



1. Emoji Memory Game (Beginner DOM + Arrays)

What they practice

- Arrays of objects
- DOM manipulation
- Event listeners (click)
- Shuffling arrays

Project Instructions

1. Create an array of emojis (each emoji twice).
2. Shuffle the array using `sort(() => Math.random() - 0.5)`.
3. Display cards (divs) on the page with "?" initially.
4. When a student clicks a card → show the emoji.
5. If two shown emojis match → keep them visible.
6. If not → flip them back after 1 second.

Challenge Add-ons

- Add a score counter.
 - Add a timer.
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2. Student Grade Analyzer (Objects + DOM)

What they practice

- Arrays of objects
- Looping
- Filtering

Instructions

1. Create `students = [{name, grades:[...]}, ...]`.
2. Add input fields: student name, grade.
3. Add a button to push the grade into the correct object.
4. Button “Calculate Average” → show results in the DOM.

Challenge

- Highlight students with average below 6 (red).
 - Highest average → green.
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3. Mini To-Do List V2 (Events + Objects + DOM)

They already built a simple to-do list — now upgrade it.

New Features

- Each task is an object: `{id, text, completed}`
- Checkbox to mark completed
- Button to delete
- Filter buttons: “All / Completed / Active”

Challenge

- Save tasks in `localStorage`.
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4. Photo Gallery With Lightbox (Events + DOM)

What they practice

- `querySelectorAll`
- Handling multiple elements
- Changing attributes

Instructions

1. Create 6–8 images in a grid.
2. When a student clicks an image → open big version in a modal.
3. Add a close button.

Challenge

- Add “Next” and “Previous” buttons.



5. Quiz App (Arrays + JSON + DOM)

What they practice

- Arrays of objects
- Mapping data to DOM
- Event listeners
- Checking answers

Instructions

1. Create an array of question objects:

```
{ question: "...", options: [ "a", "b", "c", "d" ], answer:"a" }
```

2. Display one question at a time.
3. Student clicks an option → check answer.
4. Score increases.
5. After last question → show summary.

Challenge

- Load questions from a JSON file.
 - Add a timer.
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6. Reaction Speed Game (Events + Timers)

What they practice

- setTimeout
- event listeners
- DOM styling

Instructions

1. Create a big box (`div`).
2. After 1–3 seconds randomly → change color to green.
3. Student must click AS FAST AS POSSIBLE.
4. Display reaction time in milliseconds.

Challenge

- 5 rounds → calculate best and worst times.
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7. Canvas Drawing Pad (Canvas + Mouse Events)

They already touched canvas, this one is super fun.

Instructions

1. Create a `<canvas>`.

2. When mouse is down and moved → draw lines.
3. Add buttons:
 - Change color
 - Change brush size
 - Clear canvas

Challenge

- Add an eraser.
 - Add a “save as image” option.
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8. Bouncing Ball Playground (Animations + Physics)

Perfect follow-up to your “bouncing ball” lesson.

Instructions

1. Draw a circle on canvas.
2. Give it `dx`, `dy`.
3. Animate it with `requestAnimationFrame`.
4. Detect collision with edges → reverse direction.
5. Add keyboard buttons to change ball speed.

Challenge

- Add 3–5 balls.
 - Make them bounce off each other.
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9. Avoid the Falling Objects Game (Canvas + Keyboard)

What they practice

- Collision detection
- Movement with arrow keys
- Drawing shapes repeatedly

Instructions

1. Create player square at bottom.
2. Drop circles from top randomly.
3. If circle hits player → “Game Over”.
4. Player moves left/right with arrow keys.

Challenge

- Score increases over time.
 - Increasing difficulty (faster objects).
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10. Interactive Storybook (JSON + DOM + Events)

Good for young kids to combine coding + creativity.

Instructions

1. Create a JSON structure:

```
[  
  { text: "Page 1 text", img:"1.jpg" },  
  { text: "Page 2 text", img:"2.jpg" }  
]
```

2. Display text + image.
3. Button “Next” → load next index.
4. Add animations (fade-in).

Challenge

- Add choices → “Choose your path”.
- Multiple endings.