Design Review 2: DigiTool Inc.

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Project: Digital Logic Self-Study Toolkit
Project Sponsor: Xi Zhou
**Team Faculty Mentor: Fabio Santos**

Big Picture

- Intro to Digital Logic is a foundational course for EE majors

- Large number of students take the course every year
  - Estimated 75 students per semester

- Course introduces many complicated topics

- It costs money to hire teaching assistants and tutors

Project Sponsor: Xi Zhou

- Ph.D. Material Science & Engineering
  - Norfolk State University

- Assistant Professor of Practice

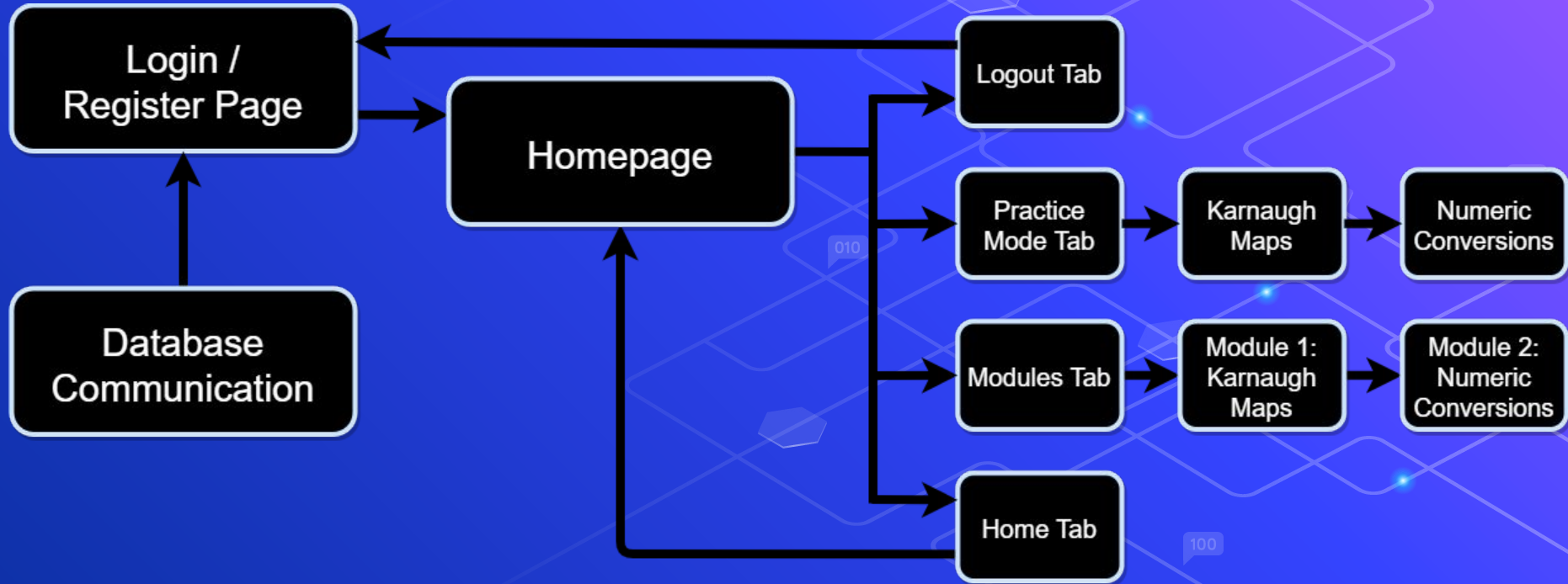- Teaches Intro to Digital Logic course
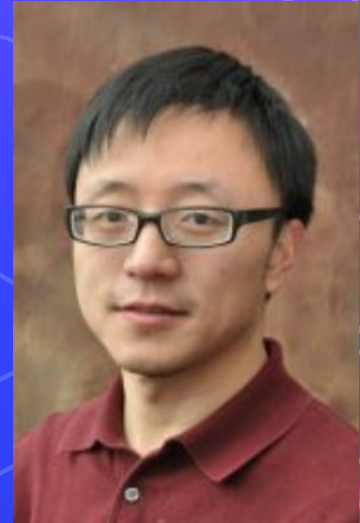
Problem Statement

- Students might have difficulty learning these complex topics

- They might not have the time to meet with their professor

- They have to devote time to other work

- Previous tool being used no longer functions

Solution Overview

Solution Overview Cont.

Competing product

SUM of PRODUCTS

Feedback

Email

Map

	$\overline{C}$	C
$\overline{A}.\overline{B}$	1	1
$\overline{A}.B$	0	0
$A.B$	0	0
$A.\overline{B}$	1	0

Map Layout

	$\overline{C}$	C
$\overline{A}.\overline{B}$	0	1
$\overline{A}.B$	2	3
$A.B$	6	7
$A.\overline{B}$	4	5

Groups

(0,1)	$\overline{A}.\overline{B}$
(0,4)	$\overline{B}.\overline{C}$

$y = A'B' + B'C'$

Our product

Home   Modules   Practice Mode   Log Out

Question Three: Enter the equation based off of the KMap.

Truth Table

A	B	C	Y
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

K-Map

A\B C

	00	01	11	10
0	1	1	1	1
1	1	1	0	0

Submit   Hint   Reset

Y =

Attempts left: 2   Star Score: 2/3

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Implementation Overview

Highly Reactive Web Application

Helps students practice classroom content

Series of Interactive activities

Secure database

Increase student proficency rates

Implementation Overview
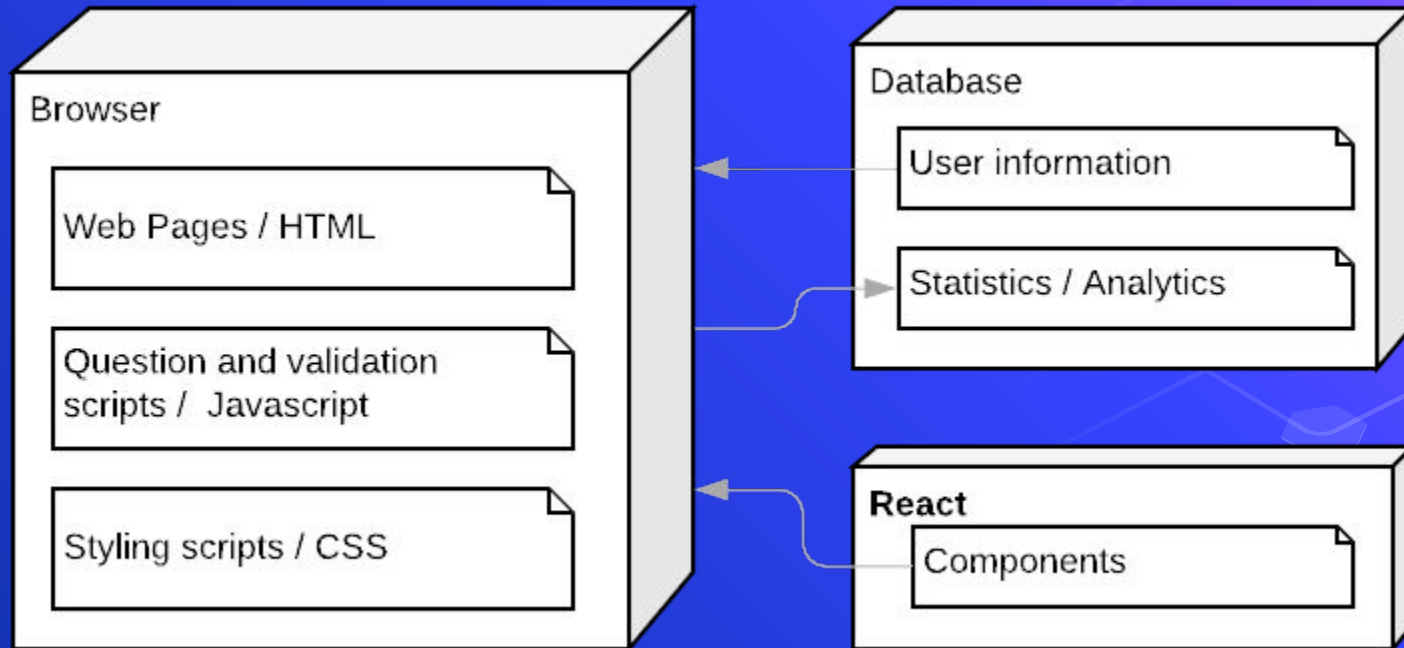
Architecture Overview
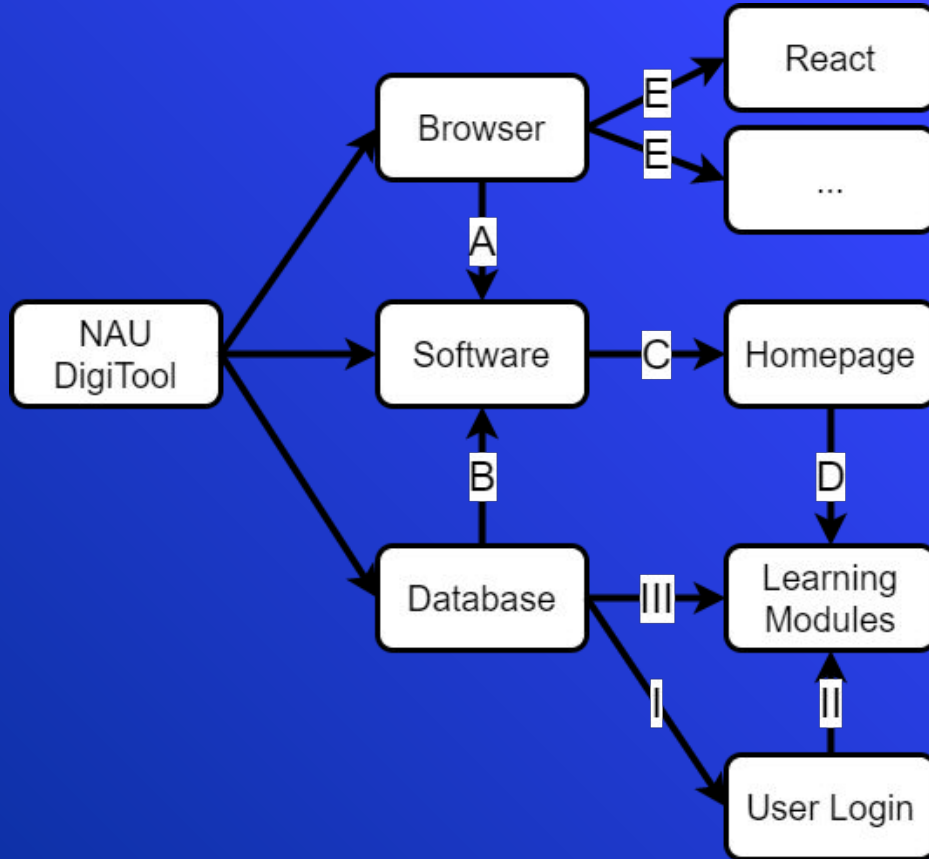
The code is mainly written in JavaScript and is presented in the form of a web page, which is convenient to use in various situations.

Our architecture style is layered pattern.

Challenge 1: K-maps

2000 Lines of code and growing fast

Solution:

Multiple validation and logic checking steps

Challenge 2: Database communication

JS ✖➤ SQL

Javascript has no direct way to talk to a SQL based database

Solution:

TBD: Current best option is using a different language like php, or switching database types

Schedule

#	Task Name	Duration	Primary Assignee	January				February				March				April			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Node and React setup	3 Weeks																	
2	Login	1 1/2 Weeks																	
3	Design	1 Week	Miguel																
4	Testing	3 Days	Spencer																
5	K-Map module - 3 and 4 variable (possibly 5)	11 Weeks																	
6	Translating truth table	6 Weeks	Tray																
7	Grouping	6 Weeks	Tray																
8	Equations for grouping	6 Weeks	Tray																
9	Testing	1 1/2 Weeks	Spencer																
10	Number Conversions	4 Weeks																	
11	Binary	3 Weeks	Langqing																
12	Hex	3 Weeks	Miguel																
13	Octal	3 Weeks	Spencer																
14	Testing	1 Week	Spencer																
15	Statistic tracking	4 Weeks																	
16	Module one	2 Weeks	Tray																
17	Module two	2 Weeks	Langqing																
18	Testing	1 Week	Langqing																
19	Product Documentation	3 Weeks	Everyone																
20	Potential additional module	4 Weeks																	
21	Design	3 Weeks																	
22	Testing	1 Week																	
23	Documentation	1 Week																	

Conclusion

- Main goal: Help students with various classroom topics

- Our envisioned solution is to create an easy to use and reliable Web Application

- Future development

    - Module completion
    - Tracking system