

Roll No.: 21006 AIE

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Amrita School of Computing, Amritapuri
Mid-Term Examinations, October 2024

S7 BTech

Computer Science and Engineering (Artificial Intelligence)

22AIE457 Full Stack Development

Duration: Two hours

Maximum Marks: 50

CO#	Course Outcomes
CO01	Use markup and scripting languages to design and validate dynamic web pages.
CO02	Customize pages for users need based on responsive web design concepts
CO03	Learn to design appropriate database services based on the requirements
CO04	Design, develop and deploy an end-to-end web application as a term project.

Answer all questions

1. Create an HTML form that includes validation. The form should have the following fields:
(5 marks) (CO1) (BTL3)

- a) A "Name" field that is required and should accept only alphabetic characters.
- b) An "Email" field that is required and should accept a valid email address.
- c) A "Mobile Number" field that is required and should accept only 10-digit numbers.
- d) A "Password" field that is required and should be at least 8 characters long.
- e) A "Submit" button to submit the form.

[Constrains: Do not use JavaScript or CSS. Only use HTML5 validation attributes]

2. a) What is Semantic HTML? (1 mark) (CO1) (BTL1)

- b) Provide examples of semantic HTML tags and explain their significance in web development.

(3 mark) (CO1) (BTL1)

3. Consider an e-commerce website where users can view and interact with product listings. The website uses a variety of HTML tags and structure to display dynamic content, including product images, descriptions, pricing, and user reviews. Each product must be displayed with:

(8 marks) (CO2)(BTL 2)

- a) A clickable product image that links to the detailed product page.
- b) A product title (<h2>) that is both screen reader-friendly and optimized for SEO.
- c) A pricing section with discounts applied.
- d) User ratings represented as stars using a combination of semantic HTML and appropriate CSS.
- e) Propose a structure to support dynamic user-generated content like reviews, where each review

contains: The user's name as a heading, the review content as a paragraph, and a rating. The reviews should be accessible for screen readers.

f) Allow sorting reviews by recency or helpfulness, and make this feature accessible without JavaScript for users with limited functionality.

4. You are tasked with building a dynamic, responsive webpage that simulates a simple publication management system for a PhD research group. The webpage should allow users to upload their research papers, view uploaded papers, and filter the papers by year, title, and research area. The following HTML and CSS requirements must be met: (12 marks)(CO1)(BTL 3)

- Create a form for uploading papers, including fields for paper title, year of publication, research area (dropdown), and a file upload option (PDF only).
- Display the uploaded papers in a tabular format, with columns for title, year, research area, and download link.
- Include a search bar for filtering papers by title, year, or research area.
- Ensure the webpage is fully responsive, adjusting seamlessly between mobile, tablet, and desktop views.
- Style the form and table to provide a clean and modern look, using CSS Flexbox or Grid.
- Highlight the search results dynamically using hover or active pseudo-classes.

5. Consider the following HTML code:

(4 marks)(CO2) (BTL1)

```
<div id="top">
  <div id="1" class="child">Child level 1</div>
  <div id="2" class="child">Child level 2</div>
  <div id="3" class="child">Child level 3</div>
</div>
```

How would you select and manipulate the DOM elements in the following situations?

- Select the div with id "top".
- Select all divs with the class "child".
- Change the text content of the div with id "2" to "2nd Child".

6. You are developing a complex web application that has the following structure in its HTML:

```
<div class="container">
  <header id="main-header">
    <h1 class="title">Welcome to the Dashboard</h1>
  </header>
  <section id="content">
    <div class="card">
      <p class="info important">System status: All systems operational.</p>
```



```

</div>
<div class="card highlighted">
<p class="info">Security alert. Unauthorized login attempt detected </p>
</div>
<div class="card">
<p class="info">New updates are available.</p>
</div>
<ul id="task-list">
<li class="task">Task 1</li>
<li class="task done">Task 2</li>
<li class="task important">Task 3</li>
</ul>
</section>
</div>

```

Write CSS to achieve the following styling conditions:

(10 marks)(CO1)(BTL 2)

- Change the color of the <h1> tag inside the #main-header to blue.
- Apply a bold font to the paragraph with the class .info inside any div with both the card and highlighted classes.
- Set a background color of yellow for every that is both a .task and .important, but not if it also has the .done class.
- Add padding only to the first inside the #task-list.
- Explain the types of selectors you used for each part of the question and why they are the most efficient solution for the given problem.

7. You are working on a team project with multiple contributors. One of your teammates accidentally pushed several commits to the main branch instead of a feature branch. These commits contain incomplete code that is causing the build to fail. However, other important commits have been made to the main branch since the erroneous push. You need to address the situation carefully to avoid losing any important work or causing conflicts with other contributors.

(7 marks) (CO2) (BTL 4)

- Explain how you would identify the specific commits that need to be removed from the main branch.
- Using Git commands, how would you remove only the erroneous commits while preserving the valid ones?
- After removing the erroneous commits from the main branch, describe how you would move those commits to a new feature branch for continued work without losing the history.
- How would you ensure that your changes (removal of commits) do not conflict with other recent commits made by your teammates on the main branch? What Git features or processes can help prevent potential conflicts?
- Once the changes are made, how would you communicate these changes to the rest of the team, ensuring everyone's local repositories are in sync with the corrected main branch?
- What Git branch protection mechanisms can be enforced to prevent accidental commits to the main branch in the future?
- After fixing the issue in the main branch, the build still fails because the incomplete code broke some dependencies. Which Git techniques can you use to roll back to a working state while investigating the cause of the failure?