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Better Problems with Python

Custom Grading for Fun and Profit

Presented by:

Colin Fredericks

"I'm being quoted to introduce something, but I have no idea what it is and certainly don't endorse it."

-- Randall Munroe

Prerequisites

- Have made an edX problem before.
- Will grudgingly edit XML.
- Understand the following line of code or can make a pretty good guess at it:

```
x = random.randint(1, 11)
```

- ...That's basically it, honestly.

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What kind of problem?

- 🎉 **Every kind!** 🎉 ,

But especially…
- **Numerical**
- Custom **Python-Evaluated**, of course
- The "Grading" part of
  Custom JavaScript Display and **Grading**

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Yeah but pedagogically...

- **Make cheating more difficult** by giving each learner a slightly different problem.
- **Test out problem variants** by having 2-3 different images or blocks of text for each learner.
- **Grade things you can't normally grade**, like lists of things or more sophisticated mathematics.
- **Update complex problems** more easily in the future by changing a variable and letting the problem do the calculations.

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Inserting your Script Tag

```
<problem>
<script type="loncapa/python">
<[CDATA[
n = random.randint(1, 11)
]]>
</script>
<p>Your number is $n.</p>
<other_tags useful="I'm sure" />
</problem>
```

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The tag itself

```
<problem>
<script type="loncapa/python">
<[CDATA[
n = random.randint(1, 11)
]]>
</script>
<p>Your number is $n.</p>
<other_tags useful="I'm sure" />
</problem>
```

Important.

Script Tag

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Why this CDATA thing?

```
<problem>
<script type="loncapa/python">
<[CDATA[
n = random.randint(1, 11)
]]>
</script>
<p>Your number is $n.</p>
<other_tags useful="I'm sure" />
</problem>
```

CDATA: "a section of element content that is marked for the parser to interpret purely as textual data, not as markup", or,

"Could you *not* make less-than signs ruin my code please?"

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The code

```
<problem>
<script type="loncapa/python">
<[CDATA[
n = random.randint(1, 11)
]]>
</script>
<p>Your number is $n.</p>
<other_tags useful="I'm sure" />
</problem>
```

Actual code.

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Using the variables

```
<problem>
<script type="loncapa/python">
<[CDATA[
n = random.randint(1, 11)
]]>
</script>
<p>Your number is $n.</p>
<other_tags useful="I'm sure" />
</problem>
```

Inserting your variable into the problem text

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Live demo and experimentation time.

If you're a Python beginner, start here:

If / Then / Else	Do logic things
str.strip()	Remove quotes, whitespace, etc.
random.randint()	Make random numbers
String formatting operator (%)	Make numbers look pretty

Thanks!

Colin Fredericks
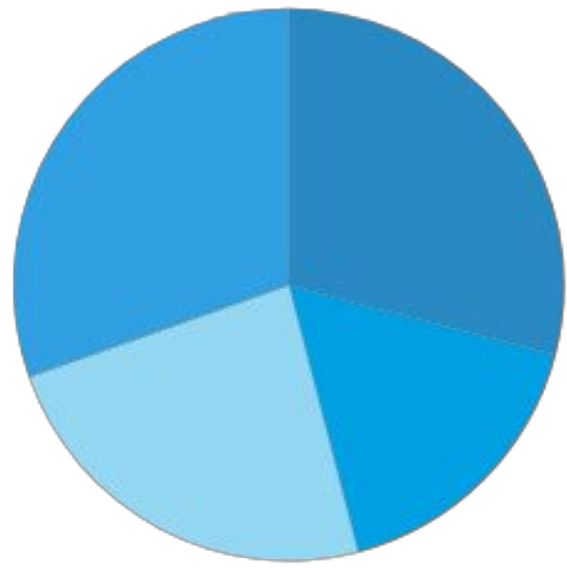Senior Project Lead, HarvardX
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quote

Author

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Category 1
Category 2
Category 3
Category 4

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	Column A	Column B	Column C	Column D
Row A				
Row B				
Row C				

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