

## INTERACTIVE ECO-FRIENDLY APP FOR SMART CITY SOLUTIONS

### Objective

Design and develop an interactive, eco-friendly mobile app that integrates app development principles, image editing, data analysis, and game development. The app will educate users on sustainable living practices, collect data for smart city operations, and feature interactive elements, all while using tools like Krita, Excel, and Python.

### Session 1: App Development and Design

#### Activities

##### 1. Introduction to App Development

###### ✦ Task

- ✦ Students will explore the basic concepts of app development. They will learn about the difference between Android and iOS platforms, the types and categories of mobile apps, and the process of downloading and installing apps. Students will define what makes a mobile app functional and user-friendly.

###### ✦ Skills Practised

- ✦ Understanding the difference between Android and iOS app development
- ✦ Setting up a development environment for app creation

##### 2. Creating an Eco-Friendly App Concept

###### ✦ Task

- ✦ Students will design the concept for their eco-friendly mobile app, which will feature sustainable living tips, real-time data on energy use, and interactive challenges for users (e.g., reduce water consumption, save energy).

###### ✦ Skills Practised

- ✦ Conceptualizing features like sustainable tips, data tracking, and interactive challenges
- ✦ Creating an app design document to guide the development process



## Outcome for Session 1

- ◊ An app concept and the app's features and UI.
- ◊ Basic understanding of app development for Android and iOS platforms.

## Session 2: Image Editing and Content Creation with Krita

### Activities

#### 1. Designing the App's Visual Assets in Krita

##### ◊ Task

- ✦ Students will use Krita to create images for the app, such as eco-friendly icons, buttons, and backgrounds for the user interface. They will explore Krita's tools for image editing, including selection tools, painting tools, and layer management to create vibrant, appealing visuals.

##### ◊ Skills Practised

- ✦ Creating images for icons, buttons, and backgrounds suitable for the app design
- ✦ Exporting images for app use, ensuring optimal file sizes for mobile devices

#### 2. Editing App Images and Finalizing the UI Elements

##### ◊ Task

- ✦ Students will finalize their images by adding finishing touches, such as applying filters, adjusting brightness, and cropping images to fit within the app's UI design. They will also explore advanced features of Krita, such as smart objects and retouching tools.

##### ◊ Skills Practised

- ✦ Image retouching and enhancements using advanced Krita features
- ✦ Organizing assets into the proper format for mobile app integration

## Outcome for Session 2

- ◊ Eco-friendly visuals created for the app using Krita.
- ◊ Finalized images ready for integration into the app's UI.

## Session 3: Data Management and Automation with Excel and Python

### Activities

#### 1. Using Excel for Sustainable Data Management

##### ◊ Task

- ✦ Students will use Excel to track and analyse data related to sustainability, such as energy consumption, water usage, and carbon footprint. They will explore advanced Excel features like pivot tables, data validation, conditional formatting, and filters to manage and visualize the data.



### ❖ Skills Practised

- ✦ Using Excel functions to organize and analyse sustainability data and use conditional formatting to highlight key sustainability trends and insights
- ✦ Creating Pivot Tables to summarize energy consumption and sustainability metrics

## 2. Python for Automating Data Input and App Integration

### ❖ Task

- ✦ Students will write a Python script to automate the process of updating sustainability data in the app. The script will allow users to input energy usage data, which will then be automatically processed and displayed on the app. The script will also include basic if...else statements to provide customized energy-saving tips.

### ❖ Skills Practised

- ✦ Python programming for automating data collection and updates
- ✦ Conditional statements and functions to calculate and display sustainability tips based on user input
- ✦ Integrating Python with Excel to fetch and manage sustainability data

## Outcome for Session 3

- ❖ Excel spreadsheets used for managing and analysing sustainability data.
- ❖ Python automation scripts that collect and process user data for the app.

## Final Deliverables

Tick (✓) the box if submitted:

- ❖ Eco-Friendly App Concept and Wireframe outlining features and design.
- ❖ Visual assets (icons, buttons, backgrounds) created using Krita for the app UI.
- ❖ Excel spreadsheets with data tracking and Pivot Tables for sustainability metrics.
- ❖ Python scripts for automating data input and providing customized tips based on real-time data.

This Capstone Project combines app development, image editing, data management, and automation to build an eco-friendly mobile app platform. It teaches students how to integrate various tools like Krita, Excel, and Python to promote sustainability through an interactive digital experience.