Computer Science & Information Systems Department

CS 341: Web Technologies
Mid-Semester Exam

Semester: Semester I, Aug-Dec, 2024
Date: 28th October 2024
Duration: 1 hour 10 minutes
Points: 30
Weight: 15 %

First Name : _____   Last Name: _____

Student ID No.: _____   Username: _____

Instructor:
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INSTRUCTIONS
1. Be sure to read the instructions and each question very carefully.

2. This is a Multiple-Choice Question type exam. Answer *all* the questions. The points to the questions are given based on the difficulty level.

3. You are NOT allowed to use your devices like your laptop, mobile phone, and tab during the exam's answering phase (the first 60 min). However, you can use your devices to transfer the answers to Canvas during the last 10 min.

4. Submit this question booklet with your answers written therein, at the end.

5. All rules governing examinations and academic honesty at Ashesi apply.

Q1) [2 Points]
Consider the following HTML code.

```
<ul class="menu">
   <li>Home</li>
   <li>About</li>
   <li>Contact</li>
</ul>
<ul class="footer">
   <li>Privacy Policy</li>
   <li>Terms of Service</li>
</ul>
```

Which CSS rule will correctly style only the first <li> element inside the <ul class="menu"> without affecting other lists?

A) ul.menu li:first-of-type { color: red; }
B) ul li:first-child { color: red; }
C) ul.menu li:nth-child(0) { color: red; }
D) ul.menu li:first { color: red; }

Q2) [2 Points]
 What will be the visual result of the following HTML and CSS combination?

```
<!DOCTYPE html>
<html>
<head>
   <style>
     div {
       width: 100px;
       height: 100px;
       background-color: red;
     }
     .container div {
       width: 50%;
     }
   </style>
</head>
<body>
   <div class="container">
     <div></div>
   </div>
</body>
</html>
```

A) The div inside .container will be 50% of the browser's width.
B) The div inside .container will be 50px wide.
C) The div inside .container will still be 100px wide.
D) The div inside .container will be hidden due to conflict.

Q3) [2 Points]
Which of the following HTML code snippets creates a form with a text input field that automatically capitalizes the input letters and makes the input mandatory?

A) <form>
  <input type="text" id="name" name="name" style="text-transform: uppercase;">
</form>

B) <form>
  <input type="text" id="name" name="name" style="text-transform: uppercase;" required>
</form>

C) <form>
  <input type="text" id="name" name="name" style="text-transform: capitalize;">
</form>

D) <form>
  <input type="text" id="name" name="name" required>
</form>

Q4) [2 Points]
Consider the following HTML snippet. What will be the outcome when the user clicks the submit button, assuming JavaScript is handling the validation?

<form>
  <label for="email">Email:</label>
  <input type="email" id="email" required>
  <input type="submit">
</form>

A) If the email input is empty, the form will not submit.
B) If the email input is not in the correct format, an error will be thrown.
C) Both A and B.
D) The form will submit regardless of input.

Q5) [1 Point]

What will happen if you use the <img> element without specifying the alt attribute in HTML5?

A) The image will not be displayed.
B) A broken image icon will appear.
C) Screen readers won't be able to describe the image.
D) The image will only load in certain browsers.

Q6) [1 Point]

Which of the following is correct about setTimeout?

A) setTimeout(fn, 0) immediately executes fn.
B) setTimeout is part of the JavaScript language core.
C) setTimeout executes a function after the given delay, but other code continues to run.
D) setTimeout returns the result of the function passed to it.

Q7) [1 Point]

What is the output of the following code?

```
let a = 1;
let b = 2;
[a, b] = [b, a];
console.log(a, b);
```

A) 2, 1
B) 1, 2
C) undefined, undefined
D) NaN, NaN

Q8) [2 Points]

What will the following code print?

```
let element = document.createElement('p');
element.innerHTML = '<strong>Bold Text</strong>';
console.log(element.textContent);
```

A) Bold Text
B) Bold Text
C) Error
D) undefined

Q9) [2 Points]

What is the correct order of specificity from highest to lowest for the following CSS selectors applied to an HTML element?

A) Inline styles > Class selectors > ID selectors > Element selectors

B) ID selectors > Class selectors > Inline styles > Element selectors

C) Inline styles > ID selectors > Class selectors > Element selectors

D) ID selectors > Inline styles > Class selectors > Element selectors

Q10) [2 Points]

What is the output of the following code?

```
let a = [1, 2, 3];
let b = a;
b.push(4);
console.log(a);
```

A) [1, 2, 3]

B) [1, 2, 3, 4]

C) [4, 2, 3]

D) Error

Q11) [2 Points]

Which of the following JavaScript functions takes an array arr of numbers as input and returns an array where each element is squared?

```
A) function squareArray(arr) {
   return arr.map(x => x * x);
}
```

```
B) function squareArray(arr) {
   return arr.reduce((a, b) => a * b);
}
```

```
C) function squareArray(arr) {
   for (let i = 0; i < arr.length; i++) {
     arr[i] = arr[i] * arr[i];
   }
   return arr;
}
```

```
D) function squareArray(arr) {
   return arr.filter(x => x > 0);
}
```

Q12) [1 Point]
How can you add a new item to the beginning of a list in the DOM using JavaScript?

A) document.querySelector('ul').appendChild(newItem);
B) document.querySelector('ul').prepend(newItem);
C) document.querySelector('ul').innerHTML += newItem;
D) document.querySelector('ul').removeChild(newItem);

Q13) [1 Point]
Which of the following is the correct way to remove an element from the DOM?

A) document.querySelector('#myElement').remove();
B) document.querySelector('#myElement').delete();
C) document.querySelector('#myElement').innerHTML = '';
D) document.querySelector('#myElement').detach();

Q14) [2 Points]
 Write a function that changes the text of a button to "Clicked!" after the button is clicked.

```
A) document.querySelector('button').addEventListener('click', function() {
   this.textContent = 'Clicked!';
});
```

```
B) document.querySelector('button').onclick = function() {
   this.innerText = 'Clicked!';
};
```

```
C) document.querySelector('button').addEventListener('click', function() {
   document.querySelector('button').textContent = 'Clicked!';
});
```

D) All of the above

Q15) [2 Points]
Write a function that adds a new <li> item with the text "New Item" to a list with ID myList.

```
A) function addNewItem() {
   let list = document.querySelector('#myList');
   let newItem = document.createElement('li');
   newItem.textContent = 'New Item';
   list.appendChild(newItem);
}
```

B) function addNewItem() {
   let list = document.querySelector('#myList');
   list.innerHTML += '
New Item
';
}

C) function addNewItem() {
   let list = document.querySelector('#myList');
   let newItem = document.createElement('li');
   newItem.textContent = 'New Item';
   list.prepend(newItem);
}

D) All of the above

Q16) [1 Point]
What will be the output of the following code?

```
(function() {
   var x = y = 100;
})();
console.log(typeof y);
```

A) undefined
B) number
C) object
D) Error

Q17) [2 Points]
Write a function that changes the background color of an element with the ID box to blue when a button with ID changeColor is clicked.

A) document.querySelector('#changeColor').addEventListener('click', function() {
   document.querySelector('#box').style.backgroundColor = 'blue';
});

B) document.querySelector('#changeColor').addEventListener('click', function() {
   document.querySelector('#box').style.color = 'blue';
});

C) document.querySelector('#changeColor').onclick = function() {
   document.querySelector('#box').style.backgroundColor = 'blue';
};

D) Both A and C

Q18) [2 Points]

Write a function that returns the number of vowels in a given string.

A) function countVowels(str) {
  return str.match(/[aeiou]/gi).length;
}

B) function countVowels(str) {
  return str.split('').filter(c => 'aeiou'.includes(c)).length;
}

C) function countVowels(str) {
  let vowels = 'aeiouAEIOU';
  let count = 0;
  for (let i = 0; i < str.length; i++) {
    if (vowels.includes(str[i])) {
      count++;
    }
  }
  return count;
}

D) All of the above

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Check: Did you transfer your answers to Canvas?