Errors Guidelines DRAFT

Document history:

* 23 April 2021: First draft of outcomes and methods under development
* 27 April 2021: Shared draft of one method (Method: Instructions display at the source of input (All)) with Silver TF; decision to publish in May WD
* 30 April 2021: Shared final draft of one method (Method: Instructions display at the source of input (All)) on Silver TF mailing list
* 4 May 2021: Migrated Method: Instructions display at the source of input (All) to GitHub for publication in May WD

# Error Prevention

Guideline: Provide features that help users avoid errors. “Error prevention” how-to (link)

## Input instructions provided

Provides instructions for inputs that have requirements (for example, required, formatting) so users know how to provide valid information.

Outcome, details, and methods for “Input instructions provided” (link)

Functional categories for “Input instructions provided” (show/hide)

This outcome related to the following functional categories:

* Essential
* Sensory - Vision and Visual
* Sensory - Sensory Intersections
* Cognitive - Attention
* Cognitive - Language and Literacy
* Cognitive - Learning
* Cognitive - Memory
* Cognitive - Executive
* Cognitive - Mental Health
* Cognitive - Cognitive and Sensory Intersections
* Independence

Critical errors for “Input instructions provided” (show/hide)

* Any input that has specific data requirements (e.g., date format, password) that is provided without instructions.
* Any input for collecting sensitive information (e.g., social security number) that fails “Input instructions provided” tests.

Rating for “Input instructions provided” (show/hide)

|  |  |
| --- | --- |
| Rating | Criteria |
| Rating 0 | Score of 25% or less OR there is a [critical error](https://w3c.github.io/silver/guidelines/#dfn-critical-error) |
| Rating 1 | Score of 26-50% or less AND there are no [critical errors](https://w3c.github.io/silver/guidelines/#dfn-critical-error) |
| Rating 2 | Score of 51-80% or less AND there are no [critical errors](https://w3c.github.io/silver/guidelines/#dfn-critical-error) |
| Rating 3 | Score of 81-95% or less AND there are no [critical errors](https://w3c.github.io/silver/guidelines/#dfn-critical-error) |
| Rating 4 | Score of 96-100% or less AND there are no [critical errors](https://w3c.github.io/silver/guidelines/#dfn-critical-error) |

## Outcome: Input instructions provided

Provides instructions for inputs that have requirements (for example, required, date format, password) so users know how to provide valid information.

This outcome relates to guideline Error Prevention.

### Functional Categories

This outcome relates to the following functional categories:

* Essential
* Sensory - Vision and Visual
* Sensory - Sensory Intersections
* Cognitive - Attention
* Cognitive - Language and Literacy
* Cognitive - Learning
* Cognitive - Memory
* Cognitive - Executive
* Cognitive - Mental Health
* Cognitive - Cognitive and Sensory Intersections
* Independence

### Methods

* Instructions for completing tasks (All) (in progress)
* Required inputs indicated (All) (proposed)
* Instructions available at the source of input (All) (on GitHub)

### Method: Instructions for completing tasks (All)

#### Introduction

##### Platform

* All desktop and mobile platforms
* Documents such as PDF and word processing documents

##### Technology

* Web (HTML, ARIA)
* Applications (iOS, Android, MacOS, Windows)
* Documents (editable PDF and word processing documents)

##### Summary

* Instructions help users enter and submit data.
* Instructions explaining data requirements help users avoid data entry errors.
* Instructions that include illustrative examples help users understand and follow data requirements when inputting data.

##### How it solves user needs

* People need instructions for inputs that have data requirements.
* People benefit from instructions that are clear and easy to follow.
* People benefit from instructions that include examples that illustrate formatting requirements.

#### Description

##### Outcome

This method supports the outcome Input instructions provided.

##### Detailed description

* **Instructions:** Provide instructions for any inputs that have data requirements, for example, password requirements or data format requirements.
* **Clear words:** Use clear words to explain data requirements.
* **Examples:** Include illustrative examples when appropriate for explaining data requirements, for example, Email (e.g., joe@example.com).

##### Dependencies

To be determined.

#### Examples

##### Providing simple instructions within input labels

Simple instructions can be provided within an input label, for example, including “required” in the label of an input that must be completed:

Name (required):

##### Providing an example

In some cases, the best instruction is an example of data in the correct format, for example, including “joe@example.com” in the label to show the required email format:

Email (e.g., joe@example.com):

##### Providing more detailed instructions in a block or list

Some inputs require more detailed instructions that are clearly marked and defined, for example, providing detailed password requirements with a section heading and list of requirements:

Password Requirements

* At least 8 characters
* Uppercase and lowercase letters
* At least one number
* At least one special character

#### Tests

##### Atomic Tests

* Test Units: Each input.
* Unit Score: For each test unit, complete each of the following tests and sum the test credits to get the unit score.

###### Test that instructions are present

Procedure

1. Identify inputs that only accept data in a given format.
2. Check that the page or view includes instructions about the required format.

Expected Results

#2 is true. Credit: 1

Critical Error if #2 is false.

###### Test for clear words

Procedure

1. Identify inputs that have instructions.
2. Check that the instructions use clear words.

Expected Results

#2 is true. Credit: 1

###### Test that illustrative examples are present

Procedure

1. Identify inputs that have instructions that describe format requirements that would benefit from an illustrative example.
2. Check that the instructions include an example of data in the required format.

Expected Results

#2 is true. Credit: 1

Exception: Password inputs

#### Scoring

Score: Percentage of inputs with specific data requirements on a page, screen, or view.

* Calculate the total possible credits (total test units x total tests)
* Calculate the total credits (sum of test unit scores)
* Express total credits as a percentage of total possible credits (total credits / total possible credits)

The following example shows scoring for a page that has two inputs with specific data requirements.

|  |  |
| --- | --- |
|  | Score |
| Password input | 1 (covered as exception for Test 2) |
| Email input | 2 |
| Total credits | 3 |
| Total possible credits | 4 (2 inputs x 2 tests) |
| Score | TBC (how to manage scoring for exceptions) |

#### Resources

##### W3C Resources

* Easy Checks: Required fields and other instructions — [Forms, labels, and errors](https://www.w3.org/WAI/test-evaluate/preliminary/#forms)
* WAI Tutorials: [Form Instructions](https://www.w3.org/WAI/tutorials/forms/instructions/)

##### Non-W3C Resources

### Method: Instructions available at the source of input (All)

#### Introduction

##### Platform

* All desktop and mobile platforms
* Documents such as PDF and word processing documents

##### Technology

* Web (HTML, ARIA)
* Applications (iOS, Android, MacOS, Windows)
* Documents (editable PDF and word processing documents)

##### Summary

* Instructions that are persistent remain visible as users enter data.
* Instructions that display at the source of input are visible as users enter data.
* Instructions that display in a predictable location improve ease of use.
* Instructions that are programmatically defined and associated with inputs can be conveyed by assistive technology as users enter data.
* Instructions that are relevant to associated inputs enable users to understand how to enter data correctly

##### How it solves user needs

* People need instructions that are available as they enter data in inputs.
* People need instructions that display at the source of input so they can read and follow the instructions while entering data in the input.
* People benefit from instructions that appear in a predictable location so they are easy to find and follow.
* People who use screen magnification need input instructions that display next to inputs so they can see the instructions while focused on the input.
* People who use assistive technology need instructions that are programmatically defined and associated so they can use their technology to access the instructions while focused on the input.

#### Description

##### Outcome

This method supports the outcome Input instructions provided.

##### Detailed description

* **Persistent instructions:** Display instructions for as long as people need them.
* **Adjacent instructions:** Display instructions near inputs so that people can follow the instructions as they are entering data.
* **Predictable location:** Display instructions in a standard location so that people know where to find them.
* **Programmatically defined and associated instructions:** Provide instructions programmatically so that they are available to assistive technology.

##### Dependencies

To be determined.

#### Examples

##### Providing instructions within labels

For simple use cases, providing instructions within labels may be sufficient. This approach is reliable across different web browsers and assistive technologies, although it may require some additional thought to support some styling needs.

In the example below, the required format for the “Date of Birth” is indicated by “MM/DD/YYYY” within the same label:

<label for="dob">Date of Birth (MM/DD/YYYY)</label>

<input type="text" id="dob">

##### Providing instructions outside of labels

Another approach to associate additional instructions with a form field is to use aria-describedby. Information referenced by this attribute is made available to the users after the label and other information is announced.

<label for="date">Date</label> <span id="date-tip">MM/DD/YYYY</span>

<input type="text" id="date" aria-describedby="date-tip">

#### Tests

##### Atomic Tests

* Test Units: Each input that has specific data requirements.
* Unit Score: For each test unit, complete each of the following tests and sum the test credits to get the unit score.

###### Test that instructions are persistent

Procedure

1. Check that instructions for input data requirements are available on the page or view.
2. Check that the instructions are persistent.

Expected Results

All checks are true. Credit: 1

###### Test that instructions are adjacent to inputs

Procedure

1. Check that instructions for input data requirements are available on the page or view.
2. Check that the instructions are adjacent to the input.

Expected Results

All checks are true. Credit: 1

###### Test that instructions are predictably located

Procedure

1. Check that instructions for input data requirements are available on the page or view.
2. Check that instructions display in a standard location.

Expected Results

All checks are true. Credit: 1

###### Test that instructions are programmatically defined and associated

Procedure

1. Check that instructions for input data requirements are available on the page or view.
2. Check that instructions are programmatically defined and associated with the input.

Expected Results

All checks are true. Credit: 1

#### Scoring

Score: Percentage of inputs with specific data requirements on a page, screen, or view that have persistent instructions that are adjacent to inputs, predictably located, and programmatically defined and associated.

* Calculate the total possible credits (total test units x total tests)
* Calculate the total credits (sum of test unit scores)
* Express total credits as a percentage of total possible credits (total credits / total possible credits)

The following example shows scoring for a page that has two inputs with specific data requirements.

|  |  |
| --- | --- |
|  | Score |
| Date of birth input | 3 |
| Credit card number input | 2 |
| Total credits | 5 |
| Total possible credits | 8 (2 inputs x 4 tests) |
| Score | 62.5% |

##### Holistic Tests

To be developed.

#### Resources

##### W3C Resources

* Easy Checks: Required fields and other instructions — [Forms, labels, and errors](https://www.w3.org/WAI/test-evaluate/preliminary/#forms)
* WAI Tutorials: Form Instructions — [Inline Instructions](https://www.w3.org/WAI/tutorials/forms/instructions/#in-line-instructions)

##### Non-W3C Resources

# Proposals

This working section is for working through ideas and proposals.

## Scoring

[How do we handle scoring at the outcome level?](https://docs.google.com/document/d/1lonY6dmgfqNYglJ7OhZVusc16q1Jv8i_mGDZtFi_bkc/edit#heading=h.4qkwqbqg8la)

### Input instructions provided (Outcome)

#### Rubric

|  |  |  |
| --- | --- | --- |
| **Method** | **Possible credits** | **Weighting** |
| Instructions provided for inputs with specific data requirements (All) | Prerequisite | NA |
| Instructions available at the source of input (All) | 4 | 10% |
| TBC | TBC | TBC |

#### Score

|  |  |  |
| --- | --- | --- |
| **Method** | **Earned credits** | **Score (percentage of possible credits)** |
| Instructions provided for inputs with specific data requirements (All) | Prerequisite | NA |
| Instructions available at the source of input (All) | 2 | 50% |
| TBC | TBC | TBC |

**Prerequisites** are requirements that must be included to achieve any score for the outcome (similar to critical errors).

**Credits** are the number of tests in a method. In this example, there are 4 tests in the method, and each passing test gets 1 credit.

**Weighting** is a measure of impact on user experience. Methods that have low impact have a lower weighting. Methods that have a high impact have a higher weighting.

**Score** is a measure of earned credits as a percentage of possible credits for each method.