Function Name	Test Description	Sample Input	Expected Result	Actual Result	Status
getRandInt	2 Integers, min < max	-1, 10	Random Integer between min and max inclusive	7	PASS
	2 Floats, min < max	1.3, 11.2	Random Integer between min and max inclusive	10	PASS
	1 Float, 1 Integer, min < max	5, 20.3	Random Integer between min and max inclusive	18	PASS
	2 Integers, min > max	12, 7	Random Integer between min and max inclusive	9	PASS
	2 Integers, min == max	11, 11	11	11	PASS

SAMPLE QUESTIONS STRUCT 1 - struct questionData sampleQuestions1
Used for: existingQNACheck(), displayTopics(), sortQuestions()
Description: Sorted question numbers, unsorted topics

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Language	1	Q1	A	B	C	A
1	Language	2	Q2	A	B	C	B
2	Astronomy	1	Q3	D	E	F	F
3	Astronomy	2	Q4	A	B	C	A
4	Geography	1	Q5	X	Y	Z	X

existingQNACheck	Question and answer pair does not exist within the struct	Q6, G	-1	-1	PASS
	Question exists within the struct but answer does not	Q4, C	-1	-1	PASS
	Question does not exist within the struct but answer exists	Q7, A	-1	-1	PASS
	Question and answer pair already exists within the struct	Q3, F	2	2	PASS
passwordScreen	Password does not match, user opts to exit (correctPassword is password69)	password 1	******** Incorrect Password! Press [1] to Exit, press any key to retry (returns to Main Menu)	******** Incorrect Password! Press [1] to Exit, press any key to retry (returns to Main Menu)	PASS
	Password does not match, user opts to retry	password 2	********	********	PASS

	(correctPassword is password69)		Incorrect Password! Press [1] to Exit, press any key to retry (prompted for input again)	Incorrect Password! Press [1] to Exit, press any key to retry (prompted for input again)	
	Password matches	password69	********** Welcome! (displays manage options)	********** Welcome! (displays manage options)	PASS

SAMPLE QUESTIONS STRUCT 2 - struct questionData sampleQuestions2
Used for: sortQuestions()
Description: Sorted topics, unsorted question numbers

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	2	Q6	A	B	C	A
1	Animal	1	Q7	F	G	H	H
2	Science	2	Q8	D	E	F	F
3	Science	3	Q9	A	B	C	A
4	Science	1	Q10	J	K	L	L

SAMPLE QUESTIONS STRUCT 3 - struct questionData sampleQuestions3
Used for: sortQuestions()
Description: Unsorted topics, unsorted question numbers

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Language	2	Q11	A	B	C	A
1	Animal	2	Q12	A	B	C	B
2	Technology	1	Q13	D	E	F	F

| 3 | Animal | 1 | Q14 | A | B | C | A |
| 4 | Language | 1 | Q15 | X | Y | Z | X |

SAMPLE QUESTIONS STRUCT 4 - struct questionData sampleQuestions4
Used for: sortQuestions(), addRecord(), editRecord(), deleteRecord()
Description: Sorted topics, sorted question numbers

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Geography	1	Q16	A	B	C	A
1	Geography	2	Q17	A	B	C	B
2	History	1	Q18	D	E	F	F
3	Science	1	Q19	A	B	C	A
4	Science	2	Q20	X	Y	Z	X

*Expected results and actual results will be represented with rearranged indexes

sortQuestions	Struct array with sorted question numbers, unsorted topics	sampleQuestions1	2, 3, 0, 1, 4	2, 3, 0, 1, 4	PASS
	Struct array with sorted topics, unsorted question numbers	sampleQuestions2	1, 0, 4, 2, 3	1, 0, 4, 2, 3	PASS
	Struct array with unsorted topics, unsorted question numbers	sampleQuestions3	3, 1, 4, 0, 2	3, 1, 4, 0, 2	PASS
	Struct array with sorted topics, sorted question numbers	sampleQuestions4	0, 1, 2, 3, 4	0, 1, 2, 3, 4	PASS

SAMPLE QUESTIONS STRUCT 5 - struct questionData sampleQuestions5
Used for: displayTopics()
Description: All questions have unique topics

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Language	1	Q1	A	B	C	A
1	Animal	1	Q2	A	B	C	B
2	Astronomy	1	Q3	D	E	F	F
3	Technology	1	Q4	A	B	C	A
4	Geography	1	Q5	X	Y	Z	X

SAMPLE QUESTIONS STRUCT 6 - struct questionData sampleQuestions5
Used for: displayTopics(), addRecord()
Description: All questions have the same topic

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Film	1	Q1	A	B	C	A
1	Film	2	Q2	A	B	C	B
2	Film	3	Q3	D	E	F	F
3	Film	4	Q4	A	B	C	A
4	Film	5	Q5	X	Y	Z	X

displayTopics	Struct array with multiple topics	sampleQuestions1	Language Astronomy Geography	Language Astronomy Geography	PASS
	Struct array with all questions having a unique topic	sampleQuestions5	Language Animal Astronomy Technology Geography	Language Animal Astronomy Technology Geography	PASS
	Struct array with all questions having the same topic	sampleQuestions6	Film	Film	PASS

SAMPLE PLAYERS STRUCT 1 - struct playerData samplePlayers1

Used for: sortScores()

Description: Unsorted scores, duplicate scores present

Index	Name	Score
0	Bob	21
1	Alice	15
2	John	15
3	Sara	19
4	Julianna	23

SAMPLE PLAYERS STRUCT 2 - struct playerData samplePlayers2

Used for: sortScores()

Description: Unsorted scores, no duplicate scores

Index	Name	Score
0	Olivia	16
1	Michael	18
2	Julianna	15
3	Emily	20
4	David	11

SAMPLE PLAYERS STRUCT 3 - struct playerData samplePlayers3

Used for: sortScores()

Description: Sorted scores

Index	Name	Score
0	Nahida	30
1	Miko	27
2	Zhongli	24
3	Faruzan	22
4	Nilou	14

*Expected results and actual results will be represented with rearranged indexes

sortScores	Unsorted struct array with duplicate scores	samplePlayers1	1, 2, 3, 0, 4	1, 2, 3, 0, 4	PASS
	Unsorted struct array with no duplicate scores	samplePlayers2	4, 2, 0, 1, 3	4, 2, 0, 1, 3	PASS
	Sorted struct array	samplePlayers3	0, 1, 2, 3, 4	0, 1, 2, 3, 4	PASS

playPanel	User selects "Play Game", with no questions in the program	'1'	No questions found!	No questions found!	PASS
	User selects "Play Game" with questions in the program	'1'	(proceeds to playGame)	(proceeds to playGame)	PASS
	User selects "View Scores"	'2'	(proceeds to viewScores)	(proceeds to viewScores)	PASS
	User selects "Exit"	'3'	(goes back to Main Menu)	(goes back to Main Menu)	PASS
adminPanel	User selects "Add a Record"	'1'	(proceeds to addRecord)	(proceeds to addRecord)	PASS
	User selects "Edit a Record" with no questions in the program	'2'	No questions found!	No questions found!	PASS
	User selects "Edit a Record" with questions in the program	'2'	(proceeds to editRecord)	(proceeds to editRecord)	PASS
	User selects "Delete a Record" with no questions in the program	'3'	No questions found!	No questions found!	PASS

	User selects "Delete a Record" with questions in the program	'3'	(proceeds to deleteRecord)	(proceeds to deleteRecord)	PASS
	User selects "Import Data"	'4'	(proceeds to importData)	(proceeds to importData)	PASS
	User selects "Export Data"	'5'	(proceeds to exportData)	(proceeds to exportData)	PASS
	User selects "Exit"	'6'	(returns to the Main Menu)	(returns to the Main Menu)	PASS
	User enters an invalid input	'a'	Invalid input!	Invalid input!	PASS

SAMPLE QUESTIONS STRUCT 4 - struct questionData sampleQuestions4
Used for: sortQuestions(), addRecord(), editRecord(), deleteRecord()
Description: Sorted topics, sorted question numbers

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Geography	1	Q16	A	B	C	A
1	Geography	2	Q17	A	B	C	B
2	History	1	Q18	D	E	F	F
3	Science	1	Q19	A	B	C	A
4	Science	2	Q20	X	Y	Z	X

totalQuestions = 5;

SAMPLE QUESTIONS STRUCT 6 - struct questionData sampleQuestions5
Used for: displayTopics(), addRecord()
Description: All questions have the same topic

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Film	1	Q1	A	B	C	A
1	Film	2	Q2	A	B	C	B
2	Film	3	Q3	D	E	F	F
3	Film	4	Q4	A	B	C	A
4	Film	5	Q5	X	Y	Z	X

totalQuestions = 5;

addRecord **(sampleQuestions6 will be used as the base struct)**	User tries to add a question and answer pair that already exists.	Q1 A	Question and answer already exists!	Question and answer already exists!	PASS
Order of inputs: Question Answer Topic Choice 1, 2, 3 Confirmation	User adds a valid question and answer pair but exits early by inputting ` (discards)	Q6 D Technology `	(returns to main menu, totalQuestions is not incremented)	(returns to main menu, totalQuestions is not incremented)	PASS
	User adds a valid question and answer pair but answers 'N' to confirmation	Q6 D Technology C A D 'N'	Current Input is Question #1 of Topic "Technology" Save the current input? (Y/N) (returns to main menu, totalQuestions is not incremented)	Current Input is Question #1 of Topic "Technology" Save the current input? (Y/N) (returns to main menu, totalQuestions is not incremented)	PASS

| | User adds a valid question and answer pair and answers 'Y' to confirmation | Q6
C
Film
B
C
D
'Y' | Current Input is Question #6 of Topic "Film"

Save the current input? (Y/N)

(returns to main menu, totalQuestions is incremented) | Current Input is Question #6 of Topic "Film"

Save the current input? (Y/N)

(returns to main menu, totalQuestions is incremented) | PASS |

SAMPLE QUESTIONS STRUCT 7 - struct questionData sampleQuestions7
Used for: editRecord(), deleteRecord
Description: Sorted topics and question numbers, all topics unique except for one

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	A
1	Animal	2	Q2	A	B	C	B
2	Astronomy	1	Q3	D	E	F	F
3	Geography	1	Q4	A	B	C	A
4	Technology	1	Q5	X	Y	Z	X

totalQuestions = 5;

| editRecord | Topic is edited to another existing topic, answers 'Y' to confirmation | Geography
1
1
Animal
Y | Type the Topic of the Question to Edit
Enter [1] to Go Back

Input [0] to Exit.
Question Numbers Associated | Type the Topic of the Question to Edit
Enter [1] to Go Back

Input [0] to Exit.
Question Numbers Associated | PASS |

| | | | with the Topic:

Question #1: Q4

Question Number: 1
[1] Topic: Geography
[2] Question: Q4
[3] Choice 1: A
[4] Choice 2: B
[5] Choice 3: C
[6] Answer: A
[7] Exit

Do you want to save your current changes? (Y/N)

Changes saved!

(return to topic selection) | with the Topic:

Question #1: Q4

Question Number: 1
[1] Topic: Geography
[2] Question: Q4
[3] Choice 1: A
[4] Choice 2: B
[5] Choice 3: C
[6] Answer: A
[7] Exit

Do you want to save your current changes? (Y/N)

Changes saved!

(return to topic selection) | |

RESULT for TEST1 (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	A
1	Animal	2	Q2	A	B	C	B
2	Animal	3	Q4	A	B	C	A
3	Astronomy	1	Q3	D	E	F	F

4	Technology	1	Q5	X	Y	Z	X

totalQuestions = 5;

		Topic is edited to a new topic, answers 'Y' to confirmation	Animal 2 1 Food Y	Type the Topic of the Question to Edit Enter [1] to Go Back Input [0] to Exit. Question Numbers Associated with the Topic: Question #1: Q1 Question #2: Q2 Question Number: 2 [1] Topic: Animal [2] Question: Q2 [3] Choice 1: A [4] Choice 2: B [5] Choice 3: C [6] Answer: B [7] Exit Do you want to save your current changes? (Y/N) Changes saved! (return to	Type the Topic of the Question to Edit Enter [1] to Go Back Input [0] to Exit. Question Numbers Associated with the Topic: Question #1: Q1 Question #2: Q2 Question Number: 2 [1] Topic: Animal [2] Question: Q2 [3] Choice 1: A [4] Choice 2: B [5] Choice 3: C [6] Answer: B [7] Exit Do you want to save your current changes? (Y/N) Changes saved! (return to	PASS

				topic selection)	topic selection)	

RESULT for TEST2 (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	A
1	Astronomy	1	Q3	D	E	F	F
2	Food	1	Q2	A	B	C	B
3	Geography	1	Q4	A	B	C	A
4	Technology	1	Q5	X	Y	Z	X

totalQuestions = 5;

	Question is edited, answers 'N' to confirmation	Technology 1 2 Q6 N	Type the Topic of the Question to Edit Enter [1] to Go Back Input [0] to Exit. Question Numbers Associated with the Topic: Question #1: Q1 Question Number: 1 [1] Topic: Technology [2] Question: Q5 [3] Choice 1: X [4] Choice 2: Y	Type the Topic of the Question to Edit Enter [1] to Go Back Input [0] to Exit. Question Numbers Associated with the Topic: Question #1: Q1 Question Number: 1 [1] Topic: Technology [2] Question: Q5 [3] Choice 1: X [4] Choice 2: Y	PASS

| | | | [5] Choice 3: Z
[6] Answer: X
[7] Exit

Do you want to save your current changes? (Y/N)

Changes discarded.

(return to topic selection) | [5] Choice 3: Z
[6] Answer: X
[7] Exit

Do you want to save your current changes? (Y/N)

Changes discarded.

(return to topic selection) | |

RESULT for TEST3 (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	A
1	Animal	2	Q2	A	B	C	B
2	Astronomy	1	Q3	D	E	F	F
3	Geography	1	Q4	A	B	C	A
4	Technology	1	Q5	X	Y	Z	X

totalQuestions = 5;

	Question is edited, answers 'Y' to confirmation	Technology 1 2 Q6 Y	Type the Topic of the Question to Edit Enter [1] to Go Back Input [0] to Exit. Question Numbers Associated with the Topic:	Type the Topic of the Question to Edit Enter [1] to Go Back Input [0] to Exit. Question Numbers Associated with the Topic:	PASS

				Question #1: Q1 Question Number: 1 [1] Topic: Technology [2] Question: Q5 [3] Choice 1: X [4] Choice 2: Y [5] Choice 3: Z [6] Answer: X [7] Exit Do you want to save your current changes? (Y/N) Changes saved! (return to topic selection)	Question #1: Q1 Question Number: 1 [1] Topic: Technology [2] Question: Q5 [3] Choice 1: X [4] Choice 2: Y [5] Choice 3: Z [6] Answer: X [7] Exit Do you want to save your current changes? (Y/N) Changes saved! (return to topic selection)	

RESULT for TEST3 (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	A
1	Animal	2	Q2	A	B	C	B
2	Astronomy	1	Q3	D	E	F	F
3	Geography	1	Q4	A	B	C	A
4	Technology	1	Q6	X	Y	Z	X

totalQuestions = 5;

SAMPLE QUESTIONS STRUCT 7 - struct questionData sampleQuestions7
Used for: editRecord(), deleteRecord
Description: Sorted topics and question numbers, all topics unique except for one

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	A
1	Animal	2	Q2	A	B	C	B
2	Astronomy	1	Q3	D	E	F	F
3	Geography	1	Q4	A	B	C	A
4	Technology	1	Q5	X	Y	Z	X

totalQuestions = 5;

| deleteRecord | Record from a topic with multiple available records is deleted, confirmation is answered 'Y' | Animal 1 Y | Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy Geography Technology Input [0] to Exit. Question Numbers Associated with the Topic: Question #[1]: Q1 Question #[2]: Q2 Are you sure you want to DELETE this | Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy Geography Technology Input [0] to Exit. Question Numbers Associated with the Topic: Question #[1]: Q1 Question #[2]: Q2 Are you sure you want to DELETE this | PASS |

			question? Y/N (This action cannot be undone) Successfully deleted. (return to topic selection)	question? Y/N (This action cannot be undone) Successfully deleted. (return to topic selection)	

Resulting Struct Array (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q2	A	B	C	B
1	Astronomy	1	Q3	D	E	F	F
2	Geography	1	Q4	A	B	C	A
3	Technology	1	Q5	X	Y	Z	X

totalQuestions = 4;

	Record from a topic only one record deleted, confirmation is answered 'Y'	Geography 1 Y	Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy Geography Technology Input [0] to Exit. Question Numbers Associated with the Topic:	Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy Geography Technology Input [0] to Exit. Question Numbers Associated with the Topic:	PASS

			Question #[1]: Q4	Question #[1]: Q4	
			Are you sure you want to DELETE this question? Y/N (This action cannot be undone)	Are you sure you want to DELETE this question? Y/N (This action cannot be undone)	
			Successfully deleted.	Successfully deleted.	
			(return to topic selection, deleted topic will no longer be displayed)	(return to topic selection, deleted topic will no longer be displayed)	

Resulting Struct Array (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	A
1	Animal	2	Q2	A	B	C	B
2	Astronomy	1	Q3	D	E	F	F
3	Technology	1	Q5	X	Y	Z	X

totalQuestions = 4;

	Record from a topic with multiple available records deleted, confirmation is answered 'N'	Animal 2 N	Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy	Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy	PASS

| | | | Geography Technology

Input [0] to Exit. Question Numbers Associated with the Topic: Question #[1]: Q1 Question #[2]: Q2

Are you sure you want to DELETE this question? Y/N (This action cannot be undone)

Deletion aborted.

(return to topic selection) | Geography Technology

Input [0] to Exit. Question Numbers Associated with the Topic: Question #[1]: Q1 Question #[2]: Q2

Are you sure you want to DELETE this question? Y/N (This action cannot be undone)

Deletion aborted.

(return to topic selection) | |

Resulting Struct Array (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	A
1	Animal	2	Q2	A	B	C	B
2	Astronomy	1	Q3	D	E	F	F
3	Geography	1	Q4	A	B	C	A
4	Technology	1	Q5	X	Y	Z	X

totalQuestions = 5;

	User opts to return to the previous menu	1	Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy Geography Technology (return to main menu)	Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy Geography Technology (return to main menu)	PASS

	Invalid topic input	Math	Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy Geography Technology Invalid input! (prompts for input again)	Type the Topic of the Question you wish to Delete Enter [1] to Go Back Available Topics: Animal Astronomy Geography Technology Invalid input! (prompts for input again)	PASS

Contents of valid.txt

Animal

1

Q1

A

B

C

B

Astronomy

1

Q2

D

E

F

F

Astronomy

2

Q3

G

H

I

H

importData	Question record is imported, file exists	1 valid.txt	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit Enter File Name: Import Complete! (sorts records) (return to previous menu)	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit Enter File Name: Import Complete! (sorts records) (return to previous menu)	PASS

Resulting Struct Array (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	B
1	Astronomy	1	Q2	D	E	F	F
2	Astronomy	2	Q3	G	H	I	H

| | Question record is imported, file does not exist, user opts to try again | 1 Invalid.txt 2 | Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit

Enter File Name:

File not found! Press [1] to return to the previous menu Press any key to try again

Enter File Name: (asks for input again) | Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit

Enter File Name:

File not found! Press [1] to return to the previous menu Press any key to try again

Enter File Name: (asks for input again) | PASS |

Contents of newScores.txt
Bob
15

Alice
17

John
13

| | | Player record is imported, file exists | 2
newScores.txt | Select Which Data to Import
[1] Questions Data
[2] Player Data
[3] Exit

Enter File Name:

Import Complete!

(sorts scores)

(return to previous menu) | Select Which Data to Import
[1] Questions Data
[2] Player Data
[3] Exit

Enter File Name:

Import Complete!

(sorts scores)

(return to previous menu) | PASS |

Resulting Struct Array (Expected and Actual)

Index	Name	Score
0	Alice	17
1	Bob	15
2	John	13

| | | Player record is imported, file does not exist, user opts to return to previous menu | 2
noScores.txt
1 | Select Which Data to Import
[1] Questions Data
[2] Player Data
[3] Exit | Select Which Data to Import
[1] Questions Data
[2] Player Data
[3] Exit | PASS |

			Enter File Name: File not found! Press [1] to return to the previous menu Press any key to try again (returns to main menu)	Enter File Name: File not found! Press [1] to return to the previous menu Press any key to try again (returns to main menu)	
	User opts to return to the previous menu	3	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit (returns to main menu)	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit (returns to main menu)	PASS

Contents of Questions Struct Array

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	B
1	Astronomy	1	Q2	D	E	F	F
2	Astronomy	2	Q3	G	H	I	H

exportData	Question record is exported	1 export.txt	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit Enter File Name: Export Complete!	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit Enter File Name: Export Complete!	PASS

Resulting File Contents (Expected and Actual)

Animal
1
Q1
A
B
C
B

Astronomy
1
Q2
D
E
F
F

Astronomy

2
Q3
G
H
I
H

Contents of Player Struct Array

Index	Name	Score
0	Alice	17
1	Bob	15
2	John	13

	Player record is exported	2 export1.txt	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit Enter File Name: Export Complete!	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit Enter File Name: Export Complete!	PASS

Resulting File Contents (Expected and Actual)

Alice
17

Bob
15

John
13

	User opts to return to the previous menu	3	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit (returns to previous menu)	Select Which Data to Import [1] Questions Data [2] Player Data [3] Exit (returns to previous menu)	PASS

playGame	User inputted record file does not exist	invalid.txt	Please input the filename of the records file to start: File not found! Please export or input records to a .txt file to play. (return to previous menu)	Please input the filename of the records file to start: File not found! Please export or input records to a .txt file to play. (return to previous menu)	PASS

Sample Records for Playing (from valid.txt)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	B
1	Astronomy	1	Q2	D	E	F	F
2	Astronomy	2	Q3	G	H	I	H

	User ends the game using the "End Game" option	valid.txt Player1 Animal 2 Animal Astronomy 4 q	Please input the filename of the records file to start: Questions Found! Total Questions: 3 Enter Your Name: Welcome [Player1]! Current Score: 0 Total Questions: 3 Questions Answered: 0 Type the Topic to Answer From Available Topics: Animal Astronomy Select a Topic Q1 [1] A [2] B [3] C [4] End Game Correct Answer! Current Score: 1 Total Questions: 3 Questions Answered: 1 Type the Topic to Answer From Available Topics: Animal Astronomy Select a Topic No more unanswered questions in this topic! Please select another topic.	Please input the filename of the records file to start: Questions Found! Total Questions: 3 Enter Your Name: Welcome [Player1]! Current Score: 0 Total Questions: 3 Questions Answered: 0 Type the Topic to Answer From Available Topics: Animal Astronomy Select a Topic Q1 [1] A [2] B [3] C [4] End Game Correct Answer! Current Score: 1 Total Questions: 3 Questions Answered: 1 Type the Topic to Answer From Available Topics: Animal Astronomy Select a Topic No more unanswered questions in this topic! Please select another topic.	PASS

| | | | (random question)

Game Over!
Player Name: Player1
Final Score: 1

[Press any key to return.]

(return to previous menu) | (random question)

Game Over!
Player Name: Player1
Final Score: 1

[Press any key to return.]

(return to previous menu) | |

	User answers all available questions	valid.txt Player2 Animal 2 Animal Astronomy 2 Astro Astronomy 3 q	Please input the filename of the records file to start: Questions Found! Total Questions: 3 Enter Your Name: Welcome [Player1]! Current Score: 0 Total Questions: 3 Questions Answered: 0 Type the Topic to Answer From Available Topics: Animal Astronomy Select a Topic Q1 [1] A [2] B [3] C [4] End Game Correct Answer! Current Score: 1 Total Questions: 3	Please input the filename of the records file to start: Questions Found! Total Questions: 3 Enter Your Name: Welcome [Player1]! Current Score: 0 Total Questions: 3 Questions Answered: 0 Type the Topic to Answer From Available Topics: Animal Astronomy Select a Topic Q1 [1] A [2] B [3] C [4] End Game Correct Answer! Current Score: 1 Total Questions: 3	PASS

				Questions Answered: 1	Questions Answered: 1	
				Type the Topic to Answer From Available Topics: Animal Astronomy	Type the Topic to Answer From Available Topics: Animal Astronomy	
				Select a Topic	Select a Topic	
				No more unanswered questions in this topic! Please select another topic.	No more unanswered questions in this topic! Please select another topic.	
				(random question)	(random question)	
				Correct Answer! Current Score: 2	Correct Answer! Current Score: 2	
				Total Questions: 3 Questions Answered: 2	Total Questions: 3 Questions Answered: 2	
				Type the Topic to Answer From Available Topics: Animal Astronomy	Type the Topic to Answer From Available Topics: Animal Astronomy	
				Invalid Topic!	Invalid Topic!	
				(random question)	(random question)	
				All questions answered. Player Name: Player2 Final Score: 3	All questions answered. Player Name: Player2 Final Score: 3	
				[Press any key to return.]	[Press any key to return.]	
				(return to previous menu)	(return to previous menu)	

importQuestions	Inputted file does not exist	invalid.txt	File not found!	File not found!	PASS

	Inputted file exists but is empty	empty.txt	No questions found in file!	No questions found in file!	PASS

Contents of valid.txt

Animal
1
Q1
A
B
C
B

Astronomy
1
Q2
D
E
F
F

Astronomy
2
Q3
G
H
I
H

	Inputted file exists and contains records	valid.txt	Questions found!	Questions found!	PASS

Resulting Struct Array (Expected and Actual)

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer

0	Animal	1	Q1	A	B	C	B
1	Astronomy	1	Q2	D	E	F	F
2	Astronomy	2	Q3	G	H	I	H

SAMPLE QUESTIONS STRUCT 8 - struct questionData sampleQuestions8
Used for: clearRecords()
Description: Standard sample array with 3 total questions

Index	Topic	Question Number	Question	Choice 1	Choice 2	Choice 3	Answer
0	Animal	1	Q1	A	B	C	B
1	Astronomy	1	Q2	D	E	F	F
2	Astronomy	2	Q3	G	H	I	H

totalQuestions = 3

clearRecords	Struct array contains elements	sampleQuestions8, &totalQuestions	Empty array, totalQuestions = 0	Empty array, totalQuestions = 0	PASS

struct questionData emptyArray (no elements)
totalQuestions = 0

	Struct array does not contains element	emptyArray, &totalQuestions	Empty array, totalQuestions = 0	Empty array, totalQuestions = 0	PASS

struct questionData emptyArray (no elements)
totalQuestions = 3

	Struct array does not contain elements, but totalQuestions > 0	emptyArray, &totalQuestions,	Empty array, totalQuestions = 0	Empty array, totalQuestions = 0	PASS