Experiment No. 10

Inventory Management System – Data Visualization using Chart.js

Objective

To design and develop a web-based application that visualizes inventory data using pie and bar charts with the help of the Chart.js library, thereby enhancing data interpretation for inventory management systems.

Software Requirements

- HTML5
- CSS3
- JavaScript (ES6)
- Chart.js (via CDN)

Data visualization is a key component of modern inventory management systems. It helps stakeholders understand stock distribution and movement efficiently. The Chart.js library is an open-source JavaScript tool that allows developers to create various interactive and responsive charts with minimal code.

In this experiment, inventory items are represented across five categories. These are visualized using two different chart types:

1. **Pie Chart** – Displays proportional distribution
2. **Bar Chart** – Shows quantity comparisons

Implementation

HTML Code: index.html

This file structures the webpage and integrates both Chart.js and the script file for data visualization.

html

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```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Inventory Management Visualization</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      text-align: center;
      margin: 50px;
    }
    canvas {
      margin: 30px auto;
    }
  </style>
</head>
<body>
  <h1>Inventory Management System</h1>
  <canvas id="pieChart" width="400" height="400"></canvas>
  <canvas id="barChart" width="400" height="400"></canvas>

  <script src="https://cdn.jsdelivr.net/npm/chart.js"></script>
  <script src="script.js"></script>
</body>
```

</html>

JavaScript Code: script.js

This file contains the data definition and the configuration of both pie and bar charts.

javascript

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```
const inventoryData = {
  labels: ['Electronics', 'Clothing', 'Home Appliances', 'Books', 'Toys'],
  datasets: [{
    label: 'Items in Stock',
    data: [200, 150, 100, 80, 50],
    backgroundColor: [
      '#FF6384', // Electronics
      '#36A2EB', // Clothing
      '#FFCE56', // Home Appliances
      '#4BC0C0', // Books
      '#9966FF'  // Toys
    ]
  }]
};

// Pie Chart
const ctxPie = document.getElementById('pieChart').getContext('2d');
const pieChart = new Chart(ctxPie, {
  type: 'pie',
```

```
  data: inventoryData,
  options: {
    responsive: true,
    plugins: {
      title: {
        display: true,
        text: 'Inventory Distribution'
      }
    }
  }
});

// Bar Chart
const ctxBar = document.getElementById('barChart').getContext('2d');
const barChart = new Chart(ctxBar, {
  type: 'bar',
  data: inventoryData,
  options: {
    responsive: true,
    plugins: {
      title: {
        display: true,
        text: 'Items in Stock by Category'
      }
    },
    scales: {
```

```
    y: {
      beginAtZero: true
    }
  }
 }
});
```

Output

The webpage displays two interactive charts:

1. **Pie Chart** – Represents the proportional breakdown of inventory items.
2. **Bar Chart** – Illustrates the quantity of stock available per category.