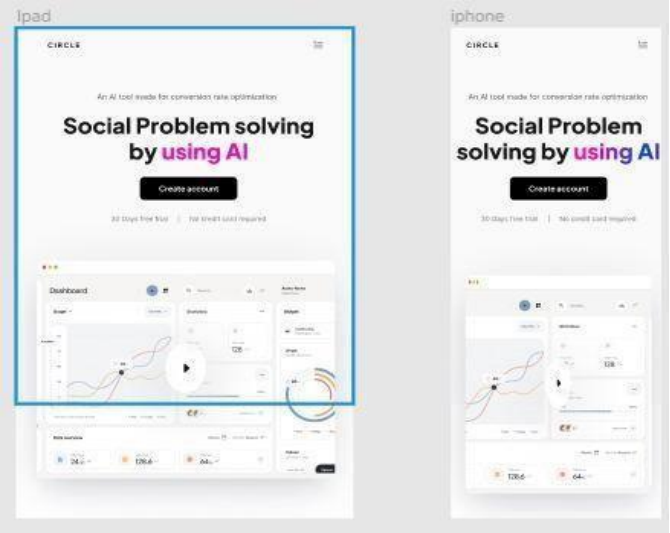
- Define your website's purpose and audience.
- Set breakpoints for different screens.
- Design desktop version.
- Use grids for layouts.
- Design for tablet and mobile.
- Create responsive components.
- Apply constraints to elements.
- Use relative font sizes.
- Optimize images.
- Test and prototype.
- Use grid/flexbox layouts.
- Design responsive navigation.
- Consider touch interactions.
- Test on various devices.
- Iterate based on feedback.
- Document choices.
- Share with developers.
- Maintain and update design.

UI Design:

Desktop:



Tablets and Phone:



Result:

Thus designing of responsive layout for a societal application hasbeen performed successfully.

Ex.No:2	EXPLORING VARIOUS UI INTERACTION PATTERNS
Date:	

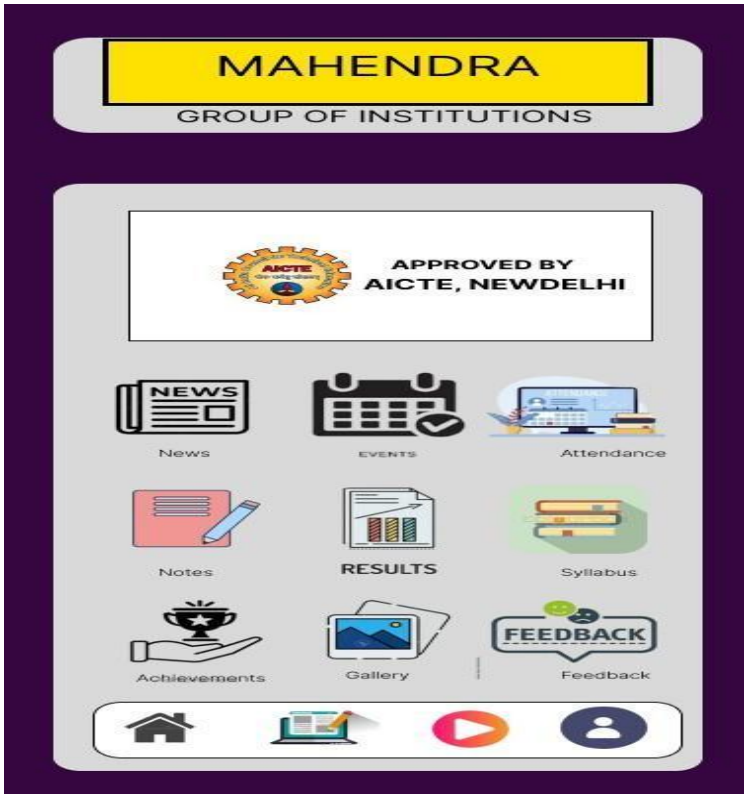
Aim:

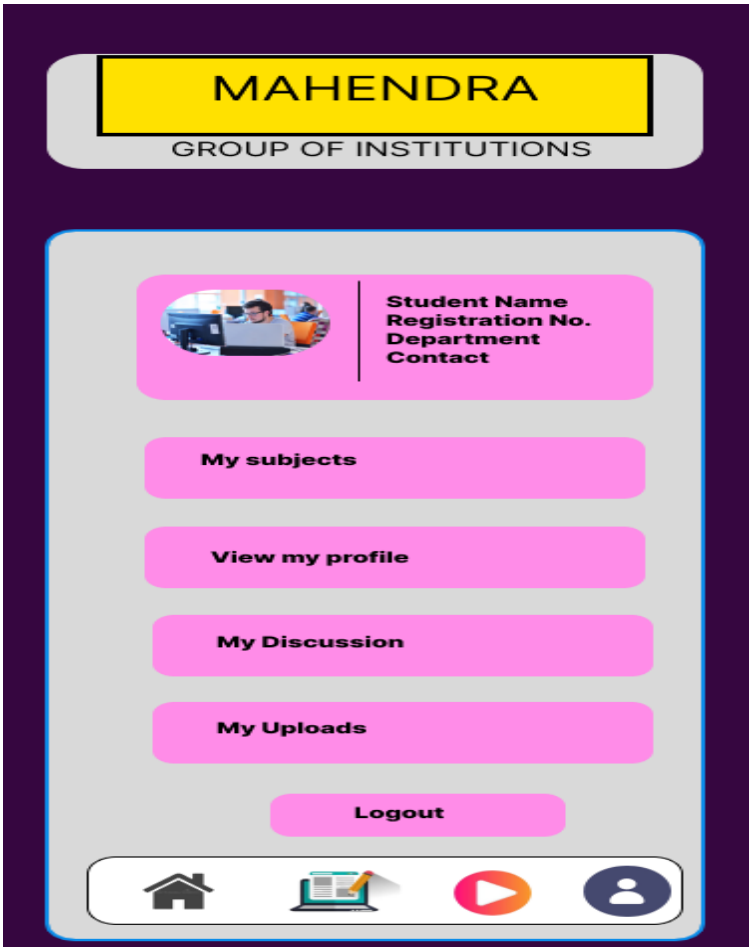
To explore various UI interaction patterns.

Algorithm/Procedure:

- Set objectives and understand user needs.
- Research and gather design inspiration.
- Create wireframes for layout and structure.
- Utilize Figma components and styles.
- Prototype interactions using Figma's features.
- Test your design with users for feedback.
- Iterate and refine based on feedback.
- Document your design decisions.

Figma Design:





Result:

Thus various UI interaction patterns have been explored Successfully.

Ex.No:3	DEVELOPING AN INTERFACE WITH PROPER UI STYLE GUIDES
Date:	

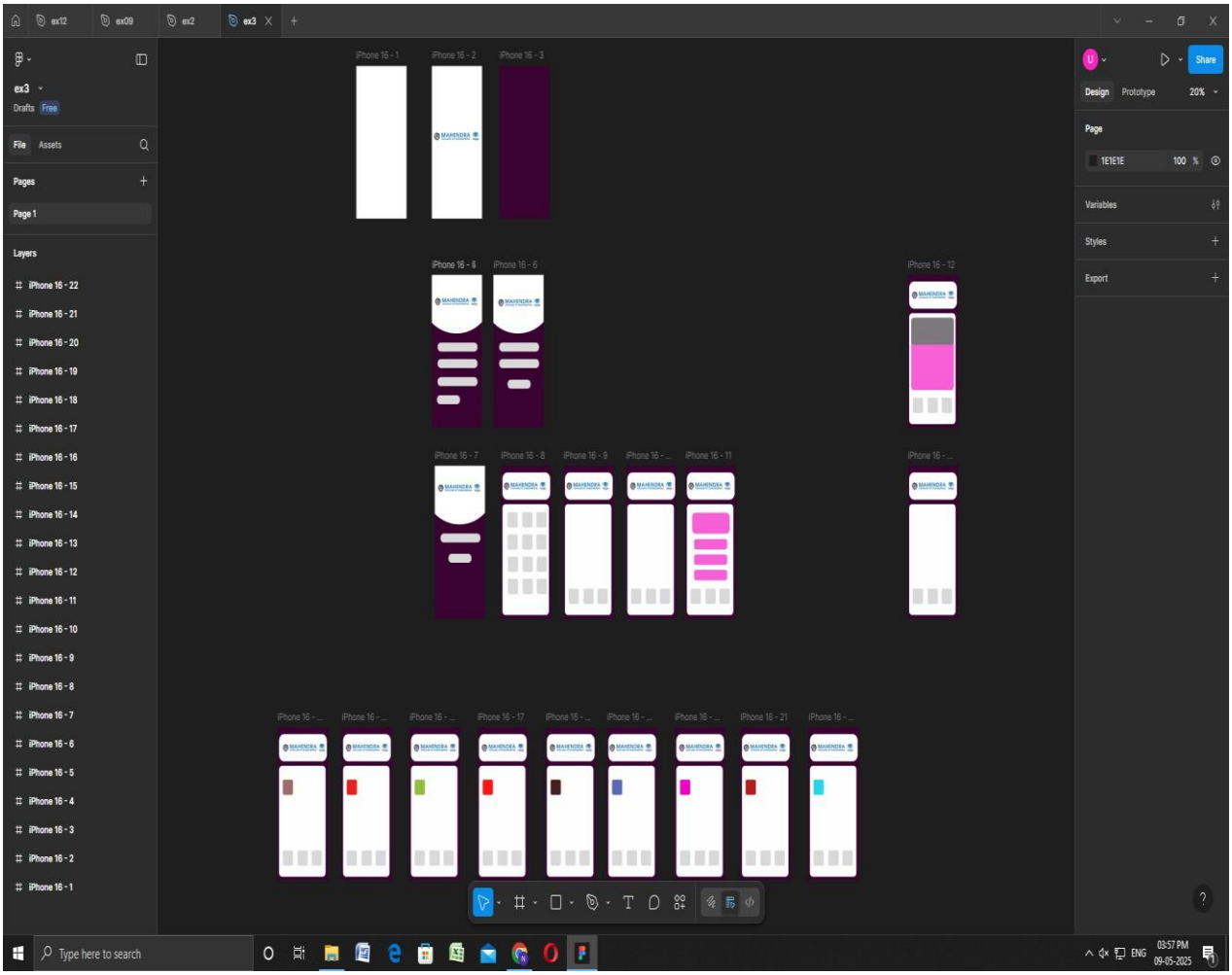
Aim:

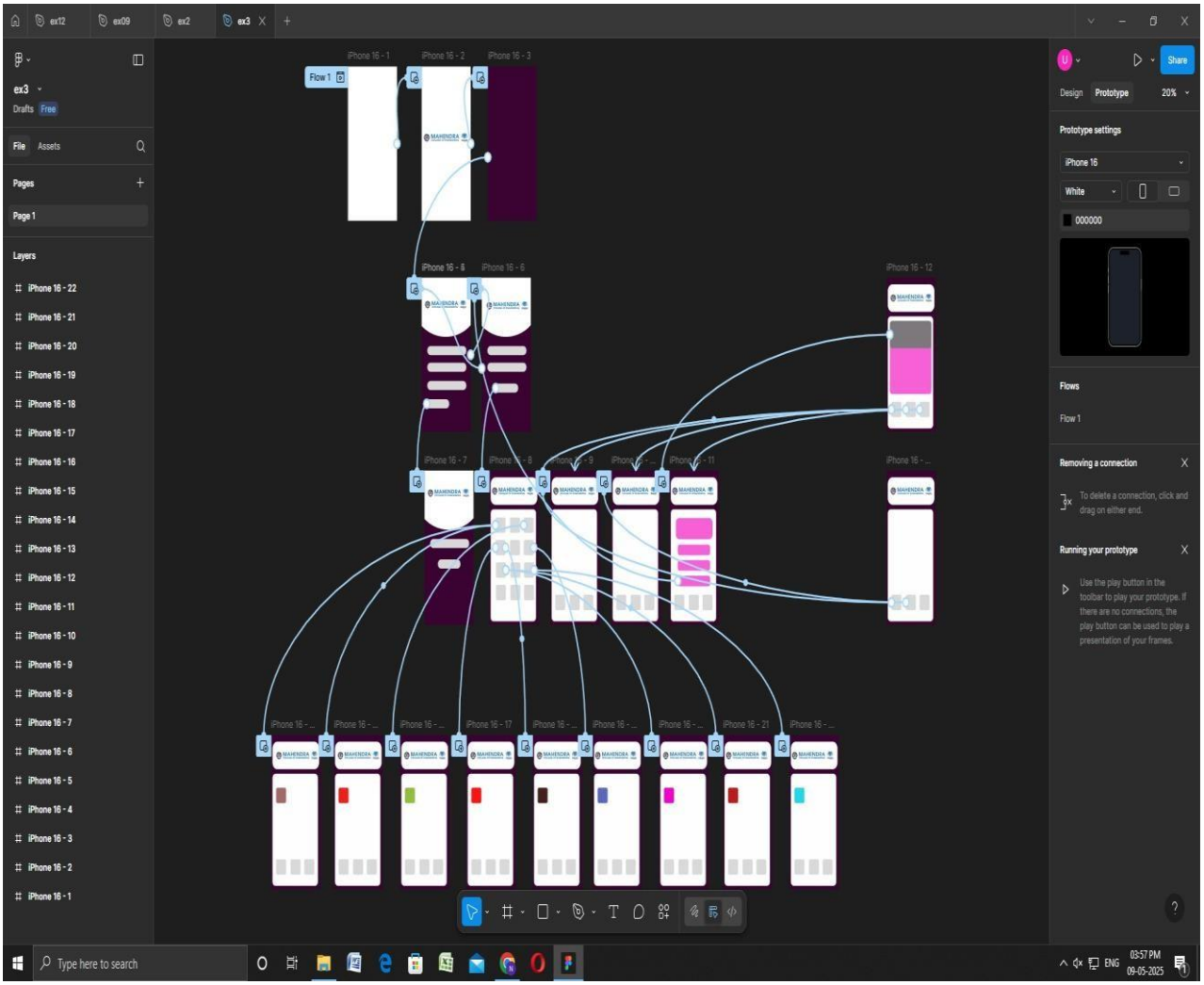
To develop an Interface with Proper UI Style Guides.

Algorithm/Procedure:

- Define Goals and Audience: Understand the project's purpose and targetusers.
- Research and Inspiration: Gather industry insights and design inspiration.
- Create a Figma Project: Start a new Figma project.
- Workspace Setup: Organize Figma files and create sections for styleguides and components.
- Brand Guidelines: Set color, typography, and brand-related guidelines.
- UI Components: Create component libraries for buttons, forms, icons,and navigation.
- Typography: Define font styles, sizes, and spacing.
- Iconography: Design and organize icons as components.
- Color System: Document primary, secondary, background, and textcolors.
- Grids and Layouts: Establish grid systems for different devices.
- Accessibility Guidelines: Ensure WCAG-compliant contrast and text sizing.
- UI Elements: Document usage guidelines for various UI elements.
- Wireframes: Create wireframes and user flows for screen layout andinteraction.
- Visual Design: Develop screens based on wireframes using componentsand styles.
- Interactive Prototyping: Build interactive prototypes for user testing andfeedback.

FigmaDesign:





Result:

Thus an Interface with Proper UI Style Guides has been developed successfully.

Ex.No:4	DEVELOPING WIREFLOW DIAGRAM FOR APPLICATION USING OPEN-SOURCESOFTWARE
Date:	

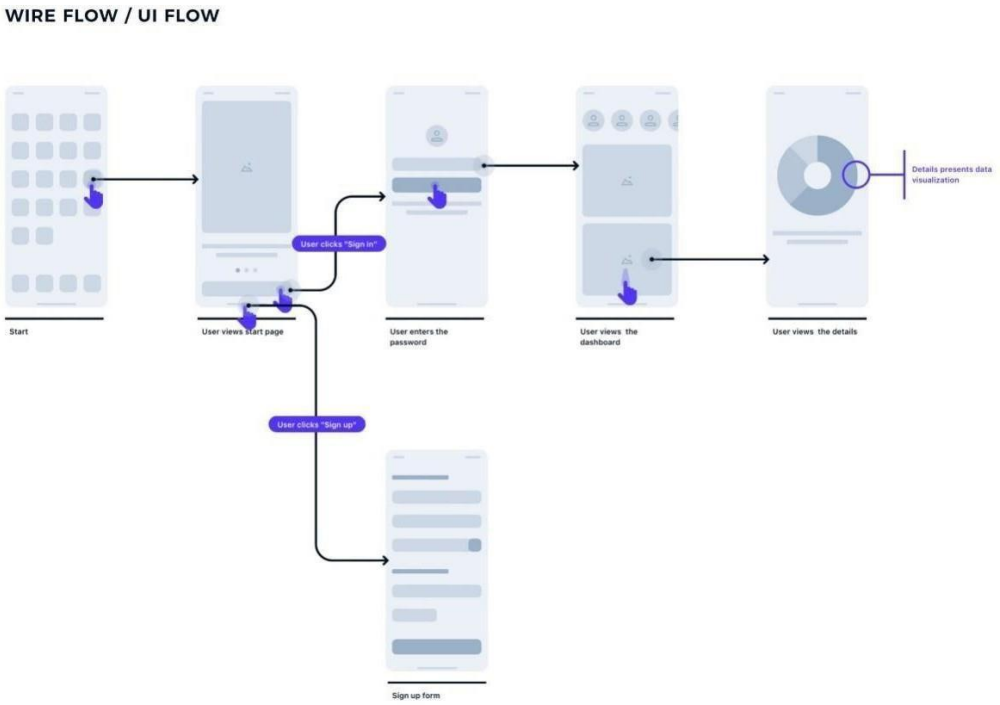
Aim:

To develop Wireflow diagram for application using open-source software

Algorithm/Procedure:

- **Define Purpose and Goals**: Determine the diagram's purpose andgoals, focusing on user flows, navigation, and interactions.
- **Identify User Personas**: If applicable, specify user personas for auser-centric approach.
- **Gather Requirements**: Collect project information, including existingdesigns and functionality requirements.
- **Select Software**: Choose open-source design software, such asFigma, for wireflow creation.
- **Create a Project**: Begin a new project in your chosen software andset up the canvas to match your project's needs.
- **Wireframe Screens**: Develop wireframes for each application screen,focusing on visual structure.
- **Define Interactions**: Add interaction notes or links to illustratenavigation and user interactions.
- **Create User Flows**: Connect wireframes to illustrate user journeys,navigation paths, and interactions.
- **Add Annotations**: Include descriptions to clarify elements and interactions in each wireframe.
- **Collaborate and Share**: Utilize collaboration features to gatherfeedback from team members and stakeholders.
- **Iterate and Refine**: Revise the wireflow diagram based on -feedback, ensuring alignment with project goals
- **Finalize and Export**: Clean up the wireflow diagram and export it to a suitable format for sharing and documentation.
- **Document the Wireflow**: Create a reference guide to explain the wireflow's purpose and key notes for stakeholders and developers.
- **Maintain Consistency**: Keep the wireflow diagram in sync with the application's actual design, updating it as needed.

Design:



Result:

Thus Wireflow diagram for application using open-source software has been developed successfully.

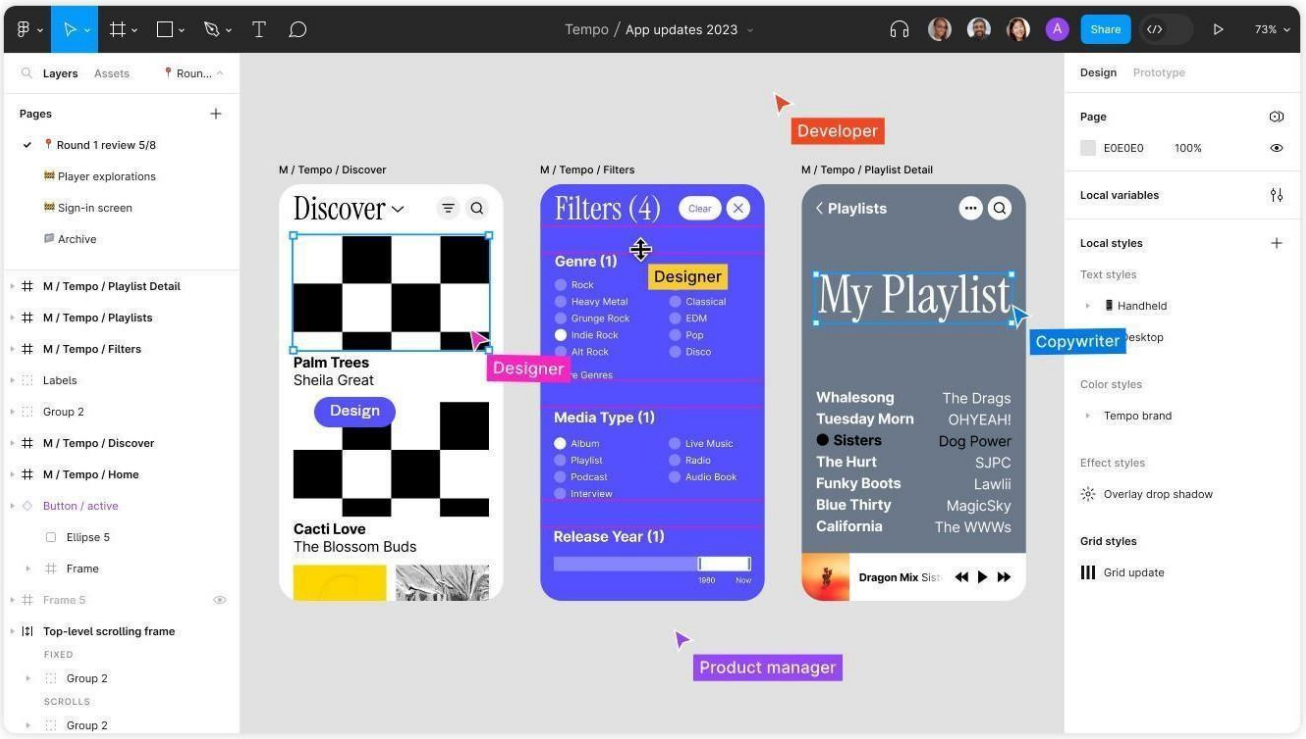
Ex.No:5	EXPLORING VARIOUS OPEN-SOURCE COLLABORATIVE INTERFACE PLATFORM
Date:	

Aim:

To Explore Various Open-Source Collaborative Interface Platform.

Algorithm/Procedure:

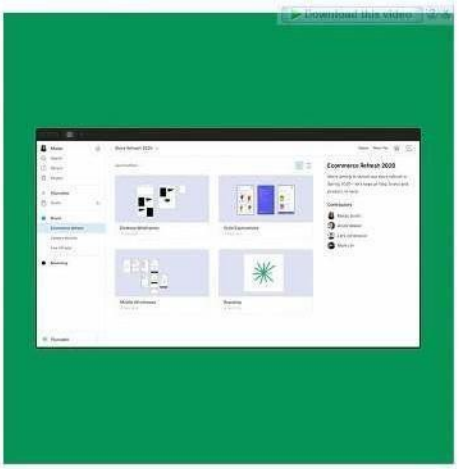
- **Needs Assessment**: Define your team's requirements and goals.
- **Research Platforms**: Identify open-source collaborative tools.
- **Feature Comparison**: Assess features and compatibility.
- **Community Support**: Check for active communities.
- **Installation**: Set up the chosen platform.
- **User Training**: Train and encourage team adoption.
- **Security**: Ensure data security and privacy.
- **Integration**: Check for compatibility with existing tools.
- **Testing and Feedback**: Pilot testing and gather feedback.
- **Scalability**: Ensure the platform can grow with your team.
- **Documentation**: Create user resources and guides.
- **Community Engagement**: Utilize community support.
- **Maintenance**: Keep the platform updated and secure.
- **Feedback Loop**: Encourage ongoing user feedback.
- **Legal Compliance**: Ensure adherence to licensing and Legal requirements.
- **Backup and Recovery**: Implement data safety measures.
- **Periodic Evaluation**: Continuously assess platform suitability.
- **Migration Plan**: Prepare for possible platform changes.
- **Success Sharing**: Promote successful platform usage.

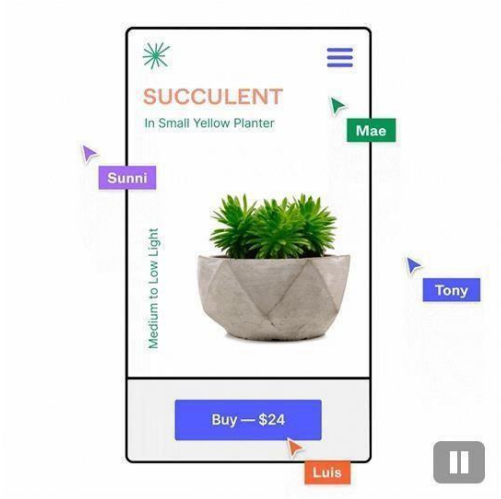


Discover the most important design work

Figma is where design work gets the visibility it needs across teams.

- **Get the latest updates:** Project Pages serve as your team's hub. Pin files for easy access. Add notes for context.
- **Centered around people:** Easily see contributors and projects on Team and Organization Pages.
- **Discover work by creator:** Browse the latest files each user has contributed to on their profile.





Jump into a file as a team. Bring people on your journey.

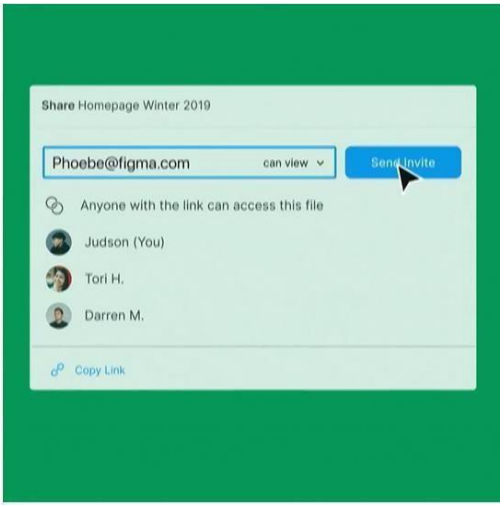
Figma makes the design process transparent, which means everyone gets aligned fast—and stays aligned.

- **Edit together in real-time:** Co-design alongside your co-workers. Run global design critiques.
- **Follow along with Observation Mode:** Shadow the presenter's every move and never get lost.
- **Worry-free version history:** See who changed what and go back in time as needed.

Invite folks into your design process

Enable others to add copy, grab specs, and give you feedback, so you ship better work.

- **Invite the people you want:** Figma puts you in the driver seat. Control who can view, add comments, and edit.
- **Share links to files:** Send a link to your Figma file. View from anywhere with the Interwebs.
- **Share or embed prototypes:** Send a link to your prototype or embed it in your preferred tool.



Result:

Thus various open-source collaborative interfaces Platform have been explored successfully.

Ex.No:6	HANDS ON DESIGN THINKING PROCESS FOR A NEW PRODUCT
Date:	

Aim:

To apply the design thinking process for a new product.

Algorithm/Procedure:

- **Empathize:** Begin by conducting user research and interviews to gain insights into potential user needs and pain points related to smart phone usage.
- **Define:** Analyze the gathered information to define a clear and specific problem statement. For example, "Users need a more efficient way to track their daily fitness activities."
- **Ideate:** Organize brainstorming sessions with a diverse team to generate a wide range of creative solutions. Encourage free thinking and open collaboration.
- **Prototype:** Create a low-fidelity prototype of the smartphone app. This can be a paper sketch or a digital wireframe that represents the app's basic functionality.
- **Test:** Conduct user testing sessions with a small group of potential users. Observe how they interact with the prototype and gather feedback.
- **Iterate:** Based on user feedback, refine the prototype and make necessary improvements to address user concerns or suggestions.
- **Prototype (Again):** Create a more advanced prototype, closer to the final product. It should incorporate the changes and improvements identified during the initial testing phase.
- **Test (Again):** Conduct another round of user testing, this time with a larger group of users. Gather data on usability, functionality, and overall user experience.
- **Refine:** Analyze the results of the second testing phase and make further refinements to the app design and functionality.
- **Implement:** Develop the final version of the smart phone app, incorporating all the changes and improvements identified during the design thinking process.
- **Test (Final Testing):** Conduct thorough testing of the fully developed app to ensure it's bug-free and ready for launch.
- **Launch:** Release the app to the target market, accompanied by marketing and promotion efforts.

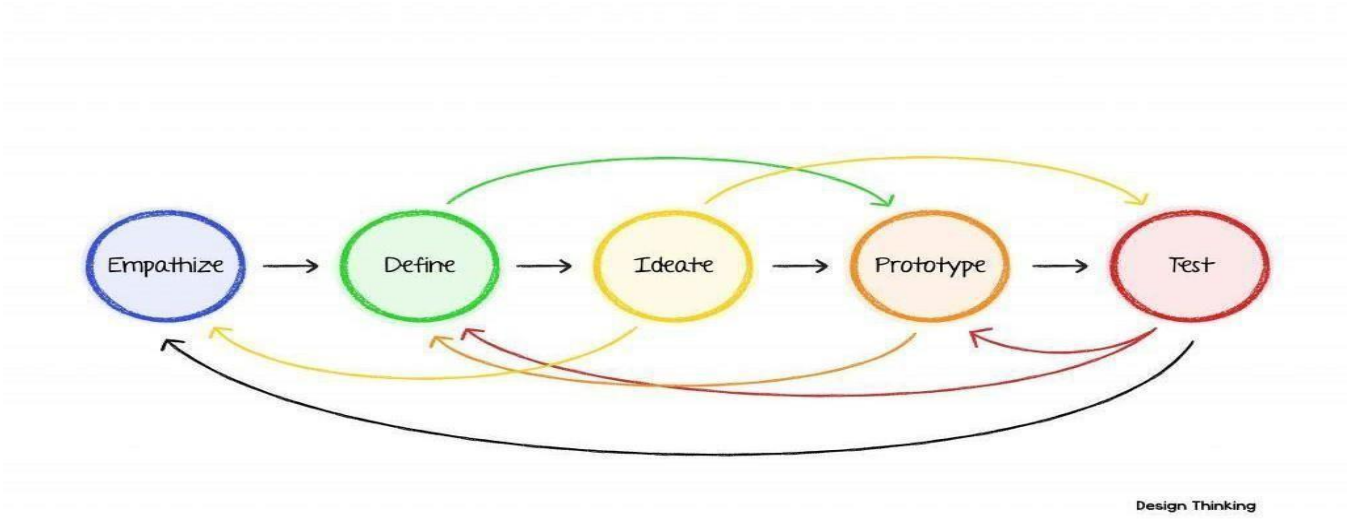
Example:

Let's say the team is designing a fitness tracking app. During the "Empathize" phase, they conduct interviews and surveys with potential users, discovering that users find it challenging to keep track of their daily physical activities. In the "Define" phase, they define the problem as "Users need a more efficient way to track their daily fitness activities."

In the "Ideate" phase, the team generates multiple ideas, including features like GPS tracking, step counting, and customizable fitness goals. They create a low-fidelity prototype that represents these features. In the first round of user testing, they observe that users have difficulty navigating the app.

After gathering feedback and identifying navigation issues, the team iterates by redesigning the user interface to improve user experience. They create an advanced prototype with a more intuitive interface and test it with a larger group of users in the second round of testing.

Based on this testing, the team further refines the app, making sure it's user-friendly, bug-free, and meets the needs of the target audience. Finally, they implement and launch the fitness tracking app to help users easily track their daily activities.



Result:

Thus the design thinking process for new product has been studied.

Ex.No:7	BRAINSTORMING FEATURE FOR PROPOSED PRODUCT
Date:	

Aim:

The aim of this process is to generate innovative and practical feature ideas for a proposed product, ensuring that the final product meets user needs, addresses pain points, and has a competitive edge in the market.

Algorithm/Procedure:

Understand the Product Concept:

Begin by thoroughly understanding the proposed product's concept, itstarget audience, and its unique selling points.

Gather a Diverse Team:

Assemble a cross-functional team with members from various departments (e.g., product development, marketing, design) to bring different perspectives to the brainstorming session.

Set Clear Objectives:

Define clear objectives for the brainstorming session. What problemsshould the new features solve? What goals should they achieve?

Warm-Up and Icebreaker:

Start the session with a warm-up or icebreaker activity to encouragecreative thinking and open communication within the team.

Idea Generation:

Allow team members to freely brainstorm feature ideas. Encourage a "noidea is a bad idea" mindset. Use techniques like mind mapping, brainstorming software, or post-it notes on a whiteboard to record ideas.

Categorize and Prioritize:

Group similar ideas together, and prioritize them based on factors likefeasibility, potential impact, and alignment with the product concept.

SWOT Analysis:

Conduct a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysisfor each feature idea to evaluate its potential in the market.

Feasibility Assessment:

Assess the technical, financial, and resource feasibility of implementingthe proposed features.

Market Research:

Conduct market research to identify user preferences and gather insightsthat can inform feature development.

Prototype and User Testing:

Create prototypes or mockups of the proposed features and conduct usertesting to gather feedback and refine the ideas.

Cost-Benefit Analysis:

Evaluate the expected cost of development against the projected benefits,such as increased user engagement, retention, or revenue.

Risk Assessment:

Identify potential risks associated with each feature and develop mitigation strategies.

Finalize Feature Set:

Based on the assessment, finalize the set of features to be included inthe product. Ensure they align with the product's vision and goals.

Documentation:

Document the chosen features, their objectives, and the rationale behindtheir selection. This document will guide the development team.

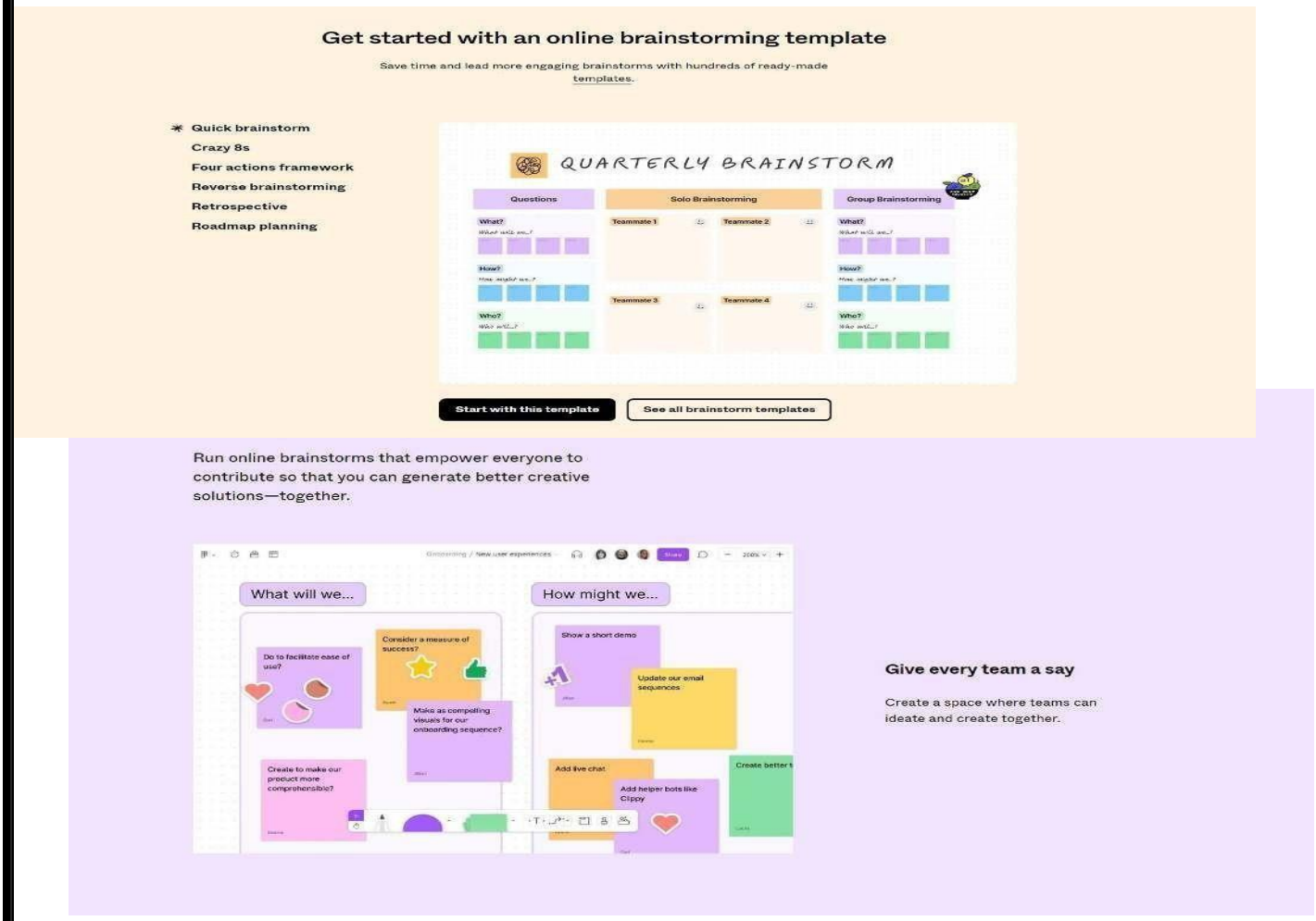
Iterate as Needed:

Keep an open line of communication for ongoing feature refinements anditerations, especially as more data and insights become available.

Example:

Suppose a software company is developing a new mobile messaging app. During the brainstorming session, the team generates a wide range of feature ideas, including:

- **End-to-End Encryption:** To ensure user privacy and data security.
- **Message Scheduling**: Allowing users to schedule messages to be sent at a specific time.
- **Reaction Emojis**: A feature that lets users react to messages with emojis for more expressive communication.
- **Dark Mode**: A night-friendly theme for the app.
- **Polls and Surveys**: Integration of polls and surveys within the chat for easydecision-making.
- **Auto-Translate**: Real-time language translation for international communication.



Result:

Thus brainstorming feature for proposed product has been appliedand executed successfully.

Ex.No:8	DEFINING THE LOOK AND FEEL OF THE NEW PROJECT
Date:	

Aim:

The aim is to establish the visual design and user experience for a new project, ensuring it aligns with the project's goals and provides an appealing, intuitive, and cohesive interface for users.

Algorithm/Procedure:

Project Goal Assessment:

Understand the project's objectives, target audience, and scope. This sets the foundation for design decisions.

Research and Inspiration:

Gather inspiration from existing designs and industry trends. Create mood boards or design boards to collect visual references.

Define Design Principles:

Determine the core design principles that will guide the project's look and feel. These could include simplicity, consistency, accessibility, and branding.

Wireframing and Prototyping:

Create wireframes or low-fidelity prototypes to plan the layout and structure of the user interface. Use tools like Figma, Sketch, or Adobe XD for digital projects.

Visual Design:

Develop a color palette, typography choices, and graphic elements (icons, images, logos) that reflect the project's identity. Create high-fidelity designs using design software.

User Interaction Design:

Define user interactions and behaviors, including animations, transitions, and micro-interactions. Ensure a smooth and intuitive user experience.

Responsive Design:

Adapt the design to various screen sizes and devices, focusing on mobile responsiveness.

Accessibility and Usability Testing:

Evaluate the design for accessibility, ensuring it's usable by individuals with disabilities. Conduct usability testing with potential users to gather feedback.

Iteration and Feedback:

Refine the design based on feedback from users and stakeholders.

Documentation:

Create design documentation that includes guidelines for developers toimplement the design.

Development Integration:

Collaboratewith developers to ensure the design is implemented accurately in the project.

User Testing:

Conduct user testing with real users to verify the design's effectiveness.

Finalization:

Make necessary adjustments and finalize the design elements for deployment.

Example:

Imagine you're tasked with defining the look and feel of a new e-commerce website. You go through the following steps:

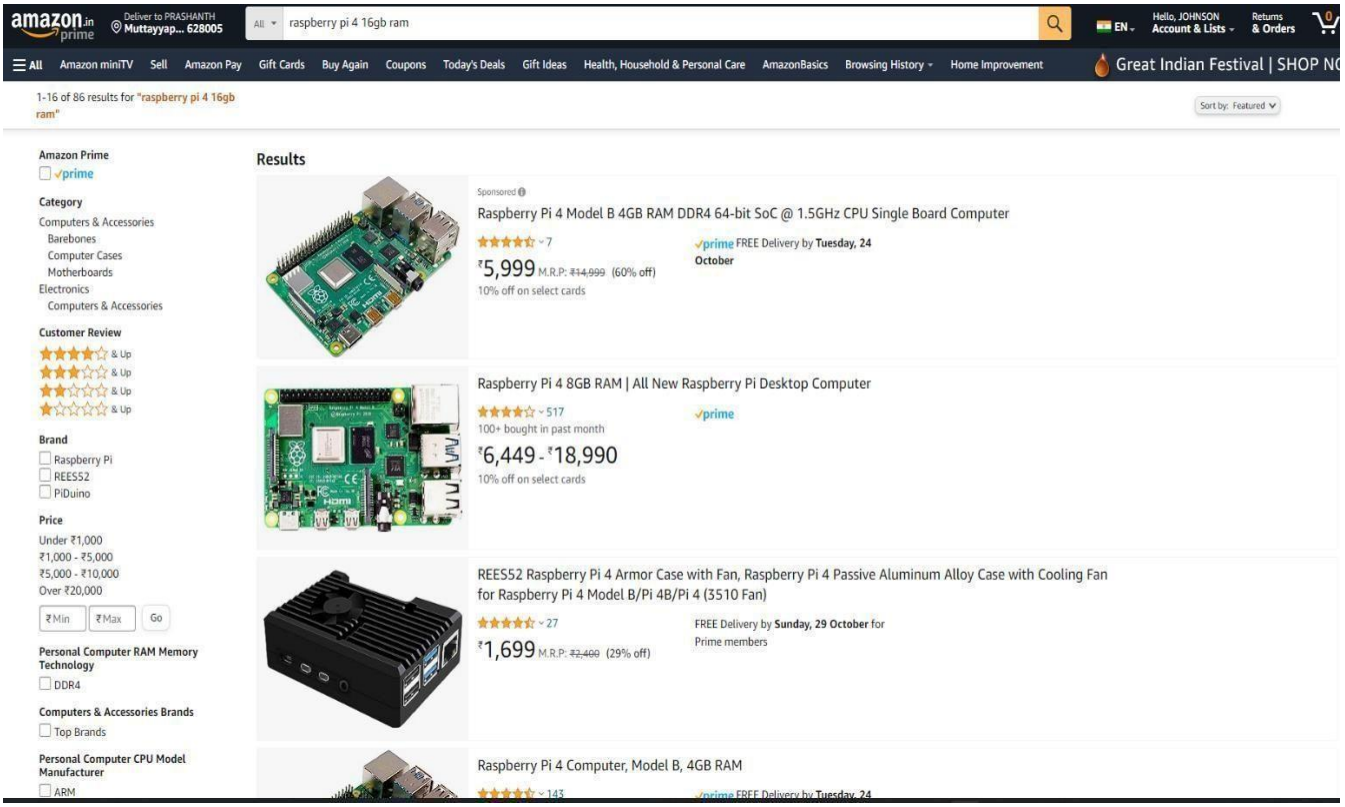
Assess the project's goal:

To create a user-friendly, visually appealing online store. Research e-commerce design trends and competitor websites.

Define design principles:

Simplicity, trust worthiness, and a focus on the product. Create wireframes for key pages like the homepage, product listing, and product detail pages. Develop a color palette featuring subtle, trust-inducing colors. Choose a clear and readable typography for product descriptions and headings. Plan user interactions like product image zoom and streamline checkout process.

Ensure that the design is responsive and mobile-friendly. Conduct accessibility testing to meet WCAG standards. Iterate on the design based on usability testing feedback. Document the design guidelines for the development team. Collaborate closely with developers to bring the design to life. Conduct user testing to validate the design's effectiveness. Make finaladjustments and prepare for the website's launch.



Result:

Thus the Look and Feel of the new Project has been defined successfully.

Ex.No:9	CREATE A SAMPLE PATTERN LIBRARY FOR THE PRODUCT (MOOD BOARD, FONTS, COLORS BASED ON UI PRINCIPLES)
Date:	

Aim:

The aim of this project is to create a sample Pattern Library for a product that includes mood boards, fonts, and color schemes based on UI (User Interface) principles. The Pattern Library will serve as a design reference for maintaining consistency and cohesion in the product's user interface.

Algorithm/Procedure:

Define the Scope:

Identify the product for which you are creating the Pattern Library. Understand the product's target audience, brand identity, and design goals.

Gather Inspiration:

Research existing UI designs, competitor products, and design trends to gather inspiration. This will help you create a mood board that captures the desired aesthetics.

Create Mood Boards:

Using design software or tools like Adobe XD or Figma, create mood boards that reflect the desired visual style, mood, and tone of the product.Include images, colors, typography samples, and other visual elements that represent the brand and design principles.

Choose Fonts:

Select fonts that align with the product's brand and design goals. Consider readability, hierarchy, and scalability. Choose a primary font for headings and body text, and possibly secondary fonts for accents.

Define Color Palette:

Create a color palette that includes primary, secondary, and accent colors. Ensure the colors are harmonious and comply with accessibility guidelines. Provide color codes (hex, RGB, or HSL) for each color.

Document UI Principles:

Document the UI design principles that underpin the Pattern Library. This may include guidelines on spacing, layout, typography, and interaction behaviors.

Organize and Label:

Organize the Pattern Library in a clear and accessible manner. Label each component, color, and typography choice, and provide context or usage guidelines.

Mockup Example Screens:

Create example screens or wireframes using the fonts, colors, and components defined in the Pattern Library. These screens should showcase the design principles in action.

Test and Refine:

Share the Pattern Library with designers, stakeholders, or users for feedback. Make refinements based on the feedback to ensure it aligns with the project's goals.

Maintenance and Version Control:

As the product evolves, maintain and update the Pattern Library to reflect any design changes. Use version control systems to keep track of changes and updates.

Example:

Let's say you're creating a Pattern Library for a mobile app focused on wellness and meditation. The aim is to create a soothing and user-friendly design that promotes relaxation. Here's a simplified example:

Mood Board:

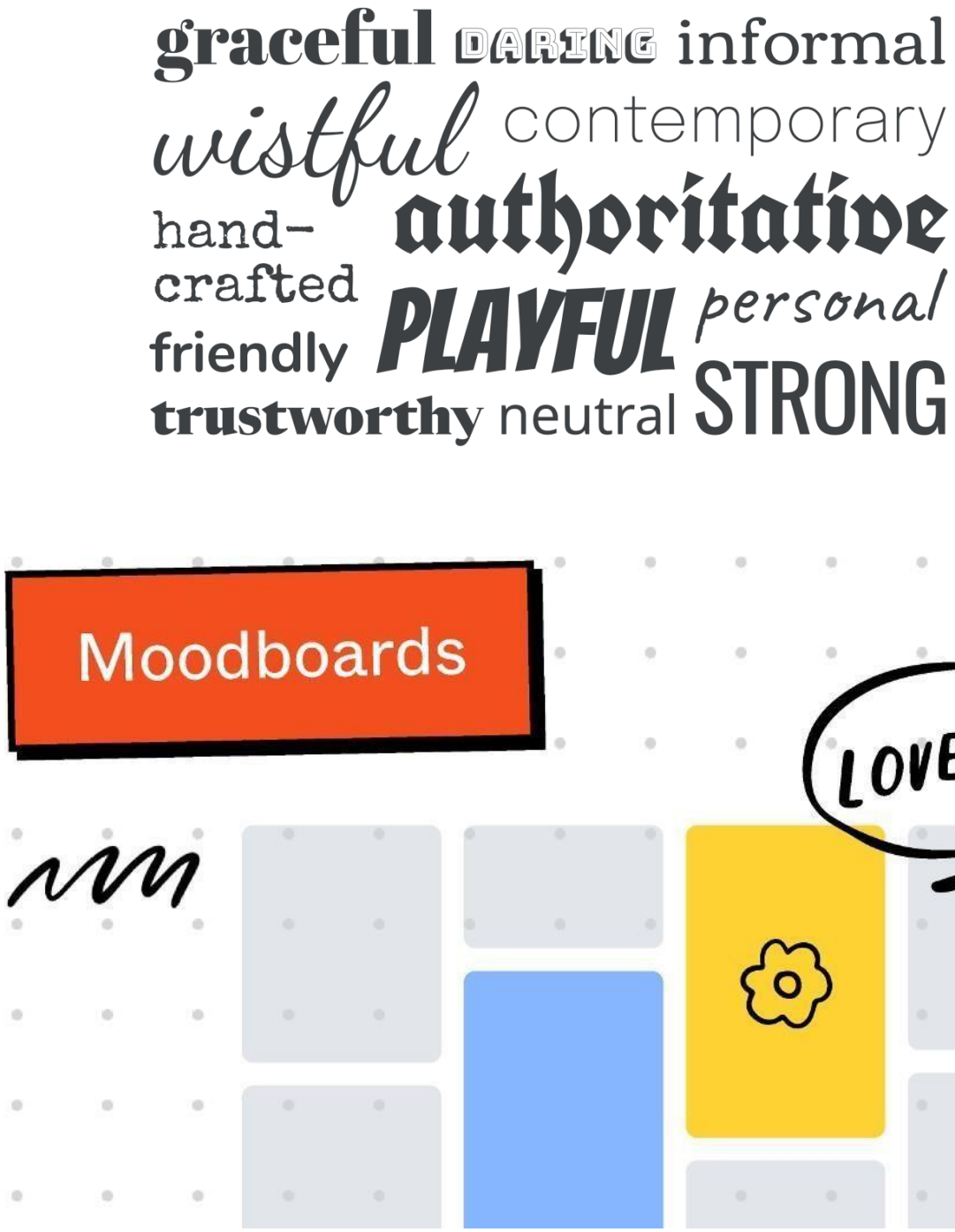
Create a mood board with images of serene landscapes, calming color schemes (e.g., blues and greens), and sample UI elements that convey a sense of tranquility.

Fonts:

Choose "Poppins" as the primary font for headings and "Roboto"for body text. These fonts are clean, readable, and complement the app's aesthetic.

Color Palette:

Define a color palette that includes calming colors like "#3CBDBE" for primary elements, "#70C1B3" for secondary elements, and "#EFEFF0" for background. Ensure that these colors meet accessibility standards.



Result: Thus a sample pattern library for a product was created successfully.

Ex.No:10	IDENTIFY A CUSTOMER PROBLEM TO SOLVE
Date:	

Aim:

The aim of this experiment is to identify a customer problem to solve effectively, which is crucial for product development, customersatisfaction, and business success.

Algorithm/Procedure:

Customer Segmentation:

Begin by segmenting your customer base into different groups based ondemographics, behavior, or other relevant criteria.

Data Collection:

Gather data from these customer segments through surveys, interviews, feedback forms, and analytics tools. You can also utilize data from your customer support system, website, or app analytics.

Problem Identification Metrics:

Define key metrics and indicators to identify customer problems. Examples include high bounce rates on a specific webpage, low customer satisfaction scores, or a surge in support tickets related to a specific issue.

Data Analysis:

Analyze the collected data to identify patterns, trends, and common issuesreported by customers. Data analysis tools and techniques, such as data mining or sentiment analysis, can be useful.

Prioritization:

Prioritize the identified problems based on their impact on customers and your business. You can use techniques like the Moscow method (Must- haves, Should-haves, Could-haves, Won't-haves) to prioritize.

Root Cause Analysis:

Conduct a root cause analysis for each identified problem. Understand why these issues are occurring by delving into the underlying causes.

Solution Ideation:

Brainstorm potential solutions for the identified problems. Encourage cross-functional teams to contribute ideas and consider how these solutions align with your business goals.

Experiment Design:

Design controlled experiments or A/B tests to validate the proposed solutions. Ensure you have a clear hypothesis and success criteria for each experiment.

Implementation:

Implement the proposed solutions on a small scale to observe their impact. This might involve website changes, process adjustments, or feature additions.

Data Collection Post-Implementation:

Continue to collect data after implementing the solutions to assess their effectiveness. Monitor key metrics to see if they improve.

Analysis and Validation:

Analyze the post-implementation data to validate whether the proposed solutions have effectively addressed the customer problem. Make data- driven decisions.

Feedback and Iteration:

Collect feedback from customers regarding the changes and iterate on the solutions based on their input. Continuous improvement is key.

Example:

Let's say you're running an e-commerce platform and want to identify a customer problem related to checkout abandonment. Here's how you could apply the algorithm/procedure:

Customer Segmentation:

Segment customers based on their demographics and purchase history.

Data Collection:

Gather data through customer surveys, web analytics, and feedbackforms.

Problem Identification Metrics:

One of your key metrics is the high rate of customers abandoning theirshopping carts before completing the purchase.

Data Analysis:

Analyze the data and find that a significant number of customers abandontheir carts at the payment stage.

Prioritization:

Prioritize the payment abandonment issue because it directly affectsrevenue.

Root Cause Analysis:

Discover that complex payment options and a lack of guest checkout arecausing the problem.

Solution Ideation:

Brainstorm solutions, including simplifying payment options and adding aguest checkout feature.

Experiment Design:

Design A/B tests to measure the impact of these changes on cartabandonment rates.

Implementation:

Implement the proposed solutions on a small scale for testing.

Data Collection Post-Implementation:

Collect data on cart abandonment rates after the changes are implemented.

Analysis and Validation:

Analyze the post-implementation data and find that cart abandonmentrates have significantly decreased.

Feedback and Iteration:

Collect feedback from customers who completed purchases and continue to iterate on the checkout process to further enhance the customer experience and address any remaining issues.

Result:

Thus a customer problem was identified and understood successfully.

Ex.No:11	CONDUCT END-TO-END USER RESEARCH - USER RESEARCH, CREATING PERSONAS, IDEATION PROCESS (USER STORIES, SCENARIOS), FLOW DIAGRAMS, FLOWMAPPING
Date:	

Aim:

The aim of this experiment is to conduct end-to-end user research and design process to develop a user-centered solution for a specific problem. This process includes user research, creating personas, ideation (user stories, scenarios), and creating flow diagrams and flow maps.

Algorithm/Procedure:

Define the Problem:

Clearly define the problem or challenge you want to address through thisuser-centered design process.

User Research:

Conduct user interviews, surveys, or observations to gather insights and data about the target users. Analyze the collected data to identify user needs, pain points, and behaviors.

Create Personas:

Based on the research findings, create user personas. Personas are fictional representations of your typical users, including their goals, needs, and characteristics.

Ideation:

Brainstorm creative ideas to address the identified problems and fulfill user needs. Develop user stories and scenarios to articulate how users will interact with the proposed solution.

User Stories:

Create user stories using the "As a [type of user], I want [an action] so that[benefit/value]" format. User stories should capture specific user tasks and their motivations.

Scenarios:

Develop detailed narratives (scenarios) that illustrate how users will use the solution to achieve their goals. Scenarios should provide context, user actions, and expected outcomes.

Flow Diagrams:

Create flow diagrams to visualize the user's journey through the solution. Use symbols and arrows to represent user actions, system responses, and transitions between different screens or stages.

Flow Mapping:

Develop flow maps to provide a holistic view of the user experience. Connect user stories and scenarios to specific steps in the flow,highlighting decision points and potential pain points.

Iterate and Test:

Review and refine your user stories, scenarios, flow diagrams, and flow maps based on feedback from stakeholders or potential users.Conduct usability testing to validate the proposed user experience.

Implementation:

Work with developers and designers to implement the user-centeredsolution based on the finalized flow and design.

Evaluation:

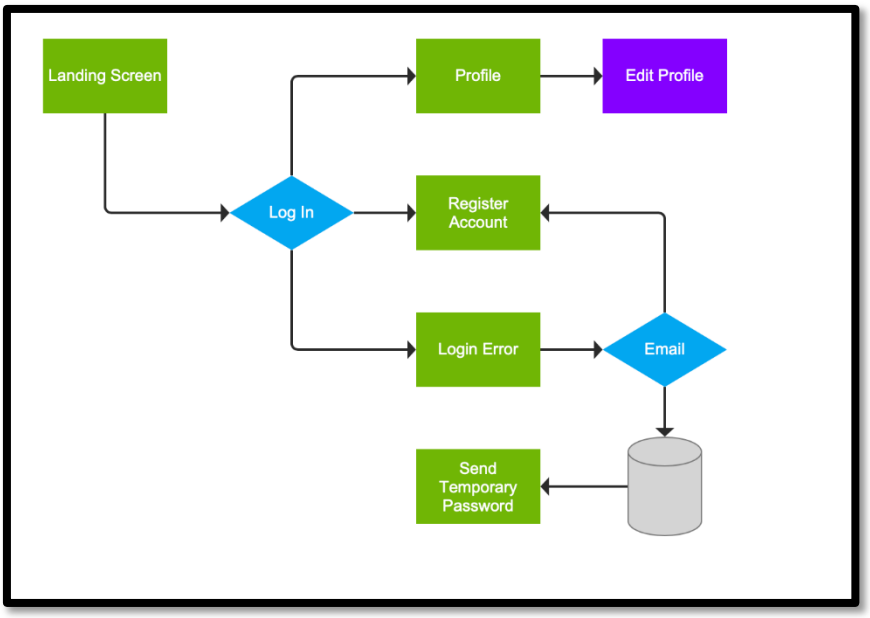
After the solution is implemented, evaluate its effectiveness by gatheringuser feedback and monitoring key performance metrics.

Iterate and Improve:

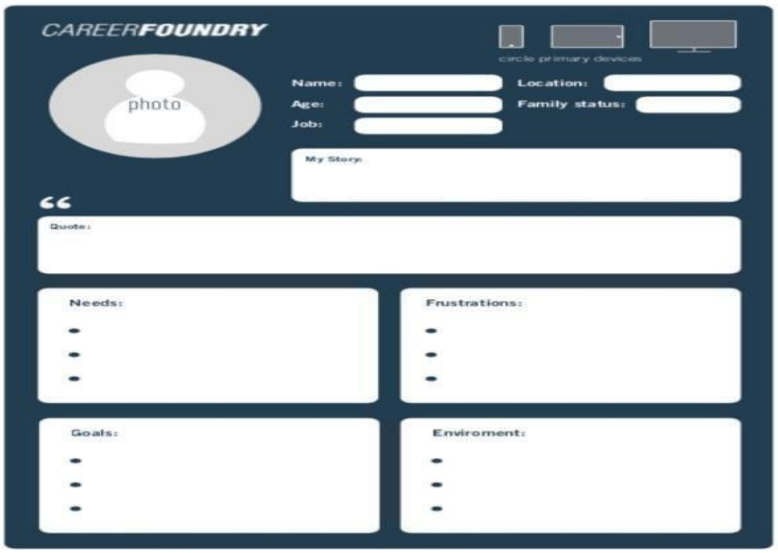
Continuously iterate on the design and user experience based on userfeedback and changing needs.

Design:

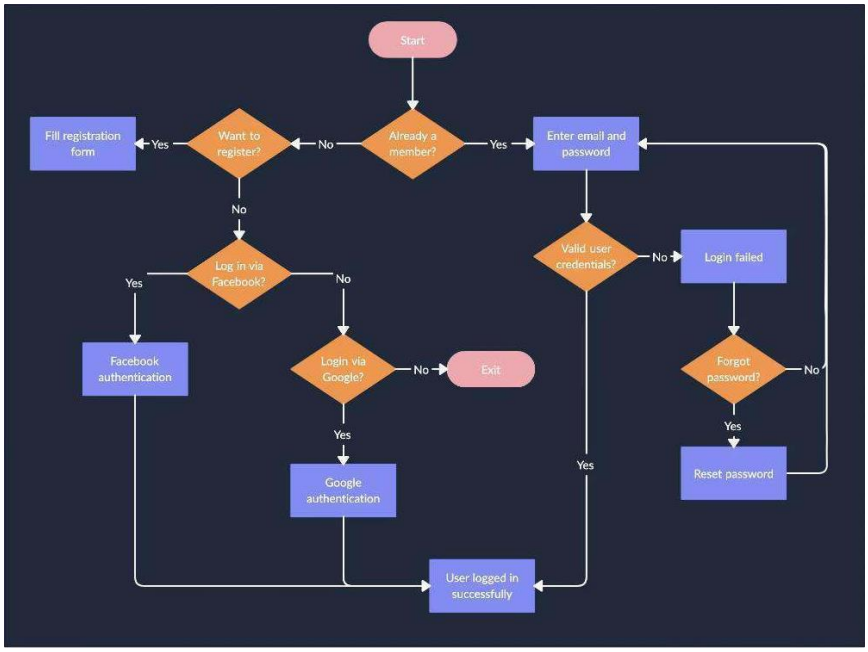
Flow Diagram:



User Personas:



Flow Mapping:



Result:

Thus a user-centered problem was identified to solve through a comprehensive process of user research, persona creation, ideation (including user stories and scenarios), flow diagrams, and flow mapping, with the goal of successfully addressing user needs and delivering an exceptional user experience.

Ex.No:12	SKETCH, DESIGN WITH POPULAR TOOL AND BUILD A PROTOTYPE AND PERFORM USABILITY TESTING AND IDENTIFY IMPROVEMENTS
Date:	

Aim:

The aim of this experiment is to design a user-friendly mobile app for task management, create a prototype using a popular design tool, perform usability testing, and identify improvements to enhance the user experience.

Algorithm/Procedure:

Define Objectives and User Persona:

Define the objectives of the task management app. Create a user persona to represent the target audience.

Sketch and Wireframe:

Start with sketching the basic layout and functionality of the app on paper or digitally. Create low-fidelity wireframes to visualize the app's structure and layout.

Design with a Popular Tool:

Choose a popular design tool such as Adobe XD, Sketch, Figma, or In Vision. Create high-fidelity designs with attention to visual elements, typography, and color schemes. Implement the user interface (UI) based on best practices and your user persona's preferences.

Prototype Creation:

Use the design tool to create interactive prototypes with clickable elements and transitions. Ensure that the prototype represents the app's core functionalities.

Recruit Participants for Usability Testing:

Identify potential users or participants who match the user persona. Prepare a usability testing plan, including tasks to be performed within theprototype.

Usability Testing:

Conduct usability testing sessions with participants. The participants are asked to perform specific tasks within the prototype. Observe and record their interactions and gather feedback on their experience.

Analyze and Identify Improvements:

Analyze the usability testing data to identify pain points and areas of improvement. Look for common patterns and issues encountered by users.

Iterate on the Design:

Implement the necessary design improvements based on the feedback received. Make changes to the prototype to address identified issues.

Second Round of Usability Testing:

Conduct a second round of usability testing with new or the same participants to evaluate the impact of the design improvements.

Finalize the Prototype:

Make any final adjustments based on the results of the second usability testing round.

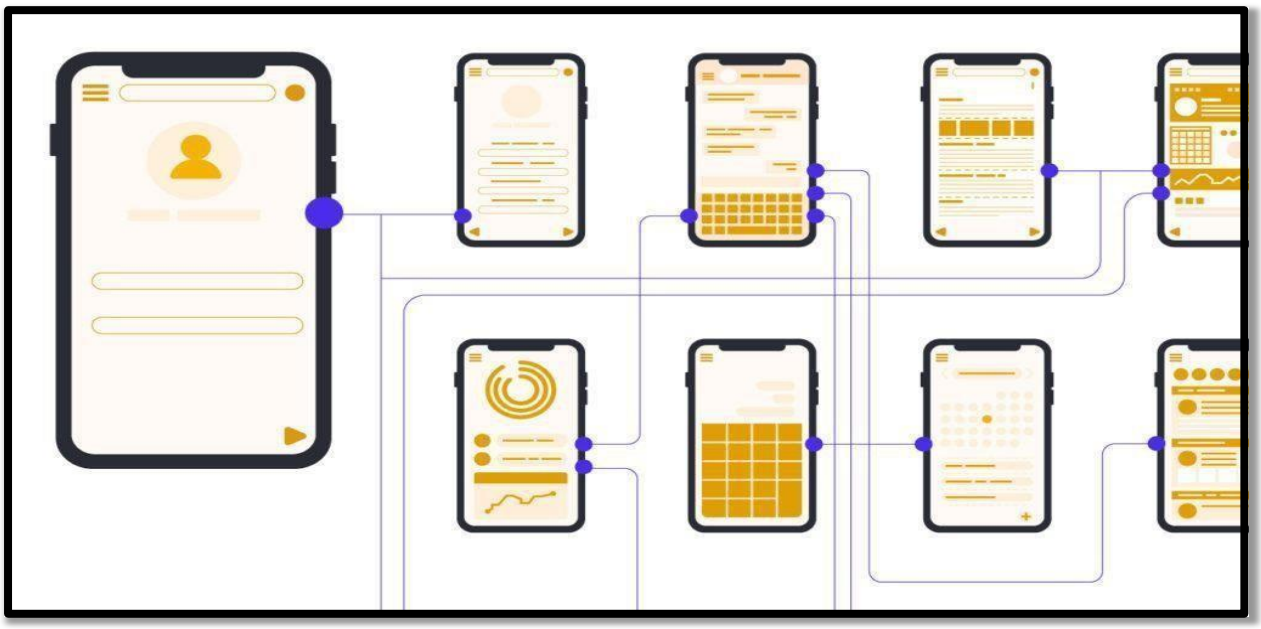
Document Findings and Recommendations:

Document the findings from both rounds of usability testing. Provide clear recommendations for further improvements ordevelopment.

Conclusion:

Conclude the experiment by summarizing the improvements made to theprototype and how they enhance the user experience.

Design:



Result:

Thus, Sketching, building a prototype, performing usability testing andidentifying improvements has been executed successfully.

CONTENT BEYOND TOPICS

Ex.No:1	IDENTIFYING INTERACTION DESIGN AND FUNCTIONAL LAYOUT PRACTICAL IMPLEMENTATION OF INTERACTION DESIGN AND FUNCTIONAL LAYOUTS.
Date:	

Aim:

To identifying interaction design and functional layout. Practical implementation of interaction design and functional layouts.

Algorithm/Procedure :

Know who your users

A design that is better for a technically skilled person might not be better for a non-technical businessman or an artist. So it is very important to identify the user before creating any design.

Propose a HCI Application for Interaction design

Create a Interaction design based on the related user requirements do create a design prototype for the same. Also maintain the working consistency of your design throughout the process.

Layout structure of HCI Application

Put buttons inconsistent places throughout the window, use the same wording in labels and messages, and use a consistent color scheme throughout. Try to build the accurate mental model.

Design:

Result:

Thus interaction design and functional layout. Practical implementation of interaction design and functional layouts has been developed successfully.

Ex.No:2	INDENTIFY AND ANALYZE “WHAT IS NAVIGATION DESIGN” AND IMPLEMENTING OF NAVIGATION DESIGN.
Date:	

Aim:

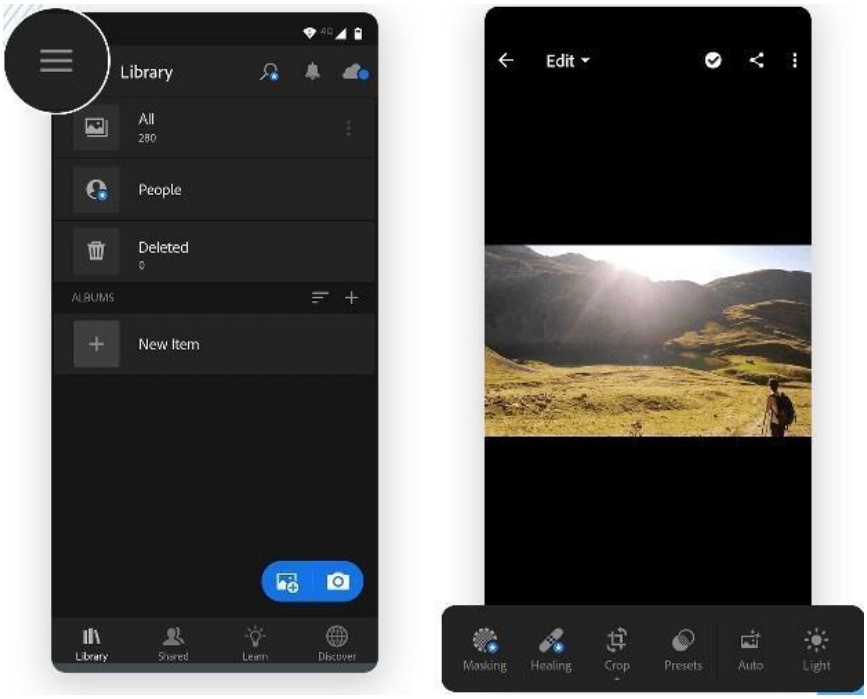
To Identify and analyze “what is navigation design ”and implementing of navigation design.

Activity 1:

Navigation design is the discipline of creating, analyzing and implementing ways for users to navigate through a website or app.

Activity 2:

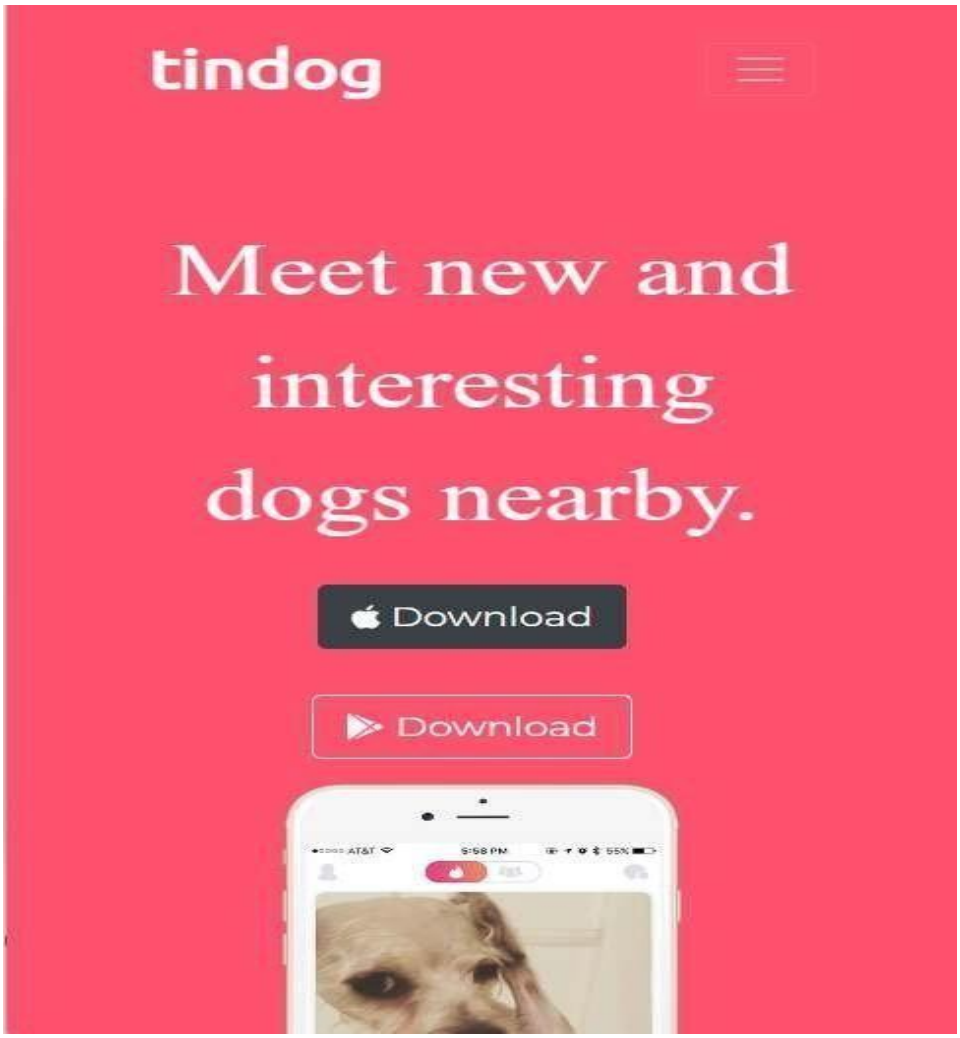
Navigation plays an integral role in how users interact with and use your products. It is how your user can get from point A to point B and even point C in the least frustrating way possible.



Activity 3:

Add a navigational widget to the existing interaction design created during lab-2 and also add functionality to it.

Output



Result:

Thus the analyze “what is navigation design” and implementing of navigation design has been verified successfully.

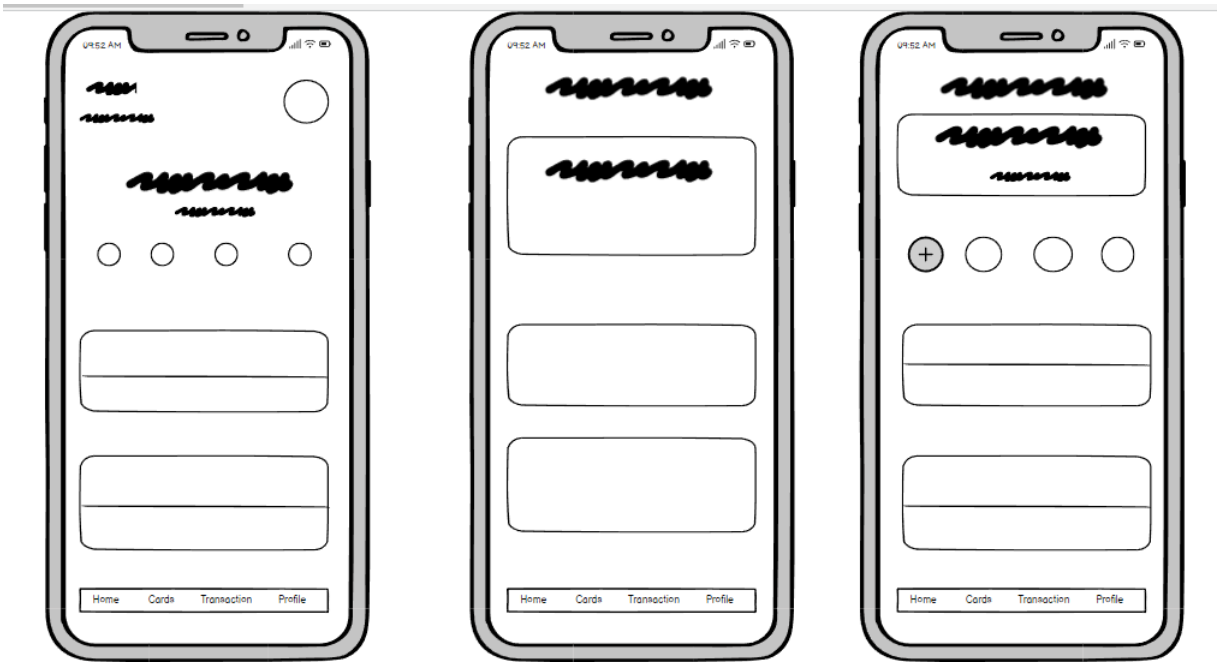
Ex.No:3	CREATE A WORKING UI/UX PROTOTYPE USING PROTOTYPING TOOLS
Date:	

Aim:

To create a working UI/UX prototype using prototyping tools.

Activity 1:

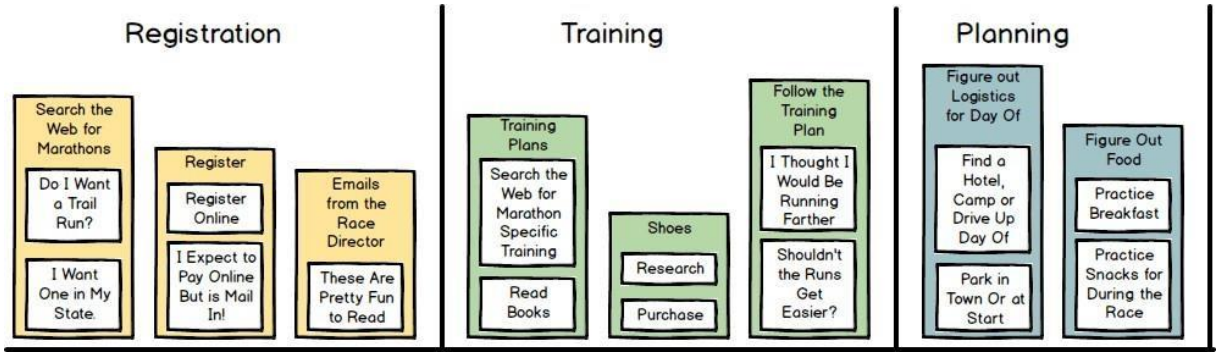
Gather the requirements and needs of the end users and create respective wireframe diagrams according to that. Example is shown as below:



Activity 2:

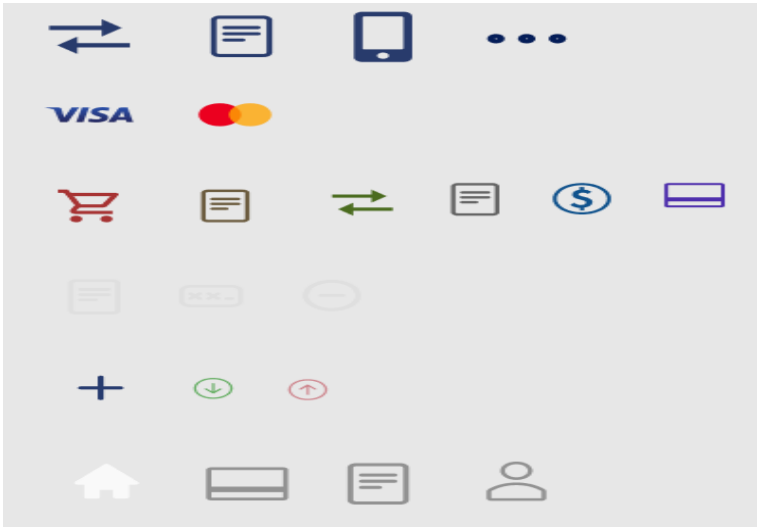
On the basis of the requirement create a basic user model and prototype design for the web application.

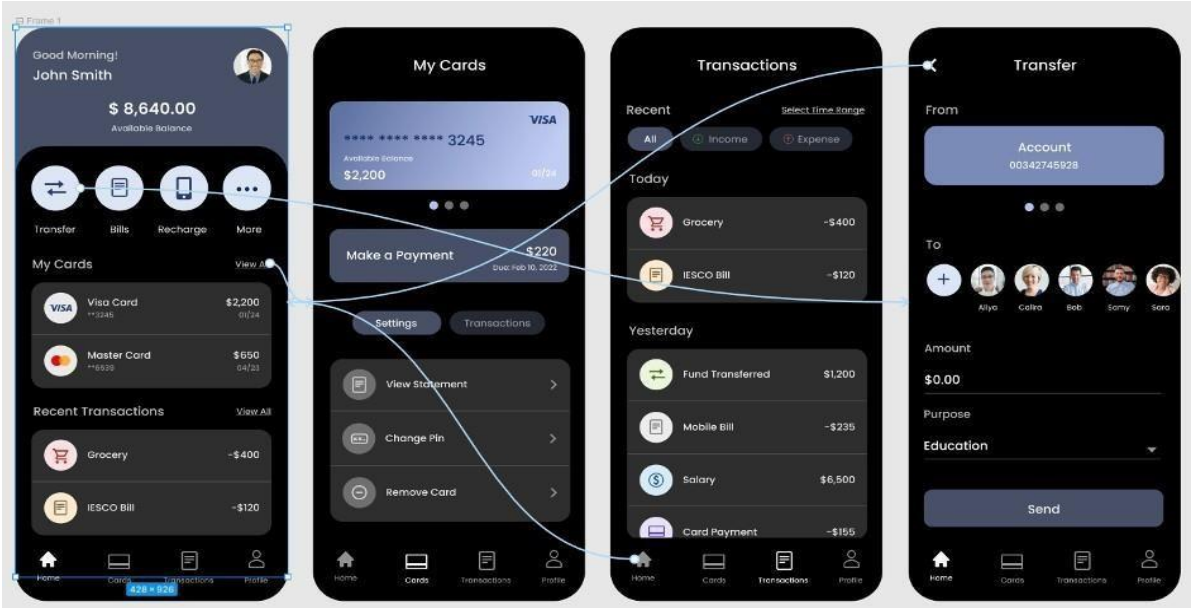
Example of Creating User Model:

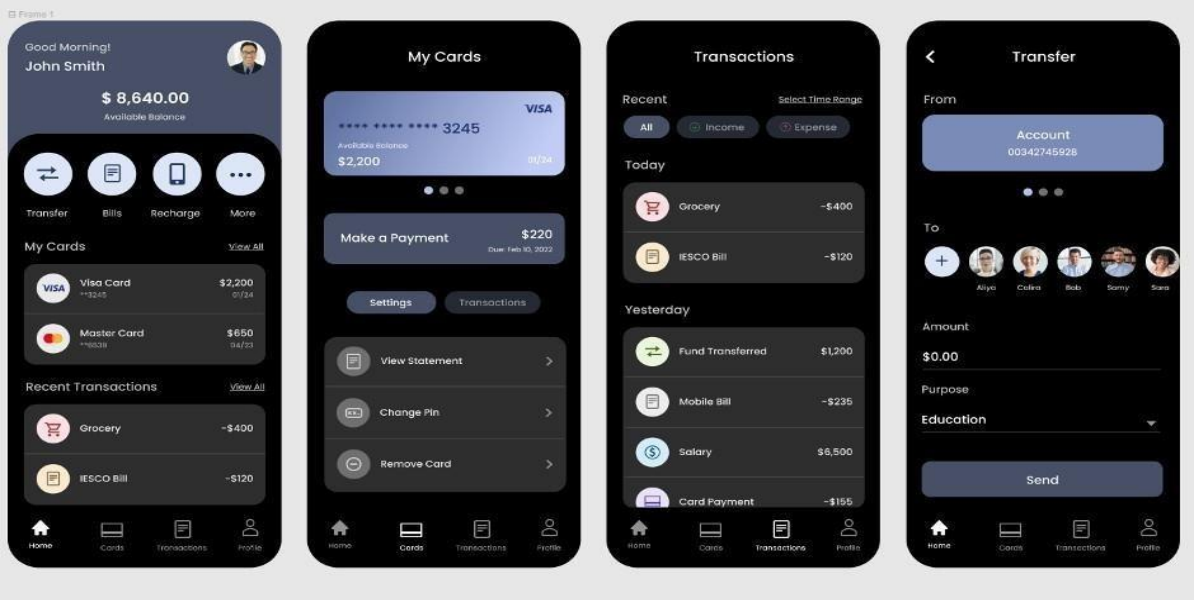


Activity 3:

Transform the prototype design into a program able design using widgets like menu, sub-menu, buttons, text boxes, labels etc.







Result:

Thus the working UI/UX prototype using prototyping tools has been verified successfully.

Viva voice

EX.01: Designing a responsive layout for a societal application.

1. What is Responsive web design?

Responsive web design or responsive design is an approach to web design that aims to make web pages render well on a variety of devices and window or screen sizes from minimum to maximum display size to ensure usability and satisfaction.

2. What motivated you to pursue a career as a Responsive web design?

Responsive Web Designers create designs to fit various screens and layouts. They produce responsive web designs (RWDs) that can improve online browsing and attract a wider audience.

3. Why is responsive design better?

Responsive design offers a more fluid and flexible approach that dynamically adjusts to different screen sizes, while adaptive design provides predefined layouts tailored to specific devices or screen sizes through server-side detection.

4. What is the purpose of a user-friendly website?

A user-friendly website makes it easy for users to look for information using any device. Because your website is easy to use, users spend more time interacting with your website, eventually resulting in conversions.

5. How important is UI and UX in developing applications?

UI and UX design is crucial for a successful app. While UI focuses on the visual aspects, UX ensures that the interactions are meaningful and enjoyable. A well-balanced mobile app UI/UX design results in a product that looks good and feels good to use.

6. How social media apps UX and UI are designed to engage and be addictive?

The push notification. It is one of the main reasons we return to an app as often as we do. When we receive notifications with likes or interactions, we want to engage. The more we engage, the more dependent on the app we become.

EX.02: Exploring various UI Interaction Patterns

1. What is UI design interaction?

Interaction Design (IxD) is the design of interactive products and services in which a designer's focus goes beyond the item in development to include the way users will interact with it. Thus, close scrutiny of users' needs, limitations and contexts, etc.

2. What are UI elements and patterns in detail?

UI patterns are the building blocks of a user interface. They can include things like buttons, menus, and text fields, as well as the layout and organization of those elements. Designers use them to create a consistent look and feel across different platforms and devices.

3. What are the principles of interaction?

The fundamental principles of interaction are an important part of understanding how interacting agents (people, robots, animals, etc.) perceive and use objects, machines, and other processes.

4. What is the five interaction design?

The 5 dimensions or parts of interactions: Words, visuals, time, physical objects, and behavior when put together in the correct way, enriches the experience a user has with the digital product.

5. What is the concept of interaction?

An interaction is an action, function, service, or capability that makes use of the resources in a collection or the collection as a whole.

6. What is UI Pattern Design?

Utilizing pre-existing design solutions to address typical user interface issues is known as UI pattern design.

Ex.03: Developing an Interface with Proper UI Style Guides

1. What UX information you need to have before you start designing?

Every professional UI designer should have as much information as possible about the user experience (UX) and user journey that the team intends to create. This UX experience is usually planned out based on gathered data, including user surveying, usability testing, and so on.

2. What are UI design guidelines?

As a UI designer, you should ensure that users don't need to remember or transfer information from one part of your interface to another. All key elements, actions and options should be visible or easily retrievable throughout the app. They should also be located in the same place.

3. How do you estimate the timeline of your own design process?

The candidate should be able to tell you about estimation tools and techniques encountered during his or her design career. Ask candidates if they create their own estimated timelines, milestones and deadlines, or if they were provided by another team member.

4. What are the 4 golden rules of UI design?

The UI design principals are: Place users in control of the interface Make it comfortable to interact with a product Reduce cognitive load Make user interfaces consistent.

5. What is style guide in UI design?

UI Style Guides are a design and development tool that brings cohesion to a digital product's user interface and experience. Record all of the design elements and interactions that occur within a product. List crucial UI components such as buttons, typography, color, navigation menus, etc.

6. What does UI style mean?

User interface (UI) design is the process designers use to build interfaces in software or computerized devices, focusing on looks or style. Designers aim to create interfaces which users find easy to use and pleasurable. UI design refers to graphical user interfaces and other forms—e.g., voice-controlled interfaces.

Ex.04: Developing wire flow diagram for application using open-sourcesoftware

1. What are the basics of open-source software?

Open source software (OSS) is software that is distributed with its source code, making it available for use, modification, and distribution with its original rights.

2. What is an open source tool?

Open source software is software developed and maintained through open collaboration. It is made available for anyone to use, examine, alter and redistribute however they like, typically at no cost.

3. What is the purpose of a wire flow?

Visualizing User Flow: A wire flow provides a visual representation of the user flow within a digital product, making it easier to understand and communicate the intended user experience.

4. What are the elements of user flow diagram?

1. Start/End (Oval) The oval symbolize the start or the end in a flowchart.
2. Process (Rectangle) ...
3. Input/Output (Parallelogram) ...
4. Decision (Diamond) ...
5. Arrow (Direction) ..

5. How to create a wire flow?

Typically, to create a wire flow, you would create your wireframe designs and then add flowchart elements between the various pages or screens of your app or web design to demonstrate both interactions and user flow.

6. What is wireframe design?

In simple terms, wireframes are visual representations of a web page or app interface, stripped down to its bare bones.

Ex.05. Exploring various open source collaborative interface Platform

1. What is an interface in UX design?

UI/UX design involves two crucial elements: User Interface (UI) and User Experience (UX). UI encompasses all the elements a user interacts with, such as colors, typography, buttons, and icons. It focuses on the aesthetics and the overall look of a product.

2. How to create user interface?

1. Understand your user's pain points. Understanding what bothers your users is a key first step in designing websites or apps. ...
2. Write user stories. ...
3. Make an interface inventory. ...
4. Identify design patterns. ...
5. Create a prototype.

3. What is the full form of UX?

"User experience (UX) is the interaction and experience users have with a company's products and services.

4. What is the question and answer user interface?

In a question-and-answer interface, the user is presented with a question on the display by the computer.

5. What are the three golden rules of interface design?

The golden rules are divided into three groups: Place Users in Control. Reduce Users' Memory Load. Make the Interface Consistent.

6. Which one is not a part of interface design?

The user interface (UI) design process involves several stages to create effective and user-friendly interfaces.

EX.06. Hands on Design Thinking Process for a new product

1. What is Design Thinking?

Design thinking is a strategic methodology employed to solve complex problems in a user-centric way.

2. What are the stages in Design Thinking?

Design thinking is anchored in five iterative stages: Empathize, Define, Ideate, Prototype, and Test. It's not a linear path but a cycle of understanding, exploring, and materializing solutions.

3. What are the features of Design thinking?

Design thinking stands out for its user-centric approach that emphasizes simplicity, aesthetics, and enhancing user experiences.

4. What are the tools involved in design thinking?

The tools in design thinking align with its phases: Immersion for deep research, Analysis and Synthesis for framing the problem, Ideation for brainstorming creative solutions, and Prototyping for validating solutions.

5. List some reasons why Design thinking fails.

Design thinking can stumble due to a misaligned organizational culture, unrealistic expectations, impatience, or lack of clear vision.

6. How can we implement Design thinking in an organization?

Implementing design thinking in an organization involves a gradual process of cultural shift. Start by clearly defining the problem, fostering design thinking skills within your team, encouraging inquisitive questioning, and embracing feedback cycles.

EX.07 Brainstorming feature for proposed product

1. What are Brainstorming Questions

Brainstorming questions are prompts used during brainstorming sessions to generate ideas, solutions, or insights on a specific topic or problem.

2. What is brainstorming in product design?

Brainstorming is a method design teams use to generate ideas to solve clearly defined design problems.

3 What is called brainstorming?

Brainstorming is a method of generating ideas and sharing knowledge to solve a particular commercial or technical problem, in which participants are encouraged to think without interruption.

4. Who introduces brainstorming?

The term was popularized by advertising executive Alex Faickney Osborn in the classic work Applied Imagination (1953). A group of people write ideas on sticky notes as part of a brainstorming session.

5. What is the structure of brainstorming?

In structured brainstorming, individuals perform divergent thinking before the meeting to come up with some possible solutions.

6. What is a feature of effective brainstorming?

In order to brainstorm effectively, it is important to create an environment of psychological safety, where all ideas are welcomed and no one is afraid to speak up.

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EX.08.Defining the Look and Feel of the new Project

1. What areas of your work or personal development are you hoping to explore further?

Discuss areas of personal development, with emphasis on visual design.

2. What do you think of (x) project?

Suggest a few projects, or ask a designer to select a project and then dissect it. The candidate should be able to pick it apart.

3. Can you tell us more about your design background?

The designer's background, based on his or her general introduction can provide us with relevant information about the design school the candidate attended, past/current work positions, design experience, problems and projects that s/he found along the way and how this translates to his/her current design career and future aspirations.

4. Why did you become a designer?

When discussing this theme, the energy and imagination behind the answers will give you an idea of the designer's character and spirit.

5. How would you describe your design research?

When discussing design research, it is necessary to cover all the angles with which the candidate is familiar, and explain the reasoning why s/he decided to use a particular technique, tool, or way of thinking to achieve a result.

EX.09.Create a Sample Pattern Library for that product (Mood board, Fonts, Colors based on UI principles)

1. What is the primary purpose of a mood board in the design process?

A moodboard is a visual tool that helps you communicate your design concepts and ideas. It's a curated collection of images, materials, colour palettes, text, and other elements arranged to evoke a particular style or feeling.

2. What is a mood board in product design?

A mood board is a collage of images, video frames, patterns, or text that convey a certain feeling at a glance. Mood boards are widely used in various applications of visual art including branding, graphics, fashion, cinema, industrial and interior design.

3. What is the most used color in UI design?

As you probably already guessed this article is dedicated to blue color. Without a doubt, blue is one of the best colors in UI design, and one of the most frequent.

4. What is UI colour?

A UI color palette is a collection of colors used in designing a user interface.

5. What is dynamic color?

On devices with Android 12 and later, the “dynamic theme” allows you to adjust the appearance of apps (and the operating system) based on the colors of your wallpaper or on individual accent colors.

EX.10. Identify a customer problem to solve

1. What is an example of a problem-solving situation?

A good example of problem-solving is when an individual gets a flat tire on their car in the morning and decides to fix it.

2. How do you answer "Tell me about a time you solved a problem"?

Describe a time when you were able to resolve an issue before it became urgent. Start your answer with the steps you took to anticipate obstacles you might encounter with your project.

3. What are 8 problem-solving?

This process is an expansion of the Plan, Do, Check, and Act (PDCA) cycle.

4. What is a problem-solving activity?

Problem solving games are activities that require players to use critical thinking skills to solve puzzles.

5. What are your main goals?

To make a positive impact and contribute to society in a meaningful way.

EX.11.Conduct end-to-end user research - User research, creating personas, Ideation process (User stories, Scenarios), Flow diagrams, Flow Mapping

1. What is user research used for?

User research is the process of understanding the needs, behaviors, and attitudes of users to inform the design and development of products or services.

2. What is User Research Process?

1. Identify your research goals. This is the first and most important step in any user research study. ...
2. Choose your research methods. ...
3. Create a user research plan. ...
4. Recruit participants. ...
5. Conduct some research! ...
6. Analyze and synthesize results. ...
7. Share your research findings.

3. What are the 5 steps of user design?

Empathize, define, ideate, prototype and test. In the empathize phase, teams explore the problem they're trying to solve with the product

4. What is end to end user research?

End to End User Research offers a wide range of research services to help you understand and design for your end user, no matter where you are in your product development cycle.

Ex.12: Sketch, design with popular tool and build a prototype and perform usability testing and identify improvements

1. What is the main purpose of prototype is to test?

Prototype testing is the process of testing an early version of a product or feature with real users.

2. What is a real time example of usability testing in software testing?

To make things easier, let's take the example of an e-commerce website that sells shoes. To test such a website, then you may ask the users to try to buy a particular pair of shoes.

3. What is the use of prototype?

A prototype is generally used to evaluate a new design to enhance precision by system analysts and users.

4. Why use prototypes in design?

The most important advantage of a prototype is that it simulates the real and future product.

5. What is usability test tools?

A usability testing tool is a software solution that provides you with features to check if your design is usable and intuitive enough for users to accomplish their goals.