

Design Document

ATeam Group: a26

Project Name: Quiz Generator

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Class Summary:

| Enum, Interface, Class, Abstract Class | Name of the type | Description of use or purpose of this type |
|--|------------------|---|
| Class | Question | It represents a question appearing in the quiz; it contains various elements that are required by a question |
| Class | Quiz | The class that contains the quiz information and questions in the quiz |
| Class | Controller | This is a backend controller class that addresses fetching from the file and saving to the file; It will also handle question generation from the front-end |

Class Diagram:

Class Name: Question

| Field | Purpose |
|----------------------|--|
| List<String> choices | The answer choices of this question; represented by a list of String |
| String description | The description of the question |
| String topic | The topic that this question is affiliated to |
| boolean answered | A boolean flag that shows if the user chooses an answer or not |
| List<String> keys | The correct answer of this question |
| List<String> answers | The user answers for this question (represented as empty String if the user does not answer this question) |
| boolean correctness | A boolean flag that shows if the answer of this question is correct |
| List<Image> imgs | The images that are related to the question. Empty list if there is no image in this question |

| Return type | Method name | Parameter list | Purpose |
|-------------|-------------|---|--|
| - | Question | List<String> choices, String description, String topic, List<String> keys, List<Image> imgs | The constructor of the Question class; choices is a list of choices for this question; description is the problem description; topic is the topic this questions is affiliated to; keys is a list of the correct answers; imgs is a list of Image objects that are relevant to this question |

Class Name: Quiz

| Field | Purpose |
|--|--|
| boolean ongoing | A boolean flag that shows whether this quiz is ongoing or not (displayed on the GUI or not being used) |
| List<String> allTopic | A topic list that includes all the topics this quiz has |
| int numQuestions (valid range: 50-100) | Number of questions in this quiz |
| int numCorrect (valid range: 0-numQuestions) | Number of correct questions |
| List<Question> questions | The question list that includes all the questions in this quiz |

| Return type | Method name | Parameter list | Purpose |
|-------------|--------------|---|---|
| - | Quiz | List<String> allTopic | Constructor of the Quiz object; it generates the questions given a list of topics |
| void | selectAnswer | Question question, List<String> answers | Select the answer for a specific question; the parameter includes the question that is going to be answered and the answer choices the user select for this question |
| Question | skip | Question question | Skip the current question and go back later; the parameter includes the current question that the user is going to skip; the method return the next question the user will do |
| Question | next | Question question | The user has chosen the answer for this question and the quiz will move to the next question; the parameter includes the question the user has answered and will return the next question the user will work on |
| Question | back | Question question | Go back to the last question; the parameter includes the current question and the return is the last question of the quiz (the question before the current question) |

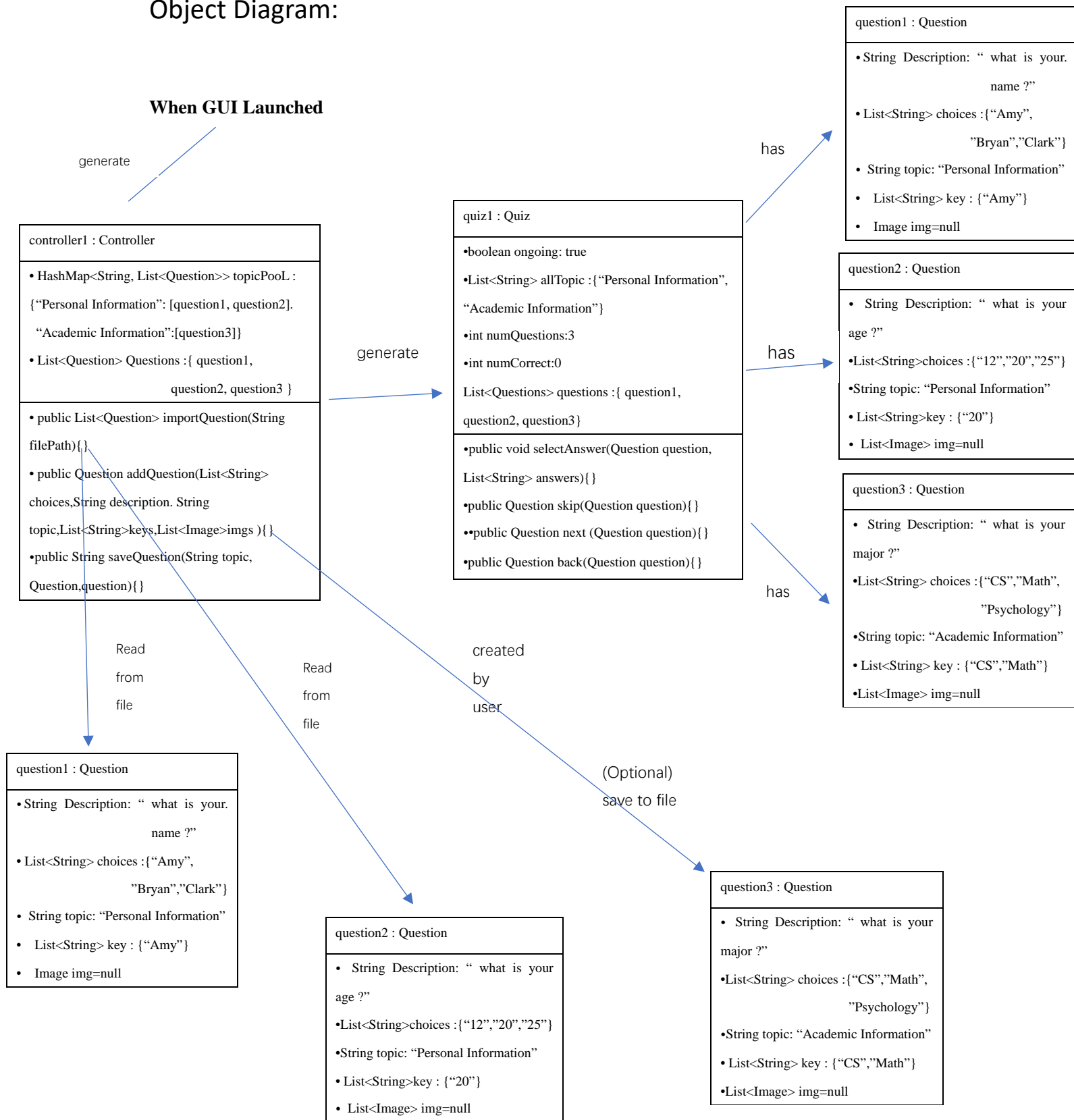
Class Name: Controller

| Field | Purpose |
|---|---|
| HashMap<String, List<Question>> questionPool | a hashmap that maps the topic name to the list of relevant questions |

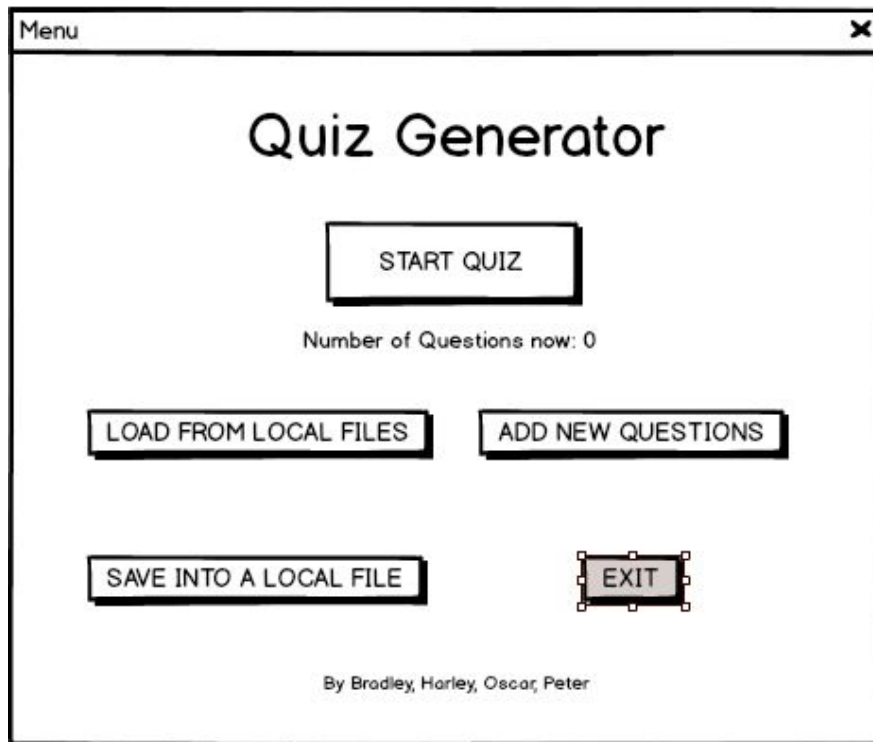
| Return type | Method name | Parameter list | Purpose |
|----------------|----------------|---|--|
| - | Controller | None | The non-parameter controller of the Controller class that controls the generation of the quiz questions of the program |
| List<Question> | importQuestion | String path | Import question from the file system; the path is the String of file path; the return is a list of questions imported from this path |
| Question | addQuestion | List<String> choices, String description, String topic, List<String> keys, List<Image> imgs | Allow user to create a question for the GUI interface by him or herself; the parameter includes all the necessary parameters for declaring a Question object; the return is the Question object the user created |
| String path | saveQuestion | String topic, Question question | Save the topic-question pair into the file system and return a file path for this saving |

Object Diagram:

When GUI Launched



GUI Layout Sketch:



Menu

Quiz Generator

START QUIZ

Number of Questions now: 0

LOAD FROM LOCAL FILES

ADD NEW QUESTIONS

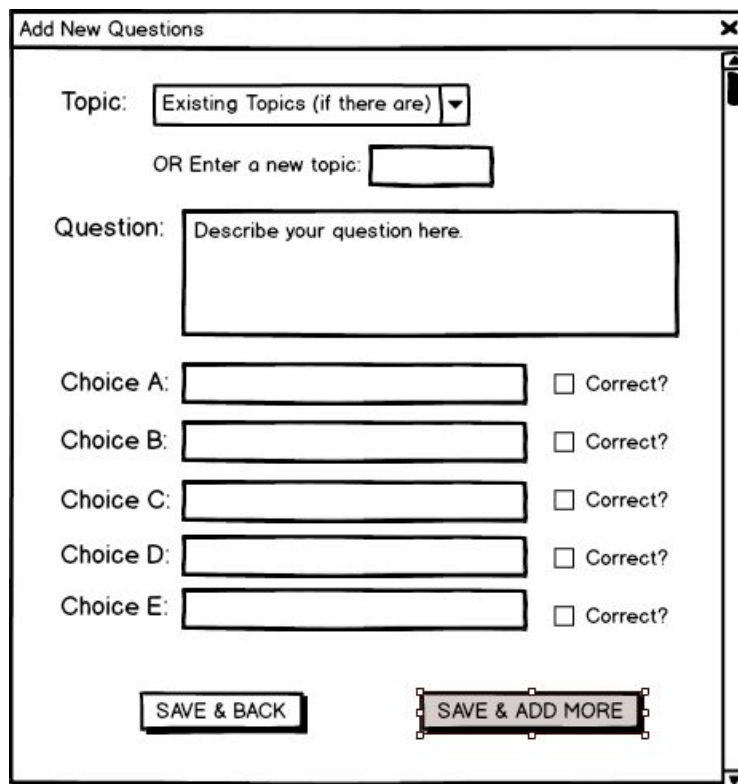
SAVE INTO A LOCAL FILE

EXIT

By Bradley, Harley, Oscar, Peter

This is a sketch of a main menu window for a quiz generator. It features a title bar with the word 'Menu' and a close button. The main content area has a large title 'Quiz Generator' at the top. Below the title is a 'START QUIZ' button. Underneath that, it says 'Number of Questions now: 0'. There are four buttons arranged in two rows: 'LOAD FROM LOCAL FILES' and 'ADD NEW QUESTIONS' in the first row, and 'SAVE INTO A LOCAL FILE' and 'EXIT' in the second row. At the bottom, it says 'By Bradley, Harley, Oscar, Peter'.

(Main menu window)



Add New Questions

Topic: Existing Topics (if there are) ▼

OR Enter a new topic:

Question: Describe your question here.

Choice A: ☐ Correct?

Choice B: ☐ Correct?

Choice C: ☐ Correct?

Choice D: ☐ Correct?

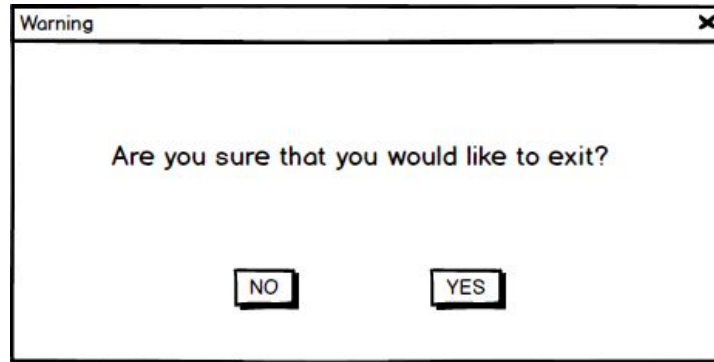
Choice E: ☐ Correct?

SAVE & BACK

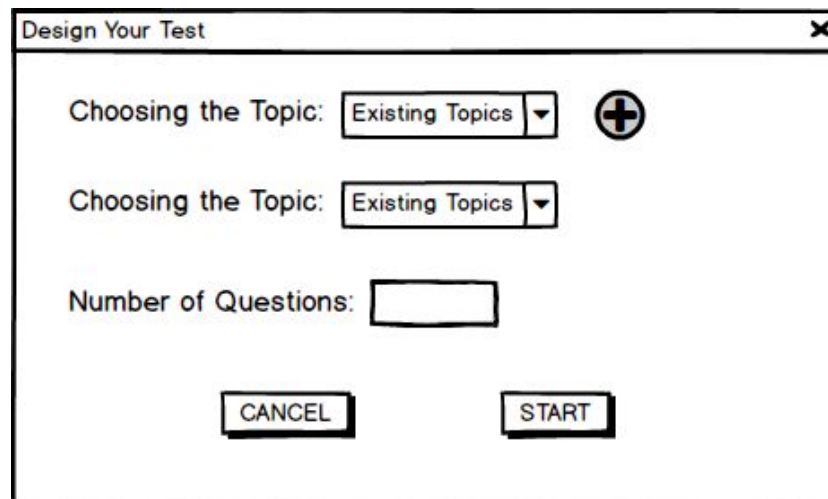
SAVE & ADD MORE

This is a sketch of a window titled 'Add New Questions'. It has a title bar with the title and a close button. The window contains a 'Topic' label followed by a dropdown menu showing 'Existing Topics (if there are)'. Below this is a label 'OR Enter a new topic:' followed by a text input field. Then there is a 'Question:' label followed by a large text area with the placeholder text 'Describe your question here.'. Below the question area are five rows, each with a choice label (Choice A through Choice E), a text input field, and a checkbox labeled 'Correct?'. At the bottom of the window are two buttons: 'SAVE & BACK' and 'SAVE & ADD MORE'.

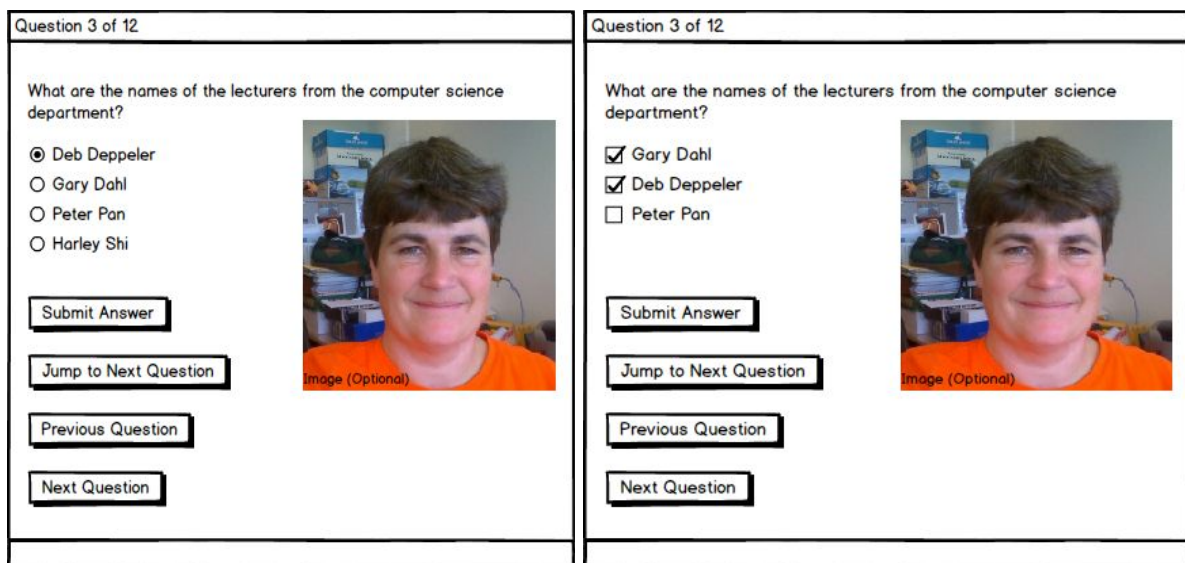
(The window to add new quiz questions)



(A warning window when the exit button is pressed)



(The window shows up before the quiz when the start quiz button is pressed)



(Multiple choice questions with one correct choice or several correct choices)

| | |
|--|--|
| Congratulations! | Uh Oh ... |
| Your answer is correct! | Your answer is in correct! |
| <input type="button" value="Next Question"/> | <input type="button" value="Next Question"/> |

(The prompt window that shows up indicating the answer is correct or not when the question is submitted)

| |
|--|
| Result |
| <p>Number of Correct Questions: 93 of 100 Number of Questions Answered: 98</p> <p><input type="button" value="Take New Quiz"/> <input type="button" value="Save Answers to .JSON"/> <input type="button" value="Exit without Saving"/></p> |

(The result page of the quiz)