1. Empathy Mapping

Empathy maps help you understand the user's feelings and behaviors.

Steps:

1. **Define the User**: Choose a specific persona (e.g., college student, online shopper).
2. **Draw the Map**: Divide a sheet into 4 quadrants labeled:
    - **Says** – What the user says out loud (quotes or comments)
    - **Thinks** – What the user is thinking (fears, desires)
    - **Does** – Actions and behaviors
    - **Feels** – Emotions and feelings
3. **Fill the Quadrants**: Use data from interviews, surveys, or assumptions based on research.
4. **Add Pain & Gain** (Optional): What are the user's challenges and goals?

---

2. Customer Journey Map

A customer journey map shows the full experience a user has with your product/service.

Steps:

1. **Create a Persona**: Describe the type of user.
2. **Identify Stages**: (e.g., Awareness → Consideration → Purchase → Support)
3. **List Touchpoints**: Where the user interacts (website, app, customer care).
4. **Capture Emotions**: How the user feels at each stage.
5. **Highlight Pain Points**: Note areas where the experience is negative.
6. **Opportunities**: Suggest improvements for each stage.

3. Ideation

Ideation is about generating ideas to solve the user's problems.

Steps:

1. **Define the Problem Statement**: Use "How Might We…" questions.
    - E.g., "How might we help students manage exam stress?"
2. **Brainstorm Ideas**: Use techniques like:
    - Brainwriting
    - SCAMPER (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Reverse)
3. **Encourage Wild Ideas**: Don't judge—write everything.
4. **Group and Prioritize**: Cluster similar ideas and choose the most practical and innovative ones.

---

4. Prototype

A prototype is a sample version of your solution to test ideas.

Steps:

1. **Select the Best Idea** from ideation.
2. **Choose the Type of Prototype**:
    - Sketches
    - Wireframes
    - Paper models
    - App mockups
3. **Build a Low-Fidelity Prototype**: Quickly create a basic model.
4. **Test with Users**: Get feedback on design, usability, and features.
5. **Iterate**: Improve the prototype based on feedback.

PRACTICAL NO. 1: EMPATHY MAPPING CANVAS

Aim:

To understand the user's feelings, actions, and behaviors by using the Empathy Mapping Canvas for identifying the user's needs and problems.

Theory:

The Empathy Map is a collaborative tool teams can use to gain a deeper insight into their customers. It allows us to visually display what we know about a user and helps organize observations and draw out unexpected insights. The canvas is divided into four quadrants:

- **Says**: What the user says in interviews or interactions
- **Thinks**: What the user is thinking or believes
- **Does**: Actions taken by the user
- **Feels**: Emotional state of the user

These help identify pain points and design better solutions.

Procedure:

1. Identify your user (target person/group).
2. Interview or analyze their behavior.
3. Fill in the Empathy Map quadrants:
    - What the user says during interaction.
    - What the user is thinking internally.
    - What the user does in their routine.
    - What the user feels based on experiences.
4. Add insights and needs that arise from this map.

Canvas Example:

User: B.Tech Student

Says: "I want to score good marks."

Thinks: "I don't get enough time to revise."

Does: Attends class, studies at night

Feels: Stressed before exams, happy after tests

Conclusion:

Empathy Mapping is an essential step in Design Thinking as it allows us to connect with the user's point of view and recognize hidden needs.

PRACTICAL NO. 2: USER PERSONA CANVAS

Aim:

To create a user persona representing the targeted users' behaviors, motivations, and goals.

Theory:

A user persona is a fictional character that represents a segment of your users. It helps in understanding the target audience, their behavior, frustrations, and motivations. It's built from real data and reflects the goals and pain points of actual users.

Procedure:

1. Choose a specific user type based on your research.
2. Define:
    - **Name, Age, Education, Occupation**
    - **Goals**: What they want to achieve
    - **Frustrations**: What problems they face
    - **Needs**: Basic and advanced expectations
    - **A Day in the Life**: Describe their daily routine
3. Use this to create a profile for user-centered design.

User Persona Example:

| **Name:** Riya Sharma
| **Age:** 19
| **Occupation:** B.Tech 1st-year student
| **Goals:** Score above 80%, understand coding concepts
| **Frustrations:** Time management, slow internet
| **Needs:** Structured notes, recorded lectures
| **A Day in Life:** College classes, lab work, evening tuition, leisure scrolling on phone |

Conclusion:

The user persona helps design solutions that are aligned with user needs and builds empathy towards the end-user.

PRACTICAL NO. 3: POINT OF VIEW (POV) & HOW MIGHT WE (HMW) STATEMENTS

Aim:

To define the user's core problem using the Point of View (POV) method and generate ideas using How Might We (HMW) statements.

Theory:

A **POV statement** is used to reframe a problem in a user-centric manner. It is written in the format:

[User] needs [Need] because [Insight]

This helps focus the problem around a particular user and their actual issue.

From the POV, **HMW (How Might We)** questions are derived to open up brainstorming for potential solutions.

Procedure:

1. Choose one user from your research or interviews.
2. Identify the user's main need and a deep insight about why they need it.
3. Write the POV statement in the correct format.
4. Derive multiple HMW questions from that POV to explore creative solutions.

Example:

POV Statement:

A first-year B.Tech student needs easy access to concise study material because they struggle with managing time before exams.

HMW Questions:

- How might we help students find all important notes in one place?
- How might we reduce stress before exams?
- How might we improve time management among students?

Conclusion:

POV and HMW statements help in identifying real user problems and create a foundation for generating practical and innovative solutions.

PRACTICAL NO. 4: IDEATION CANVAS

Aim:

To use the ideation canvas for generating ideas based on user, activity, and problem analysis.

Theory:

The Ideation Canvas is a visual tool that helps in analyzing various aspects of a problem from different perspectives. It focuses on People, Activities, Context, Props, and Situations to help teams generate ideas. It helps move from “What is the problem?” to “What are all the possible solutions?”

Procedure:

1. Identify and fill in the following canvas blocks:
    - **People (Users involved)**
    - **Activities (User's tasks)**
    - **Situation/Context (Where the activity happens)**
    - **Props (Tools/Objects involved)**
    - **Problems faced**
2. Analyze the relationships between each category.
3. Start ideating solutions by observing patterns and common issues.

Example:

| **People:** Students
| **Activities:** Studying, attending lectures
| **Context:** Classroom, hostel
| **Props:** Books, mobile phone
| **Problems:** Distraction, lack of notes, slow learning pace

Conclusion:

The Ideation Canvas helps to understand the whole environment of the user and gives clarity on where and how innovations are needed.

PRACTICAL NO. 5: BRAINSTORMING & CRAZY 8

Aim:

To generate a large number of creative ideas using Brainstorming and Crazy 8 techniques.

Theory:

Brainstorming encourages the generation of a large volume of ideas in a short period of time. There are no wrong ideas in brainstorming — the quantity matters more than quality at this stage.

Crazy 8 is a fast sketching exercise that challenges participants to come up with 8 different ideas in 8 minutes. It helps unlock creative thinking and go beyond the obvious solutions.

Procedure:

1. Choose a design challenge.
2. Conduct a brainstorming session by writing down all possible ideas (minimum 10-15).
3. Use the Crazy 8 method:
    - Fold a paper into 8 sections.
    - In each section, sketch 1 idea in 1 minute.
4. Review and shortlist the most feasible or interesting ideas.

Example:

Challenge: “How might we improve online learning for students?”
Ideas:

1. App with recorded lectures
2. Gamified learning quizzes
3. Group video study rooms
4. AI chat tutor
5. Offline content mode
6. Visual concept maps
7. Daily study goals
8. Alert system for deadlines

Conclusion:

Brainstorming and Crazy 8 help in fast idea generation and push individuals to think creatively and innovatively.

PRACTICAL NO. 6: PRODUCT DEVELOPMENT CANVAS

Aim:

To develop and document product-related features, functions, and experiences using the Product Development Canvas.

Theory:

The Product Development Canvas allows teams to clearly plan and visualize all aspects of the product, including its users, features, functionalities, and experience. It aligns business goals with user needs and helps in creating a viable product.

Procedure:

1. Fill out the following sections of the Product Development Canvas:
    - **Purpose:** What is the product for?
    - **People:** Who are the users?
    - **Product Experience:** What kind of experience will it provide?
    - **Product Functions & Features:** What will it do and how?
    - **Components, Customer Revalidation, Rejects**
2. Use feedback from previous stages to refine each section.
3. Focus on delivering maximum value with minimum complexity.

Example:

Product: Study Companion App

- Purpose: To help students prepare for exams
- People: College students
- Features: Notes, Practice MCQs, Notifications
- Experience: Easy-to-use interface, custom schedules

Conclusion:

The Product Development Canvas ensures that every part of the product is aligned with user needs and can be developed systematically.

PRACTICAL NO. 7: PROTOTYPING

Aim:

To build a prototype that represents the final product idea and helps in testing user interaction with it.

Theory:

A **prototype** is a simple model or simulation of the final product. It helps demonstrate how the product will look and function. Prototypes can be **low-fidelity** (paper sketches, wireframes) or **high-fidelity** (interactive app or digital model). It helps identify usability issues and collect user feedback early.

Procedure:

1. Select the most feasible and user-friendly idea from your brainstorming stage.
2. Choose the type of prototype (paper-based, clickable, or functional).
3. Start designing the basic layout of your product:
    - Home page or dashboard
    - Navigation buttons
    - Core features/functions
4. Make the prototype simple and clear for testing.
5. Present it to users or team members for initial feedback.

Example:

Prototype: Mobile app for student exam preparation

- First screen: Login/Register
- Second screen: Dashboard with subjects
- Third screen: Notes and quizzes section
- Fourth screen: Performance tracking

Conclusion:

Prototyping helps to bring the idea to life before full development and makes it easier to test and improve based on feedback.

PRACTICAL NO. 8: FINAL PRODUCT DESIGN CANVAS

Aim:

To compile the final product design using the Final Product Design Canvas by aligning all design thinking steps into one visual format.

Theory:

The **Final Product Design Canvas** is a tool to present the final solution in a structured way, based on all previous learnings (empathy, ideation, prototyping, feedback, etc.). It includes key details like product purpose, features, users, experience, validation, and unique value.

Procedure:

1. Begin with the **Product Purpose** and clearly define what problem it solves.
2. Fill out each of the following canvas blocks:
    - **Target Users**
    - **User Needs**
    - **Product Features**
    - **Experience Journey**
    - **Validation**: User testing & feedback
    - **Unique Value Proposition**
    - **Improvement points**
3. Use sketches or screenshots of your prototype if needed.
4. Review and finalize your product design with clarity.

Example:

Product: Smart Study Planner

- **Purpose:** Help students manage time and track progress
- **Users:** B.Tech students
- **Features:** Timetable, task checklist, reminders
- **Experience:** Easy planning, reduced stress
- **Validation:** Feedback from 5 students – 4 liked UI, 1 wanted dark mode
- **Unique Value:** Combines notes + planner in one app
- **Improvements:** Add feature to sync with college timetable

Conclusion:

The Final Product Design Canvas summarizes the entire design journey and acts as a blueprint for developing and delivering the final product.