Team Zurg Design Project

Team Members:

Brock Matzenbacher, Joshua Haupt, and Mitchel Zurliene

Overview

- Client: College Board
- Computer Science AP course - web application
  - Thinking Practices
  - Big Ideas
  - Interactive

Contextual Inquiry

User Preferences

- Quiz
  - Multiple choice questions
  - "Instantaneous" feedback
- Navigation
  - Data preservation
  - Breadcrumbs
- Interaction
  - Examples

Content

- Test
  - Realistic questions
- Examples
- Interaction

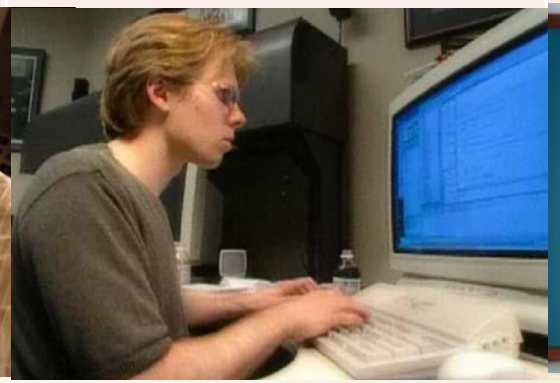
Event	Note	Marker Type	Score	Task	Time	Observer
Task Started				Introduction	0:00:05	Matzenbacher, Brock
Task Stopped				Introduction	0:00:16	Matzenbacher, Brock
Task Started				Technical Ability	0:00:17	Matzenbacher, Brock
Marker	Laptop and Cellphone	Q-Quote/comment		Technical Ability	0:00:40	Matzenb
Marker	User seemed confused about question	(undefined)		Technical Ability		
Marker	User utilized algorithmic approach	Q-Quote/comment		Technical Ability		
Marker	User needed some probing to get more information	(undefined)		Technic		
Task Stopped				Technical Ability	0:02:49	Matzenbacher, Brock
Task Started				Useability	0:02:53	Matzenbacher, Brock
Marker	user seems well versed in web browsing, majority from laptop	Q-Quote/comment				
Marker	Bookmarks, multiple tabs	Q-Quote/comment		Useability	0:05:14	Matzenb
Task Stopped				Useability	0:05:33	Matzenbacher, Brock
Task Started				Preferences	0:05:34	Matzenbacher, Brock
Task Stopped				Preferences	0:06:14	Matzenbacher, Brock
Task Started				Student standpoint	0:06:15	Matzenbacher, Brock
Marker	user assumes that students are thinking ahead	(undefined)		Student standpo		
Marker	computer science is a broad topic, consider probing deeper	Q-Quote/comment				
Marker	User likes the amount of design that went into the websites.	O-Observation				
Marker	User prompted to clarify the response	P-Participant prompted		Student standpo		
Marker	thinking ahead, persona: tidy, detail oriented	Q-Quote/comment		Student standpo		
Marker	Multiple choice questions are preferred	Q-Quote/comment		Student standpoint		
Marker	Reason for choice seems related to a remembering tactic.	O-Observation				
Marker	Believe the user is hinting at a metaphor	O-Observation		Student standpo		
Marker	Consider reference links to applied knowledge that must be comfortable with			Q-Quote		
Task Stopped				Student standpoint	0:15:34	Matzenbacher, Brock
Task Started				Teacher standpoint	0:15:36	Matzenbacher, Brock
Marker	Relate to the usefulness of reality.	O-Observation		Teacher standpoint		
Marker	This seems like a useful resource for interview subjects as well, looking for a job in					
Marker	Request for question variety	O-Observation		Teacher standpoint	0:19:39	
Marker	Ask about a portal service	Q-Quote/comment		Teacher standpoint	0:21:30	
Marker	User monitoring, Question randomization.	O-Observation		Teacher standpo		
Marker	Users abstraction, you dont have to how it can kill you for it to kill you.|			O-Obser		
Task Stopped				Teacher standpoint	0:25:36	Matzenbacher, Brock
Task Started				conclusion	0:25:38	Matzenbacher, Brock
Task Stopped				conclusion	0:25:48	Matzenbacher, Brock

Contextual Inquiry

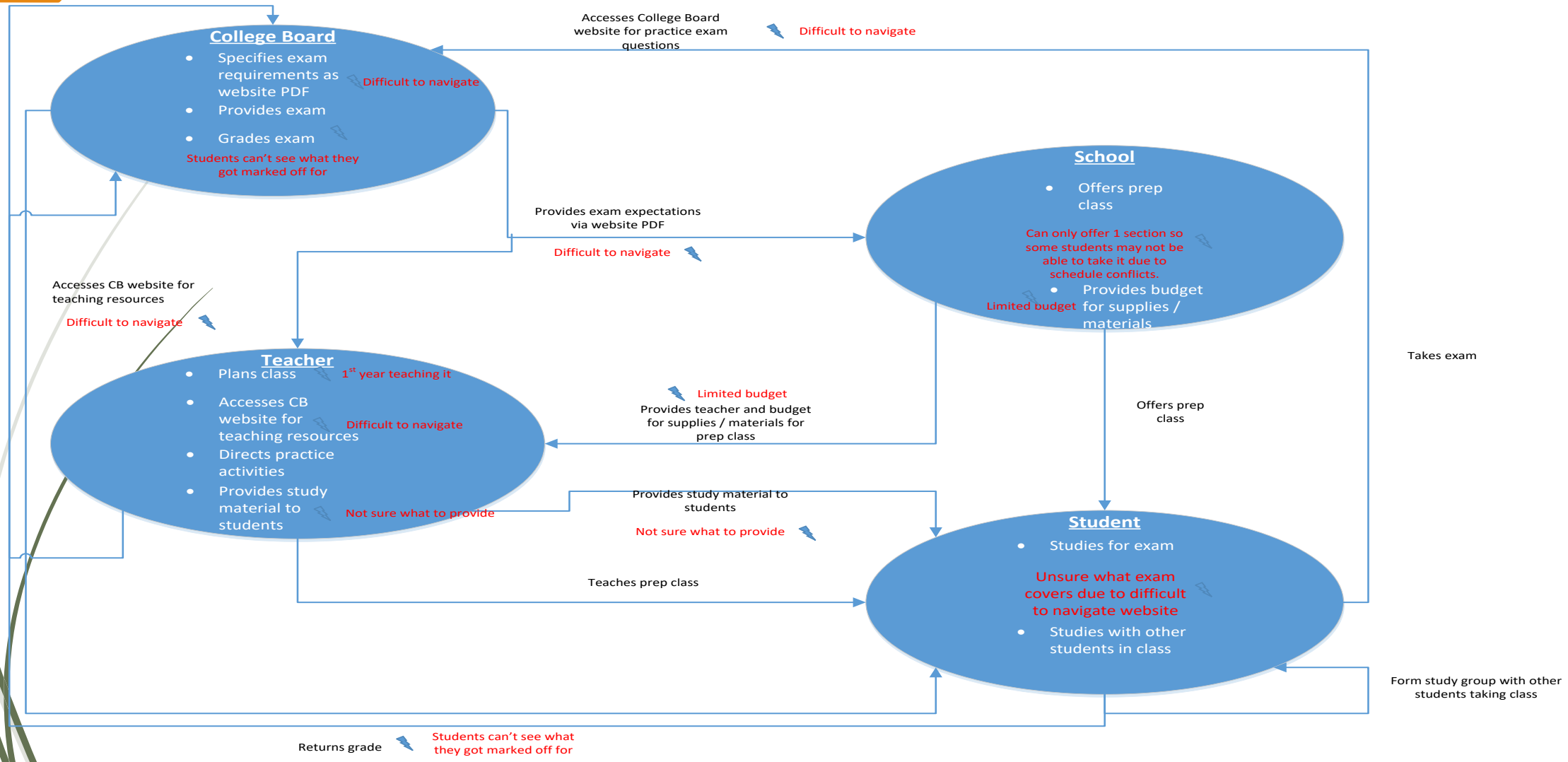
Team Zurg
Team Member: Brock Matzenbacher

Personas

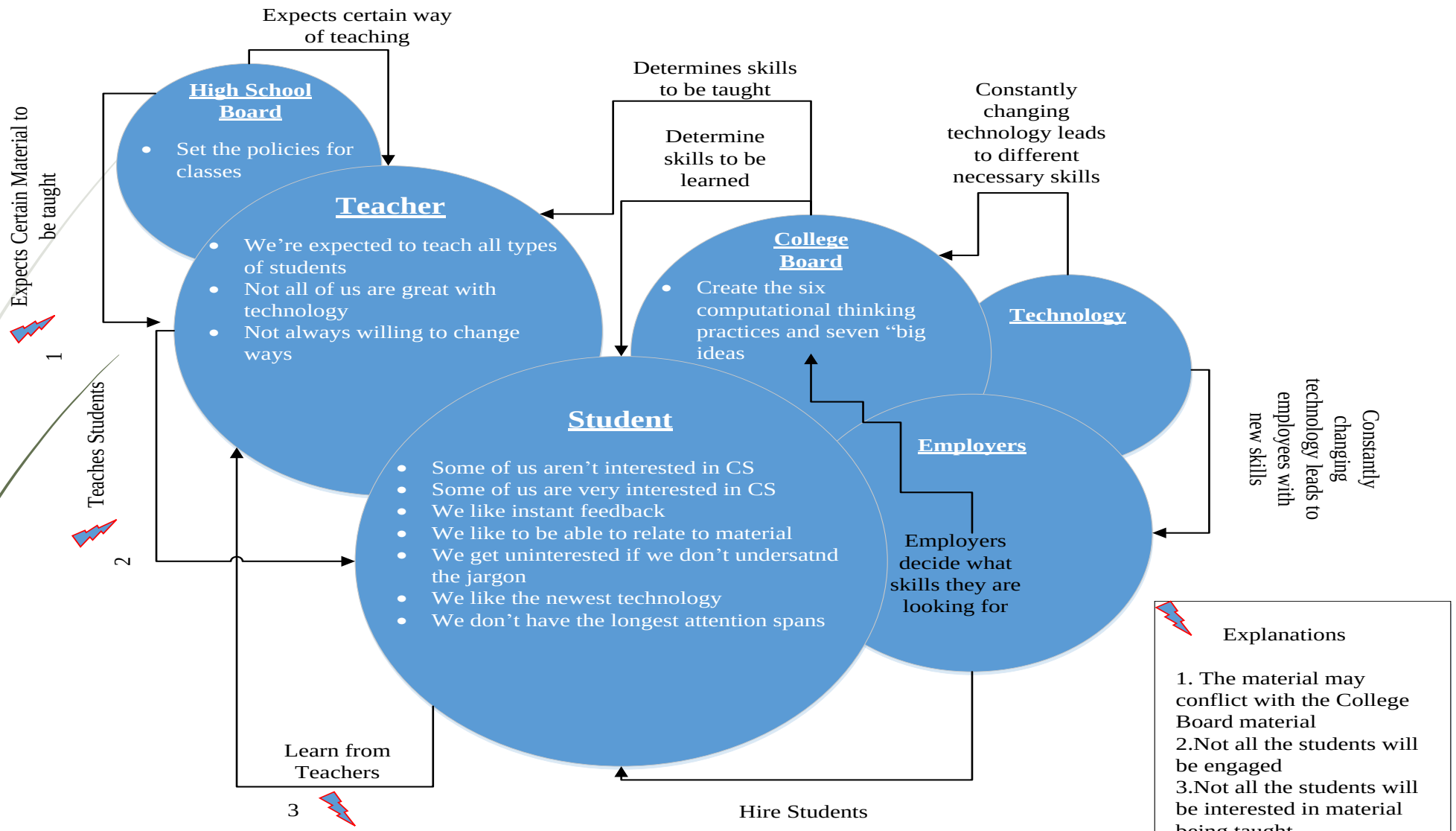
Who	Danny Banks	Bill Stanzas	Barry Whayer
What	Ex militant	C.S. Enthusiast	Teacher
Why	Daughter is interested, Parents are usually the ones who search.	Student that knows the jargon. Students Use the application	Teachers use the application



Work Model: Flow Model



Work Model: Cultural Model



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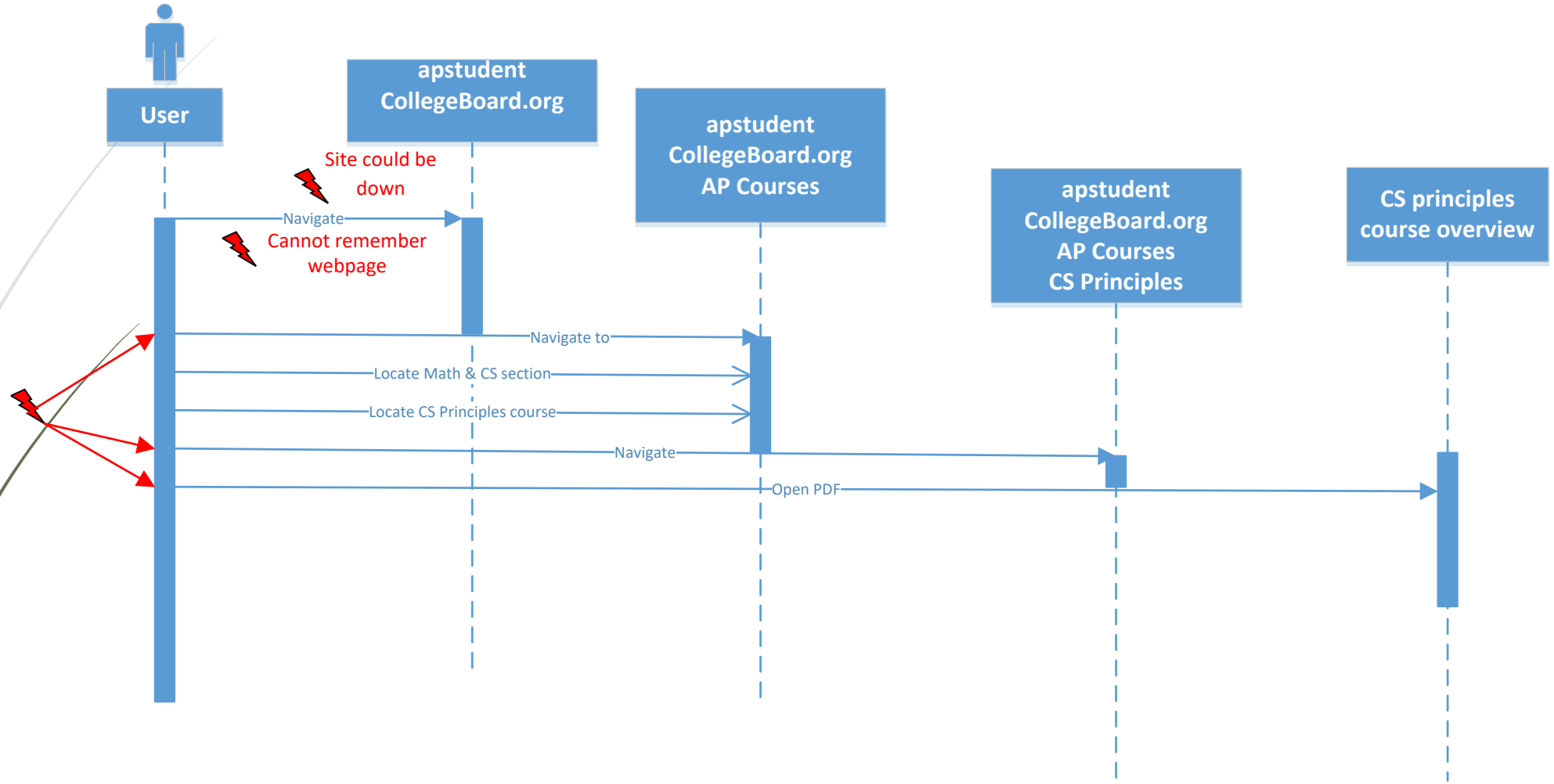
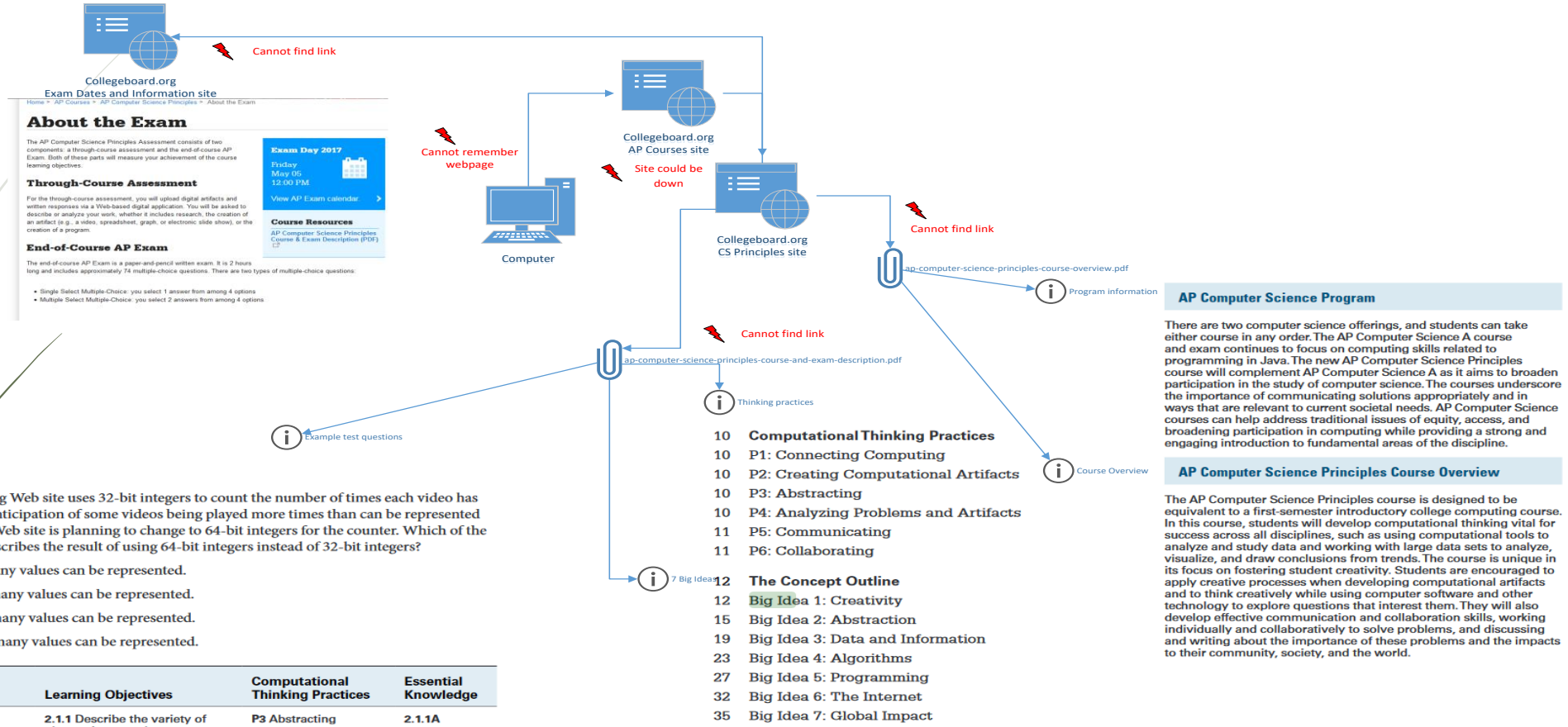
Team Member: Mitchel Zurliene

Work Model: Sequence Model



Work Model: Artifact Model



1. A video-streaming Web site uses 32-bit integers to count the number of times each video has been played. In anticipation of some videos being played more times than can be represented with 32 bits, the Web site is planning to change to 64-bit integers for the counter. Which of the following best describes the result of using 64-bit integers instead of 32-bit integers?

   (A) 2 times as many values can be represented.

   (B) 32 times as many values can be represented.

   (C) 2^{32} times as many values can be represented.

   (D) 32^2 times as many values can be represented.

Enduring Understandings	Learning Objectives	Computational Thinking Practices	Essential Knowledge
2.1 A variety of abstractions built upon binary sequences can be used to represent all digital data.	2.1.1 Describe the variety of abstractions used to represent data. [P3]	P3 Abstracting	2.1.1A 2.1.1B 2.1.1E

2. A programmer completes the user manual for a video game she has developed and realizes she has reversed the roles of goats and sheep throughout the text. Consider the programmer's goal of changing all occurrences of "goats" to "sheep" and all occurrences of "sheep" to "goats." The programmer will use the fact that the word "foxes" does not appear anywhere in the original text.

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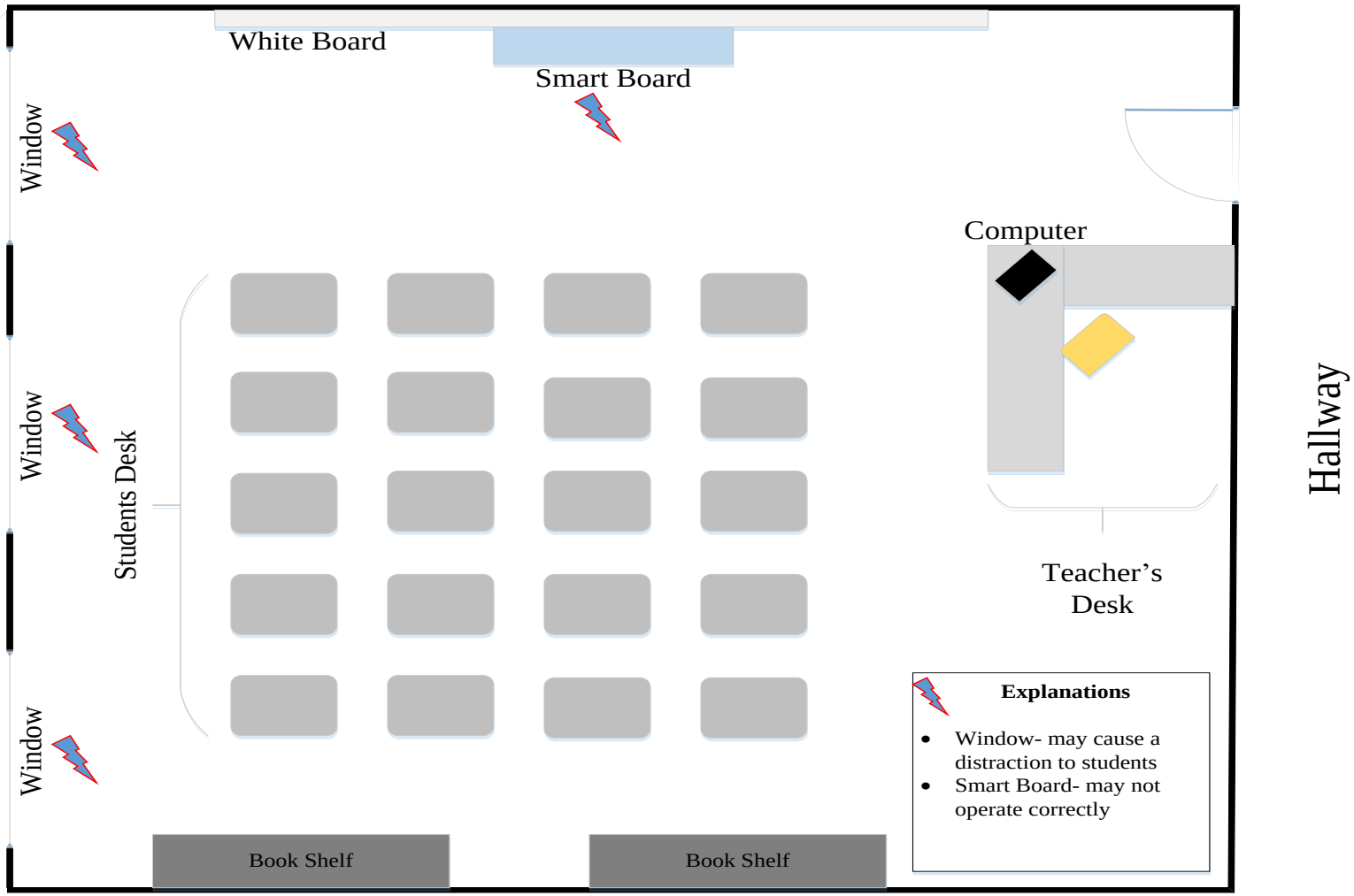
Work Model: Artifact Model

Work Model: Physical Model



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Work Model: Physical Model

Work Models: Affinity Diagram

Organization / Navigation	Teacher	Student
Easy to navigate	Teachers view student progress	Tips for students
All info in one place	Class activity ideas for teachers	Students perfer "hands on" learning
User friendly UI	Teaching examples that can be built off of	Students perfer MC questions
Real world examples	Should clarify goals	Instant feedback
Easy Navigation	Wants question randomization	Instant feedback to questions
Easy to understand organization	Wants question variety	Address all students
Simple Nav bar		"Down to Earth" examples
Mobile and Desktop		Address all types of students
Appealing layout, (colors, buttons, etc)		Perfer multiple choice questions
Use Laptop and Cellphone		Algorithmic approach to problem solving
Bookmarks and multiple tabs		Perfers laptop
Looking for well designed website		Lices MC because of a remembering tactic
Portal service for all user types		Needs connections to reality
Brock	Mitch	Josh

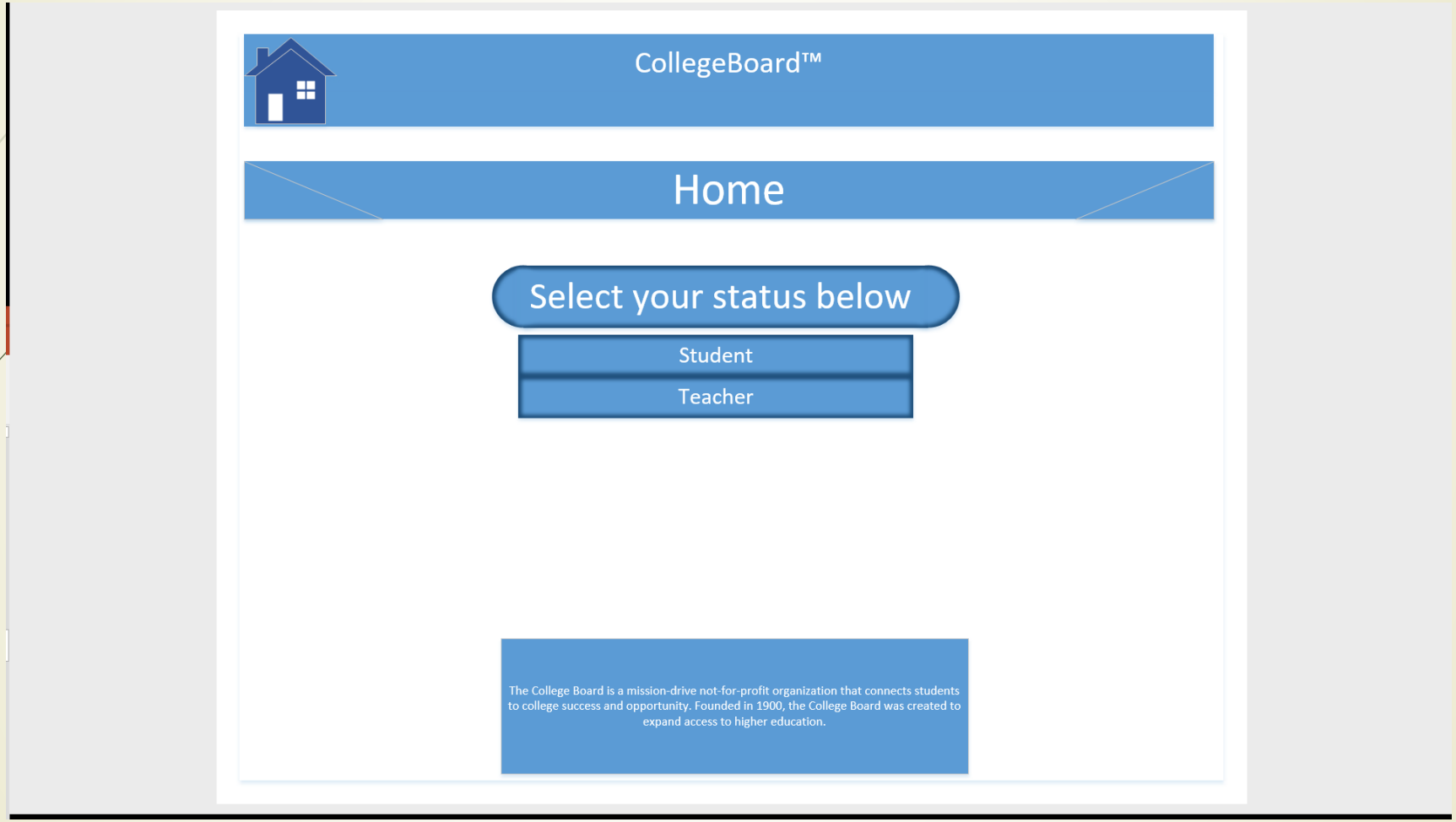
Impactful Issues

- Easy to navigate
- Class activities
- Instant feedback to questions
- “Down to Earth” examples

Low Fidelity Prototype

Team Zurg
Team Member: Joshua Haupt

Main Menu



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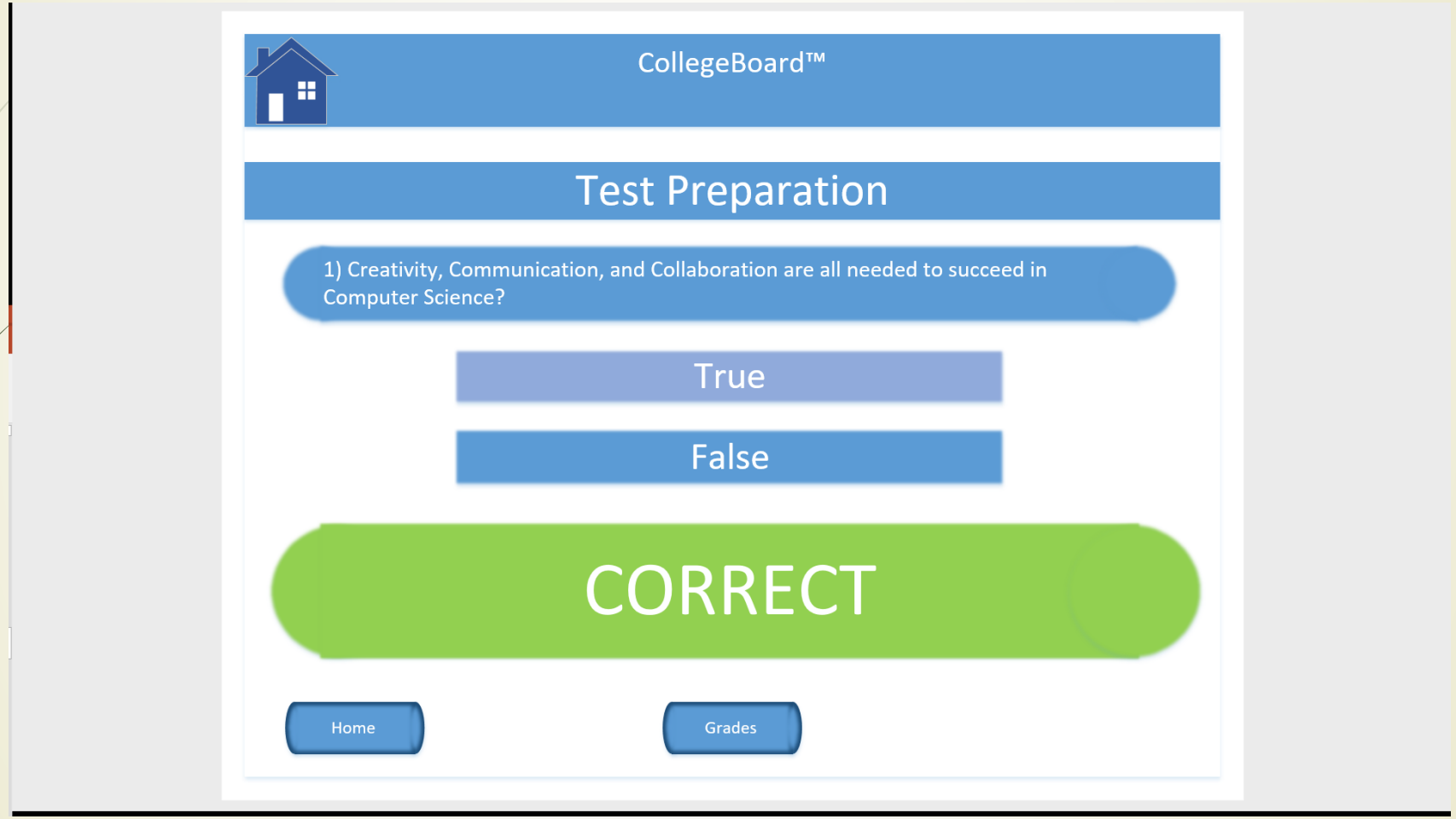
Low Fidelity: Main Menu

Practice Quiz



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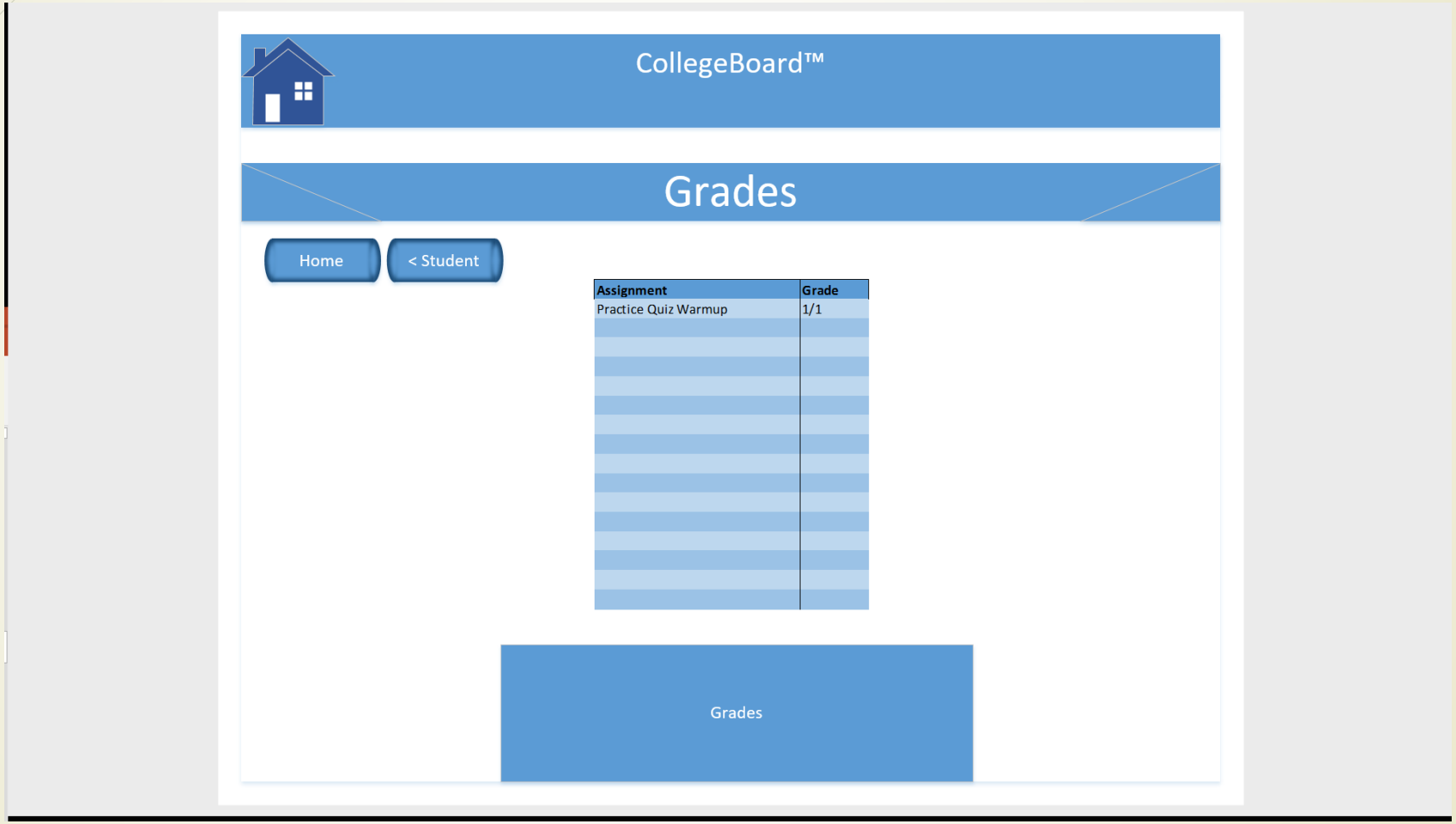
Team Member: Joshua Haupt

Low Fidelity: Practice Quiz

Quiz Grades

NOTICE: Our low fidelity prototype showed more design effort than our final Implementation.



Low Fidelity: Quiz Grades

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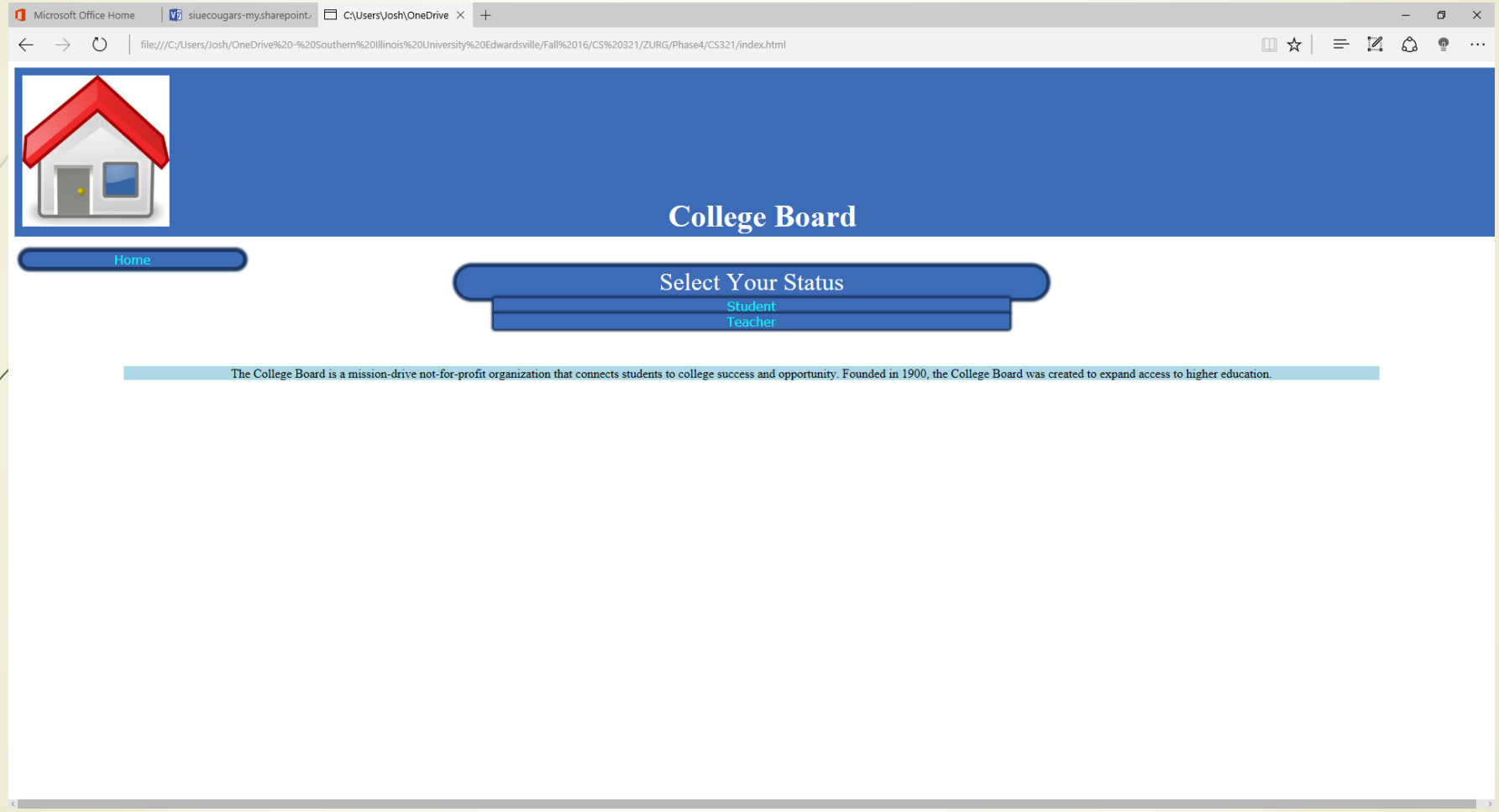
Team Member: Joshua Haupt

High Fidelity Prototype

Team Zurg
Team Member: Joshua Haupt

Main Menu



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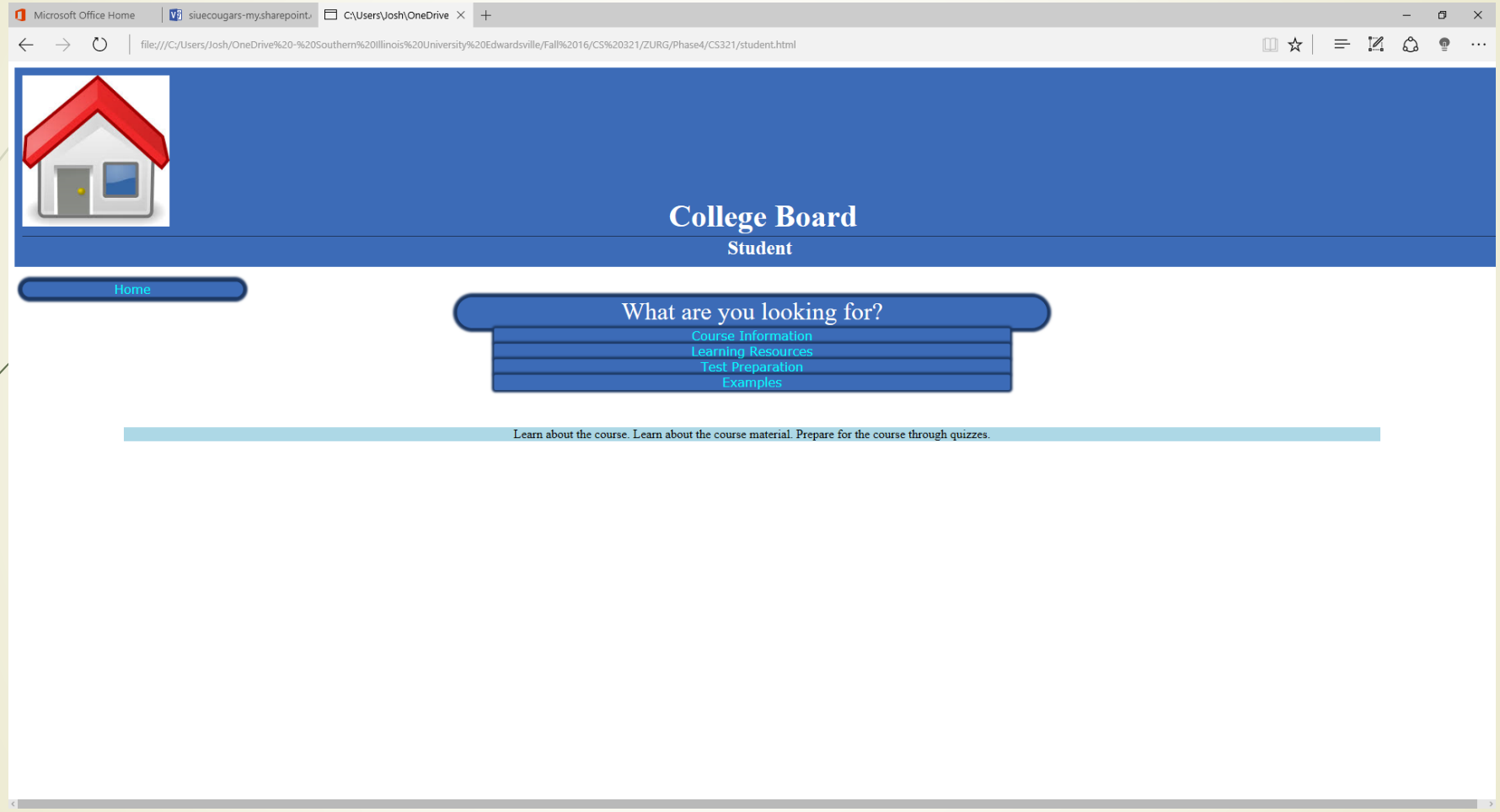
High Fidelity: Main Menu

Student



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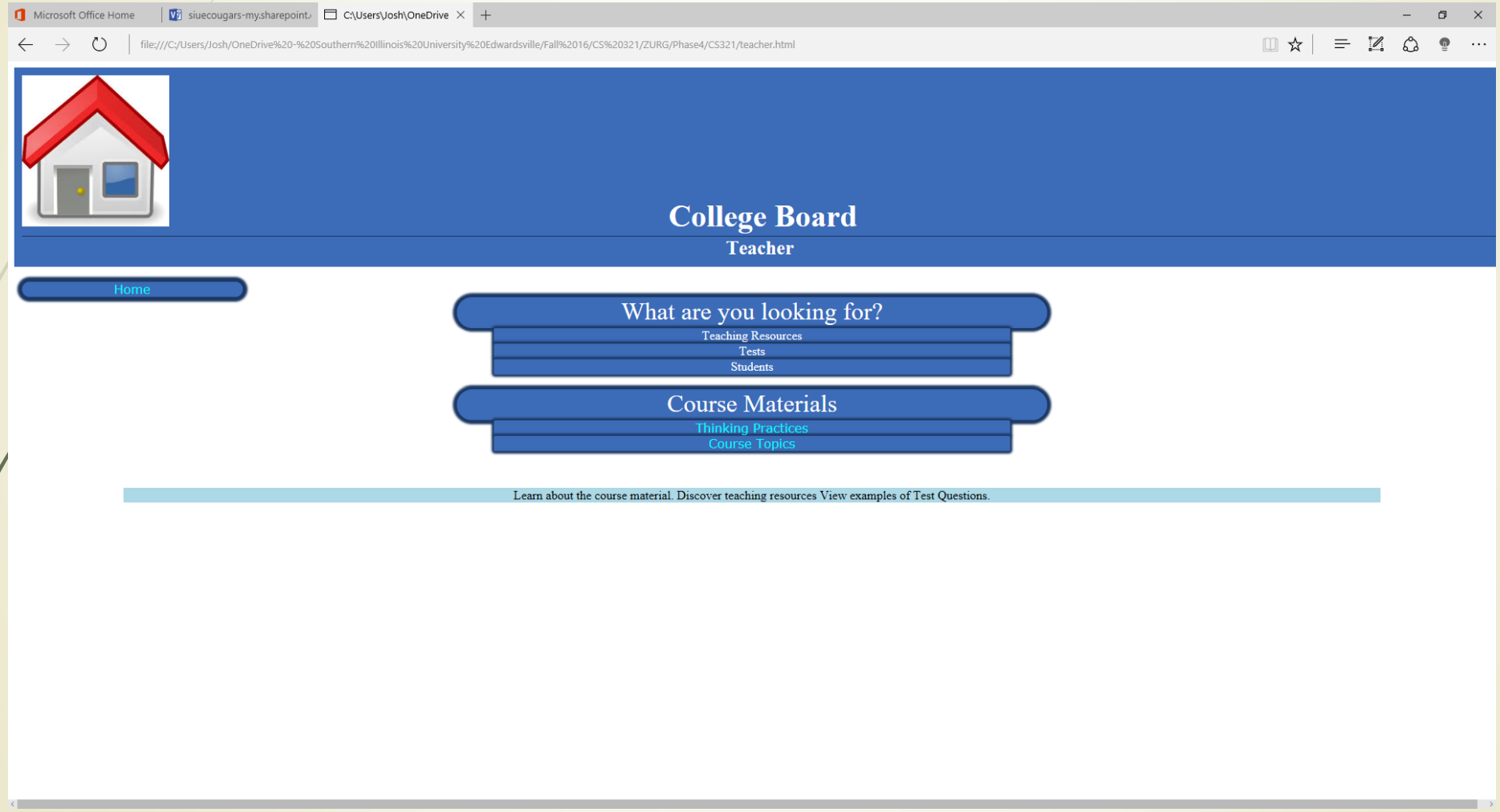
High Fidelity: Student

Teacher



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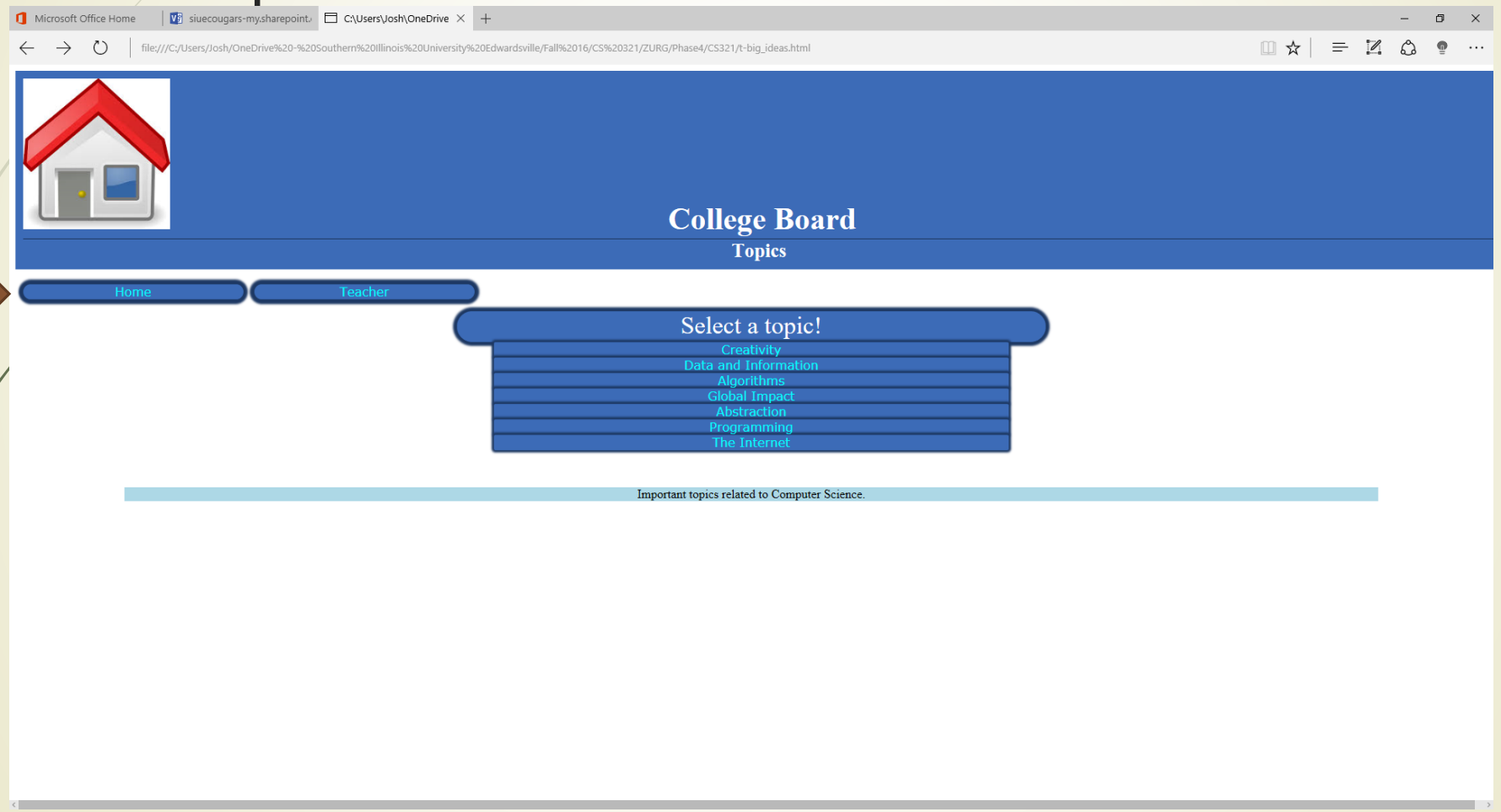
High Fidelity: Teacher

What Subjects Liked and Disliked

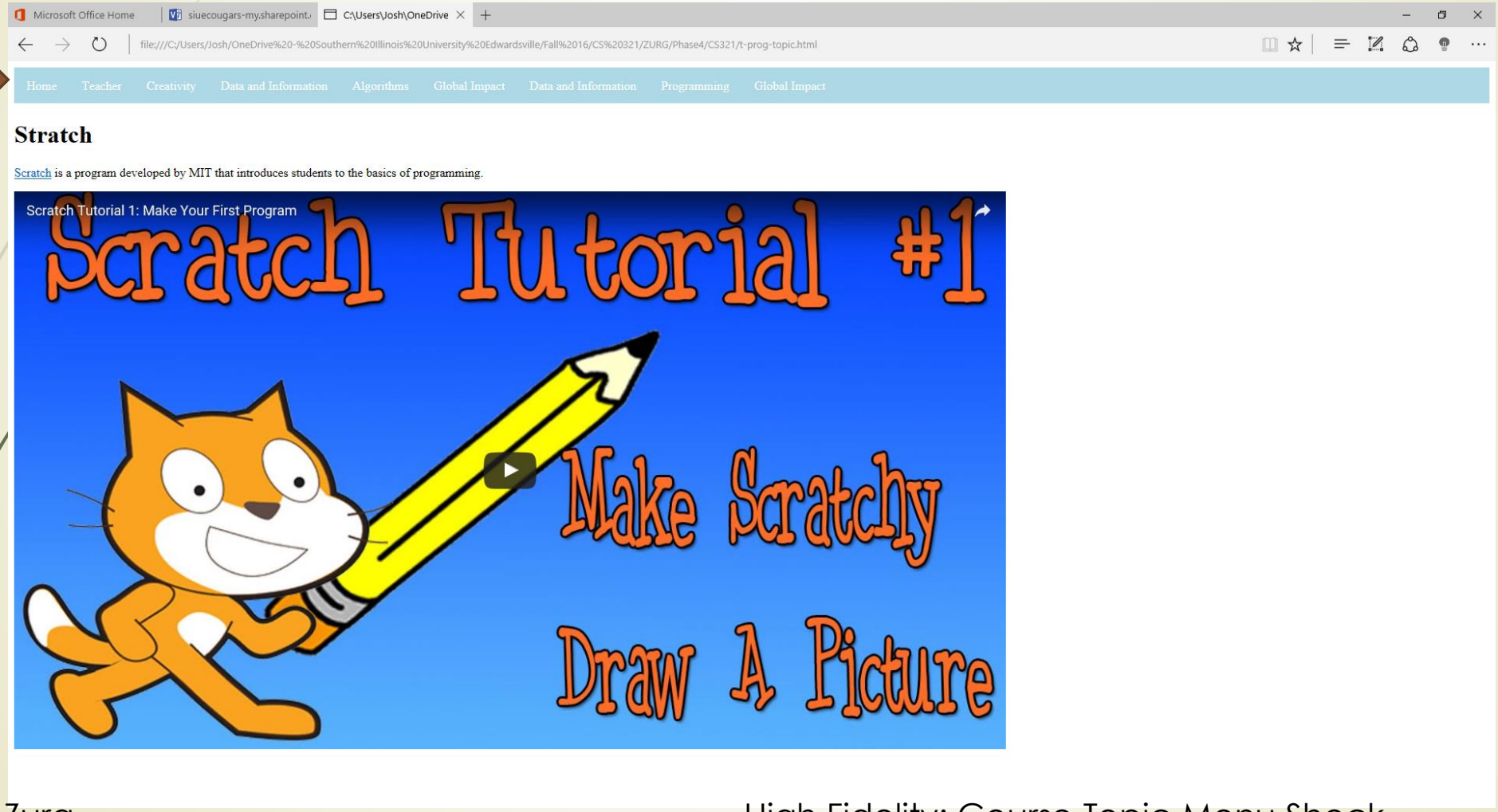
- Liked:
  - color scheme
  - Navigation
    - Easy to keep track of your current position and navigate back if desired.
- Disliked:
  - naming
    - Big Ideas
      - Unclear name
        - So we changed it to Course Topics
      - Navigation menu difference was a shock

Navigation and Big Ideas -> Course Topics



NOTICE: The different menu system

Course Topic Menu Shock



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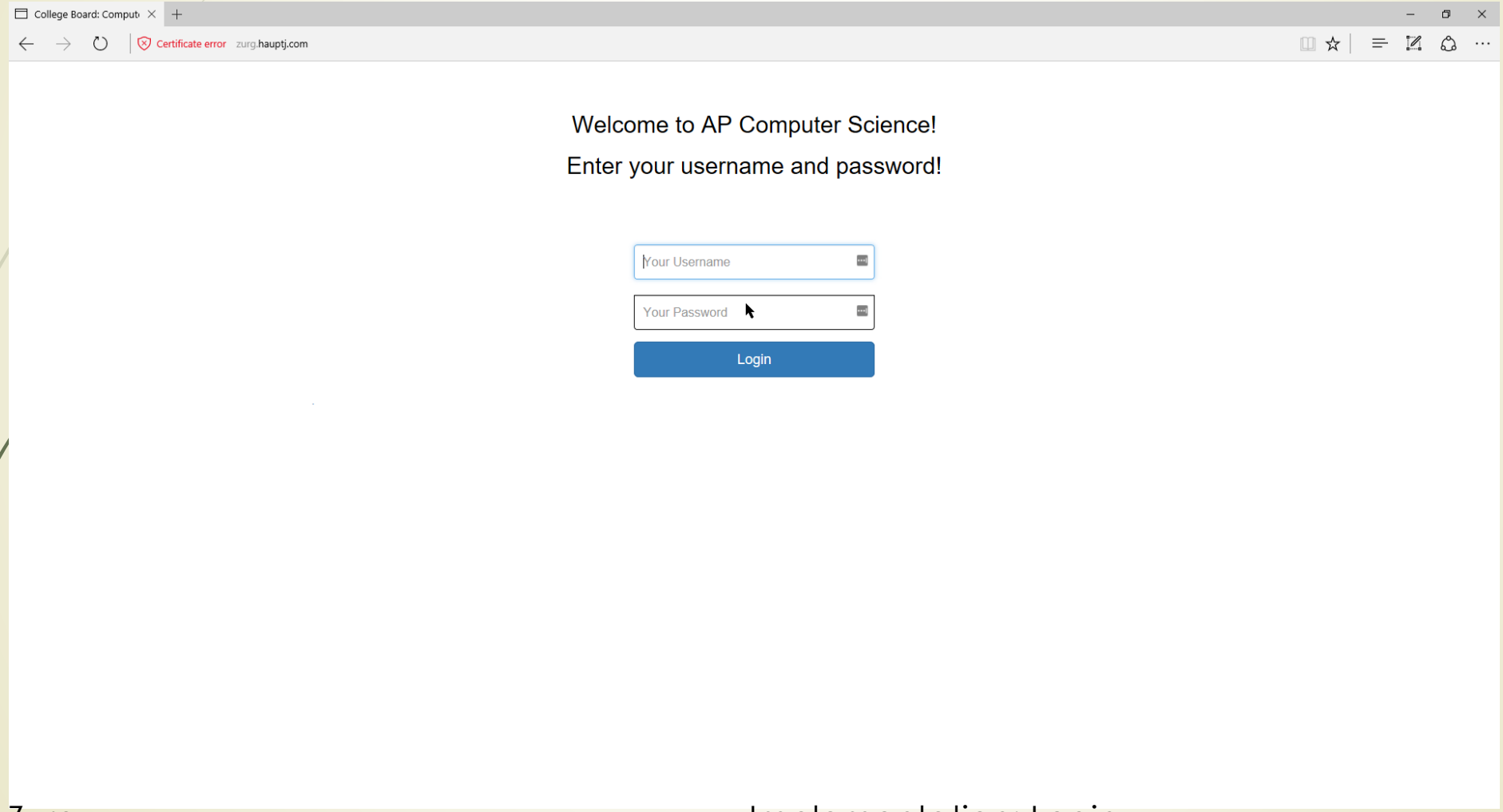
High Fidelity: Course Topic Menu Shock

High Fidelity -> Implementation

- Dr. White's criticism:
  - To text based, NOT enough interaction
- Unfortunately, we did not add enough interaction into our final implementation.

Implementation

Login



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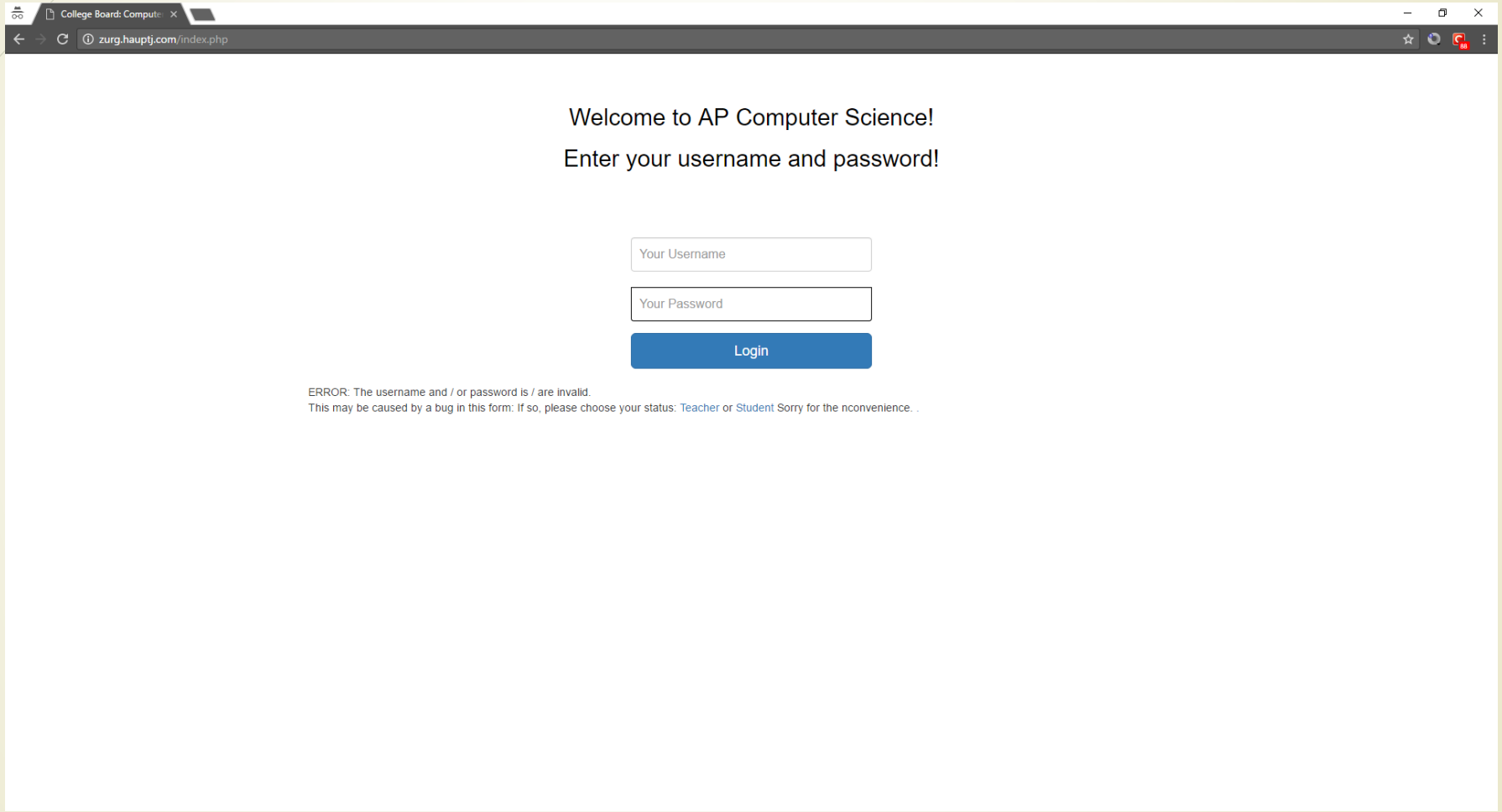
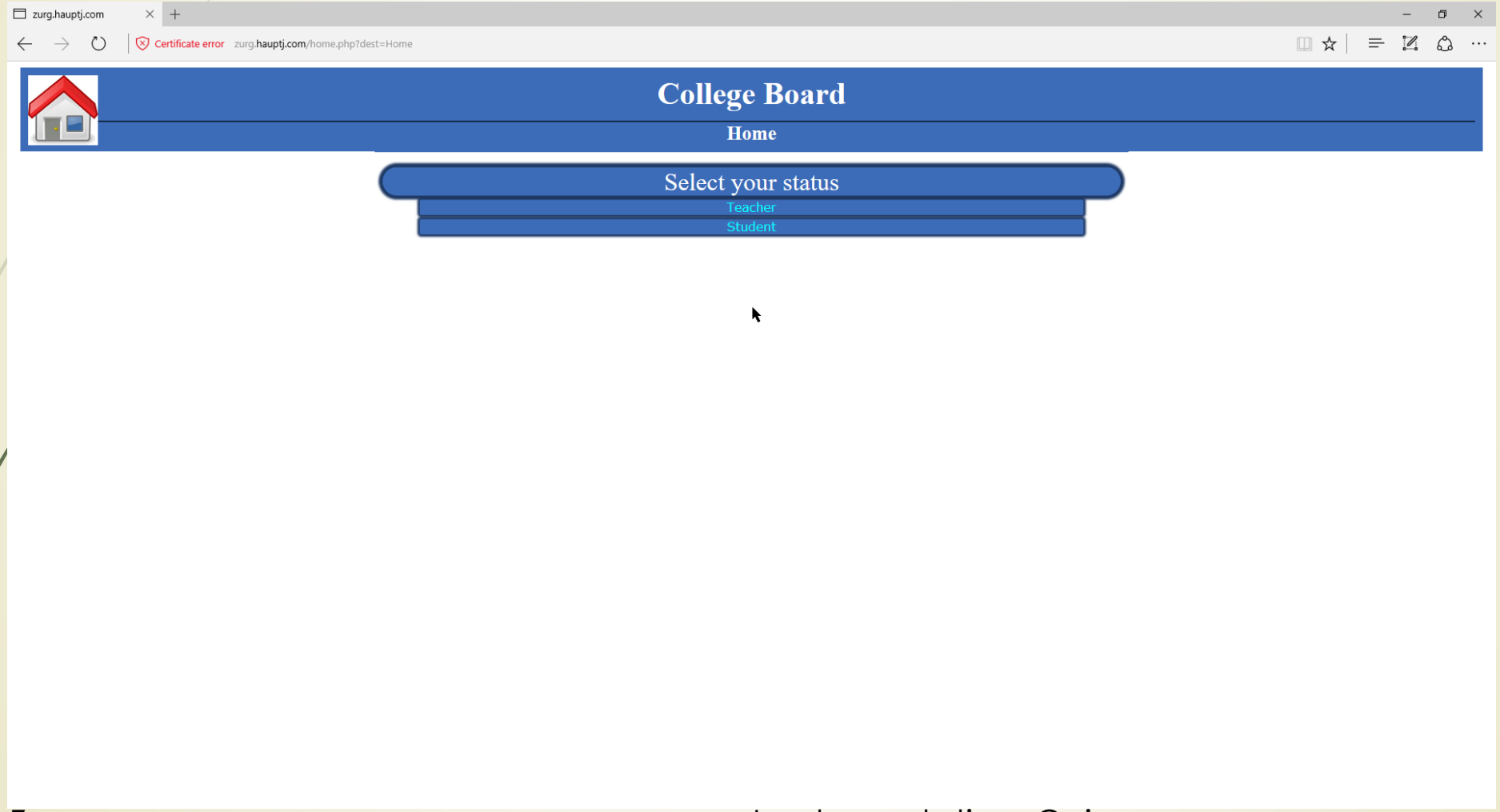
Implementation: Login

Issue with Login Implementation



Main Menu



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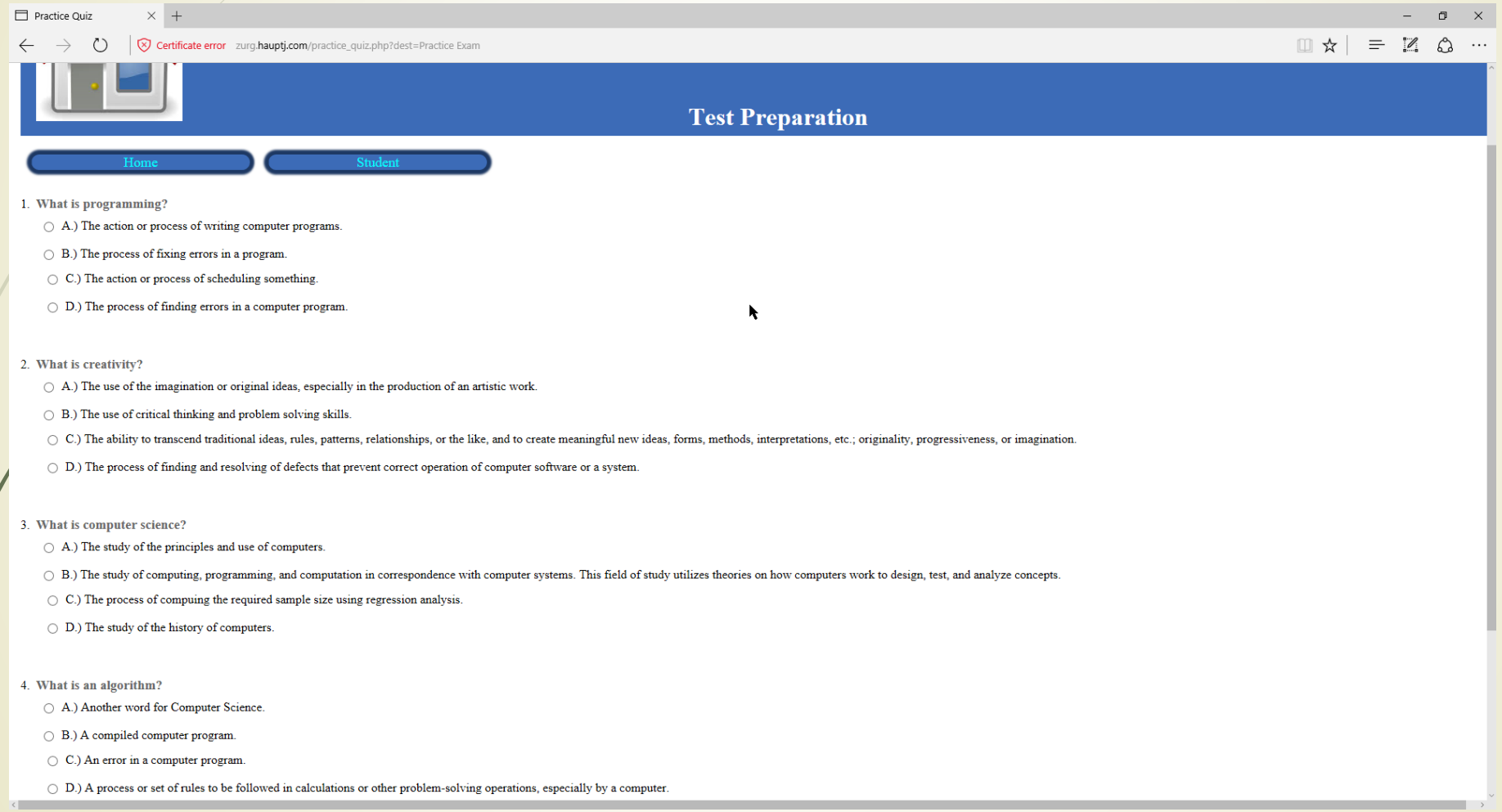
Implementation: Quiz

Quiz



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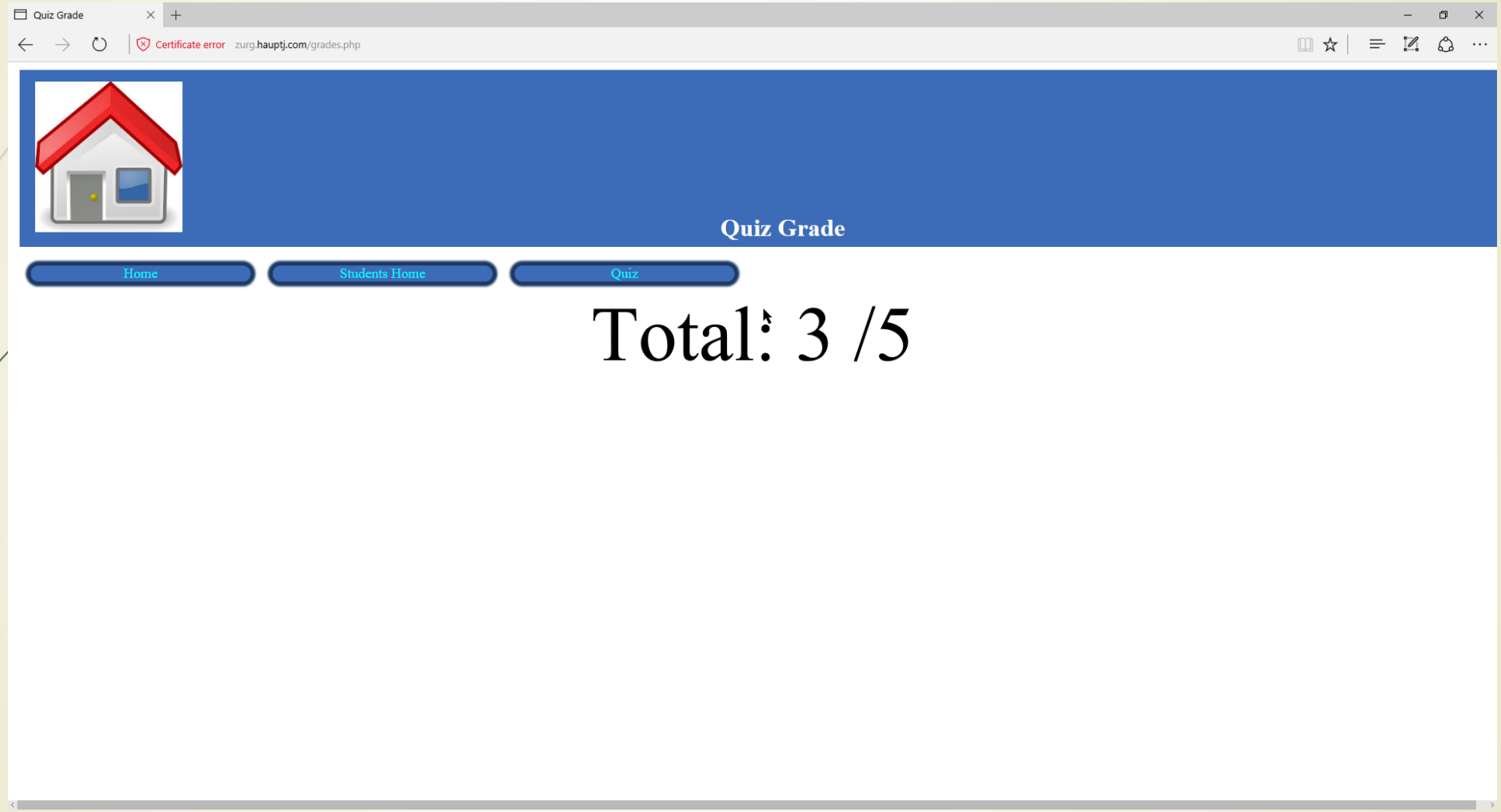
Implementation: Quiz

Quiz Score



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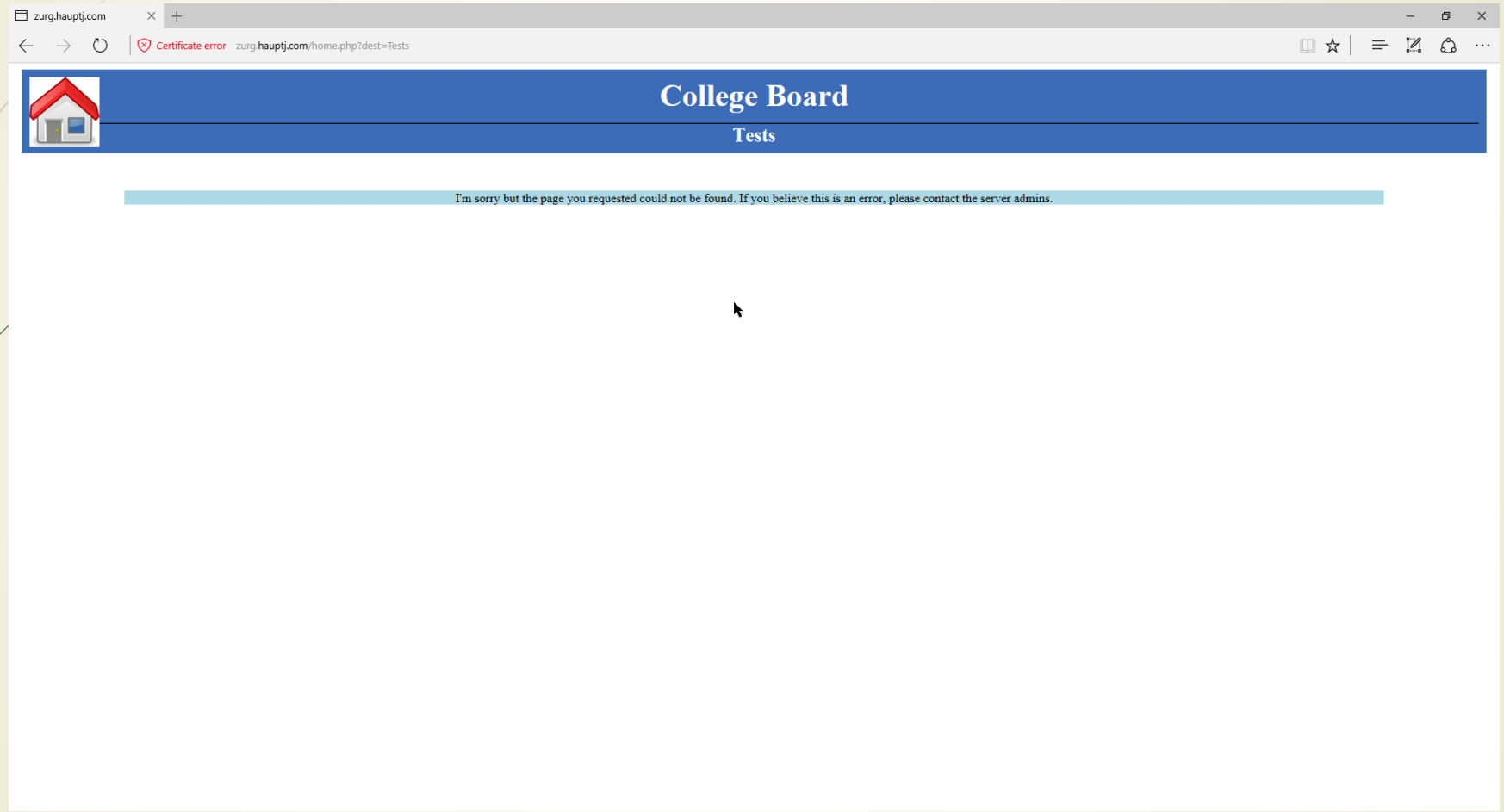
Implementation: Quiz Score

Incomplete Implementations



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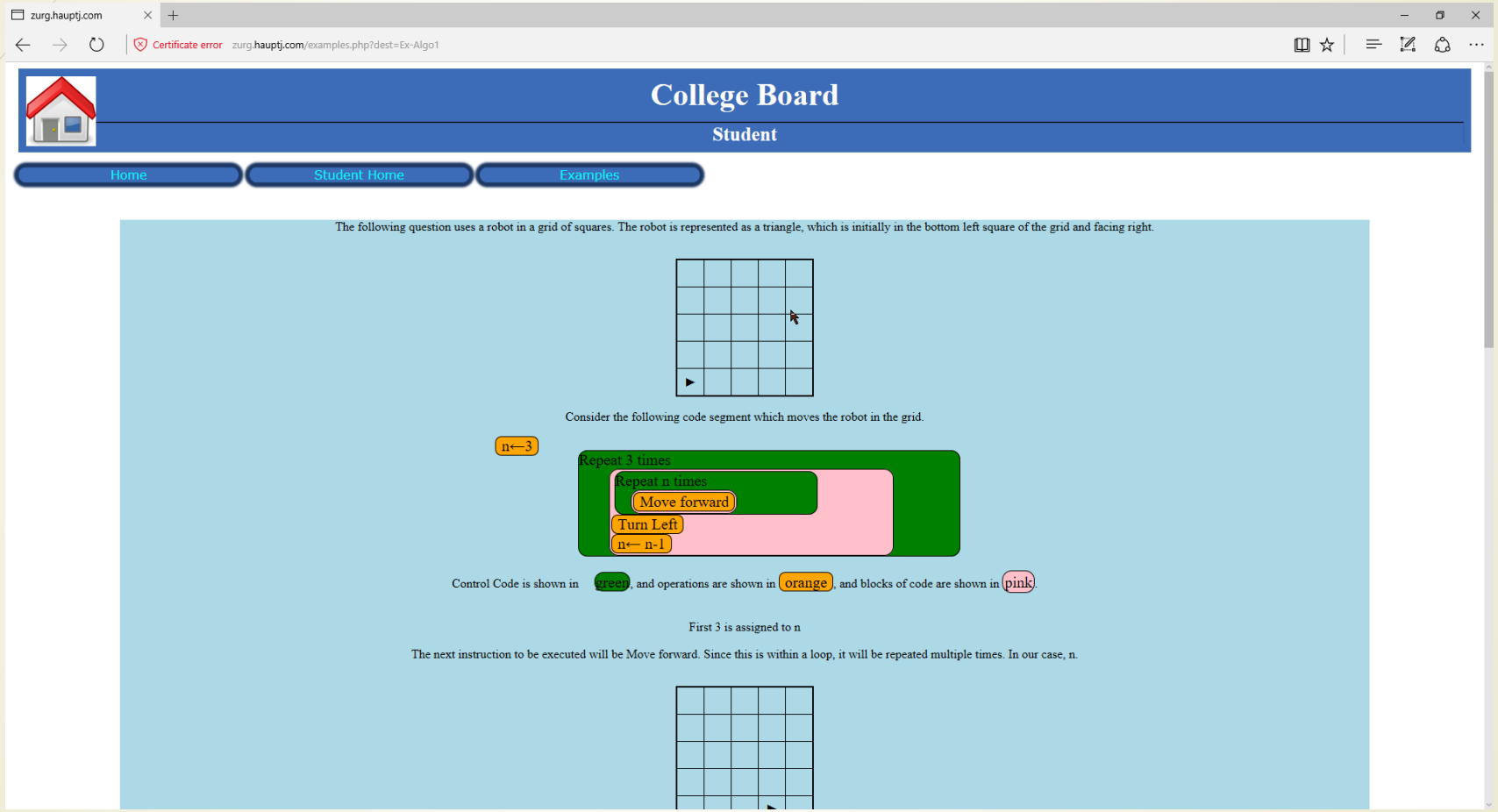
Implementation: Incomplete

Too Text Based



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Implementation: Too Text Based

Usability Test

Tasks included:

- "Big Ideas" Activity
- Navigating to Course Description
- Completing Practice Quiz
- "Thinking Practices" Activity

Results

- SUS 90 % Confidence Interval - 72.29 to 98.71
- Users found navigation of application easy
- More interaction and questions in quiz needed

	Entire recording	Task 1	Task 2	Task 3	Task 4
Time on Task (Minutes)					
UsabilitySession1	5.78	2.41	0.45	0.64	0.43
UsabilitySession2	6.19	0.8	0.3	1.18	1.49
UsabilitySession3	5.67	0.91	0.39	0.65	0.82
UsabilitySession4	4.37	0.79	0.34	0.37	0.9
UsabilitySession5	4.83	0.71	0.34	0.33	0.7
Minimum	4.37	0.71	0.3	0.33	0.43
Maximum	6.19	2.41	0.45	1.18	1.49
Mean	5.37	1.12	0.37	0.63	0.87
Standard Dev.	0.74	0.72	0.06	0.34	0.39
90 % CI (minutes)		.435 - 1.81	.309 - .419	.311 - .957	.495 - 1.20

Post-Mortem

Nonsuccess
- Poor high fidelity prototype and final implementation
- Took time to relearn material

Success
- Completed appropriate personas, work models, and low fidelity prototype
- Improved development skills

Lessons Learned
- Good communication and time management are crucial
- Beginning phases of development are extremely important, don't push them away