



# Project – Alphabet Picture Game

Deadline and Submission: Check Sakai

## Project Overview

We will develop a kid-friendly game app. The app will randomly show letters from the English alphabet and the goal of the player is to find an object that starts with that letter and take a photo. The app will automatically validate the photo (i.e., recognizing the object and determining if the object's name starts with the letter), keep track of the time, and keep track of the stats/history.

### Screen 1 – First Screen

- There should be at least 2 buttons – “Start Game” and “History”.
- Start Game will take the user to Screen 2 where the game is played.
- History will take the user to Screen 3 that shows stats and history.
- Use images and sound effects.

### Screen 2 – Game Screen

- Music – A background music starts to play (only music, without voice)
- Board – Show a game board with 26 boxes with labels. A letter should be shown as a label for each box. Every time the user starts a new game, all the boxes should be empty.
- Letter – Use animation (or alike) for a random box that is currently empty to glow/grow-shrink/highlight. Use sound that shouts the letter out, e.g., in children's voice.
- Timer – A timer should start that keeps track of the elapsed time for each round of the game (i.e., time from the appearance of the letter to taking a photo).
- Photo – The user should click on the highlighted box and the camera app should start. The user will take a photo and the result (photo) will be back to the app. The app will use Tensor Flow Lite (or, some other library or service) to recognize the object and if at least one of the top 3 labels you get from TF starts with the letter, the user wins this round, otherwise loses. In case of a win, animate the photo, e.g., grow/glow etc. and then add the photo into the box after properly sizing. In case of an incorrect photo, show similar animation to inform that it was incorrect. Use sounds e.g., claps or boos as appropriate. The timer resets and a new letter will be shown for the next round.
- Fake – Detect if the user is taking photos of an actual object or a virtual object. Virtual objects should not be accepted and flagged as cheating.
- Exit – the game ends when the Exit button is pressed or when all boxes are filled with photos.

### Screen 3 – History Screen

- Plot – A bar plot with letters on the X axis and the average photo taking time on the Y axis.
- Recent Photos – A list of images grouped by the letters. For each letter, show up to 3 most recent photos, their labels, time to take the photo, and when was the photo taken.

**Tasks, Points, and Deadlines:**

|               | <b>Task</b>              |    | <b>Deadline</b> |
|---------------|--------------------------|----|-----------------|
| <b>Part 1</b> | Screen 1 (All)           | 10 | April 13        |
|               | Screen 2 (Music)         | 10 |                 |
|               | Screen 2 (Board)         | 10 |                 |
|               | Screen 2 (Letter)        | 20 |                 |
| <b>Part 2</b> | Screen 2 (Timer)         | 10 | April 20        |
|               | Screen 2 (Photo)         | 30 |                 |
|               | Screen 2 (Exit)          | 10 |                 |
| <b>Part 3</b> | Screen 2 (Fake)          | 10 | April 27        |
|               | Screen 3 (Plot)          | 40 |                 |
| <b>Part 4</b> | Screen 3 (Recent Photos) | 50 | May 4           |