CAPSTONE PROJECT

SMART SOLUTIONS FOR A SUSTAINABLE FUTURE

Objective

Design and develop an interactive, visually appealing, and automated digital platform that educates users on sustainable living and eco-friendly solutions through image design, web development, and automation.

Session 1: Designing Eco-Friendly Visuals in Photoshop

Activities

1. **Creating a Digital Poster Using Photoshop**

   <> **Task**

   ✦ Students will use Adobe Photoshop 2024 to create a digital poster that promotes sustainability, such as renewable energy or waste reduction. They will use Move and Selection tools, Cropping tools, and Painting tools to design a clean, professional-looking poster.

   <> **Skills Practised**

   ✦ Opening a new document and adjusting canvas settings in Photoshop.

   ✦ Using Move Tool, Selection Tools, and Cropping Tools to edit images.

   ✦ Painting Tools and Inserting Text to communicate the message effectively.

2. **Using Layers to Enhance the Poster Design**

   <> **Task**

   ✦ Students will use layers in Photoshop to add multiple design elements (e.g., text, images, shapes) while maintaining flexibility for editing. They will apply Layer as Smart Object to make non-destructive adjustments.

   <> **Skills Practised**

   ✦ Working with Layers to manage different design elements

   ✦ Using Layer as a Smart Object for easy edits

   ✦ Retouching Tools to enhance images and ensure clarity

Outcome for Session 1

<> A digital promotional poster designed in Photoshop promoting sustainable living.

<> A layered design that showcases the flexibility and potential of Photoshop's editing tools.

Session 2: Web Development and Interactive Features with HTML5

Activities

1. **Creating the Smart City Web Portal Using HTML5**

    <> **Task**

    ✦ Students will design a basic web portal using HTML5 that highlights eco-friendly solutions. The portal will feature sections like renewable energy, recycling initiatives, and sustainable transport options.

    <> **Skills Practised**

    ✦ Inserting Images and linking web pages to create a cohesive user experience.

    ✦ Using Frames to organize different sections of the portal (e.g., energy-saving tips, solar panel installations).

    ✦ Styling the portal with HTML5 tags for accessibility and clarity.

2. **Embedding Multimedia and Forms in HTML5**

    <> **Task**

    ✦ Students will embed audio and video elements on their web portal, explaining sustainable living practices in an engaging way. They will also create forms to collect user feedback on eco-friendly practices.

    <> **Skills Practised**

    ✦ Inserting audio and video elements with HTML5 tags like <audio> and <video>.

    ✦ Creating interactive forms using <input>, <textarea>, and <button> tags.

    ✦ Using links to guide users to different sections of the website (e.g., information on solar panels, energy conservation tips).

Outcome for Session 2

<> A fully designed web portal using HTML5, featuring multimedia content and interactive forms.

<> Multimedia elements such as audio and video explaining eco-friendly practices.

Session 3: Automating Sustainability with Python

Activities

1. **Using Loops in Python for Data Automation**

   <> Task
   - ✦ Students will write a Python script that automatically updates the website with real-time data on eco-friendly metrics, such as solar energy savings or carbon footprint reduction. They will use for loops to process data over a set period and update the webpage.

   <> Skills Practised
   - ✦ Writing for loops to handle repetitive tasks like updating data on the website
   - ✦ Automating data display to provide users with real-time updates
   - ✦ Integrating Python with the website to dynamically show energy savings or environmental impact

2. **Functions and String Manipulation in Python for User Interaction**

   <> Task
   - ✦ Students will write a Python function that processes user input from the website (e.g., energy consumption forms). The function will manipulate the input strings and provide personalized energy-saving tips based on the user's data.

   <> Skills Practised
   - ✦ Writing functions in Python to process and return results
   - ✦ Using string manipulation to format user input (e.g., capitalizing names, formatting numbers)
   - ✦ Using Python to interact with data collected via HTML5 forms

Outcome for Session 3

- <> A Python script that automates data updates and interacts with the web portal.
- <> Personalized energy-saving tips using functions and string manipulation.

Final Deliverables

Tick (✓) the box if submitted:

- <> Eco-Friendly Digital Poster designed using Adobe Photoshop.

- <> Smart City Web Portal designed with HTML5, featuring images, videos, and interactive forms.

◆ Python Script that automates the real-time display of energy-saving tips or eco-friendly data.

◆ Final Presentation showcasing the digital platform, explaining the use of Photoshop, HTML5, and Python for creating a sustainable smart city experience.

This project combines various technologies, from digital design and web development to automation and data management, all aimed at promoting sustainable living and eco-friendly practices in a modern, interactive city.