LAVA

6: Debugging

Bug

[b*uhg*]

Unexpected problem with
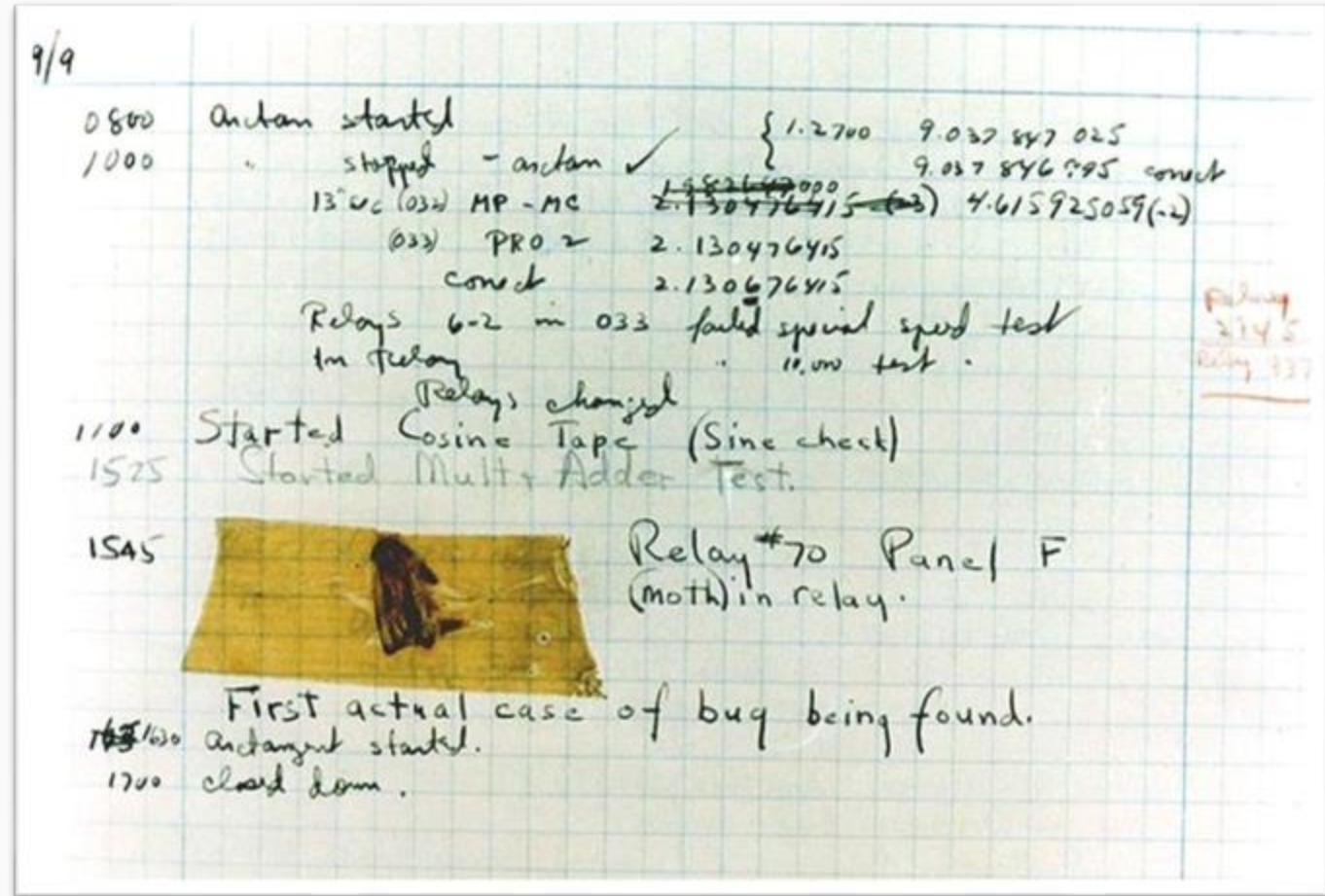software or hardware

💡 **Demystified:**

"Why isn't this doing what I want it to?"

TECHNICAL
TERMS

ROCK

The World's First Software Bug

Thomas Edison reported "bugs" in his designs as early as the 1800s, but this was the first bug identified in computer software.
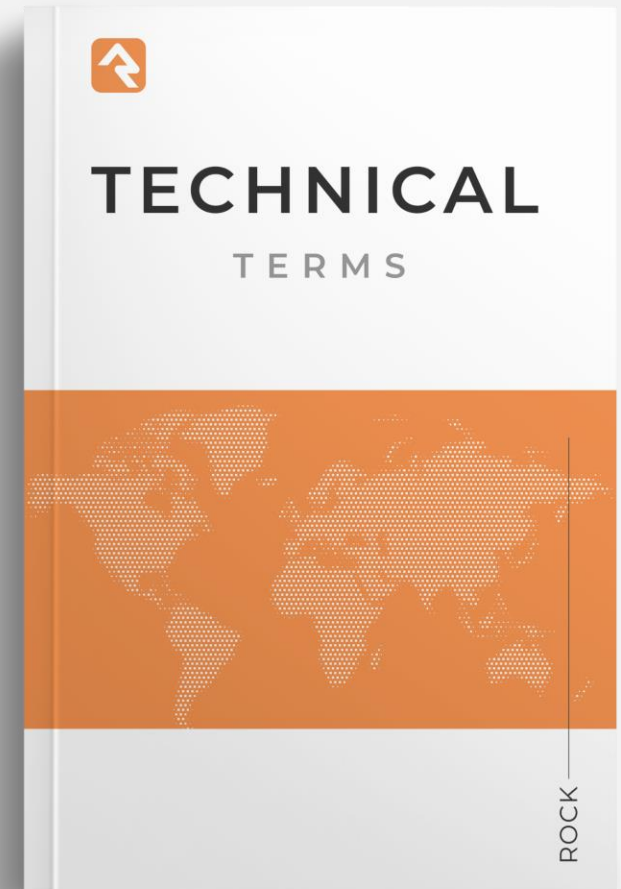
Researchers at Harvard, 1945

How to Approach Debugging

(and avoid guessing)!

"Step through" the template
Baby steps on the bus, baby steps down the aisle

Check your variables
Say *what?*

Confirm your assumptions
Merge fields from the block, etc.

Confirm Your Assumptions

Check the block's Merge Fields

```
1   {{ 'Lava' | Debug }}
```

Lava Debug Info

Below is a listing of available merge fields for this block. Find out more on Lava at rockrms.com/lava.

Page Parameter ⌄

Current Person ⌄

Current Visitor ⌄

Campuses ⌄

Pagination ⌄

Linked Pages ⌄

Items ⌄

Item Tag List ⌄

Archive Summary ⌄

- **RockVersion** - 1.16.6.6
- **CurrentPageUrl** - /blog?Tag=TagTemplate
- **ArchiveSummaryPageUrl** - /blog?Year=YearTemplate&Month=MonthTemplate

Person ⌄

Global Attribute ⌄

Confirm Your Assumptions

Check the block's Merge Fields

```
1   {{ 'Lava' | Debug }}
```

Lava Debug Info

Below is a listing of available merge fields for this block. Find out more on Lava at rockrms.com/lava.

Page Parameter   ⌄

Current Person   ⌄

CurrentPerson properties can be accessed by `{{ CurrentPerson.[PropertyKey] }}`. Find out more about using 'Person' fields in Lava at rockrms.com/lava/person.

- **IsSystem** - True
- **RecordTypeValueId** - 1
- **RecordStatusValueId** - 3
- **RecordStatusLastModifiedDateTime** -
- **RecordStatusReasonValueId** -
- **ConnectionStatusValueId** - 66
- **ReviewReasonValueId** -
- **IsDeceased** - False
- **TitleValueId** -
- **FirstName** - Alisha
- **NickName** - Alisha
- **MiddleName** -
- **LastName** - Admin
- **SuffixValueId** -
- **PhotoId** - 417
- **BirthDay** -
- **BirthMonth** -
- **BirthYear** -
- **Age** -
- **Gender** - Unknown
- **MaritalStatusValueId** -
- **AnniversaryDate** -
- **GraduationYear** -
- **GivingId** - P1
- **GivingLeaderId** - 1
- **Email** - admin@organization.com
- **IsEmailActive** - False
- **EmailNote** -
- **EmailPreference** - EmailAllowed

Confirm Your Assumptions

Check the block's Merge Fields

CurrentPerson properties can be accessed by `{{ CurrentPerson.[PropertyKey] }}`. Find out more about using 'Person' fields in Lava at rockrms.com/lava/person.

- **IsSystem** - True
- **RecordTypeValueId** - 1
- **RecordStatusValueId** - 3
- **RecordStatusLastModifiedDateTime** -
- **RecordStatusReasonValueId** -
- **ConnectionStatusValueId** - 66
- **ReviewReasonValueId** -
- **IsDeceased** - False
- **TitleValueId** -
- **FirstName** - Alisha
- **NickName** - Alisha
- **MiddleName** -
- **LastName** - Admin

```
1  {{ CurrentPerson.Nickname }}
```

Confirm Your Assumptions

Check the block's Merge Fields

CurrentPerson properties can be accessed by `{{ CurrentPerson.[PropertyKey] }}`. Find out more about using 'Person' fields in Lava at rockrms.com/lava/person.

- **IsSystem** - True
- **RecordTypeValueId** - 1
- **RecordStatusValueId** - 3
- **RecordStatusLastModifiedDateTime** -
- **RecordStatusReasonValueId** -
- **ConnectionStatusValueId** - 66
- **ReviewReasonValueId** -
- **IsDeceased** - False
- **TitleValueId** -
- **FirstName** - Alisha
- **NickName** - Alisha
- **MiddleName** -
- **LastName** - Admin

```
1   {{ CurrentPerson.NickName }}
```

Confirm Your Assumptions

Check the block's Merge Fields

```
1   {{ CurrentPerson.NickName }}
```

Remember

Lava is caSe sENsITivE

Confirm Your Assumptions

Even if you can't click

```
1   {% assign item = Items | First %}
2   <pre>{{ item | ToJSON }}</pre>
```

JSON = JavaScript Object Notation

Douglas Crockford (Not Jason)
🤷‍♂️

Confirm Your Assumptions

Even if you can't click

```
1  {% assign item = Items | First %}
2  <pre>{{ item | ToJSON }}</pre>
```

```
1   {
2     "ContentChannelType": {
3       "IsSystem": false,
4       "Name": "Blogs",
5       "DateRangeType": 1,
6       "IncludeTime": true,
7       "ShowInChannelList": true,
8       "Id": 3,
9       "IdKey": "yqMlAxmENZ",
10      "Guid": "c0549458-dccf-4e02-8978-b15932576f68"
11    },
12    "ContentChannelId": 3,
13    "ContentChannelTypeId": 3,
14    "Title": "Mea Animal Aperiam Ornatus Eu",
15    "Content": "Dolor intellegebat ad vim. Clita tritani...",
16    "Priority": 100,
17    "Status": 2,
18    "ApprovedByPersonAliasId": 10,
19    "ApprovedDateTime": "2015-11-19T00:00:00",
20    "StartDateTime": "2015-11-19T00:00:00",
21    "ExpireDateTime": "2050-08-02T00:00:00",
22    "Permalink": null,
23    "Order": 0,
24    "ItemGlobalKey": "mea-animal-aperiam-ornatus-eu",
25    "Id": 9,
26    "IdKey": "bD9PD7lqzZ",
27    "Guid": "e214f2a7-cb53-4640-acd5-cead2190c99d"
28  }
```

Meeting JSON

Decoding the Code

Primitives

Bear

```
1    "Bear"
```

Arrays

0	Bear
1	Dog
2	Rhino

```
1    [ "Bear", "Dog", "Rhino" ]
```

Objects

FirstName: Theodore

NickName: Ted

LastName: Decker

...

```
1    {
2        "FirstName": "Theodore",
3        "NickName": "Ted",
4        "LastName": "Decker"
5    }
```

Meeting JSON

Decoding the Code

💡 **Only object properties can be named in JSON**

Because … reasons.

🤷

```
1  "Bear"
```

```
1  [ "Bear", "Dog", "Rhino" ]
```

```json
1  {
2    "FirstName": "Theodore",
3    "NickName": "Ted",
4    "LastName": "Decker"
5  }
```

Named Properties

Primitives

favoriteAnimal

Bear

```
1   "Bear"
```

```
1   {
2       "FavoriteAnimal": "Bear"
3   }
```

Named Properties

Arrays

favoriteAnimals

0	Bear
1	Dog
2	Rhino

```
1  [ "Bear", "Dog", "Rhino" ]
```
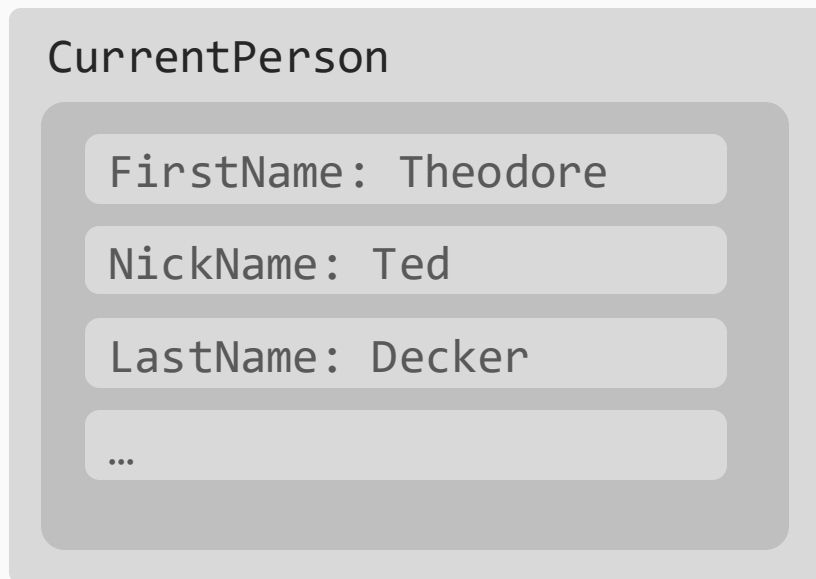
```
1  {
2    "FavoriteAnimals": [
3      "Bear",
4      "Dog",
5      "Rhino"
6    ]
7  }
```

Named Properties

Objects

CurrentPerson

FirstName: Theodore

NickName: Ted

LastName: Decker

…

```json
1  {
2      "FirstName": "Theodore",
3      "NickName": "Ted",
4      "LastName": "Decker"
5  }
```
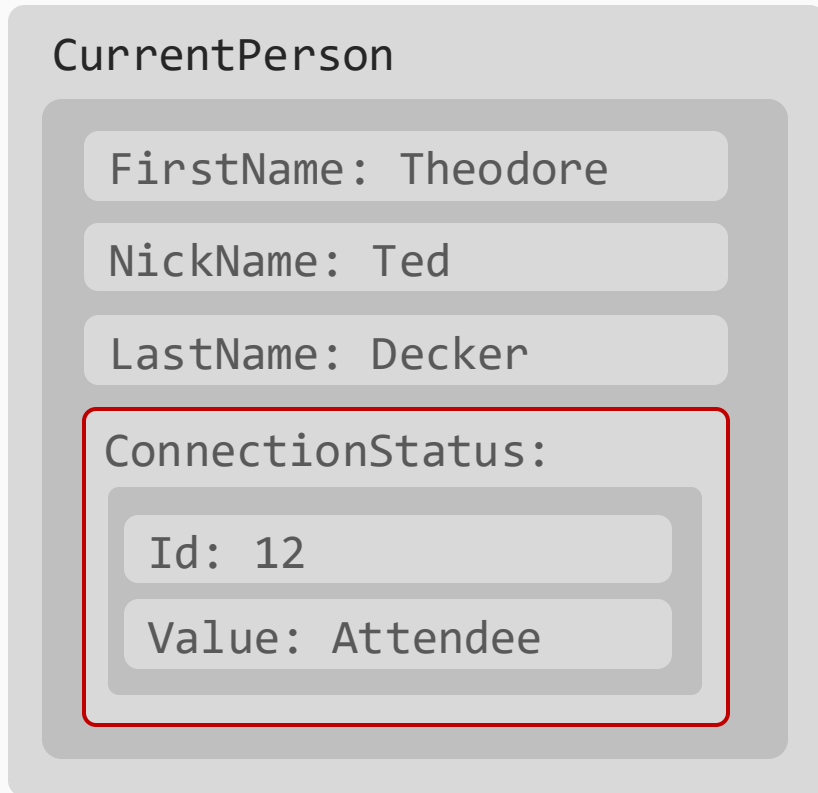
```json
1  {
2      "CurrentPerson": {
3          "FirstName": "Theodore",
4          "NickName": "Ted",
5          "LastName": "Decker"
6      }
7  }
```

Named Properties

CurrentPerson

FirstName: Theodore

NickName: Ted

LastName: Decker

ConnectionStatus:

> Id: 12
>
> Value: Attendee

Properties can be objects.

```
1  {
2      "CurrentPerson": {
3          "FirstName": "Theodore",
4          "NickName": "Ted",
5          "LastName": "Decker",
6          "ConnectionStatusValue": {
7              "Id": 12,
8              "Value": "Attendee"
9          }
10     }
11 }
```

Named Properties

Favorite
Animal

```
 1  {
 2    "CurrentPerson": {
 3      "FirstName": "Theodore",
 4      "NickName": "Ted",
 5      "LastName": "Decker",
 6      "ConnectionStatusValue": {
 7        "Id": 12,
 8        "Value": "Attendee"
 9      }
10    }
11  }
```
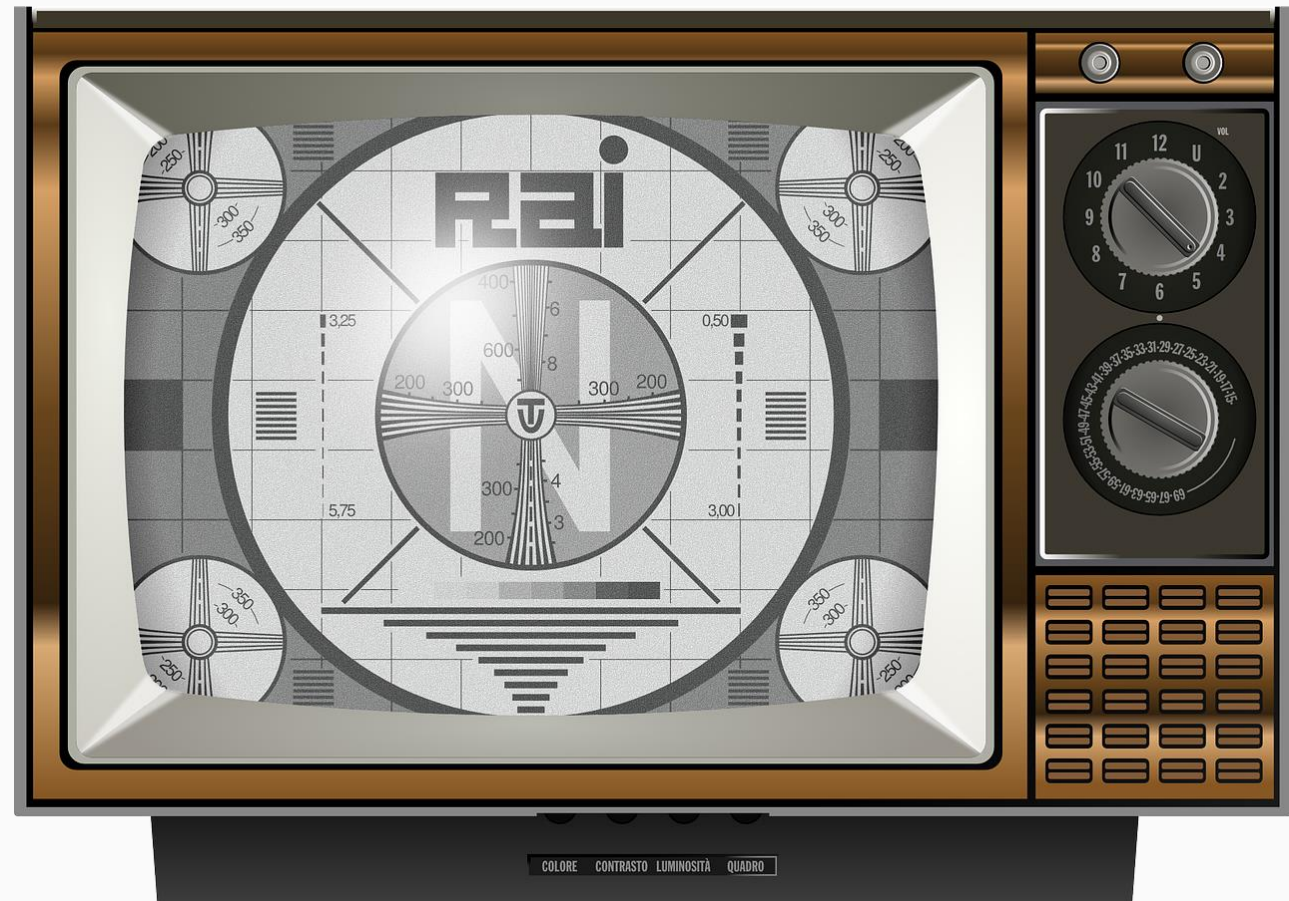
Back to Debugging…

Confirm Your Assumptions

```
1   {% assign item = Items %}
2
3   Our blog post is titled
4   {{ item.Title }}
```

Our blog post is titled

🤔

Confirm Your Assumptions

```
1  {{ 'Lava' | Debug }}
```

Typical pattern
(but not the only option)

Confirmed: Title is set

Linked Pages   ⌄

Items   ⌃

Items properties can be accessed by `{% for item in Items %}{{ item.[PropertyKey] }}{% endfor %}`.

{
- [0]
  - PrimarySlug - mea-animal-aperiam-ornatus-eu
  - ContentChannelId - 3
  - ContentChannelTypeId - 3
  - Title - Mea Animal Aperiam Ornatus Eu
  - Content - <p>Dolor intellegebat ad vim. Clita tritani...
  - StructuredContent -
  - Priority - 100
  - Status - Approved
  - ApprovedByPersonAliasId - 10
  - ApprovedDateTime - 11/19/2015 12:00:00 AM
  - StartDateTime - 11/19/2015 12:00:00 AM

Confirm Your Assumptions

```
1  {{ 'Lava' | Debug }}
```

Linked Pages

Items

Items properties can be accessed by `{% for item in Items %}{{ item.[PropertyKey] }}{% endfor %}`.

{
- [0]
    - PrimarySlug - mea-animal-aperiam-ornatus-eu
    - ContentChannelId - 3
    - ContentChannelTypeId - 3
    - Title - Mea Animal Aperiam Ornatus Eu
    - Content - <p>Dolor intellegebat ad vim. Clita tritani...
    - StructuredContent -
    - Priority - 100
    - Status - Approved
    - ApprovedByPersonAliasId - 10
    - ApprovedDateTime - 11/19/2015 12:00:00 AM
    - StartDateTime - 11/19/2015 12:00:00 AM

Eureka!

Items is an array, not an object

Confirm Your Assumptions

```
1  <pre>{{ 'Items' | ToJSON }}</pre>
```

Remember:

Objects are made up of properties. Arrays aren't.

Also Remember:

Items in an array are numbered, not named.

```json
1   {
2       "Items": [
3           {
4               "Title": "Mea Animal...",
5               "Status": "Approved",
6               "StartDateTime": "1/9/2015"
7           },
8           {
9               "Title": "Probo Senserit...",
10              "Status": "Approved",
11              "StartDateTime": "1/8/2015"
12          }
13      ]
14  }
```

Confirm Your Assumptions

```
1  <pre>{{ 'Items' | ToJSON }}</pre>
```

Items

Title: Mea Animal...

Status: Approved

StartDateTime: 1/9/15

...

Title: Probo Senserit...

Status: Approved

StartDateTime: 1/8/15

...

Remember:

Objects are made up of properties. Arrays aren't.

Also Remember:

Items in an array are numbered, not named.

One Solution:

```
1  Our blog post is titled:
2  {% for item in Items %}
3     {{ item.Title }}
4     {% break %}
5  {% endfor %}
```

Our blog post is titled: Mea Animal Aperiam Ornatus Eu

Check Your Variables

A Time-Honored Tradition 😂

```
1  {% assign var = 1 %}
2  <p>Value after assignment (should be "1"):</p>
3  <pre>{{ var }}</pre>
```

Check Your Variables

```
1  {% for item in Items %}
2    {% assign person = item | Attribute:'Author' %}
3    <p>
4      {{ item.Title }}
5      <small>By {{ person.FullName }}</small>
6    </p>
7  {% endfor %}
```

Mea Animal Aperiam By

🤔

Check Your Variables

```
1  {{ Items | ToJSON }}
```

`Items`

```
1  {{ Items | First | Attribute:'Author' }}
```

`item | Attribute:'Author'`

Check Your Variables

```
1  <pre>{{ Items | ToJSON }}</pre>
2  {{ Items | First | Attribute:'Author' }}
3
4  {% for item in Items %}
5    {% assign person = item | Attribute:'Author' %}
6    <p>
7      {{ item.Title }}
8      <small>By {{ person.FullName }}</small>
9    </p>
10 {% endfor %}
```

```
[
  {
    "Id": 24,
    "Title": "Mea Animal Aperiam"
  },
  {
    ....
  }
]
```

Ted Decker

Mea Animal Aperiam By

Step Through Your Template

Line by line, step by step.

```
1   {% for item in Items %}
2     {% assign person = item | Attribute:'Author' %}
3     <p>
4       {{ item.Title }}
5       <small>By {{ person.FullName }}</small>
6     </p>
7   {% endfor %}
```

Step Through Your Template

```
1   {% for item in Items %}
2     {{ forloop.length }}
3     {% break %}
4
5     {% assign person = item | Attribute:'Author' %}
6     <p>
7       {{ item.Title }}
8       <small>By {{ person.FullName }}</small>
9     </p>
10  {% endfor %}
```

Let's make really sure our Items list is valid

Keep the rest of the loop from running.

8

Step Through Your Template

```
1   {% for item in Items %}
2     //- {{ forloop.length }}
3     {{ item.Id }}
4     {% break %}
5
6     {% assign person = item | Attribute:'Author' %}
7     <p>
8       {{ item.Title }}
9       <small>By {{ person.FullName }}</small>
10    </p>
11  {% endfor %}
```

Let's make sure our item itself is valid

17

Step Through Your Template

```
1   {% for item in Items %}
2     //- {{ forloop.length }}
3     //- {{ item.Id }}
4
5     {% assign person = item | Attribute:'Author' %}
6     {{ person }}
7     {% break %}
8
9     <p>
10      {{ item.Title }}
11      <small>By {{ person.FullName }}</small>
12    </p>
13  {% endfor %}
```

Make sure the attribute has a value

Ted Decker

Step Through Your Template

```
1   {% for item in Items %}
2     //- {{ forloop.length }}
3     //- {{ item.Id }}
4
5     {% assign person = item | Attribute:'Author' %}
6     {{ person.Id }}
7     {% break %}
8
9     <p>
10      {{ item.Title }}
11      <small>By {{ person.FullName }}</small>
12    </p>
13  {% endfor %}
```

Make sure the value is
the record we expect.

🤔

Step Through Your Template

```
1  {% for item in Items %}
2    //- {{ forloop.length }}
3    //- {{ item.Id }}
4
5    {% assign person = item | Attribute:'Author','Object' %}
6    {{ person.Id }}
7    {% break %}
8
9    <p>
10     {{ item.Title }}
11     <small>By {{ person.FullName }}</small>
12   </p>
13 {% endfor %}
```

5

Step Through Your Template

```
1  {% for item in Items %}
2    //- {{ forloop.length }}
3    //- {{ item.Id }}
4
5    {% assign person = item | Attribute:'Author','Object' %}
6    {{ person.FullName }}
7    {% break %}
8
9    <p>
10     {{ item.Title }}
11     <small>By {{ person.FullName }}</small>
12   </p>
13 {% endfor %}
```

Ted Decker

Step Through Your Template

```
1  {% for item in Items %}
2    //- {{ forloop.length }}
3    //- {{ item.Id }}
4
5    {% assign person = item | Attribute:'Author','Object' %}
6    //- {{ person.FullName }}
7
8    <p>
9      {{ item.Title }}
10     <small>By {{ person.FullName }}</small>
11   </p>
12 {% endfor %}
```

Mea Animal Aperiam By Ted Decker

Don't forget the last step!

```
1   {% for item in Items %}
2     //- {{ forloop.length }}
3     //- {{ item.Id }}
4
5     {% assign person = item | Attribute:'Author','Object' %}
6     //- {{ person.FullName }}
7
8     <p>
9       {{ item.Title }}
10      <small>By {{ person.FullName }}</small>
11    </p>
12  {% endfor %}
```

Clean Up Your Debugging

```
1  {% for item in Items %}
2    {% assign person = item | Attribute:'Author','Object' %}
3    <p>
4      {{ item.Title }}
5      <small>By {{ person.FullName }}</small>
6    </p>
7  {% endfor %}
```

Cleaning up our debugging comments 🤩

Mea Animal Aperiam **By Ted Decker**

For the record...

```
1  <pre>{{ Items | First | Attribute:'Author' | ToJSON }}</pre>
2
3  <pre>{{ Items | First | Attribute:'Author','Object' | ToJSON }}</pre>
```

```
"Ted Decker"
```

```
{
  "Id": 5,
  "FirstName": "Theodore",
  "LastName": "Decker",
  "NickName": "Ted",
  "ConnectionStatusValueId": 35
  ...
}
```