Design Thinking for Software Engineers

Lab – 3

Problem Statement:

Urban residents lack access to usable and emotionally satisfying green spaces

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Aim of the Experiment

The aim of this experiment is to apply the Design Thinking process to understand the challenges urban residents face in accessing green spaces and to design a user-centered digital solution that supports convenient, safe, and emotionally rewarding interaction with greenery. The experiment focuses on identifying real user behaviors, emotional barriers, and lifestyle constraints through interviews and observations, rather than relying on assumptions.

Problem Context

Rapid urbanization has led to dense residential layouts where open green areas are either limited, distant, overcrowded, or unsafe for regular use. Although greenery is known to improve mental health, physical well-being, and social connection, many urban residents are unable to benefit from it due to distance, time constraints, physical

effort, and lack of nearby options. Older adults and homemakers are particularly affected, as they prefer calm, familiar, and accessible environments. Existing urban planning often overlooks usability and daily routines, resulting in green spaces that exist but are underused.

Empathize Stage

Key Observations

What frustrates users most?

Users feel frustrated when green spaces are far away, crowded, or difficult to reach daily. Maintenance effort and lack of guidance also reduce motivation to keep plants at home.

Where do users hesitate or avoid action?

Users hesitate when they need to walk long distances, cross busy roads, or manage plant care without confidence. Many avoid parks despite liking them.

What makes users feel safe or unsafe?

Greenery that is close, familiar, and easy to maintain creates comfort. Distance, physical strain, and uncertainty create anxiety and avoidance.

Activities Performed

- Conducted interviews with urban residents, including elderly users and homemakers
- Observed daily routines related to outdoor movement and plant care
- Noted hesitation, emotional reactions, and repeated concerns
- Recorded exact statements expressing comfort, fear, and preferences

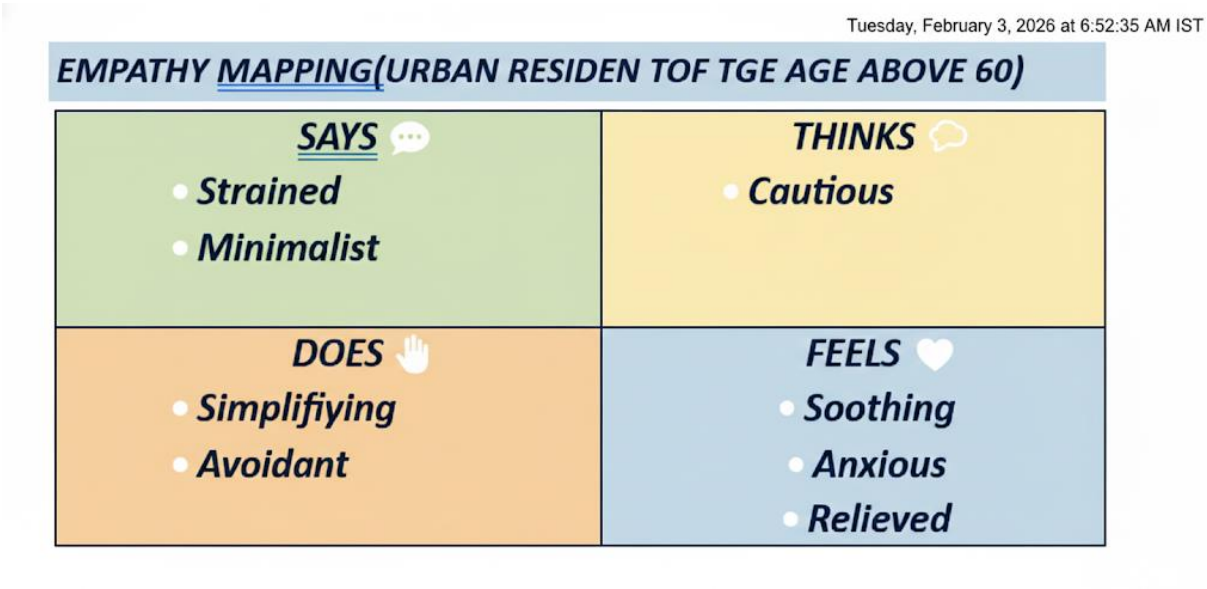
Empathy Map

User 1

Name: Meena

Age: 60

Occupation: Retired Homemaker

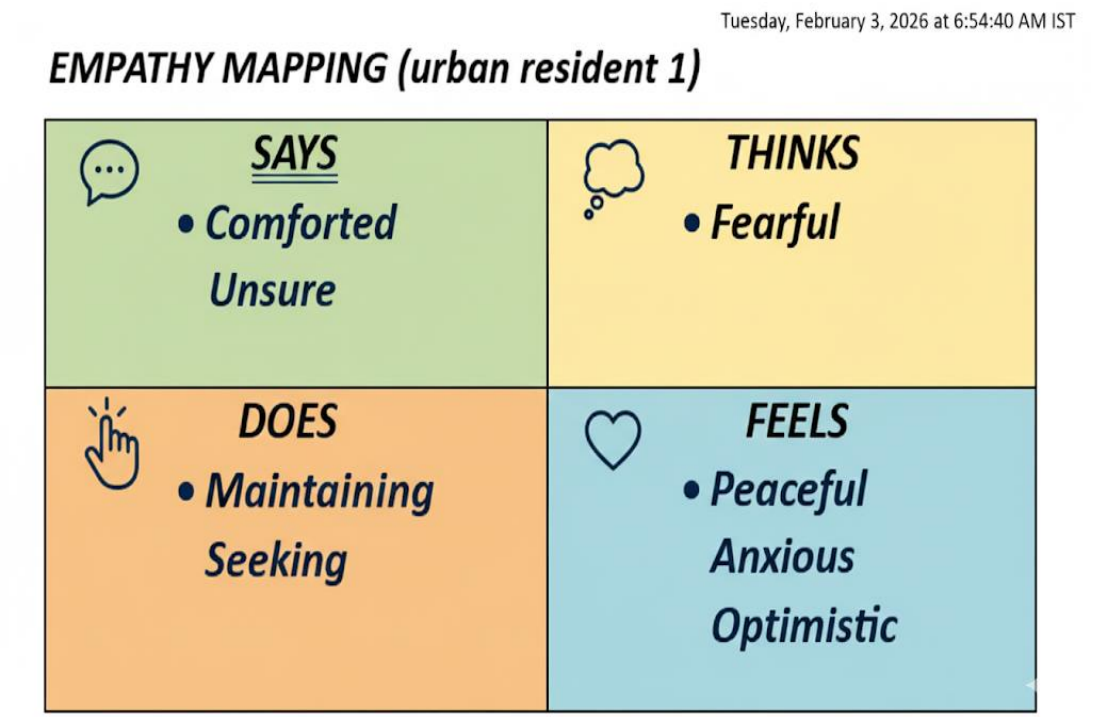


User 2

Name: Raji

Age: 48

Occupation: Homemaker



User Insights

- Users value greenery emotionally but avoid it when access feels difficult
- Distance and physical effort are stronger barriers than lack of interest
- Simple, low-maintenance solutions increase confidence and adoption
- Emotional comfort matters more than large or elaborate green spaces
- Guidance and reassurance reduce hesitation

Define Stage

Objective

To clearly define the core problem faced by urban residents in accessing and benefiting from green spaces based on real user insights.

Problem Statement

Urban residents need an easy and accessible way to experience greenery in their daily lives because distance, effort, and uncertainty prevent them from using existing green spaces regularly.

How Might We Question

How might we help urban residents experience the benefits of greenery in a way that feels close, simple, and emotionally comforting?

Ideate Stage

- Brainstormed Ideas
- Digital guidance for easy-to-maintain indoor and balcony plants
- Location-based suggestions for nearby calm green spots
- Daily greenery reminders and care prompts
- Community-based shared green spaces coordination
- Visual progress tracking for plant growth and well-being benefits

Idea Selection

A simple digital platform that guides users toward nearby or home-based greenery using reminders, easy-care suggestions, and emotional reinforcement.

Prototype Stage

Objective

The objective of the prototype is to demonstrate how a digital solution can support urban residents in accessing greenery through guided plant

care, nearby green space suggestions, and emotional engagement without increasing effort or complexity.

Prototype Description

- Home screen displaying daily greenery suggestions
- Easy plant recommendations based on space and effort level
- Reminder system for watering and care
- Community tab showing nearby shared green spaces
- Visual feedback showing plant growth and mood benefits

Design Rationale

- Simple guidance reduces fear of failure
- Indoor greenery removes distance barriers
- Reminders support consistency without pressure
- Visual feedback reinforces emotional rewards
- Community features encourage shared responsibility

Prototype Type

Low-fidelity wireframes focused on user flow, clarity, and emotional comfort rather than visual design.

Test Stage

Objective

To test whether the prototype reduces hesitation, increases confidence, and encourages regular interaction with greenery.

Testing Method

- Prototype shown to previously interviewed users
- Users explored features relevant to their routine
- Feedback collected on ease, comfort, and motivation

User Feedback Summary

- What Worked Well
- Easy plant suggestions felt reassuring
- Reminders reduced forgetfulness
- Visual growth tracking felt motivating

What Was Confusing

Users wanted clearer symbols for effort level

User Suggestions

Add voice guidance

Include seasonal plant tips

Iteration and Improvements

- Simplified icons and labels
- Added effort-level indicators
- Included optional voice instructions
- Improved community space visibility

Reflection

This experiment showed that access to greenery is not just a physical issue but an emotional and usability challenge. Initial assumptions focused on lack of green spaces, but user interaction revealed deeper barriers related to effort, confidence, and routine. Empathy-driven design helped shift focus from building more spaces to making greenery feel closer, safer, and easier.

Conclusion

By applying the Design Thinking process, this lab identified real user challenges related to urban green space access and validated solutions through empathy and testing. The results demonstrate that small, guided, and emotionally supportive interventions can significantly improve how urban residents engage with greenery in their daily lives.