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Requirements									
	Filemaker (written with v19.4, but should work with v16 or greater)								
Questions Data									
	Question Type	Figures	QTI		Import (I) / Export (E) Limits				OS
			Import	Import or API POST	Questions	Answers	Alternatives	Distractors	
	essay	✓	✓	✓ ¹	1 (I/E)	1 (I/E)			 
	file upload		X ²	considering					
	fill in multiple blanks	✓	✓	✓	1 (I/E)	9 (I/E)	3 (I/E) each		 
	fill in multiple blanks (table)	✓	X ³	✓	3 (E)	9 (E)	3 (E) each		 
	formula question	X ²	X ²	X ²					
	matching	✓	✓ ⁴	✓	9 (I/E)	9 (I/E)		2 (E) total	 
	multiple answers	✓	✓	✓	6 (I/E)	6 (I/E)			 
	multiple choice	✓	✓ ⁵	✓	1 (I/E)	6 (I/E)			 
	multiple drop down	✓	✓	✓	6 (I/E)	6 (I/E)		3 (I/E) each	 
	multiple drop down (table)	✓	X ³	✓	3 (E)	9 (E)		3 (E) each	 
	numerical answer	✓	✓ ⁶	✓ ⁶	1 (I/E)	1(I/E)			 
	short answer	✓	✓	✓	1 (I/E)	1 (I/E)	3 (I/E) total		 
	text (no question)	✓	✓	✓ ⁷					 
true/false	✓	✓	✓	1 (I/E)	1 (I/E)			 	
Notes									
1. For all questions feedback not implemented. For essay questions upload not implemented, if used, it is visible to students — this is a Canvas limitation									
2. possible, but need real world example									
3. the table format is non-existent in QTI; it is generated in the database via HTML during export; if present in QTI quiz, the question is imported as a 'multiple drop down' and the table headers and questions will need to be fixed; current table is limited to 4X4									
4. distractors not imported (cannot figure out how to do so from XML structure)									
5. imports follow XML data structure, if the correct answer is listed first on Canvas, it will be imported as answer “A” in the database. To avoid <u>all</u> multiple choice answers being “A” after re-exporting, either: 1) select shuffle answers when exporting the quiz or 2) rearrange the answers manually in the question database.									
6.’ answer in the range’ works, need to add ‘exact answer’ and ‘answer with precision’; need real world example									
7. properly positioning the ‘text’ question (spacer) during QTI export is not implemented — related to known issue 1									











Question Formating				
	Format	Import	Export	
	HTML	X ¹	✓ ²	     
	plain text	✓	✓	
	RTF	X ¹	✓ ²	
Notes	<p>1. all question formatting is stripped during import (to avoid a display mess)</p> <p>2. any text in the 'question' section can be formatted using Filemaker. Formats (<i>italic</i>, <u>underline</u>, etc) will be sent to Canvas in HTML automatically. Instead of /bold Filemaker uses "font style" which is not recognized by Canvas. The following characters are substituted automatically in CSS transform to comply with XML constraints <,>, ", ', &. Also, Unicode characters for lowercase Greek alphabet are hard-coded (<i>i.e.</i> &alpha; → &#x3B1) and should be automatically converted into safe XML format. Other Unicode characters will need to be added individually. If formatted HTML is buggy on Canvas after export, check for Unicode characters.</p>			

Quiz Import				
	File Format	Import	Figures	
	CSV	✓ ¹	X ²	 
	FileMaker	✓ ¹	✓	 
	Microsoft Excel	✓ ¹	X ²	 
	QTI 1.2 XML Quiz			 
	single quiz	✓	✓ ³	 
	all quizzes	✓	✓ ³	 
	TAB delineated	✓ ¹	X ²	 
Notes	<p>1. efficient import will require a template that specifies datafield targets, considering generating templates</p> <p>2. figures need to be manually imported (drag/drop) into the database</p> <p>3. Exported QTI packages have a subfolder named after the folder in which the files are stored on Canvas. It contains all quiz-associated figures as long as the user has the appropriate file permissions. In a multi-instructor setting, figures may be missing if an instructor stores figures in their userspace. This is a Canvas limitation.</p>			

Quiz Management on Canvas		
	Feature	implemented
	Delete Quiz	
	single quiz	✓
	selected quizzes	✓
	all quizzes	✓
	Dynamic Hyperlinks	
	go to quizzes page	✓
	go to import status page	✓
	go to quiz preview	✓
Notes		

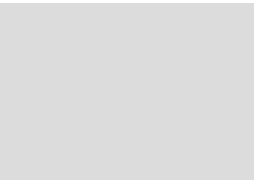
Known Issues

1. Figure out how to specify question sort order dynamically (q_format vs q_#), currently set by q_# in the database
2. If number of quizzes on Canvas > number of quizzes in database, an error is thrown when parsing quiz_id (#10) after post
3. Proctorio settings may not align given the \$string used — specific to my settings (is this possible to change?)
4. TXT questions are not counted on Canvas as a question, but must be in the database, this will make questions out of register
5. may be a problem with capturing/deleting pre-existing \$quiz_id if there are duplicate names (use 'Download & parse quiz IDs (cURL)' first) or scripts are terminated prematurely
6. can upload quizzes faster than Canvas can keep up, this can cause quizzes to fall out of register for 'Delete quiz on Canvas based on ID'
7. fix figure upload sub-script for single and multiple quizzes (need to parse assesement)
8. work on exporting figures for printed quizzes
9. quiz settings (instructions; times; etc) not imported — need to scan assessment_meta.xml file; current import only scans question data file
10. The following characters cannot be present in a question as they cannot be uploaded in the XML (<, >, “, ‘, &). Need to figure out a substitution calculation on export or make the characters invalid on entry.

Data Export				
	File Format	Export	Figures	 
	CSV	✓	✓ ¹	 
	Microsoft Excel	✓	✓ ¹	 
	Filemaker	✓	✓	 
	TAB delineated	✓	✓ ¹	 
Notes	1. figures can be exported but are not linked to the data file			

Quiz Management on Canvas		
	Feature	implemented
	Delete Quiz	
	single quiz	✓
	selected quizzes	✓
	all quizzes	✓
	Dynamic Hyperlinks	
	go to quizzes page	✓
	go to import status page	✓
	go to quiz preview	✓
Notes		

Exported QTI package settings					
	Feature	Options	implemented		
	access code generation	random string	✓		
	allow multiple attempts	number	✓		
	anonymous submissions	true or false	✓		
	availability from	date/time	✓		
	available until	date/time	✓		
	due date	date/time	X ¹	if not specified, 'available until' date is substituted	
	hide results	always; until last attempt	✓		
	post feedback	true or false	X ²		
	Proctorio	true or false	✓ ³		
	publish	true or false	✓		
	question bank incorporation	automatic	✓		
	question bank suppression		X ⁴		
	question number	number	✓		
	quiz point value	number	✓		
	quiz type	gnment; graded_survey; practice	✓		
	require LockDown browser	true or false	✓ ⁷		
	scoring policy	hightest or latest	✓		
	show answer start date	date/time	✓ ⁵		
	show answer until date	date/time	✓ ⁵		
	show correct answers	date/time	✓ ⁵		
	suffle answers	true or false	✓		
	time limit	number (min)	✓		
	upload quiz associated figures	yes or no	✓ ⁶		
Notes	1. possible, just not implemented yet (available until is a far superior option) 2. currently feedback not exported; but possible 3. Proctorio "Secure Exam Proctor" must be activated in Canvas Settings for the course before uploading quiz				

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- 4. cannot figure out if this is possible — I would like to not have an automatic Question Bank populated
 - 5. unavailable if “hide results” is populated
 - 6. automatically specified in upload script
 - 7. Respondus LockDown Browser can be set, but I don't know if it works because I've never used it

Question Database Organization		
Features	Question tagging ¹	question tagging (multiple tags; add tag to single question; remove tag from single question; add tag to question set; remove tag from set)
	chapter	
	checked flag (question is ok to publish)	
	exam flag	
	homework flag	
	in process flag (question is not finished)	
	modify flag (question needs to be changed)	
	point value for question	
	question type (see above)	
	question number	
	question source	
	quiz flag	
	topic	
	generate quiz from selected group	
	question select flag	
Notes	1. searches: "exam 1" finds anything with "exam" or "1", if one wants an exact match you need to enter '==exam 1' — this is a Filemaker-specific 'feature', a script could be written to deal with this	