**1) Explain the structure of an HTML Table and the purpose of each of the following element <table>, <tr>, <th>, <td> and <head>.**

**Structure of an HTML Table**

An HTML table is used to display data in a tabular format with rows and columns. It is composed of several elements that define the table, its rows, headers, and cells.

### Key Elements and Their Purpose

1. **<table>**
   * This element defines the start and end of the table.
   * It acts as a container for all other table elements like rows, headers, and data cells.
   * Without <table>, the browser won’t recognize the content as a table.
2. **<tr>** (Table Row)
   * Defines a row inside the table.
   * It groups a set of cells horizontally.
   * Every row must be inside a <table> and contains one or more <th> or <td> elements.
3. **<th>** (Table Header Cell)
   * Defines a header cell inside a row.
   * Header cells usually appear in the top row or the first column of a table and are bold and centered by default.
   * They describe what the data in the corresponding column or row represents.
4. **<td>** (Table Data Cell)
   * Defines a standard data cell inside a row.
   * It holds the actual data of the table.
   * Each <td> corresponds to a column within a row.
5. **<head>** (Table Head)
   * Groups the header content of the table.
   * Typically contains one or more <tr> elements, usually those with <th> cells.
   * Helps browsers and assistive technologies to understand and style the table headers separately from the body.
   * Often used in conjunction with <body> and <foot> for semantic and structural clarity.

**2) What is the difference between Colspan and rowspan in tables? provide examples.**

The colspan and rowspan attributes in HTML tables are used to merge cells horizontally and vertically, respectively.

* **COLSPAN:**
  + **Purpose**: Merges **columns** (i.e., makes a cell span across multiple columns horizontally).
  + **Used in**: <td> or <th> tags.

**EX.**

**<**table border=”1”>

<tr>

<th> Age </th>

<th colspan=”2”>Name</th>

</tr>

<tr>

<td> john</td>

<td> Deo</td>

<td>30</td>

</tr>

</table>

* **ROWSPAN:**
  + **Purpose**: Merges **rows** (i.e., makes a cell span across multiple rows vertically).
  + **Used in**: <td> or <th> tags.

**EX**.

<table border=”1”>

<tr>

<th rowspan=”2”>Name </th>

**<**table border="1">

<tr>

<th rowspan="2"> Name </th>

<th>Age</th>

</tr>

<tr>

<td>30</td>

</tr>

</table>

**3) Why should tables be used sparingly for layout purposes? What is a better alternative?**

 **Poor Accessibility**:

* Screen readers and assistive technologies expect tables to represent data, not layout.
* Misusing tables confuses these tools and makes navigation harder for users with disabilities.

 **Responsive Design Challenges**:

* Tables are rigid and don't adapt well to different screen sizes or orientations (like on mobile).
* It's much harder to make a layout responsive when it's built with tables.

 **Increased Complexity and Maintenance**:

* Table-based layouts require more complex HTML and are harder to edit or update.
* They often result in deeply nested structures, making the code harder to read and maintain.

 **Slower Page Load Times**:

* Table rendering can be slower, especially with large or deeply nested tables.

 **Outdated Practice**:

* Modern web standards and practices discourage table layouts in favor of cleaner, more semantic approaches.