

Programme	:	B.Tech.	Semester	:	Winter24-25
Course	:	BCSE203E: Web Programming Lab	Slot	:	TE1/TE2
Faculty	:	Dr. LM Jenila Livingston	Marks	:	10

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Exercise 12: JavaScript Canvas, Charts and graphs using plotly.js. and Stack elements using Z-Index

1. Write a **JavaScript program** using the **HTML5 Canvas API** to draw a scene that consists of the following **shapes and corresponding drawings**:

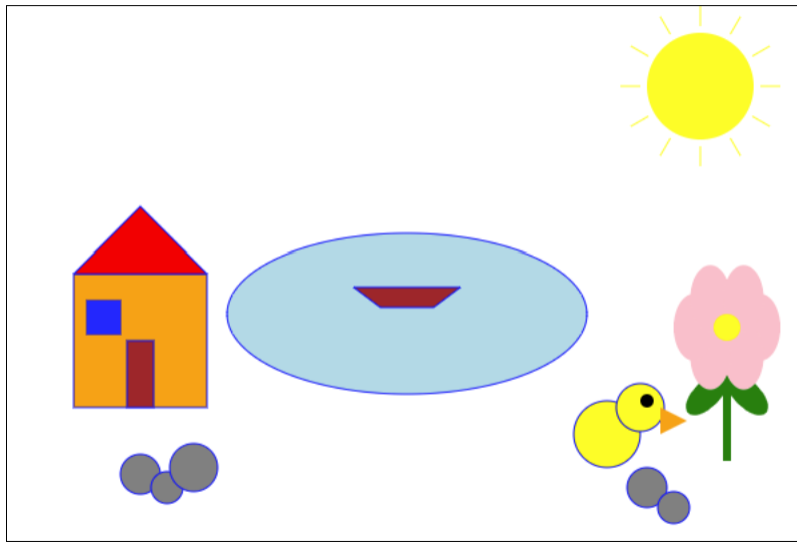
Shape	Drawing Representation
Oval	Pond
Polygon (Quadrilateral with curved edges)	Boat
Two Circles of Different Sizes	Duck (Body & Head)
A Large Circle with Multiple Straight Lines Extending Outward	Sun
A Rectangle with a Triangle on Top	House
An Ellipse with a Vertical Line and Two Curved Shapes	Flower (Stem, Leaves, and Petals)
Multiple Small Circles	Stones

Requirements:

- Use the **Canvas API** functions such as `arc()`, `ellipse()`, `fillRect()`, `lineTo()`, `moveTo()`, and `stroke()`.
- Assign **different colors** to each shape.
- Ensure the **relative positioning** of the elements remains visually structured.

Sample Scene:

Pond Scene using JavaScript Canvas



2. Apply an animation effect to the boat
3. Write a JavaScript program that creates a **working analog clock** using the HTML5 Canvas API. The clock should display the **current time dynamically and accurately**, updating every second.

Requirements:

- i) Use the Canvas API to draw the clock face, hands, and markings.
 - ii) The clock must include the following elements:
 - a. A circular clock face with a border and a filled background color.
 - b. Hour, minute, and second hands that update dynamically based on the current time.
 - c. Numerical or tick markings for hours (1 to 12).
 - d. A center pivot point for the hands.
 - iii) Ensure the hands move smoothly and update every second.
4. Write a **JavaScript program** that dynamically generates the charts (**bar chart, line chart, pie chart** and a **donut chart**) using **Plotly.js**. Each chart must include:
 - a. Labeled X and Y axes (for bar and line charts).
 - b. Title for each chart.
 - c. Different colors for data points.
 - d. Legend (for the pie chart and donut) showing categories.
 - ii) The chart should be scaled properly to fit within the display area.

5. Write a JavaScript program that dynamically creates and manipulates **overlapping elements** using **CSS `z-index`**. The program should allow the user to **change the stacking order** of elements by adjusting their `z-index` values.
- Create at least three overlapping elements (e.g., `div` boxes or images).
 - Use CSS `z-index` to control the layering order of these elements.
 - Provide buttons or user input to dynamically adjust the `z-index` values using JavaScript.
 - Display the current `z-index` value of each element.