ExGen

Team 11

1. What is ExGen

➔ **Procedurally generated exams**
Means you can practice as much or as little as you want

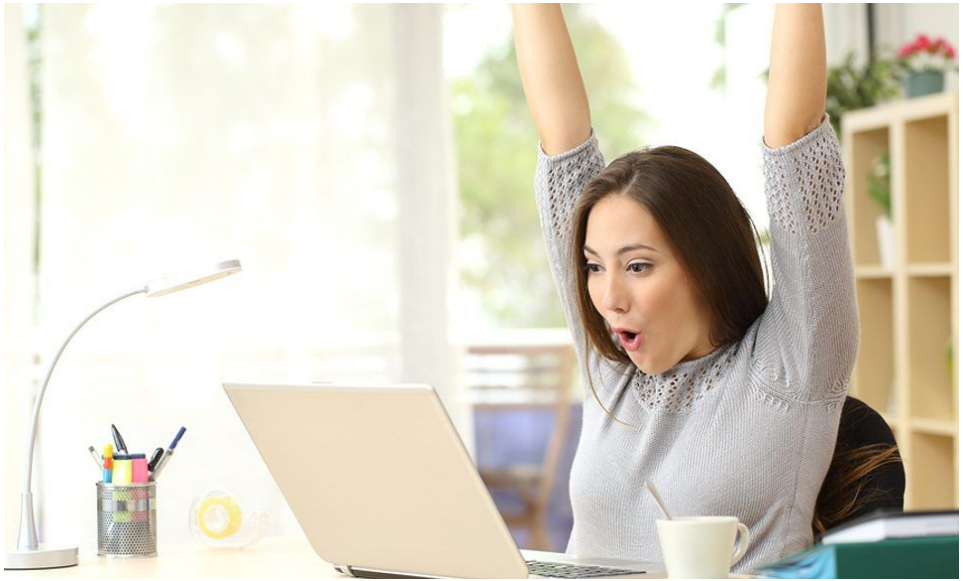
➔ **Simple**
As easy as any other question / answer website, except we **never** run out of questions.

➔ **For everyone**
Useful for professors, useful for students.

FRONTEND

Users

- **Students**
- **Course Reps**
- **Professor**
- **Admins**



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Security and Business rules

Admins

- 12 characters
- No words
- None of the top 5000 passwords
- Contains at least 1 special character
- Contains at least 1 number
- Contains at least 1 English letter

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Security and Business rules

Everyone else

- Be at least 8 characters long
- Not in the top 5000 passwords
- Not a single word
- Not a sequence
- Contains at least 1 special character
- Contains at least 1 number
- Contains at least one English letter

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Backup and recovery

- Locally on server
- Also backup to an overseas server.

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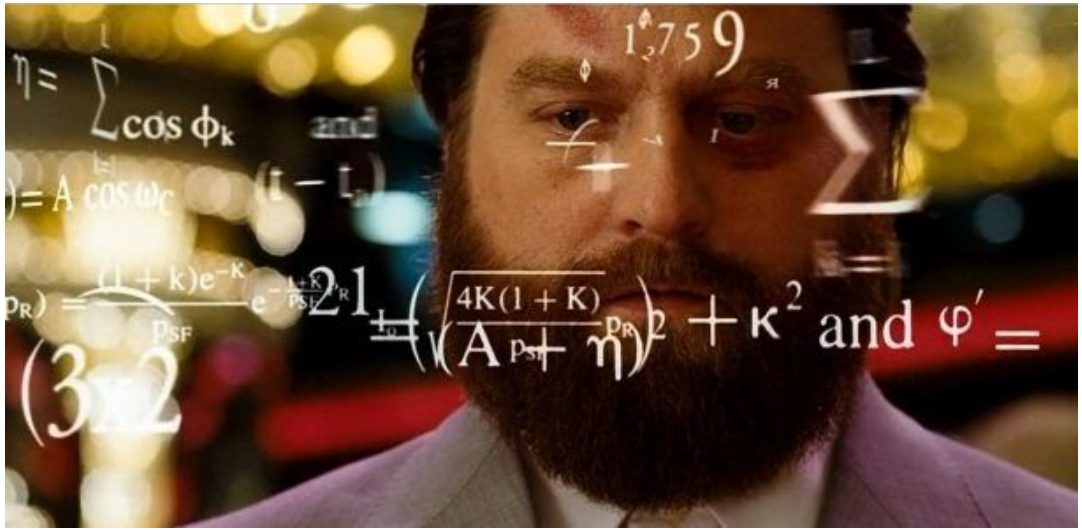
Competitors

- MathGenMaker



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Categories

Select The Question Categories You Want

☑ linear_equations

Go On To Select Questions

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Questions

Select The Questions You Want

Linear Equations

☐ Find the integer x intercept of a line in slope intercept form with nonzero slope.

☐ Find the integer x intercept of a line in slope intercept with nonzero fractional slope.

Go On To Generate Test

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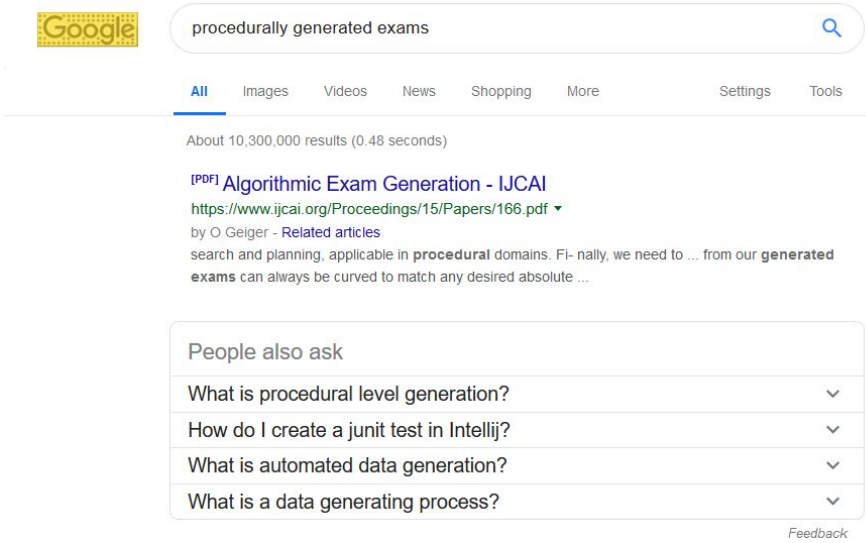
“{'problemStatement': 'Find the x intercept of $y = -5x + -25$.', 'correctAnswer': -5, 'correctAnswerIdx': 3, 'wrongAnswers': [-4, -4, -4, -4], 'points': 1, 'solution': [('y = -5x + -25', 'Find the x intercept.'), ('0 = -5x + -25', 'Set y to zero.'), ('0 - -25 = -5x + -25 - -25', 'Subtract b from both sides.'), ('25 = -5x', 'Simplify.'), ('25 / -5 = x', 'Divide both sides by m.'), ('-5', 'Simplify.')]} ”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procedurally generated exams
All Images Videos News Shopping More Settings Tools
About 10,300,000 results (0.48 seconds)
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search and planning, applicable in procedural domains. Fi- nally, we need to ... from our generated exams can always be curved to match any desired absolute ...
People also ask
What is procedural level generation?
How do I create a junit test in Intellij?
What is automated data generation?
What is a data generating process?
Feedback
Test data generation - Wikipedia
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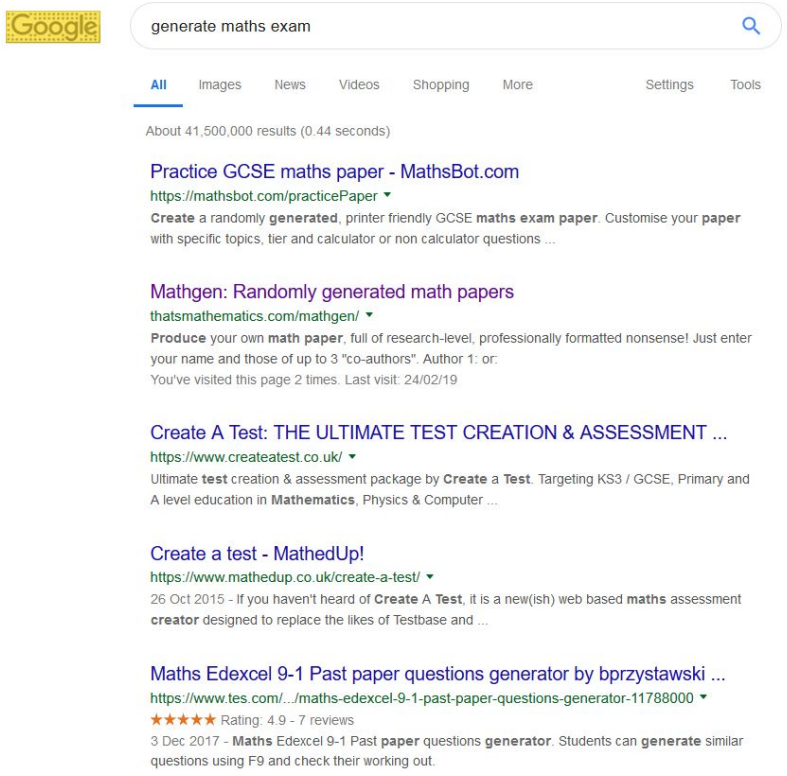
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26 Oct 2015 - If you haven't heard of Create A Test, it is a new(ish) web based maths assessment creator designed to replace the likes of Testbase and ...
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https://www.tes.com/.../maths-edexcel-9-1-past-paper-questions-generator-11788000
★★★★★ Rating: 4.9 - 7 reviews
3 Dec 2017 - Maths Edexcel 9-1 Past paper questions generator. Students can generate similar questions using F9 and check their working out.

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Mathgen

Randomly generated mathematics research papers!

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Produce your own math paper, full of research-level, professionally formatted nonsense! Just enter your name and those of up to 3 "co-authors".

Author 1: ◉ A. Lastname or: ○ generic name ○ famous name

Author 2: ◉ or: ○ generic name ○ famous name

Author 3: ◉ or: ○ generic name ○ famous name

Author 4: ◉ or: ○ generic name ○ famous name

Generate!

Donate Bitcoins: 1MaThGensManWqak5j6Nq8bDXEgCUaXEg1

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What we've done so far

This featured many changes. From our GitHub pull requests:

1. Allow for hidden constants. This allows the user to specify a number between {min = x} and {max = y}.
2. Refactoring the code to Object Oriented Design
3. Allow spaces in the hidden constants definition (bug fix).
4. Allow the user to enter any question they want, one of the largest features we shipped. Now the user can enter a question and the program will work no matter the question (as long as its maths / computer science).
5. Allow multi-character variables. Users can now do things like "What is firstNumber + lastNumber {min = 5, max = 25}"
6. Refactor the code to feature PEP8, the Python style guide.
7. Make constants optional in the program. So users do not have to enter min, max if they want to. These numbers are randomly select.

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What we've done so far

- Created a fully fledged design

Luke and I created and coded a design using Figma, an online design / storyboarding tool. Thanks to their efforts, the design of the website is finished. As you will see in the design presentation.

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What we've done so far

- Set up the server with all the software we need, and writing Monitor Bot and backup Bot.

Steffan, Geng and Brandon did this. We set the server up as described in the requirements document:

1. Ubuntu on Digitalocean
2. Cloudflare CDN
3. Apache web server
4. Mysql database
5. Wrote Monitor & Backup bot
6. Set up ZSH
7. Installing Python
8. Setting up PHP

.

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What we've done so far

- Designed and created the database

Claire created the database and designed the tables. Everything related to databases she has done. Some of the notable feats are:

1. Setting up the database
2. Creating tables
3. Entity Relationship Diagram
4. Logical Table
5. Transaction Matrix
6. Designing some transactions

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What we've done so far

According to our Gantt chart, GitHub issue resolution (on average it takes 4 days for an issue to be fixed) and all the work put in by our team, we are on a good trajectory to finishing this project

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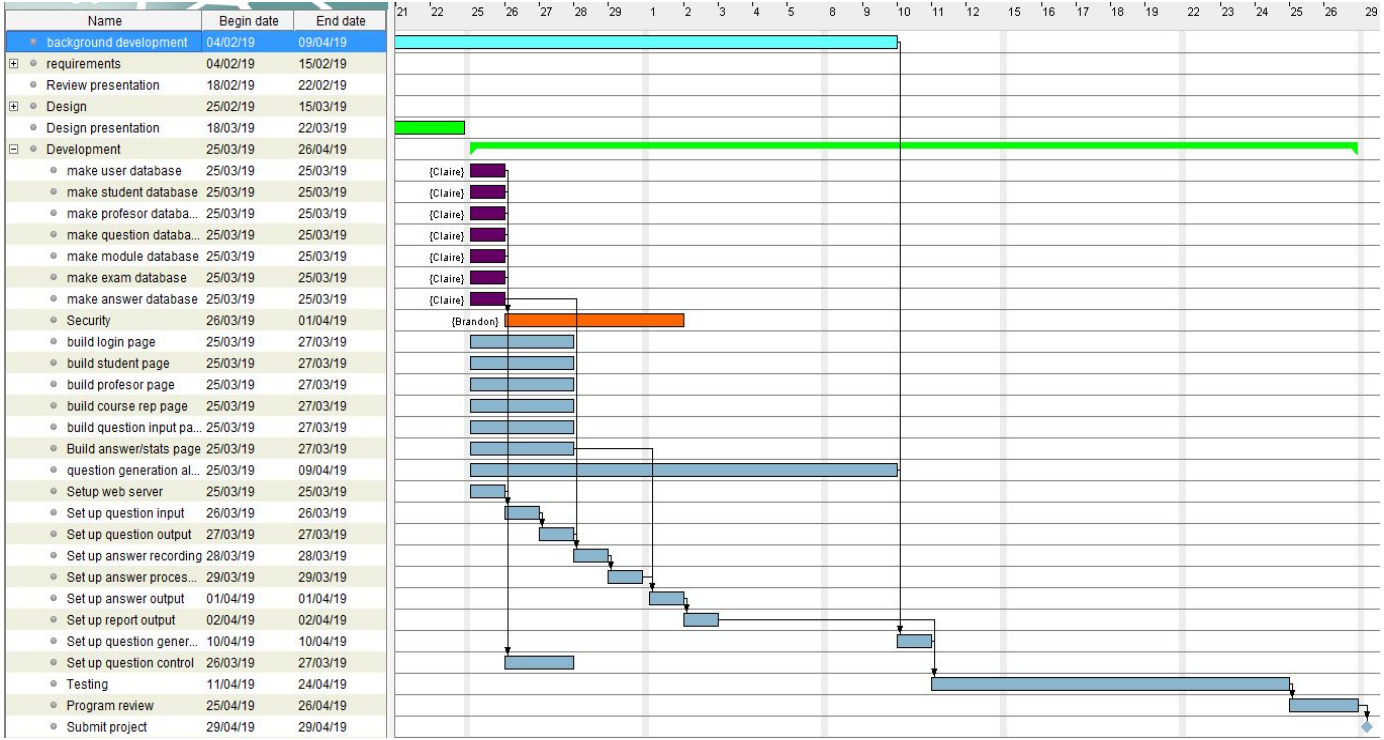
Gantt chart (what we are planning to do)



Name	Begin date	End date
background development	04/02/19	09/04/19
requirements	04/02/19	15/02/19
Review presentation	18/02/19	22/02/19
Design	25/02/19	15/03/19
Design presentation	18/03/19	22/03/19
Development	25/03/19	26/04/19
make user database	25/03/19	25/03/19
make student database	25/03/19	25/03/19
make profesor databa...	25/03/19	25/03/19
make question databa...	25/03/19	25/03/19
make module database	25/03/19	25/03/19
make exam database	25/03/19	25/03/19
make answer database	25/03/19	25/03/19
Security	26/03/19	01/04/19
build login page	25/03/19	27/03/19
build student page	25/03/19	27/03/19
build profesor page	25/03/19	27/03/19
build course rep page	25/03/19	27/03/19
build question input pa...	25/03/19	27/03/19
Build answer/stats page	25/03/19	27/03/19
question generation al...	25/03/19	09/04/19
Setup web server	25/03/19	25/03/19
Set up question input	26/03/19	26/03/19
Set up question output	27/03/19	27/03/19
Set up answer recording	28/03/19	28/03/19
Set up answer proces...	29/03/19	29/03/19
Set up answer output	01/04/19	01/04/19
Set up report output	02/04/19	02/04/19
Set up question gener...	10/04/19	10/04/19
Set up question control	26/03/19	27/03/19
Testing	11/04/19	24/04/19
Program review	25/04/19	26/04/19
Submit project	29/04/19	29/04/19

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Risk Assessment

The risks for our system can be broadly categorised into 2 main groups:

Risks for the system:

- Server failure (low)
- Server breach (low)
- Misuse/cheating by user (low)

Risks for the project:

- Running out of resources (low)
- Server failure (low)
- Meeting deadlines (low)

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INTERFACE DEMO

Evaluation Design

When evaluating our design we are focusing on satisfying 6 specific factors.

CLARITY

CONSCIOUSNESS

DETECTABILITY

CONSISTENCY

COMPREHENSIBILITY

LEGIBILITY

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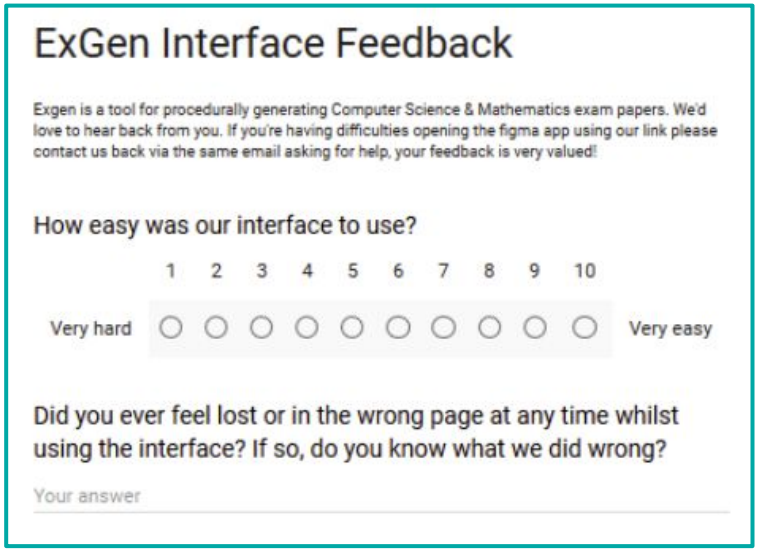
How did we evaluate?

We provided our Figma build to a test group consisting of a wide spread of ages with varying technological skills. They were then asked to complete a survey, providing feedback on our interface. With the questions in the survey aiming to provide direct feedback relating to the 6 test factors.



ExGen Interface Feedback

Exgen is a tool for procedurally generating Computer Science & Mathematics exam papers. We'd love to hear back from you. If you're having difficulties opening the figma app using our link please contact us back via the same email asking for help, your feedback is very valued!

How easy was our interface to use?

	1	2	3	4	5	6	7	8	9	10	
Very hard	○	○	○	○	○	○	○	○	○	○	Very easy

Did you ever feel lost or in the wrong page at any time whilst using the interface? If so, do you know what we did wrong?

Your answer

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Findings of our survey

Positives

+ Accessible
+ No one felt lost within our system
+ Information easy to find
+ Easy to use
+ Technological experience not necessary

Constructive Criticism

- Lacks a little originality in terms of the interface design (time constraints)

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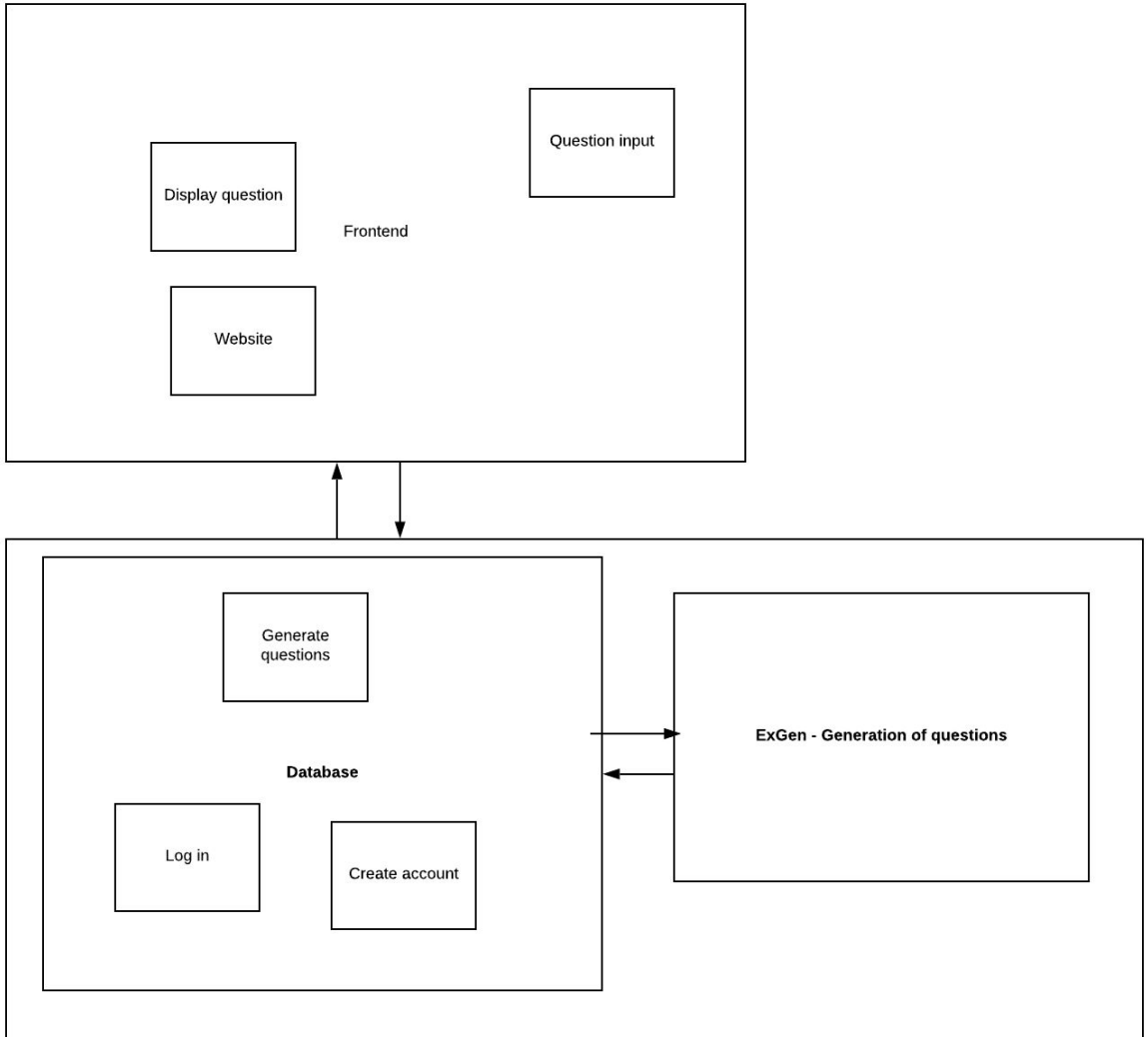
Subsystem Design



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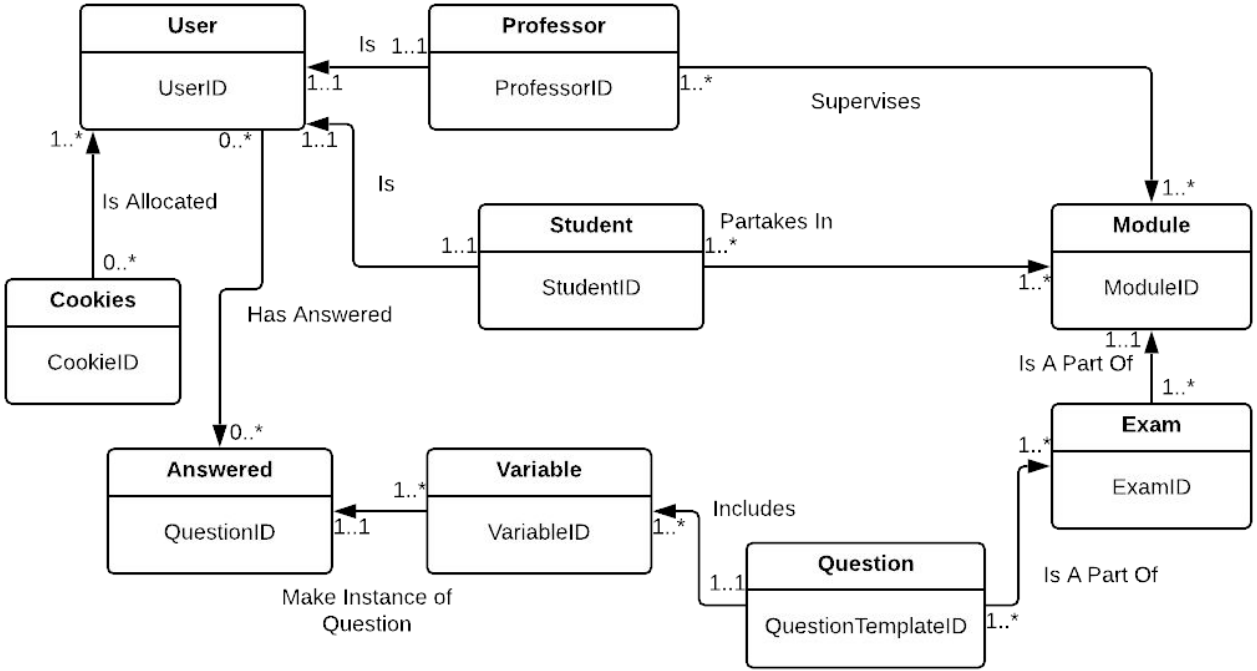
USE-CASE DIAGRAM

Entity-relationship diagram



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Logical table structure

User(UserID, UserName, Hash, Salt, Type) **Primary Key** UserID	**Cookies**(CookieID, UserID, ExpiryDate) **Primary Key** CookieID **Foreign Key** UserID **References** User(UserID)
Student(StudentID, UserID) **Primary Key** StudentID **Foreign Key** UserID	**Professor**(ProfessorID, ProfessorName, ProfessorDescription, UserID) **Primary Key** ProfessorID **Foreign Key** UserID **References** User(UserID)
Module(ModuleID, ModuleName, ModuleDescription, ModuleCode) **Primary Key** ModuleID	**Exam**(ExamID, ModuleID, Title, Description, Enabled?) **Primary Key** ExamID **Foreign Key** ModuleID **References** Module(ModuleID)

StudentModule(StudentID, ModuleID) **Foreign Key** StudentID **References** Student(StudentID) **Foreign Key** ModuleID **References** Module(ModuleID)	**ProfessorModule**(ProfessorID, ModuleID, HeadProfessor) **Foreign Key** ProfessorID **References** Professor(ProfessorID) **Foreign Key** ModuleID **References** Module(ModuleID)
ExamQuestion(ExamID, QuestionID) **Foreign Key** ExamID **References** Exam(ExamID) **Foreign Key** QuestionID **References** Answered(QuestionID)	**VariableQuestion**(VariableID, QuestionID, QuestionTemplateID) **Foreign Key** VariableID **References** Variable(VariableID) **Foreign Key** QuestionID **References** Answered(QuestionID) **Foreign Key** QuestionTemplateID **References** Question(QuestionTemplateID)

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Transaction matrix

a) Creation of a student account
b) Creation of new questions, once the pre rendered ones have been exhausted by a student
c) A student deletes their account
d) A student completes a question
e) A student requests their own statistics for a module
f) A student queries for a new exam question to complete
g) A Course Representative requests an overview of the statistics of an exam
h) A professor adds new questions to an exam

Transaction/ Table	(a)				(b)				(c)				(d)				(e)				(f)				(g)				(h)			
	I	R	U	D	I	R	U	D	I	R	U	D	I	R	U	D	I	R	U	D	I	R	U	D	I	R	U	D	I	R	U	D
User	X					X						X		X																		
Cookie	X											X																				
Professor																													X			
ProfessorModule																													X			
Student	X											X						X				X				X						
StudentModule																		X				X				X						
Module																		X				X				X				X		
Exam																		X				X				X				X		
ExamQuestion																		X				X				X				X		
Question						X												X				X				X			X			
VariableQuestion						X												X				X				X						
Variable					X																X											
Answered						X						X	X					X								X						

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Sequence Diagrams

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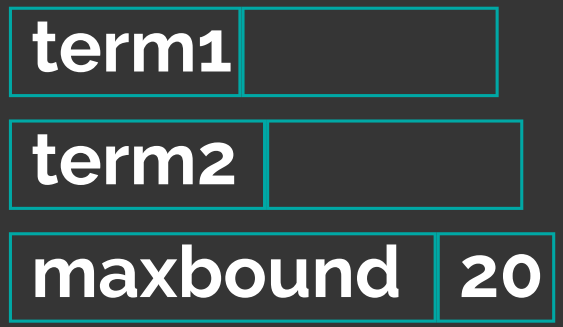
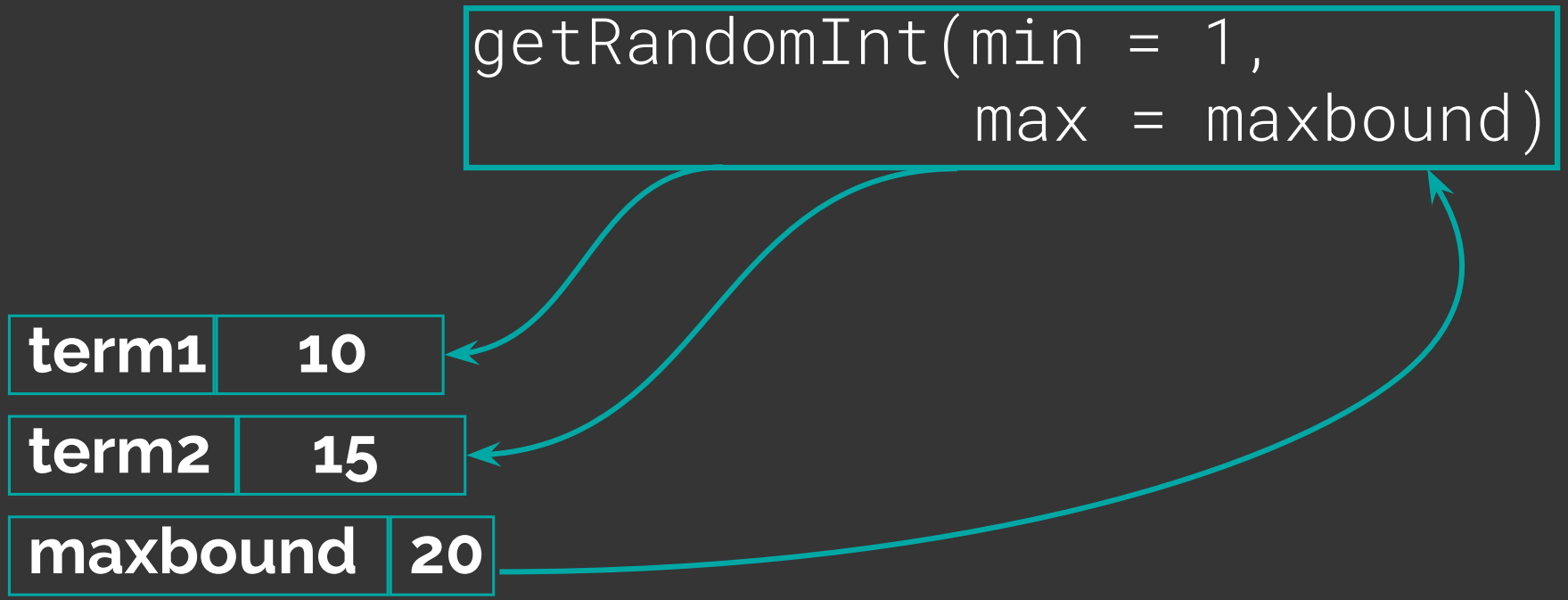
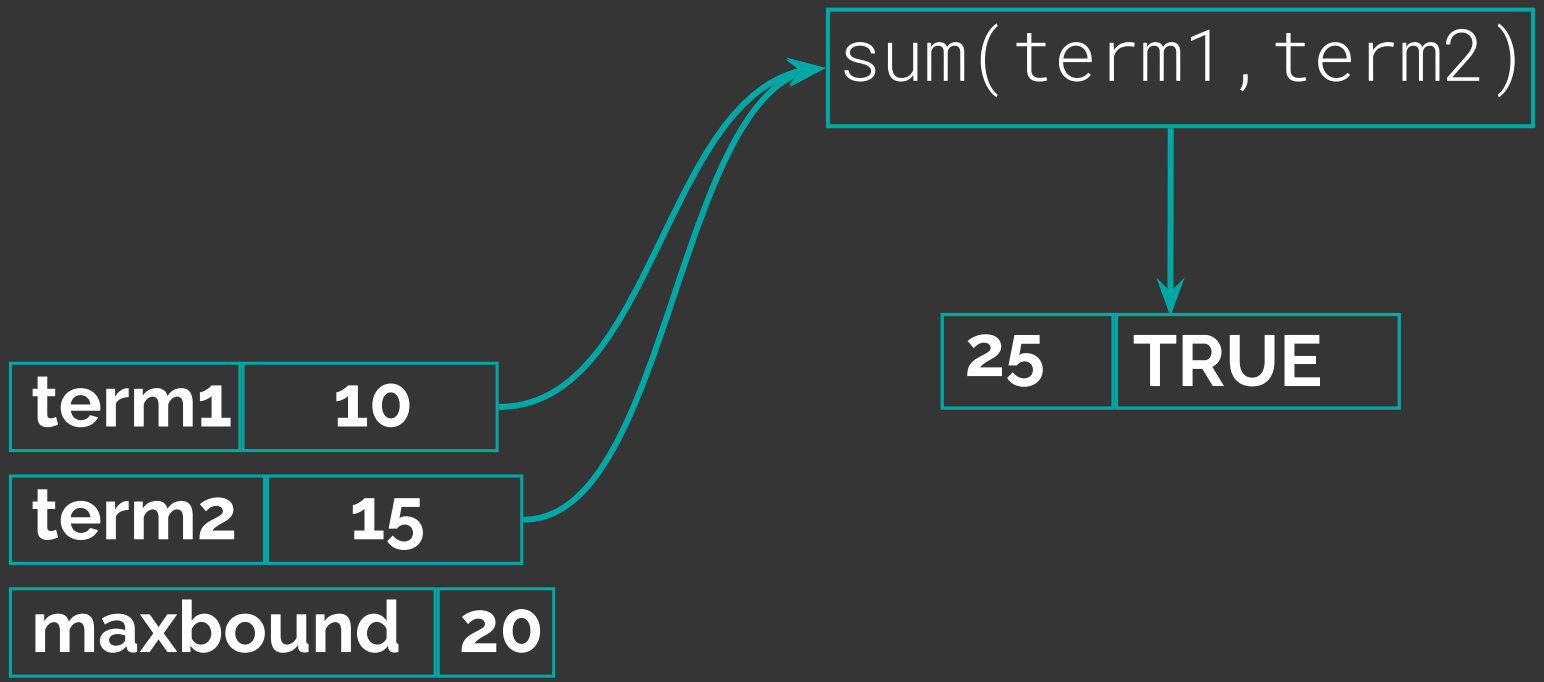
BACKEND

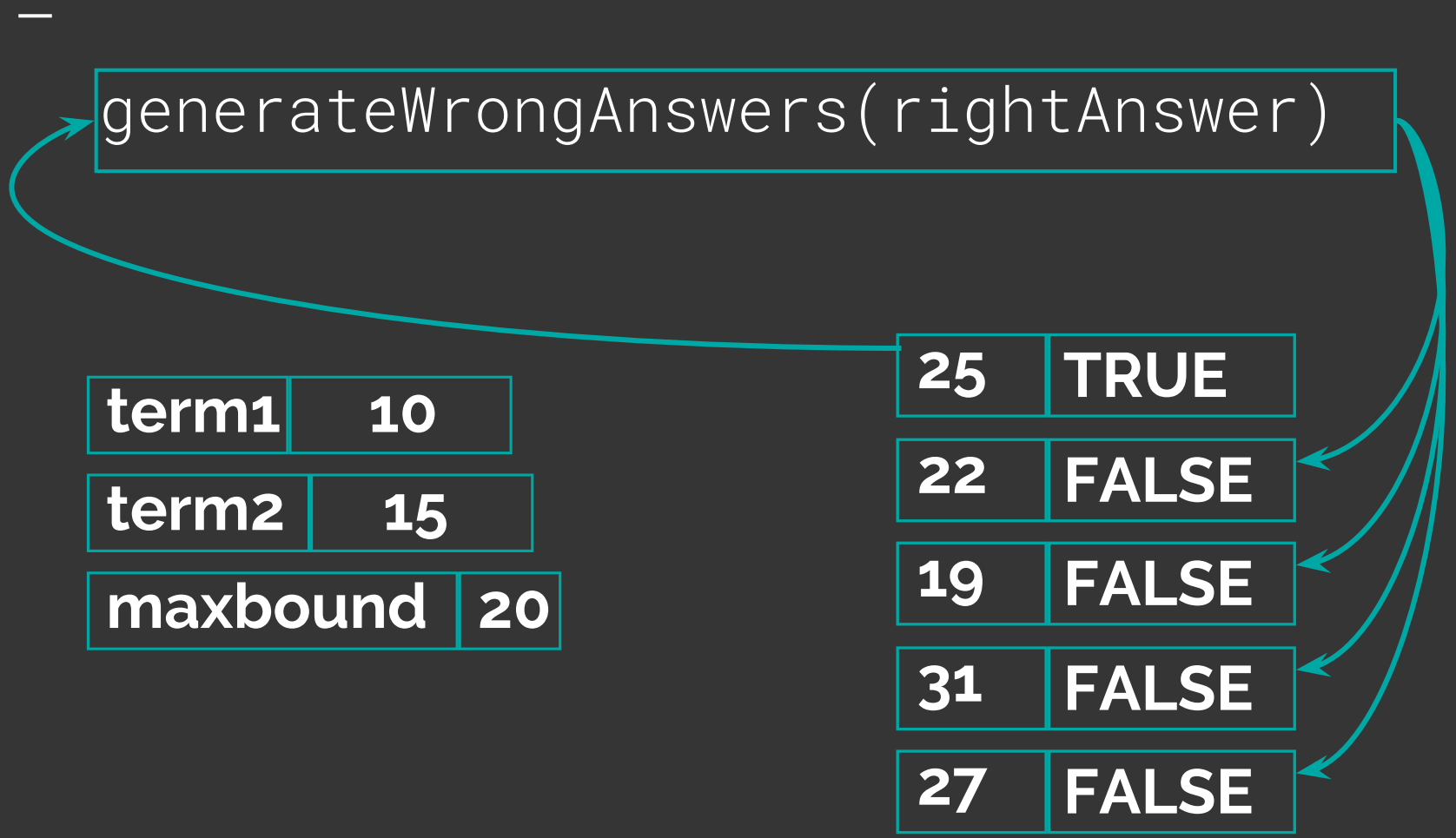

variable
What is $term1 + $term2 equal to? {maxbound = 20}
variable
constant

What is $term1 + $term2 equal to? {maxbound = 20}

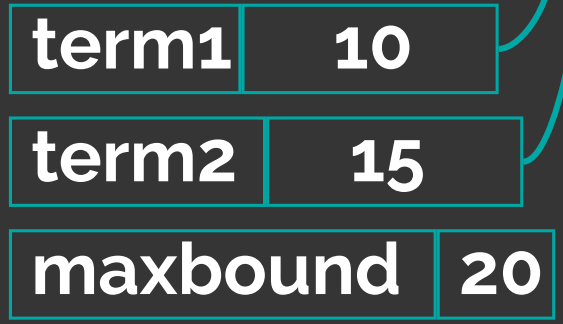



getRandomInt(min = 1,
max = maxbound)
term1
10
term2
15
maxbound
20


sum(term1,term2)
25
TRUE
term1
10
term2
15
maxbound
20


generateWrongAnswers(rightAnswer)
term1 10
term2 15
maxbound 20
25 TRUE
22 FALSE
19 FALSE
31 FALSE
27 FALSE

What is $term1 + $term2 equal to? {maxbound = 20}



25	TRUE
22	FALSE
19	FALSE
31	FALSE
27	FALSE

What is 10 + 15 equal to?

What is 10 + 15 equal to?

a) 25

b) 22

c) 19

d) 31

e) 27