Web Technologies Coursework – Part 2 Report

A. URL

Deployed Site URL
https://nutellayan.github.io/WebTech/
My GitHub repository:
https://github.com/nutellayan/WebTech

B. Differences Between Initial Plan and Final Implementation

While the final implementation stays true to many features proposed in Part 1, several changes and improvements were made based on feasibility, user experience, and time constraints:

1. **Demo Page Replaces Game Preview**
   The initial plan included a static "Game Preview" section. Instead, I created a standalone demo.html page that contains an .mp4 video walkthrough with subtitles. This demo uses a unique image set not found in the game and better showcases the game's interface and features interactively.
2. **Demo Access via Button, Not Navigation Bar**
   Rather than adding demo access to the main navigation menu, I included a clearly visible “Watch Demo” button beneath the “Start Game” button on the homepage. This reduces clutter while maintaining visibility.
3. **Dark Mode Dropped**
   I originally considered implementing a dark mode toggle, but chose to focus instead on completing the core functionality and polishing features such as hint effects, audio toggles, and overall UI clarity.
4. **Branding Introduced**
   A custom logo ("Joker.co") was designed and animated in the page footers. This purely decorative branding element adds personality without linking externally.
5. **Final Level Set Adjusted to 15**
   While the original plan was to include 15–20 levels, I finalized the game with 15 carefully selected image sets. The number of interactive differences increases progressively — starting with 5 and reaching up to 12 in the final level — to introduce greater challenge as the player advances.
6. **End-of-Game Popup**
   A new feature was added: after completing the final image set, players now receive a popup message saying, “That’s all levels! Thanks for playing!” This gives a more polished sense of game completion.

C. Potential Enhancements with More Time

If more time were available, I would aim to enhance the project with the following features:

- **More Levels and Thematic Variety**
  Expanding the number of levels with different visual styles would improve replayability.
- **Dark Mode**
  A toggle for light/dark themes would improve visual comfort and accessibility.
- **Progress Saving**
  Using local storage to track progress would let users resume their game later.
- **Hints through Mini-Games**
  Instead of providing 3 fixed hints per level, players could earn additional hints by completing small mini-games between levels. This would add more interactivity and reward skilful play.
- **Responsive Design Enhancements**
  Although the game performs well on standard screens, further optimization for mobile devices would broaden accessibility.

D. Reflection on Challenges and Achievements

Challenges Faced:

- **Accurate Click Detection Across Zoom and Resolutions**
  One of the most technically challenging aspects was ensuring that clicks on image differences were detected accurately across varying screen sizes, resolutions, and browser zoom levels. I used scaling logic — relying on naturalWidth and getBoundingClientRect() — to calculate precise positions. However, I discovered that click locations and circle overlays would shift slightly when the page was zoomed in or out, especially on larger images.
  While I considered refactoring the layout and click detection to use percentage-based coordinates within a fully responsive container, it would have required major structural changes. Due to time constraints, I documented this limitation in the report instead.

- **Choosing a Realistic Game Concept**
  As someone who doesn't play many games, choosing a manageable project idea was difficult. I ruled out complex games like platformers or physics-based puzzles and focused on something achievable. A "Spot the Differences" game allowed me to concentrate on interactivity, multimedia integration, and visual feedback — all while keeping the scope focused and realistic.

- **Multimedia Integration**
  Integrating audio and music added more complexity than expected. I had to manage playback logic for correct/incorrect sounds, ensure background music looped smoothly, and prevent overlapping audio or autoplay issues — particularly across different browsers and devices.

- **Creating and Syncing the Demo Video**
  Producing a subtitled demo video using CapCut and .srt was a brand-new skill. I had to learn how to format subtitles, time them correctly, and embed them with the .mp4 file. This extra effort made the game more accessible and gave new players a clearer introduction.

- **Time Management and Gantt Chart Adjustments**
  I followed a Gantt chart from February to April, but coding and debugging took longer than expected. JavaScript functionality, game responsiveness, and demo video integration all extended past their planned time slots. To stay on track, I adjusted the timeline, dropped less essential features like dark mode, and focused on delivering a polished, playable experience.

- **Manual Coordinate Mapping**
  I manually annotated the correct spot coordinates for every image set in the game. With over 15 levels, this was a repetitive and time-consuming task, but it was essential to ensure accurate gameplay. Automating it would have required complex image processing — so instead, I carefully mapped each difference by hand to maintain control and precision.

Achievements:

- **Completed Core Game Mechanics**
  All key features — clickable differences, hint system, sound/music toggle, and success/fail visual feedback — were successfully implemented using clean JavaScript.
- **Improved User Experience**
  Features like the demo video, end-of-game popup, and polished UI help guide users and make the game more engaging.
- **Visual Branding and Interface**
  The overall look is clean, minimal, and functional, with consistent styling and a fun, branded touch through the animated footer logo.

End of report

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