BlockPy Accessibility Conformance Report

International Edition

VPAT® Version 2.3 (Revised) – April 2019

Name of Product/Version:

BlockPy (version 4.0.0)

Product Description:

The BlockPy project is a web-based programming environment for Python aimed at novice programmers. Novices using the environment can write Python code to solve programming problems in a graded, classroom context. The environment is scaffolded with features that support learners and integrates with Learning Management Systems (LMS). BlockPy itself can be seen as divided into two major components: the front-end interface ("BlockPy Client") and the back-end application ("BlockPy Server"). BlockPy Server has basic functionality for course management and database administration, while BlockPy Client represents the bulk of the scaffolding features. The most central of these features is a dual block/text coding interface that lets students seamlessly switch between different representations of their work. The environment also has features for connecting with various data sources, producing graphs and other kinds of graphics, and providing instructor-authored feedback.

The current version of BlockPy Server is a Python Flask web application meant to be run as an application on a Linux server (e.g., Ubuntu) over HTTPS. The architecture is divided into a controller that serves views and mediates interactions with a database. These views are the web pages that users interact with via their web browser. BlockPy Client represents one of these views, although there are a several others accessible depending on a user's type. BlockPy has four major types of users:

- Students: Students are intended to use BlockPy through an LMS, and will almost be exclusively exposed to the Client view. They are also able to access a Submission view of their prior work via their LMS that shows details about their graded code.
- Instructors: Teachers are intended to use BlockPy through an LMS after initial registration and setup (which occurs through Registration, Login, and Course Creation pages on the Server). In addition to the Client view that students see (augmented with additional instructor features), instructors have a Content Selection view used to choose and develop course content through their LMS.

- Admins: Anyone managing an instance of BlockPy has access to additional administrative views related to Course Management and Database Administration. These pages are not available through the LMS and are only meant for administrators.
- Public: Several views are publicly accessible outside of the LMS and contain static Public Information about the BlockPy project.

Report Date:

July 4, 2019

Contact Information:

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Notes:

Both BlockPy's server and client are open source projects. The following public GitHub repositories are relevant:

- BlockPy Client: https://github.com/RealTimeWeb/blockpy
- BlockPy Server: https://github.com/acbart/Blockpy-Server

This report covers the following previously identified views:

- Client: Particularly, the dual block/text editor, assignment introduction area, toolbar, console output area, feedback area, utilities area, screen capture dialog, assignment editor dialog, import datasets dialog, and history dialog. The assignment introduction area allows instructors to inject arbitrary HTML, but that will not be considered in terms of accessibility. However, the programming environment's ability to create console output (including graphics) will be considered. As an iFramed web application instead of a web document, the client is limited in its accessibility.
- Submission: A static page that is generated when the user submits their solution. This page is sent to the LMS to represent their submission (along with a score). The page is an extremely basic HTML representation of their code and a few other metrics related to the submission. It is not a complete web page, since it is meant to be embedded in the LMS.
- Registration: A simple form-centric view where users enter their registration information to be added as a user to the site.
- Login: A simple form-centric view users enter their login information to enter the site.
- Course Creation: A set of pages with instructions for creating a new course for instructors.

- Content Selection: A dynamic page for creating, editing, and selecting assignments meant to be launched from within the LMS.
- Course Management: A set of pages related to course management for administrators.
- Database Administration: A set of pages related to database management for administrators, using a standard Flask plugin.
- Public Information: A set of publicly facing pages not actually relevant to the app's usage by students or teachers, but has some additional information about the website.

In some cases, the views may technically represent groups of web pages with related characteristics (e.g., the course management views) or mutual dependence (e.g., they are all components of a single interface served dynamically through AJAX). This document attempts to evaluate views more closely and in more isolation when they face non-administrative users.

Evaluation Methods Used:

Testing is based on general product knowledge from the developer and the use of siteimprove.com.

Applicable Standards/Guidelines

This report covers the degree of conformance for the following accessibility standard/guidelines:

Standard/Guideline	Included In Report
Web Content Accessibility Guidelines 2.0	Level A (Yes) Level AA (Yes) Level AAA (No)
Web Content Accessibility Guidelines 2.1	Level A (Yes) Level AA (Yes) Level AAA (No)
Revised Section 508 standards published January 18, 2017 and corrected January 22, 2018	(No)
EN 301 549 Accessibility requirements suitable for public procurement of ICT products and services in Europe, - V2.1.2 (2018-08)	(No)

Terms

The terms used in the Conformance Level information are defined as follows:

- **Supports**: The functionality of the product has at least one method that meets the criterion without known defects or meets with equivalent facilitation.
- **Partially Supports**: Some functionality of the product does not meet the criterion.
- **Does Not Support**: The majority of product functionality does not meet the criterion.
- **Not Applicable**: The criterion is not relevant to the product.
- **Not Evaluated**: The product has not been evaluated against the criterion. This can be used only in WCAG 2.0 Level AAA.

WCAG 2.x Report

Tables 1 and 2 also document conformance with:

- EN 301 549: Chapter 9 - Web, Sections 10.1-10.4 of Chapter 10 - Non-Web documents, and Sections 11.1-11.4 and 11.8.2 of Chapter 11 - Non-Web Software (open and closed functionality), and Sections 12.1.2 and 12.2.4 of Chapter 12 – Documentation
- Revised Section 508: Chapter 5 – 501.1 Scope, 504.2 Content Creation or Editing, and Chapter 6 – 602.3 Electronic Support Documentation.

Note: When reporting on conformance with the WCAG 2.x Success Criteria, they are scoped for full pages, complete processes, and accessibility-supported ways of using technology as documented in the WCAG 2.0 Conformance Requirements.

Table 1: Success Criteria, Level A

Notes:

Criteria	Conformance Level	Remarks and Explanations
1.1.1 Non-text Content (Level A) Also applies to: EN 301 549 Criteria • 9.1.1.1 (Web) • 10.1.1.1 (Non-web document) • 11.1.1.1.1 (Open Functionality Software) • 11.1.1.1.2 (Closed Functionality Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Client: Partially Supports Other Views: Supports	Client: BlockPy has very little non-text content. Icons on all buttons are labeled. The blocks themselves are matched 1-1 with text via the block/text interface. However, images generated programmatically are not labeled in a meaningful way and are assigned a fairly generic label. Submission: Images of the blocks submitted by the student are embedded with a generic alt description – the textual version of the code is right below the block image.
1.2.1 Audio-only and Video-only (Prerecorded) (Level A) Also applies to: EN 301 549 Criteria • 9.1.2.1 (Web) • 10.1.2.1 (Non-web document) • 11.1.2.1.1 (Open Functionality Software) • 11.1.2.1.2.1 and 11.1.2.1.2.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Public Information: Supports Other Views: Not Applicable	Public Information: There is an embedded YouTube video on one of the public information pages, with both audio, video, and closed captions. Other views: There is no audio or video in other views.

Criteria	Conformance Level	Remarks and Explanations
1.2.2 Captions (Prerecorded) (Level A) Also applies to: EN 301 549 Criteria • 9.1.2.2 (Web) • 10.1.2.2 (Non-web document) • 11.1.2.2 (Open Functionality Software) • 11.1.2.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Public Information: Supports Other Views: Not Applicable	Public Information: There is an embedded YouTube video on one of the public information pages, with both audio, video, and closed captions. Other views: There is no audio or video in other views.
1.2.3 Audio Description or Media Alternative (Prerecorded) (Level A) Also applies to: EN 301 549 Criteria • 9.1.2.3 (Web) • 10.1.2.3 (Non-web document) • 11.1.2.3.1 (Open Functionality Software) • 11.1.2.3.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Public Information: Does not support Other Views: Not Applicable	Public Information: No audio description or media alternative is available for the video. The video is not essential to the use of the website, and is not meant to be seen by students. Other views: There is no audio or video in other views.
1.3.1 Info and Relationships (Level A) Also applies to: EN 301 549 Criteria • 9.1.3.1 (Web)	Client: Partially Supports Database Administration: Does not support Other views: Supports	Client: In some places, meaningful relationships are difficult to convey because of the interactive nature of the web application. In particular, landmarks are less meaningful than typical web documents, and many

Criteria	Conformance Level	Remarks and Explanations
• 10.1.3.1 (Non-web document) • 11.1.3.1.1 (Open Functionality Software) • 11.1.3.1.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)		components are simply "region" or "application" to highlight their complex nature. The use of Summernote as an enhanced WYSIWIG html editor for instructors to edit text causes several false alarms in our analysis tool: icons are incorrectly identified as not accessible (since they are created using the 'i' tag, a common and now accepted web convention); several modal popup dialogs are incorrectly seen as not included because they are dynamically generated. Database Administration: Most pages do not have headings, the tables are not always clearly labeled, and the relationships between buttons and their actions are not very clear. Some elements have duplicate IDs.
1.3.2 Meaningful Sequence (Level A) Also applies to: EN 301 549 Criteria • 9.1.3.2 (Web) • 10.1.3.2 (Non-web document) • 11.1.3.2.1 (Open Functionality Software) • 11.1.3.2.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Client: Supports Other views: Supports	
1.3.3 Sensory Characteristics (Level A) Also applies to: EN 301 549 Criteria • 9.1.3.3 (Web) • 10.1.3.3 (Non-web document)	Client: Supports Course Creation: Partially supports Course Management: Partially supports Other views: Supports	Client: Although instructor problem instructions frequently do use sensory characteristics, this is a reflection of custom user content and not inherent to the BlockPy application itself. Minimal instruction is contained within the BlockPy Client.

Criteria	Conformance Level	Remarks and Explanations
11.1.3.3 (Open Functionality Software) 11.1.3.3 (Closed Software) 11.8.2 (Authoring Tool) 12.1.2 (Product Docs) 12.2.4 (Support Docs) Revised Section 508 501 (Web)(Software) 504.2 (Authoring Tool) 602.3 (Support Docs)		Course Creation: The instructions for creating new courses relies on a number of sensory characteristics described in both text and with screenshots. Course Management: The tables of student submissions accessible in this view only use color to indicate problem completion.
1.4.1 Use of Color (Level A) Also applies to: EN 301 549 Criteria 9.1.4.1 (Web) 10.1.4.1 (Non-web document) 11.1.4.1 (Open Functionality Software) 11.1.4.1 (Closed Software) 11.8.2 (Authoring Tool) 12.1.2 (Product Docs) 12.2.4 (Support Docs) Revised Section 508 501 (Web)(Software) 504.2 (Authoring Tool) 602.3 (Support Docs)	Database Administration: Does not support Other views: Supports	Database Administration: A number of buttons rely on color to indicate being disabled.
1.4.2 Audio Control (Level A) Also applies to: EN 301 549 Criteria 9.1.4.2 (Web) 10.1.4.2 (Non-web document) 11.1.4.2 (Open Functionality Software) 11.1.4.2 (Closed Software) 11.8.2 (Authoring Tool) 12.1.2 (Product Docs)	All views: Not Applicable	All views: No pages automatically play any audio or video

Criteria	Conformance Level	Remarks and Explanations
• 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)		
2.1.1 Keyboard (Level A) Also applies to: EN 301 549 Criteria • 9.2.1.1 (Web) • 10.2.1.1 (Non-web document) • 11.2.1.1.1 (Open Functionality Software) • 11.2.1.1.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Client: Partially Supports Other Views: Supports	Client: The block interface for writing code does not allow users to use keyboard controls to manipulate blocks but supports being tabbed over. All other interfaces can be controlled via the keyboard.
2.1.2 No Keyboard Trap (Level A) Also applies to: EN 301 549 Criteria • 9.2.1.2 (Web) • 10.2.1.2 (Non-web document) • 11.2.1.2 (Open Functionality Software) • 11.2.1.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Client: Partially supports Other Views: Supports	Client: All editors within BlockPy support being escaped. For CodeMirror (the text editor), you must use the ESC key to move focus to the next element – the tab key is too commonly used in Python to afford an alternative; however, the user can use CTRL+Enter to quickly run their code. For Summernote, regular tab behavior exists to move the user to another fied. The Block interface does not have any keyboard traps.

Criteria	Conformance Level	Remarks and Explanations

2.1.4 Character Key Shortcuts (Level A 2.1 only)
Also applies to:
EN 301 549 Criteria
   • 9.2.1.4 (Web)
   • 10.2.1.4 (Non-web document)
   • 11.2.1.4.1 (Open Functionality Software)
   • 11.2.1.4.2 (Closed Software)
   • 11.8.2 (Authoring Tool)
   • 12.1.2 (Product Docs)
   • 12.2.4 (Support Docs)
Revised Section 508 – Does not apply
	Client: Supports
	Other Views: Supports
		Client: Only the text and block editors remap shortcuts, and they only do so when they have focus.

2.2.1 Timing Adjustable (Level A)
Also applies to:
EN 301 549 Criteria
   • 9.2.2.1 (Web)
   • 10.2.2.1 (Non-web document)
   • 11.2.2.1 (Open Functionality Software)
   • 11.2.2.1 (Closed Software)
   • 11.8.2 (Authoring Tool)
   • 12.1.2 (Product Docs)
   • 12.2.4 (Support Docs)
Revised Section 508
   • 501 (Web)(Software)
   • 504.2 (Authoring Tool)
   • 602.3 (Support Docs)
	Client: Supports
	Other Views: Not applicable
		Client: When executing code, a timeout can if execution takes too long. This is critical when running code that requires user input. Instructors can disable timeout per problem (and are expected to do so when questions involve user input), but users can also disable timeouts from the settings menu.

2.2.2 Pause, Stop, Hide (Level A)
Also applies to:
EN 301 549 Criteria
   • 9.2.2.2 (Web)
   • 10.2.2.2 (Non-web document)
   • 11.2.2.2 (Open Functionality Software)
   • 11.2.2.2 (Closed Software)
   • 11.8.2 (Authoring Tool)
	Client: Supports
	Other Views: Not applicable
		Client: There are three parts of the Client that move. First, when the server or execution status changes, the status boxes in the top right shudder for only 1 second. Second, when the user clicks the run button, the screen scrolls to the new feedback presented and focuses on it – this functionality is now considered essential to student learning since previously it was possible to miss critical feedback. Third, new printed output will scroll to

Criteria	Conformance Level	Remarks and Explanations
• 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)		show the latest printed output when the user chooses to execute their program – this is also considered essential for the user to understand the activity of their program.
2.3.1 Three Flashes or Below Threshold (Level A) Also applies to: EN 301 549 Criteria • 9.2.3.1 (Web) • 10.2.3.1 (Non-web document) • 11.2.3.1 (Open Functionality Software) • 11.2.3.1(Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	All views: Supports	All views: No web pages have any flashing elements
2.4.1 Bypass Blocks (Level A) Also applies to: EN 301 549 Criteria • 9.2.4.1 (Web) • 10.2.4.1 (Non-web document) – Does not apply • 11.2.4.1 (Open Functionality Software) – Does not apply • 11.2.4.1 (Closed Software) – Does not apply • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508	Client: Does not support Submission: Supports Other views: Does not support	Client: The client offers no way to conveniently skip over known blocks to access the coding environments, except possibly for shift-tabbing backwards. Submission: There is no header for this page or any other content to skip. Other views: No skiplink for navbar – not deemed an issue since most screen readers have ways to identify the main content landmark, which is available on every page.

Criteria	Conformance Level	Remarks and Explanations
501 (Web)(Software) – Does not apply to non-web software 504.2 (Authoring Tool) 602.3 (Support Docs) – Does not apply to non-web docs		
2.4.2 Page Titled (Level A) Also applies to: EN 301 549 Criteria 9.2.4.2 (Web) 10.2.4.2 (Non-web document) 11.2.4.2 (Open Functionality Software) - Does not apply 11.2.4.2 (Closed Software) – Does not apply 11.8.2 (Authoring Tool) 12.1.2 (Product Docs) 12.2.4 (Support Docs) Revised Section 508 501 (Web)(Software) 504.2 (Authoring Tool) 602.3 (Support Docs)	Submission: Does not support Content Selection: Does not support Other views: Supports	Submission and Content Selection: These views are meant to be embedded inside of other pages with their own titles.
2.4.3 Focus Order (Level A) Also applies to: EN 301 549 Criteria 9.2.4.3 (Web) 10.2.4.3 (Non-web document) 11.2.4.3 (Open Functionality Software) 11.2.4.3 (Closed Software) 11.8.2 (Authoring Tool) 12.1.2 (Product Docs) 12.2.4 (Support Docs) Revised Section 508 501 (Web)(Software) 504.2 (Authoring Tool)	Database administration: Does not support Other Views: Supports	Database Administration: The focus order for the date editing popups is totally wrong for the page, since they appear at the end after all other interface elements, instead of an order that is related to their actual appearance on the page.

Criteria	Conformance Level	Remarks and Explanations
• 602.3 (Support Docs)		
2.4.4 Link Purpose (In Context) (Level A) Also applies to: EN 301 549 Criteria • 9.2.4.4 (Web) • 10.2.4.4 (Non-web document) • 11.2.4.4 (Open Functionality Software) • 11.2.4.4 (Closed Software • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Database Administration: Does not support Other Views: Supports	Database Administration: Many buttons are represented as links, and many of them are not obvious in what they do.
2.5.1 Pointer Gestures (Level A 2.1 only) Also applies to: EN 301 549 Criteria • 9.2.5.1 (Web) • 10.2.5.1 (Non-web document) • 11.2.5.1 (Open Functionality Software) • 11.2.5.1 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply	Client: Supports Other Views: Not Applicable	Client: The block interface uses pointer gestures, but this can be avoided by using the text interface.
2.5.2 Pointer Cancellation (Level A 2.1 only) Also applies to: EN 301 549 Criteria • 9.2.5.2 (Web) • 10.2.5.2 (Non-web document) • 11.2.5.2 (Open Functionality Software)	Client: Supports Other Views: Not Applicable	Client: The block interface supports Undo.

Criteria	Conformance Level	Remarks and Explanations
• 11.2.5.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply		
2.5.3 Label in Name (Level A 2.1 only) Also applies to: EN 301 549 Criteria • 9.2.5.3 (Web) • 10.2.5.3 (Non-web document) • 11.2.5.3 (Open Functionality Software) • 11.2.5.3 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply	Database Administration: Does not support Other Views: Supports	Database Administration: Most input elements are not properly labeled, especially on pages for editing and creating specific database elements.
2.5.4 Motion Actuation (Level A 2.1 only) Also applies to: EN 301 549 Criteria • 9.2.5.4 (Web) • 10.2.5.4 (Non-web document) • 11.2.5.4 (Open Functionality Software) • 11.2.5.4 (Closed Software • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply	All views: Not Applicable	BlockPy has no elements controlled by motion actuation.
3.1.1 Language of Page (Level A) Also applies to: EN 301 549 Criteria • 9.3.1.1 (Web) • 10.3.1.1 (Non-web document) • 11.3.1.1.1 (Open Functionality Software)	Database Administration: Does not support Other Views: Supports	Submission and Content Selection: This page is meant to be embedded in other pages, but declares its language using the xml:lang attribute. Only English is supported currently. Database Administration: This page does not set a language encoding.

Criteria	Conformance Level	Remarks and Explanations
• 11.3.1.1.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)		Other views: Use the standard HTML lang attribute.
3.2.1 On Focus (Level A) Also applies to: EN 301 549 Criteria • 9.3.2.1 (Web) • 10.3.2.1 (Non-web document) • 11.3.2.1 (Open Functionality Software) • 11.3.2.1 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Database Administration: Does not support Other views: Supports	Database Administration: On database pages involving editable date fields, focusing on one of these fields can cause a new popup to appear which is potentially distracting.
3.2.2 On Input (Level A) Also applies to: EN 301 549 Criteria • 9.3.2.2 (Web) • 10.3.2.2 (Non-web document) • 11.3.2.2 (Open Functionality Software) • 11.3.2.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508	All Views: Supports	Client: Possibly the only thing that can be considered a change of context is when the "Block/Split/Text" buttons are clicked to change the current view. However, since these are buttons, that behavior is expected.

Criteria	Conformance Level	Remarks and Explanations
501 (Web)(Software) 504.2 (Authoring Tool) 602.3 (Support Docs)		
3.3.1 Error Identification (Level A) Also applies to: EN 301 549 Criteria 9.3.3.1 (Web) 10.3.3.1 (Non-web document) 11.3.3.1.1 (Open Functionality Software) 11.3.3.1.2 (Closed Software) 11.8.2 (Authoring Tool) 12.1.2 (Product Docs) 12.2.4 (Support Docs) Revised Section 508 501 (Web)(Software) 504.2 (Authoring Tool) 602.3 (Support Docs)	All Views: Supports	Client: As a novice programming environment, there is technically no possible "error input" – all code is a potential answer for a student. However, BlockPy is designed to provide feedback on incorrect code once it is run, through the Feedback region. Registration, Login, and Database Administration: Incorrect form values will be shown a message indicating the nature of the error. Other views: No form of erroneous input possible.
3.3.2 Labels or Instructions (Level A) Also applies to: EN 301 549 Criteria 9.3.3.2 (Web) 10.3.3.2 (Non-web document) 11.3.3.2 (Open Functionality Software) 11.3.3.2 (Closed Software) 11.8.2 (Authoring Tool) 12.1.2 (Product Docs) 12.2.4 (Support Docs) Revised Section 508 501 (Web)(Software) 504.2 (Authoring Tool) 602.3 (Support Docs)	Client: Partially supports. Database Administration: Does not support Other Views: Supports	Client: All inputs are labeled, with the exception of the Wrench in the top-right corner. This wrench button holds additional settings for the user that are not commonly needed – they are to be activated by the instructor in a scenario where they must provide additional supports to students. Therefore, this button being unlabeled is pedagogically essential. Database Administration: Many fields are not labeled or given full instructions.

Criteria	Conformance Level	Remarks and Explanations

4.1.1 Parsing (Level A)
Also applies to:
EN 301 549 Criteria
    • 9.4.1.1 (Web)
    • 10.4.1.1 (Non-web document)
    • 11.4.1.1.1 (Open Functionality Software)
    • 11.4.1.1.2 (Closed Software) – Does not apply
    • 11.8.2 (Authoring Tool)
    • 12.1.2 (Product Docs)
    • 12.2.4 (Support Docs)
Revised Section 508
    • 501 (Web)(Software)
    • 504.2 (Authoring Tool)
    • 602.3 (Support Docs)
	Submission: Partially Supports
	Content Selection: Partially Supports
	Database Administration: Partially supports
	Other Views: Supports
		Submission and Content Selection: Although not a full HTML page, all HTML content in this page is valid.
		
		Database Administration: Some pages have incorrect HTML, such as duplicate IDs.
		
		Other Views: Are all full HTML pages.

4.1.2 Name, Role, Value (Level A)
Also applies to:
EN 301 549 Criteria
    • 9.4.1.2 (Web)
    • 10.4.1.2 (Non-web document)
    • 11.4.1.2.1 (Open Functionality Software)
    • 11.4.1.2.2 (Closed Software) – Not required
    • 11.8.2 (Authoring Tool)
    • 12.1.2 (Product Docs)
    • 12.2.4 (Support Docs)
Revised Section 508
    • 501 (Web)(Software)
    • 504.2 (Authoring Tool)
    • 602.3 (Support Docs)
	Client: Partially supports
	Database Administration: Does not support
	Other Views: Supports
		Client: The primary interactive components (the block and text editor) have a tremendous amount of complexity internally. Not every aspect of their internal design is well articulated through Aria roles and their values cannot be easily accessed programmatically. The new version of the editor is in development and will hopefully provide a more unified interface over the two components. However, preliminary testing suggests that the current editor is still suitable for interacting, if a bit clunky.
		
		Database Administration: Most page elements do not have roles or names.

Table 2: Success Criteria, Level AA

Notes:

Criteria	Conformance Level	Remarks and Explanations
1.2.4 Captions (Live) (Level AA) Also applies to: EN 301 549 Criteria 9.1.2.4 (Web) 10.1.2.4 (Non-web document) 11.1.2.4 (Open Functionality Software) 11.1.2.4 (Closed Software) 11.8.2 (Authoring Tool) 12.1.2 (Product Docs) 12.2.4 (Support Docs) Revised Section 508 501 (Web)(Software) 504.2 (Authoring Tool) 602.3 (Support Docs)	All Views: Not Applicable	All Views: BlockPy has no live content.
1.2.5 Audio Description (Prerecorded) (Level AA) Also applies to: EN 301 549 Criteria 9.1.2.5 (Web) 10.1.2.5 (Non-web document) 11.1.2.5 (Open Functionality Software) 11.1.2.5 (Closed Software) 11.8.2 (Authoring Tool) 12.1.2 (Product Docs) 12.2.4 (Support Docs) Revised Section 508 501 (Web)(Software) 504.2 (Authoring Tool) 602.3 (Support Docs)	Public Information: Does not support Other Views: Not Applicable	Public information: The youtube video embedded on one of the pages does not have an audio description. However, it is not meant to be seen by users and is not necessary to the use of the application.
1.3.4 Orientation (Level AA 2.1 only) Also applies to: EN 301 549 Criteria 9.1.3.4 (Web) 10.1.3.4 (Non-web document)	All Views: Supports	

Criteria	Conformance Level	Remarks and Explanations
• 11.1.3.4 (Open Functionality Software) • 11.1.3.4 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply		
1.3.5 Identify Input Purpose (Level AA 2.1 only) Also applies to: EN 301 549 Criteria • 9.1.3.5 (Web) • 10.1.3.5 (Non-web document) • 11.1.3.5 (Open Functionality Software) • 11.1.3.5 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply	Database Administration: Does not support Other Views: Supports	Database Administration: Most inputs have not been identified and labeled.
1.4.3 Contrast (Minimum) (Level AA) Also applies to: EN 301 549 Criteria • 9.1.4.3 (Web) • 10.1.4.3 (Non-web document) • 11.1.4.3 (Open Functionality Software) • 11.1.4.3 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Database Administration: Does not support Other Views: Supports	Database Administration: A number of page elements (especially the navigation buttons for the database rows) do not have high contrast.
1.4.4 Resize text (Level AA) Also applies to:	All Views: Supports	Client: All text, including the text on the blocks, can be resized without interfering with the application.

Criteria	Conformance Level	Remarks and Explanations
EN 301 549 Criteria • 9.1.4.4 (Web) • 10.1.4.4 (Non-web document) • 11.1.4.4.1 (Open Functionality Software) • 11.1.4.4.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)		
1.4.5 Images of Text (Level AA) Also applies to: EN 301 549 Criteria • 9.1.4.5 (Web) • 10.1.4.5 (Non-web document) • 11.1.4.5.1 (Open Functionality Software) • 11.1.4.5.2 (Closed Software) – Does not apply • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Client: Partially supports Submission: Partially supports Course Creation: Does not support Other Views: Supports	Client: The only image with text is graphs that are programmatically generated. Unfortunately, there is currently no mechanism to adjust the font size (although that is in development) of these graphs' text. However, the creation of static images for graphs (with text) is critical to allow users to download the graphs easily. Submission: The images of the code blocks have text that do not respond to size changes. However, all code block images are immediately followed by the code as text, which is resizable. Course Creation: There are screenshots on these pages of an LMS, including text that cannot be resized. The alt text does attempt to describe the image.
1.4.10 Reflow (Level AA 2.1 only) Also applies to: EN 301 549 Criteria • 9.1.4.10 (Web) • 10.1.4.10 (Non-web document)	Database Administration: Does not support Other views: Supports	Database Administration: Reflowing the page breaks certain kinds of functionality related to navigation and traversal of the data.

Criteria	Conformance Level	Remarks and Explanations
• 11.1.4.10.1 (Open Functionality Software) • 11.1.4.10.2 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply		
1.4.11 Non-text Contrast (Level AA 2.1 only) Also applies to: EN 301 549 Criteria • 9.1.4.11 (Web) • 10.1.4.11 (Non-web document) • 11.1.4.11 (Open Functionality Software) • 11.1.4.11 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply	Client: Partially supports Submission: Partially supports Course Creation: Does not support Other Views: Supports	Client: The block interface may not have high contrast for all blocks – however, the textual interface is an alternative, which does have high contrast. All other user interface components were evaluated for their contrast and deemed acceptable by siteimprove.com. The only pictures in the Client are graphs generated programmatically, which have sufficient contrast using the default color settings. Submission: The block images do not have high contrast for all blocks, but the textual code does. Course Creation: Some of the screenshots on the Course Creation page do not have good contrast.
1.4.12 Text Spacing (Level AA 2.1 only) Also applies to: EN 301 549 Criteria • 9.1.4.12 (Web) • 10.1.4.12 (Non-web document) • 11.1.4.12 (Open Functionality Software) • 11.1.4.12 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply	Client: Partially supports Other Views: Supports	Client: Adjusting these settings can interfere with the block editor, but the text editor should continue to function normally.
1.4.13 Content on Hover or Focus (Level AA 2.1 only) Also applies to:	All Views: Supports	

Criteria	Conformance Level	Remarks and Explanations
EN 301 549 Criteria • 9.1.4.13 (Web) • 10.1.4.13 (Non-web document) • 11.1.4.13 (Open Functionality Software) • 11.1.4.13 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 – Does not apply		
2.4.5 Multiple Ways (Level AA) Also applies to: EN 301 549 Criteria • 9.2.4.5 (Web) • 10.2.4.5 (Non-web document) – Does not apply • 11.2.4.5 (Open Functionality Software) – Does not apply • 11.2.4.5 (Closed Software) – Does not apply • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) – Does not apply to non-web software • 504.2 (Authoring Tool) • 602.3 (Support Docs) – Does not apply to non-web docs	Client: Supports Submission: Supports Other Views: Partially Supports	Client: The client is a single page application meant to be embedded in an LMS. Submission: This Submission view gives users a way to access their current submission for the assignment in the Client. It is also a single page meant to not be accessible from other pages. Registration, Login: Many of the views are accessible from other part of the sites through the navbar, and are also accessible from each other through additional convenient links. However, some views are only accessible through one particular path, typically beginning with login and selection of a specific course.
2.4.6 Headings and Labels (Level AA) Also applies to: EN 301 549 Criteria • 9.2.4.6 (Web) • 10.2.4.6 (Non-web document) • 11.2.4.6 (Open Functionality Software) • 11.2.4.6 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs)	Database Administration: Does not Support Other Views: Supports	Database Administration: Most pages related to this view do not have headings or proper labels.

Criteria	Conformance Level	Remarks and Explanations
Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)		
2.4.7 Focus Visible (Level AA) Also applies to: EN 301 549 Criteria • 9.2.4.7 (Web) • 10.2.4.7 (Non-web document) • 11.2.4.7 (Open Functionality Software) • 11.2.4.7 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Client: Partially supports Other Views: Supports	Client: The block interface does not give any visual indication that it is focused. However, the text editor does.
3.1.2 Language of Parts (Level AA) Also applies to: EN 301 549 Criteria • 9.3.1.2 (Web) • 10.3.1.2 (Non-web document) • 11.3.1.2 (Open Functionality Software) – Does not apply • 11.3.1.2 (Closed Software) – Does not apply • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Database Administration: Does not support Other Views: Supports	Database Administration: No language is specified anywhere. Other views: The entire website only supports English, so no parts are in different languages. All parts are identified as being in English through one mechanism or another.

Criteria	Conformance Level	Remarks and Explanations
3.2.3 Consistent Navigation (Level AA) Also applies to: EN 301 549 Criteria • 9.3.2.3 (Web) • 10.3.2.3 (Non-web document) – Does not apply • 11.3.2.3 (Open Functionality Software) – Does not apply • 11.3.2.3 (Closed Software) – Does not apply • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) – Does not apply to non-web software • 504.2 (Authoring Tool) • 602.3 (Support Docs) – Does not apply to non-web docs	Database Administration: Partially Supports Other Views: Supports	Database Administration: The navigation for the administrative side looks distinctive from the rest of the site, with a different style navbar. Within the administrative side, the navigation is consistent.
3.2.4 Consistent Identification (Level AA) Also applies to: EN 301 549 Criteria • 9.3.2.4 (Web) • 10.3.2.4 (Non-web document) – Does not apply • 11.3.2.4 (Open Functionality Software) – Does not apply • 11.3.2.4 (Closed Software) – Does not apply • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) – Does not apply to non-web software • 504.2 (Authoring Tool) • 602.3 (Support Docs) – Does not apply to non-web docs	All Views: Supports	
3.3.3 Error Suggestion (Level AA) Also applies to: EN 301 549 Criteria • 9.3.3.3 (Web) • 10.3.3.3 (Non-web document)	Client: Supports Database Administration: Does not support.	Client: None of the clients fields have invalid inputs, with the possible exception of the code editor – feedback on syntax and other errors are delivered through the Feedback region.

Criteria	Conformance Level	Remarks and Explanations
• 11.3.3.3 (Open Functionality Software) • 11.3.3.3 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Other Views: Not applicable	Registration and Login: These views could have information suggested, but that would potentially jeopardize the site's security. Database Administration: No attempt is made to suggest corrected inputs. Other Views: do not have erroneous inputs possible.
3.3.4 Error Prevention (Legal, Financial, Data) (Level AA) Also applies to: EN 301 549 Criteria • 9.3.3.4 (Web) • 10.3.3.4 (Non-web document) • 11.3.3.4 (Open Functionality Software) • 11.3.3.4 (Closed Software) • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs) • 12.2.4 (Support Docs) Revised Section 508 • 501 (Web)(Software) • 504.2 (Authoring Tool) • 602.3 (Support Docs)	Client: Partially supports Other Views: Not applicable	Client: Submissions are made to the LMS whenever the user runs their program. Users can review their history using the History button and choose a previous version of their code to restore a previous state. Other views: No other pages submit data to the LMS.
4.1.3 Status Messages (Level AA 2.1 only) Also applies to: EN 301 549 Criteria • 9.4.1.3 (Web) • 10.4.1.3 (Non-web document) – Does not apply • 11.4.1.3 (Open Functionality Software) – Does not apply • 11.4.1.3 (Closed Software) – Does not apply • 11.8.2 (Authoring Tool) • 12.1.2 (Product Docs)	Client: Partially supports Other Views: Not applicable	Client: There are two kinds of status messages in the Client. Changes to the server and execution status are identified in the top right, but are meant as debug information primarily for developers and not students. More critically is the feedback area, which is annotated with the aria-live attribute set to the "polite" level.

Criteria	Conformance Level	Remarks and Explanations
• 12.2.4 (Support Docs) Revised Section 508 – Does not apply		