

PIDP 3230

EVALUATION OF LEARNING



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KNOWLEDGE ASSESSMENT INSTRUMENT [KAI]

Description

Test: Sample Web Development Level 1 Final Exam

Instructor: Put your name here

Percentage of Final Grade: 20%

Instructions

You have 1.5 hours (90 minutes) for this examination; the number of points for each question indicates roughly how many minutes you should spend on that question. Make sure you print your name and sign the Honor Code below. During the examination you may not consult any notes during the exam; all sources of information, including laptops, cell phones, etc. are prohibited.

Scoring guide

Problem	Score	Max	Total
1		2	
2		5	
3		3	
4		5	
5		8	
6		2	
7		2	
8		3	
9		2	
10		3	
11		6	
12		6	
13		8	
14		5	
15		4	
16		6	
17		1	
18		4	
19		5	
20		2	
21		3	
22		15	

Problem Type Key

Problem Code	Problem Type
AR	Alternate Response
SA	Short Answer
MC	Multiple Choice
MAT	Matching Exercise
CC	Code Completion
GI	Graphic Item

Honour Code

I acknowledge and accept the Stanford University Honor Code. I have neither given nor received aid in answering the questions on this examination.

(Signature)

(Print your name, legibly!)

____@stanford.edu
(Stanford email account for grading database key)

1. Introduction to the internet and servers

QUESTION 1. MC: 2 points: 1 Minute

What is the primary difference between a client computer and a server?

- A. ☐ A client computer is more powerful than a server.
- B. ☐ A client computer requests services or resources, while a server provides them.
- C. ☐ A client computer is used for storage, while a server is used for processing.
- D. ☐ A client computer is always connected to the internet, while a server is not.

ANSWER 1.

B) A client computer requests services or resources, while a server provides them.

2. Setting up a Dev Shop [Tooling]

QUESTION 2.

MC 2 points. 1 Minute

What functions can a version control system such as Git serve? Select all that apply.

- A ☐ Manage and track changes to the codebase
- B ☐ Collaborate on code among developers
- C ☐ Deploy code to a server
- D ☐ Monitor website performance and analytics
- E ☐ Design and create user interfaces

ANSWER 2. (a)

A and c should be selected.

QUESTION 2. (b)

MAT 3 points. 2 Minutes

Match-the-columns question: Match the description in Column A with the correct term from Column B. In your answer booklet, write down only the question number and, next to it, the letter of the correct answer.

Column A		Column B	
Q.2.b.1	Used to define a paragraph of text	A.	<iframe>
Q.2.b.2	Used to create hyperlinks	B.	<progress>
Q.2.b.3	Used to apply italic style to a specific section of text	C.	<a>
Q.2.b.4	Used to define items within a list	D.	<table>
Q.2.b.5	Used to embed another HTML document	E.	<source>
Q.2.b.6	Used to apply styles to a specific section of text	F.	
		G.	<p>
		H.	
		I.	<script>
		J.	<video>
		K.	<sub>
		L.	<i>
		M.	

Write your answers here:

Question Column A	Answer Column B
Q.2.b.1	
Q.2.b.2	
Q.2.b.3	
Q.2.b.4	
Q.2.b.5	
Q.2.b.6	

ANSWER 2. (b)

Question Column A	Answer Column B
Q.2.b.1	G
Q.2.b.2	C
Q.2.b.3	L
Q.2.b.4	H
Q.2.b.5	A
Q.2.b.6	F

3. Introductory Design Concepts

QUESTION 3. MC: 3 points: 1 Minute

Select each of the following options that are website design principles (or elements of website design).

- A. ☐ Space
- B. ☐ Anticipation
- C. ☐ Repitition
- D. ☐ Color Harmony
- E. ☐ Load time
- F. ☐ Utility
- G. ☐ Dom Tree
- H. ☐ Motion

I. ☐ Attribution

ANSWER 3.

A, B, C, and H are website design principles or elements.

The alternative F is a user experience principle. The other options are distractors.

4. Introduction to GIT

QUESTION 4. SA: 5 points: 3 Minutes

List the three steps that stage new files to a git repository, prepare them for deployment, and push them to a remote repository. Assume there are currently no conflicts in the repository and no staged files, the local git repo is on the master branch, and the master branch is configured with a URL to a remote named 'origin.' Also assume a password and username are not necessary and that there is no reason to pull or fetch any data from the remote origin before deploying. Use 'Answer 4' as the message that will show in your Git log.

ANSWER 4.

Steps:

```
1. git add .  
2. git commit -m "Answer 4"  
3. git push origin master
```

5. CSS Properties

QUESTION 5. (a) MC: 2 points: 1 Minutes

Select each of the following options that is a valid CSS property.

- A. ☐ glow-intensity
- B. ☐ color
- C. ☐ background-image
- D. ☐ foreground-color
- E. ☐ font-size
- F. ☐ top-shadow
- G. ☐ border-radius

ANSWER 5. (a)

B, C, E, and G are valid CSS properties

QUESTION 5. (b) MC: 6 points: 6 Minutes

Select each of the following lines of code that are valid CSS combinators.

- A. ☐ `table +| td:first-child{}`
- B. ☐ `.parent-container #child-container div:nth-child(3){}`
- C. ☐ `img[data-tracking-params="utm_source=google&utm_medium=cpc"]{}`
- D. ☐ `.parent-class > child-container ~ button:hover{}`
- E. ☐ `div >> a[href^="mailto:"]{}`
- F. ☐ `div[class~="child-container"] {}`
- G. ☐ `body ~> * {}`
- H. ☐ `div > p + span;visited {}`

ANSWER 5. (b)

B, C, and F are correct answers

- A is incorrect because `+|` is not a valid CSS selector
- D is incorrect because `child-container` does not have a preceding period to mark it as a class
- E is incorrect because `>>` is not a valid CSS selector
- G is incorrect because `~>` is not a valid CSS selector
- H is incorrect because `;visited` is not a valid pseudo-class. The semicolon is used to separate CSS rules, not as part of a pseudo-class

6. Website Plan

QUESTION 6. MC: 2 points: 2 Minute

Select each of the options that should NOT be included in a website plan.

- A. ☐ Target audience analysis
- B. ☐ Bug fixes
- C. ☐ Content structure and organization
- D. ☐ Code repository
- E. ☐ Visual design and branding guidelines
- F. ☐ Technical requirements and infrastructure
- G. ☐ Features of the Design System
- H. ☐ Version Release Notes
- I. ☐ Search Engine Optimization (SEO) strategy

ANSWER 6.

The correct answers are:

- ☐ B Bug fixes
- ☐ D Code repository
- ☐ H Version Release Notes

These are not typically part of a website plan. A website plan usually includes target audience analysis, content structure and organization, visual design and branding guidelines, technical requirements and infrastructure, and Search Engine Optimization (SEO) strategy. Bug fixes, code repository management, features of the design system, and version release notes are related to the development and maintenance process rather than the initial planning phase.

7. Introducing Web Frameworks, CMS, Static Generators, Web Creation Technologies

QUESTION 7. MC: 2 points: 2 Minute

Describe the difference between a static website and a dynamic website

ANSWER 7.

A static website has fixed content that doesn't change unless manually updated, whereas a dynamic website generates content on the fly based on user interactions, data, or other factors, often using a database and server-side programming.

8. NPM - Manage/run packages in local repository

QUESTION 8. SA: 3 points: 3 minutes

If the shell command `npm install html-minifier` will install the NPM package `html-minifier` into a local repository, and the name of the script in the `package.json` file that minifies the production HTML in post processing is `minify:html`, write the code to minify production HTML manually from the command line.

ANSWER 8.

```
npm run minify:html
```

9. Creating a Content Security Policy [CSP Level 1]

Is the following statement true or false?

QUESTION 9. AR: 2 points, 2 minutes

In a Content Security Policy (CSP) Level 1 the `strict-dynamic` keyword allows scripts with a valid nonce or hash to execute, and also allows those scripts to dynamically load other scripts.

- ☐ True
☐ False

ANSWER 9.

False. `strict-dynamic` in CSP level 3 (not level 1) involves allowing scripts with a valid nonce or hash to execute and also allows those scripts to dynamically load other scripts. CSP level 1 does not include `strict-dynamic`.

10. Getting JavaScript into a Website

QUESTION 10. MC 3 points 3 minute

Consider each of the following ways to include JavaScript in an HTML document using a script tag:

- HTML
- A. `<script>alert("Hello World!");</script>`
 - B. `<script src="script.js" defer></script>`
 - C. `<script src="script.js"></script>`
 - D. `<script src="script.js" async></script>`

The letters in the selection box below match the lines of code in the code block above; select each of the methods that are non-blocking.

- A ☐
B ☐
C ☐
D ☐

ANSWER 10.

B. and D. are correct answers.

The `defer` and `async` attributes make script loading non-blocking.

11. JavaScript Scope and Function

QUESTION 11. CC: 6 points: 6 Minute

Write a JavaScript code snippet that uses an Immediately Invoked Function Expression (IIFE) to declare a variable `secretMessage` with the value `"Hello, World!"`, and then attaches it to an object `outerObj` defined in the outer scope. The `outerObj` object should have a property named `message` with the value of `secretMessage` after the IIFE is executed. Use a `console.log()` statement in your answer to demonstrate your results.

Given Code:

```
let outerObj = {};
```

```
(function() {  
    // Your code here  
})();
```

Javascript

Task:

Complete the IIFE statement to declare `secretMessage` and attach it to `outerObj`.

Grading Criteria:

- Correct usage of IIFE syntax
- Declaration of `secretMessage` within the IIFE scope
- Attachment of `secretMessage` to `outerObj` as a property named `message`

ANSWER 11.

```
let outerObj = {};
```

```
(function() {  
    let secretMessage = "Hello, World!";  
    outerObj.message = secretMessage;  
})();  
  
console.log(outerObj.message); // Should print "Hello, World!"
```

Javascript

12. JavaScript Syntax, Naming conventions, Literals [Medium]

QUESTION 12. MC: 6 points: 3 Minutes

Select all JavaScript statements that will return errors at runtime.

- A. ☐ `x = x ** 2;`
- B. ☐ `var y = x + ;`
- C. ☐ `let obj = { foo: 'bar' }; obj.func = function(a, b { return a + b; });`
- D. ☐ `Let d = Math.pow(5, 2);`
- E. ☐ `console.log(Hello World);`
- F. ☐ `const PI = 3.14;`

The correct answers are:

- ☒ B The expression is incomplete
- ☒ C There is a missing closing parenthesis after `b`

E

 There are missing quotes around "Hello World"

13. JavaScript Data Types

QUESTION 13.

 MAT: 8 points: 4 Minutes

Match-the-columns question: Match the description of a JavaScript data type or value in Column A with the correct data type or value from Column B. In your answer, write down only the question number and, next to it, the letter of the correct answer.

Column A		Column B	
Q.13.1	An object data type with an undefined value	A.	Infinity
Q.13.2	A number data type without a value identified as the acronym for 'Not another Number'	B.	null
Q.13.3	A boolean data type with the value of 1	C.	undefined
Q.13.4	Arithmetic unequal to NaN without strict equality with NaN that returns NaN	D.	1
Q.13.5	The return value of a variable already declared in namespace as the number 1	E.	true
Q.13.6	A number data type with an unbounded value	F.	NaN
Q.13.7	A property of the window object in a browser console	G.	0/0
Q.13.8	The return value of a variable declared in namespace but not yet assigned a value	H.	"string"
		I.	[]
		J.	Object
		K.	{}
		L.	false

Write your answers here:

Question Column A	Answer Column B
Q.13.1	
Q.13.2	
Q.13.3	

Q.13.4	
Q.13.5	
Q.13.6	
Q.13.7	
Q.13.8	

ANSWER 13.

Question Column A	Answer Column B
Q.13.1	B
Q.13.2	F
Q.13.3	E
Q.13.4	G
Q.13.5	D
Q.13.6	A
Q.13.7	C
Q.13.8	C

14. JavaScript Constants, Variables, Scope, Arithmetic operators, Expressions

QUESTION 14. MC: 5 points 5 minutes

Select all statements that are true. If the statement returns code, assume that code is entered into the console in a browser JavaScript runtime and executed according to the description in the statement.

- ☐ `const degrees = 20;`, followed by `degrees++;`, returns 21.
- ☐ `let pie = 3.14;`, followed by `pie += ' spoon'`, returns `3.14 spoon`
- ☐ It's good practice to declare variables at the top of the scope.
- ☐ Object properties can be deleted using the delete keyword.
- ☐ A variable declared without using a keyword is attached to the window object.
- ☐ Constants declared as object literals cannot have their properties updated.

ANSWER 14.

B, C, D, and E are true

☐ D is worth 2 points, the fact that variables cannot be deleted but can be reassigned to null while object properties can be deleted with the 'delete' key word, is mildly obscure. In many cases a programmer will just assign null to a property to delete it.

15. JavaScript Environment, Runtime, Global Scope

QUESTION 15. (a) SA: 2 points: 3 Minute

Short Answer: In your own words describe globalThis.

ANSWER 15. (a)

"In a JavaScript environment, `globalThis` is a property that refers to the global object, which contains the built-in properties and methods, and is the global namespace itself.

QUESTION 15. (b) SA: 2 points: 3 Minutes

In your own words describe the window object.

ANSWER 15. (b)

The window object represents the browser window or frame that contains a web page. It is the top-level object in the browser's JavaScript hierarchy and provides properties and methods for interacting with the browser, such as manipulating the page content, handling events, and controlling the window's size and position.

or

The window object is the globalThis object in a web browser's JavaScript environment.

16. Creating a Schema

QUESTION 16. (a) MC: 2 points: 2 Minutes

Which actions affect a site's indexed pages? (Select all that apply)

- A ☐ Improving page speed for all URLs.
- B ☐ Submitting an RSS feed to Google.
- C ☐ Adding a canonical tag to a duplicate page.
- D ☐ Blocking a page with =robots.txt=.
- E ☐ Repping low-quality content to target new keywords.

ANSWER 16. (a)

Correct Answers: A, C, D

QUESTION 16. (b) MC: 2 points: 2 Minutes

Which statements about SEO schemas are **true**? (Select all that apply)

- A ☐ Schema markup uses JSON-LD, microdata, or RDFa formats.
- B ☐ Schemas directly improve a website's search engine rankings.
- C ☐ Correct schema implementation can lead to rich snippets in search results.
- D ☐ All schema types are standardized and cannot be customized.
- E ☐ Schemas should describe visible content on the page.

ANSWER 16. (b)

Correct Answers: A, C, E

QUESTION 16. (c) MC: 2 points: 2 Minute

Which statements about a search engine site index are **false**? (Select all that apply)

- A ☐ A sitemap guarantees all listed URLs will be indexed.
- B ☐ Pages blocked by robots.txt may still appear in the index if linked externally.
- C ☐ The =noindex= meta tag prevents a page from being indexed.
- D ☐ Duplicate content can lead to fewer pages being indexed.
- E ☐ Google Search Console provides data on indexed pages.

ANSWER 16.

Correct Answers: A

17. Device Types, Screen Resolutions, Responsive Problems

QUESTION 17. AR: 1 point, 1 minute

There are exactly 10 preconfigured device types available for use in developing responsive websites in Chrome developer tools on a new installation of Chrome browser.

- ☐ True
- ☐ False

ANSWER 17.

The answer is false. open Chrome DevTools, go to the "Device Toolbar" (toggle device toolbar or Ctrl + Shift + M), and click on the dropdown that lists devices, there are more than 10 preconfigured device types available

18. Targeting Screen Sizes with Media Queries

QUESTION 18. MC 4 points 4 minutes

Which of the following single-line media queries is **invalid**?

- A. ☐ `@media screen and (min-width: 768px) { .class { color: red; } }`
- B. ☐ `@media (orientation: landscape) { .class { display: none; } }`
- C. ☐ `@media print and (resolution: 300dpi) { .class { font-size: 12pt; } }`
- D. ☐ `@media mobile (max-height: 600px) { .class { background: blue; } }`

ANSWER 18.

The answer is D. `mobile` is not a recognized media type in CSS. Valid types include `screen`, `print`, `speech`, etc., but not device-specific categories like "mobile"

19. On page vs off page SEO

QUESTION 19. SA 5 points 3 minutes

What distinguishes "on-page" SEO from "off-page" SEO in relation to the term 'page'?

ANSWER 19.

On-page SEO refers to optimizing elements within a webpage (such as content, meta tags, and structure) to improve search engine rankings, while off-page SEO involves actions taken outside of a webpage (like link building and social media marketing) to boost its visibility and credibility.

20. Key words, Descriptions, Titles, Meta Tags

QUESTION 20. MC 2 points 2 minutes

In the code block below, which one of the following tags should you edit to change the text that shows on the browser tab of a given webpage

- HTML
- A. `<meta name="description" content="text">`
 - B. `<title>text</title>`
 - C. `<meta name="referrer" content="strict-origin-when-cross-origin">`
 - D. `<link rel="manifest" href="/favicons/manifest.webmanifest">`

Mark the line below with the letter corresponding to the letter from the code block above from the line with the correct selection

A.

☐

B.

☐

C.

☐

D.

☐

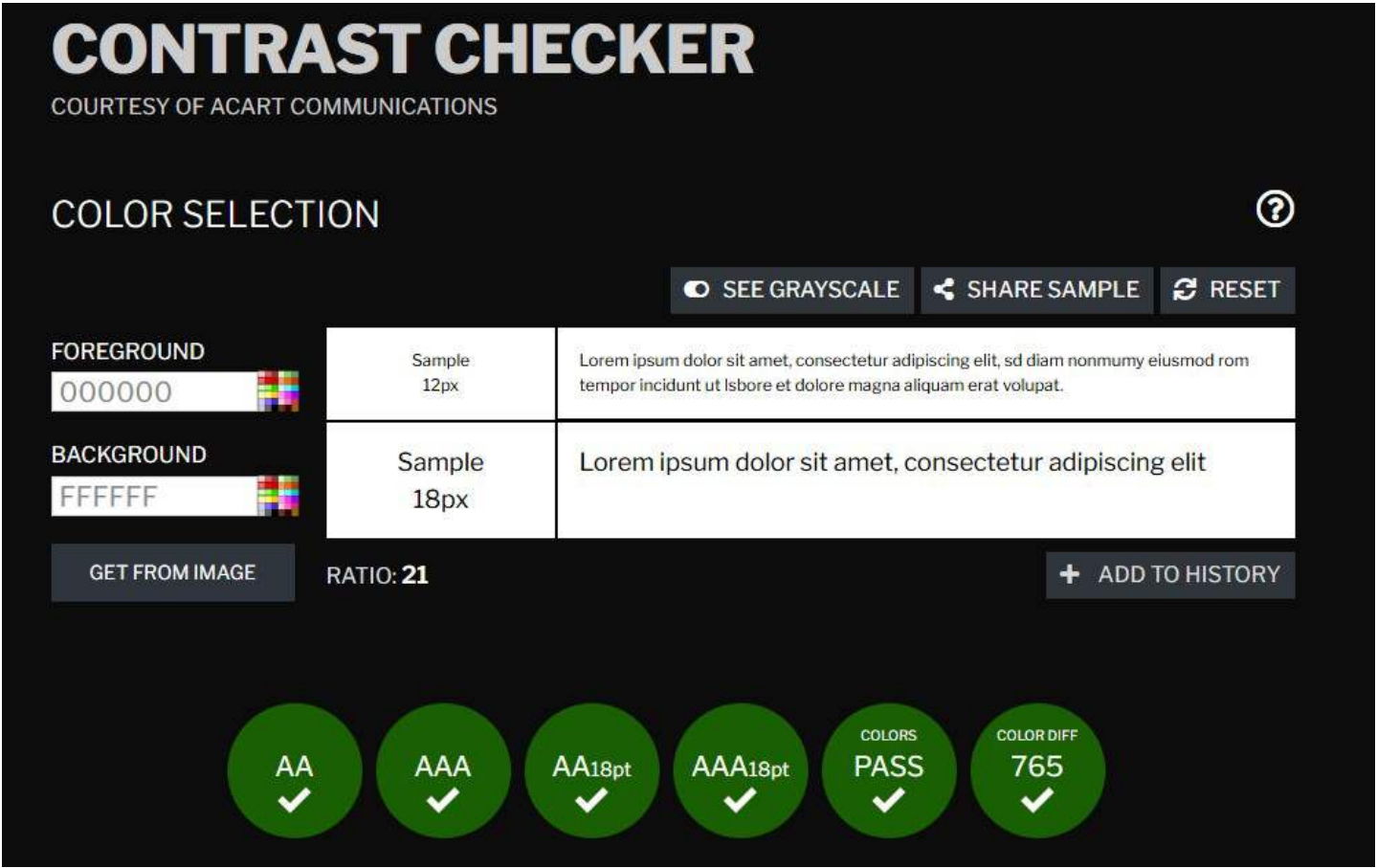
ANSWER 20.

The answer is B. To change the text that shows on the browser tab of a given webpage, you should edit the `<title>text</title>` tag.

21. Website Performance Audits

QUESTION 21. GI: 3 points: 3 Minutes

Describe how the tool visible in the following screenshot can be used to improve the Accessibility score of a Chrome lighthouse Audit?



Write your answer here:

ANSWER 21.

A contrast checker will calculate the contrast ratio between a text color and its background and indicate whether the contrast meets the Web Content Accessibility Guidelines (WCAG). Selecting color pairs that meet WCAG contrast guidelines will improve your Chrome Lighthouse audit accessibility score

22. JavaScript Conditional Logic, Loops

QUESTION 22. CC. 25 points 12 minutes

Complete the Code to Print Numbers Divisible by 5 and Even

Task Description

You are given a starting JavaScript code template that includes a function named `printSpecialNumbers`. Your task is to complete this function to print numbers between 1 and 50 that are both divisible by 5 and even.

Starting Code Template

```
function printSpecialNumbers() {  
    // Your code here  
}  
  
printSpecialNumbers();
```

Javascript

What to Add

You need to add the necessary code inside the `printSpecialNumbers` function to loop through numbers from 1 to 50, check each number to see if it is both divisible by 5 and even, and then print the numbers that meet these conditions.

Grading Criteria

1. **Correctness:** The function should correctly identify and print numbers between 1 and 50 that are both divisible by 5 and even.
2. **Code Quality:** The code should be clean, readable, and well-structured.
3. **Use of JavaScript Constructs:** Proper use of the JavaScript `modulus` operator, JavaScript loops (e.g., `for` loop) and JavaScript conditional statements (e.g., `if` statement) will be evaluated.

Example Output

Numbers that are both divisible by 5 and even between 1 and 50 include: 10, 20, 30, 40, and 50.

Submission Guidelines

Please complete the `printSpecialNumbers` function according to the task description and ensure your code is properly formatted and easy to understand.

Write Your Answer Here

ANSWER 16.

Javascript

```
//  
function printSpecialNumbers() {  
  // Loop through numbers from 1 to 50.  
  for (let i = 1; i <= 50; i++) {  
    // Check if the current number is divisible by 5 and is even.  
    if (i % 5 === 0 && i % 2 === 0) {  
      // If the condition is met, print the number.  
      console.log(i);  
    }  
  }  
}  
  
// Call the function to test it.  
printSpecialNumbers();
```