



Voluntary Product Accessibility Template (VPAT) v.1.3

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Note: This document is prepared for WeBWork v.2

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Section 1194.21 - Software Applications and Operating Systems

- (a) When software is designed to run on a system that has a keyboard, product functions shall be executable from a keyboard where the function itself or the result of performing a function can be discerned textually.


Example:

Section1 1: Problem 1

Prev Up Next

(1 pt)
Evaluate the expression for $x = 7$.

$-2x + 8 =$

Solution: 

Show correct answers

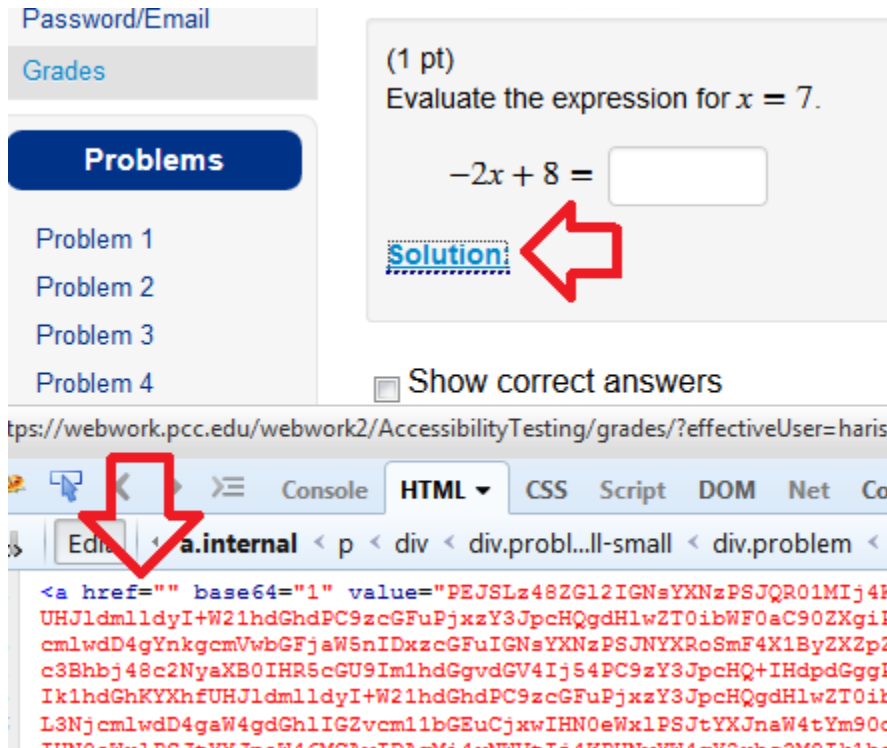
Preview Answers Check Answers

Description of Problem:

Keyboard is unable to navigate to solution as a link. Even though the solution link is a hyperlink (<a>) and the content HREF does not exist, browser does not focus the link. Without HREF, the browser will assume that the link is an anchor. (Not a problem with ChromeVox, but it is a problem with IE and Firefox.)

Solution:

I was able to overwrite using Firebug and add HREF="" or HREF="#" to Solution link. The link can be activated by keyboard and focusable. Tested on FireFox and Chrome



- (c) A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that Assistive Technology can track focus and focus changes.

Example:

Section 1 8:



ANSWERS ONLY CHECKED --

Description of the problem: Blue buttons do not have clear focus. Solution link, Homework Sets link, Problems link don't identify as a link to screen reader and cannot get keyboard focus.

Recommendation: Refer to 1194.21 (a) and also add a CSS style for a:focus or button:focus.

- (j) When a product permits a user to adjust color and contrast settings, a variety of color selections capable of producing a range of contrast levels shall be provided

Example:

ANSWERS ONLY CHECKED – ANSWERS NOT RECORDED

Result
incorrect
incorrect
incorrect
incorrect

Recommendation:

Use http://www.snook.ca/technical/colour_contrast/colour.html to check color contrast requirement. Please use at least AA guideline.

- (l) When electronic forms are used, the form shall allow people using Assistive Technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

Example:

(1 pt)

Evaluate the following expressions that have integer exponents:

a. $3^2 =$

b. $4^3 =$

c. $(-5)^2 =$

d. $(-4)^3 =$

(1 pt)

Evaluate the expression for $C = 4$ and $a = -6$.

$$\frac{9C - 6a - 2}{-5C - 8a} =$$

Solution:**Description of Problem:**

Each input field is required to have label reference to it.

When the form has a required field, it does not have any indication that the field is required. In addition, whenever system detect form has invalid response (for example no response for required field), the user should see prominent error message.

Recommendation:

Provide a label accompanying each input field. In this case, label can be the math equation. As for error message, user should also see prominent error message and first sentence to be read should be the error message instead of going to the top of the page and then each error message should have anchor link that can allow screen reader or any user to jump to field that

has an error (it's not required but recommended).

```
<div class="row-fluid">
  <div class="span10">
    <a name="Error"> </a>
    <div class="ResultsWithError">ANSWERS ONLY CHECKED -- ANSWERS NOT
    RECORDED</div>
    <br>
    <table class="attemptResults table table-condensed table-bordered">
    <p class="attemptResultsSummary"> </p>
    <div class="ResultsWithError">The answer above is NOT correct.</div>
    <p> </p>
  </div>
```

Section 1194.22 - Web-based Internet Information and Applications

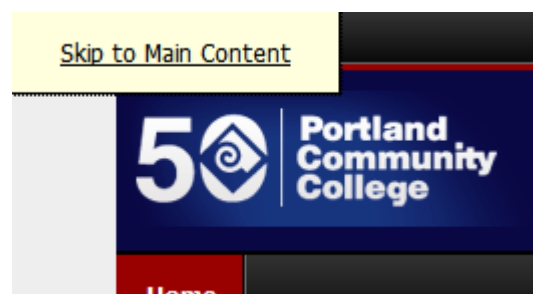
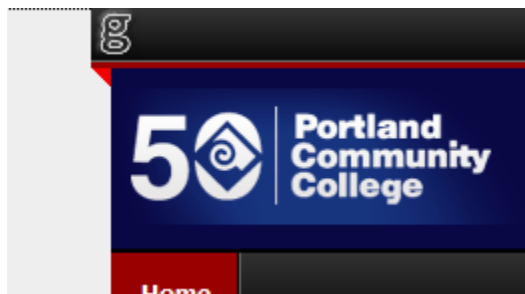
- (l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by Assistive Technology.

Refer to 1194.21 (a)

- (o) A method shall be provided that permits users to skip repetitive navigation links.

Recommendation:

Skip to Main Content and Skip to Navigation should be provided. These links do not have to be visible on the page but it should be the first two links for a user to tab to.



```
<a class="skip-links" href="#content" accesskey="C">Skip to Main Content</a>
```

```
<a class="skip-links" href="#tabs" accesskey="T">Skip to Tabs</a>
```

CSS Example:

```
.skip-links { left: -5000px; position: absolute; }
```

```
.skip-links:active, .skip-links:focus { background-color: #ffffdd; border: 0.1em solid #000; color:  
#000; font-size: 1.2em; left: 0;padding: 1em 2em; top: 0; z-index: 1000; }
```

Section 1194.31 – Functional Performance Criteria

- (a) At least one mode of operation and information retrieval that does not require user vision shall be provided, or support for Assistive Technology used by people who are blind or visually impaired shall be provided.

Video Recording:

Successful reading with JAWS 15 reading, but in IE 9 w/MathPlayer plugin:

<http://youtu.be/Opsu285Sxp8>

Successful with exceptions reading with ChromeVox:

<http://youtu.be/l-2r0rZSw7w> (Notice problems with ChromeVox reading Solution.)

<http://youtu.be/SAc-9QgWj14> (Notice problems ChromeVox has announcing end of denominator)

Findings:

All math written in MathML. Screen readers can read math correctly when browser supports MathML. ChromeVox doesn't verbalize end of denominator/fraction clearly and has problems when reading Solution.

Usability Recommendations

- Radio Button next to homework sets is confusing on initial page. This is not accessibility problem: unless this page allows multiple problem sets selection, we will suggest to provide “print to pdf/tex” button/link instead of radio buttons.

<u>Homework Sets</u>	
Name	Status
<input type="radio"/> Section1 1	closed, answers available
<input type="radio"/> Section1 2	closed, answers available
<input type="radio"/> Section1 3	closed, answers available

- Prev on Preview page (should be spelled out), Up for navigation doesn't make sense (especially to a blind user). It's unclear where Up will take you versus Prev.



- And there are multiple ways to check your answer. It's confusing. Not sure what we want to do. Show Correct answer? (Ok, we think we've figured out that one). Check Answer? Preview Answer? What's the difference? Maybe just have one? (What use is Preview?)
- Provide an initial quick 2 minutes tutorial on how to navigate the site will be very useful for everyone.
- Show correct answers checkbox, requires user to also check button: Preview or Check Answer. This wasn't readily apparent to us.

Solution:

Show correct answers



- Answer Table is a bit confusing. Consider simplifying (maybe eliminate Entered column, since it's the same as Answer Preview column).

Entered	Answer Preview	Correct	Result
16/14	$\frac{16}{14}$	$-\frac{77}{30}$	incorrect

- Main navigation list appears to be improperly formatted (noticeable when we disable styles)

<ul style="list-style-type: none"> • Main Menu • Courses • Homework Sets • <ul style="list-style-type: none"> ◦ Section1 1 ◦ <ul style="list-style-type: none"> ▪ Problem • Password/Email • Grades 	<ul style="list-style-type: none"> • Main Menu • Courses • Homework Sets • Password/Email • Grades • webwork • / • AccessibilityTesting
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- This part should be part of user preference and it does not need to be shown all the time? Or maybe these options should be presented to first time user and provide description why each option would be selected.

Display Options

View equations as:

MathJax

images

plainText

Show saved answers?

Yes

No

Apply Options

- Problems link below should be part of table's caption instead of a separate link. The link is also not clickable by keyboard in some browsers.

Problems

name	Attempts	Remaining	Worth	Status
Problem 1	0	unlimited	1	0%
Problem 2	0	unlimited	1	0%
Problem 3	0	unlimited	1	0%

This table shows the problems that are in this problem set. The columns from left to right are: name of the problem, current number of attempts made, number of attempts remaining, the point worth, and the completion status. Click on the link on the name of the problem to take you to the problem page.

- How do you submit answers? Email instructor?
- Important content such as due date should be presented before the problem list. Our suggestion is to put Set Info before list of problems. You could position the set info section using float: right to maintain the current view while the reading order will change.

Section1_1

<u>Problems</u>				
name	Attempts	Remaining	Worth	Status
Problem 1	0	unlimited	1	0%
Problem 2	0	unlimited	1	0%
Problem 3	0	unlimited	1	0%

Set Info

This assignment (Section1_1) is due 12/31/2013 at 11:01am PST.

More information about your course: MyPCC or DesireToLearn: [MyPCC](#)

Section1_1

2

<u>Problems</u>				
name	Attempts	Remaining	Worth	Status
Problem 1	0	unlimited	1	0%
Problem 2	0	unlimited	1	0%

Set Info

This assignment (Section1_1) is due 12/31/2013 at 11:01am PST.

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