

Examining patterns of content use with CourseGraph

Open edX Conference 2023

Jennifer Akana

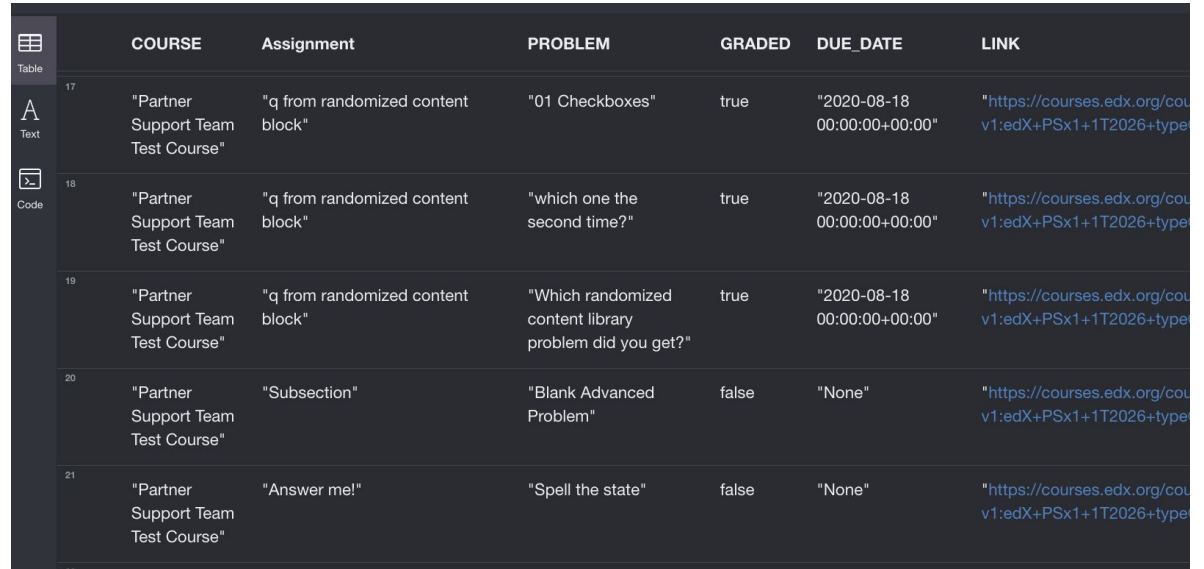
jaakana@2u.com

What's in these courses?



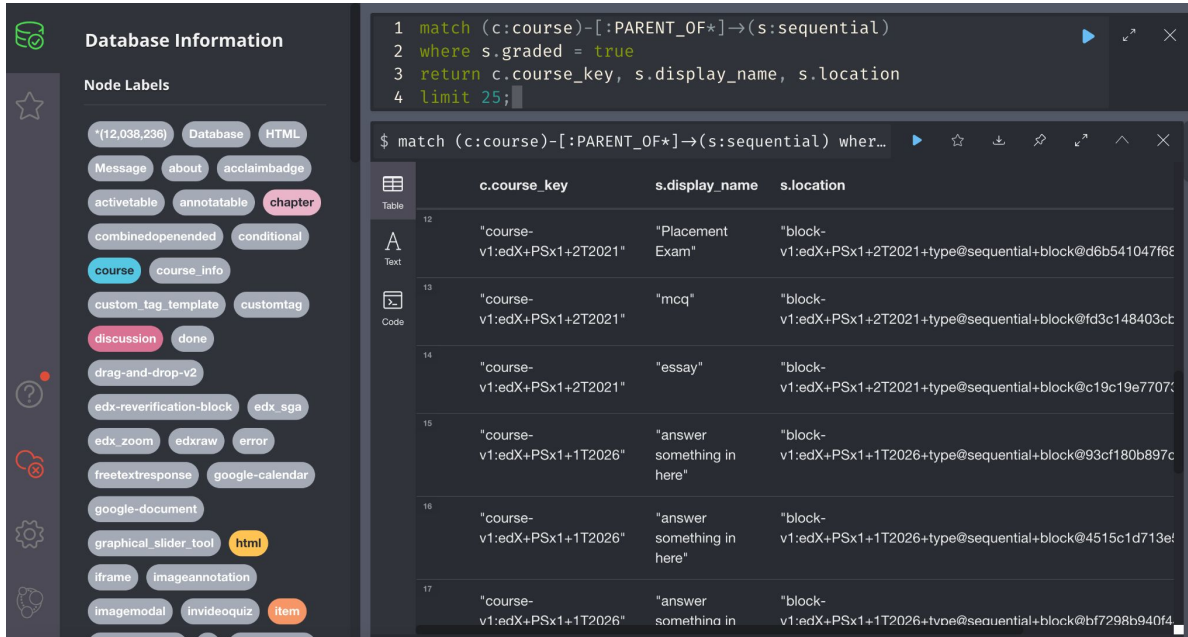
Scoping the issue with coursegraph query results

- Where is it?
- Is it graded?
- Is it timely?



	COURSE	Assignment	PROBLEM	GRADED	DUE_DATE	LINK
17	"Partner Support Team Test Course"	"q from randomized content block"	"01 Checkboxes"	true	"2020-08-18 00:00:00+00:00"	"https://courses.edx.org/cou/v1:edX+PSx1+1T2026+type"
18	"Partner Support Team Test Course"	"q from randomized content block"	"which one the second time?"	true	"2020-08-18 00:00:00+00:00"	"https://courses.edx.org/cou/v1:edX+PSx1+1T2026+type"
19	"Partner Support Team Test Course"	"q from randomized content block"	"Which randomized content library problem did you get?"	true	"2020-08-18 00:00:00+00:00"	"https://courses.edx.org/cou/v1:edX+PSx1+1T2026+type"
20	"Partner Support Team Test Course"	"Subsection"	"Blank Advanced Problem"	false	"None"	"https://courses.edx.org/cou/v1:edX+PSx1+1T2026+type"
21	"Partner Support Team Test Course"	"Answer me!"	"Spell the state"	false	"None"	"https://courses.edx.org/cou/v1:edX+PSx1+1T2026+type"

CourseGraph: course material in a graph database



The screenshot displays the CourseGraph interface. On the left, a sidebar titled "Database Information" lists various node labels such as "course", "discussion", and "item". The main area shows a Cypher query and its results.

```
1 match (c:course)-[:PARENT_OF*]-(s:sequential)
2 where s.graded = true
3 return c.course_key, s.display_name, s.location
4 limit 25;
```

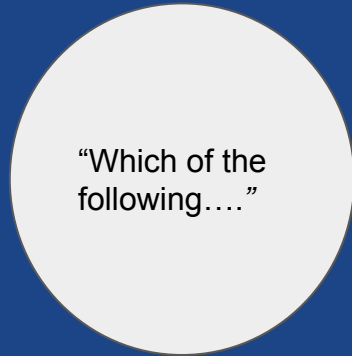
	c.course_key	s.display_name	s.location
12	"course-v1:edX+PSx1+2T2021"	"Placement Exam"	"block-v1:edX+PSx1+2T2021+type@sequential+block@d6b541047f6E"
13	"course-v1:edX+PSx1+2T2021"	"mcq"	"block-v1:edX+PSx1+2T2021+type@sequential+block@fd3c148403ct"
14	"course-v1:edX+PSx1+2T2021"	"essay"	"block-v1:edX+PSx1+2T2021+type@sequential+block@c19c19e7707K"
15	"course-v1:edX+PSx1+1T2026"	"answer something in here"	"block-v1:edX+PSx1+1T2026+type@sequential+block@93cf180b897c"
16	"course-v1:edX+PSx1+1T2026"	"answer something in here"	"block-v1:edX+PSx1+1T2026+type@sequential+block@4515c1d713eI"
17	"course-v1:edX+PSx1+1T2026"	"answer something in"	"block-v1:edX+PSx1+1T2026+tvoe@sequential+block@bf7298b940f4"

CourseGraph plugin for Tutor

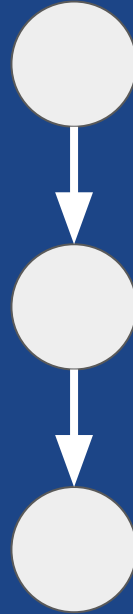


Open edX Slack: #coursegraph

Content



Structure



Question 1

0/1 point (ungraded)

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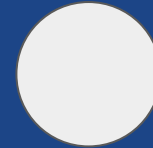
a correct answer

an incorrect answer

an incorrect answer

a correct answer

Submit



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Question 1

0/1 point (ungraded)

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a correct answer

an incorrect answer

an incorrect answer

a correct answer

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Page 1
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Question 1
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a correct answer

an incorrect answer

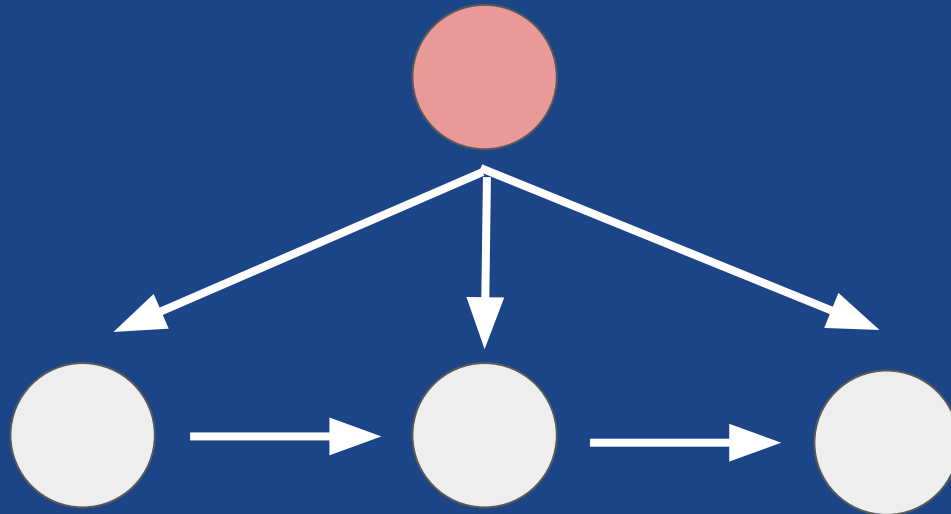
an incorrect answer

a correct answer

Submit

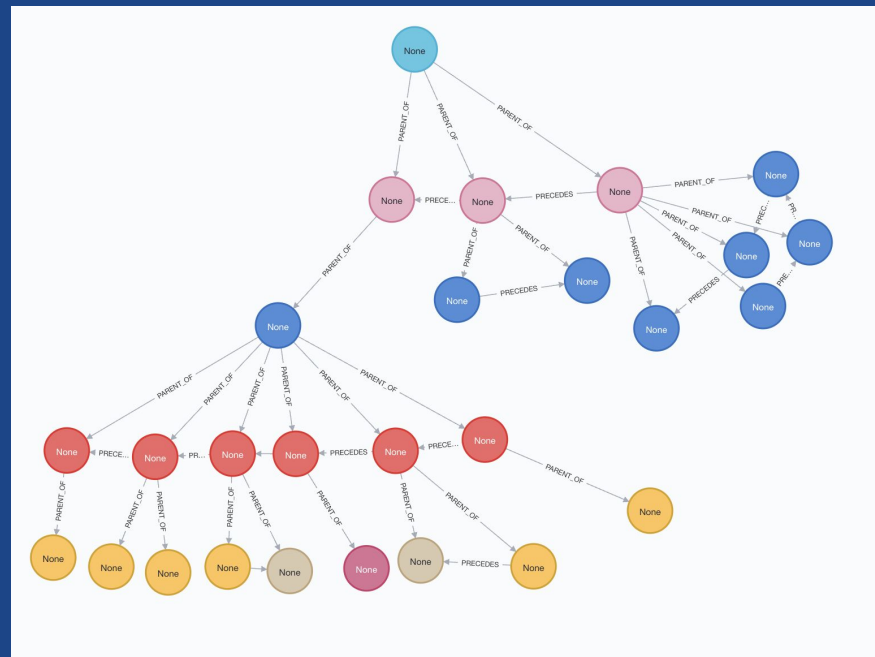
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Context from the course tree

The screenshot shows the edX Studio interface for a course. At the top, it says "edX Studio" and "edX DemoX.1 DemoX". Below that are navigation tabs for "Content", "Settings", and "Tools". The main heading is "Course Outline" with a "+ New Section" button. Below the heading, there are fields for "Start Date" (Aug 30, 2019 at 00:01 UTC), "Pacing Type" (Self-Paced), "Checklists" (7/9 completed), and "Course Highlight Emails" (Enable Now). The course outline is organized into sections: "Introduction", "Module 1: Experiencing Course Content", and "Module 2: Being Social". Under "Module 2: Being Social", there is a section for "Lesson 2: A Social Student" which contains a list of content items: "Being Social on edX", "Discussions", "Wiki", "Teams", "Social Media", and "End of Lesson". Each item has a set of icons for editing and deleting.



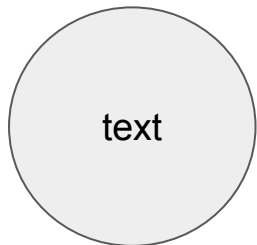
Open edX Slack: [#coursegraph](#)

Example: Content search



“Where does a course talk about the mobile experience?”

Example: Content Search



MATCH (text:html)

WHERE text.data CONTAINS "mobile"

RETURN text.display_name, left(text.data, 200), text.location

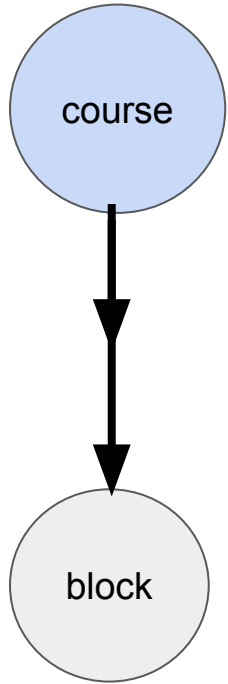
text.display_name	left(text.data,200)	text.location
"Your First Grade"	"<h3>Your First Grade</h3> <p>Congratulations on getting through your first module and your first homework assignment! You've officially received your first grade in this course "	"block-v1:edX+DemoX.1+2T2019+type@html+block@b5a909bcfec7479d93d590663d14a5a1"
"Exams in edX Courses"	"<h3>Exams</h3> <p>Most edX courses have graded quizzes or exams. When you view your <strong style='font-size: 16px; line-height: 1.6;'>Prog"	"block-v1:edX+DemoX.1+2T2019+type@html+block@443810a13bb443858faa02aaaf383024"
"edX Mobile App "	"<h3>edX Mobile App</h3> <p>At edX we are committed to providing as many ways to access our learning management system as possible. Learners who are new to our platform may not know that we have a"	"block-v1:edX+DemoX.1+2T2019+type@html+block@5ad6847bcb7d42c9b573f997520ed816"

Example: Structure Search



“Where is every course that uses my randomized library?”

Example: Structure Search



MATCH (course:course) -[:PARENT_OF*]-> (block:library_content)

WHERE

block.source_library_id = "library-v1:[ORG+NUM+RUN]"

RETURN

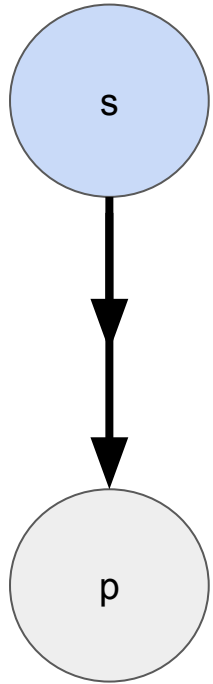
course.display_name, course.start,
block.display_name;

Example: Content and Structure



Where are the timed exams with really long exercises?

Example: Content and Structure



MATCH (subsection:sequential) -[:PARENT_OF*]-> (problem:problem)

WHERE

subsection.is_time_limited = true

AND

subsection.graded = true

AND

length(problem.data) >=5000 **RETURN**;

Finding particular patterns



Operations

- Find all LTI launch urls
- Find due date conflicts

UX investigation

- Find an example of text-video-text
- Find the longest lesson

Content use

- Find which components are in heavy use
- Find their common configurations

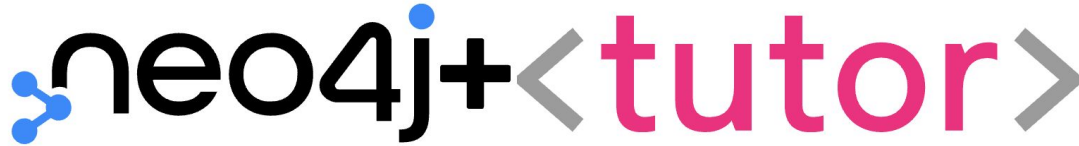
What's in these courses?





More

CourseGraph plugin for Tutor



1. <https://openedx.org/blog/announcing-coursegraph-a-new-tool-in-the-maple-release/>
2. <https://openedx.atlassian.net/wiki/spaces/COMM/pages/3273228388/Useful+CourseGraph+Queries>
3. <https://github.com/openedx/tutor-contrib-coursegraph>

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