SMARTERAPP INTERFACE SPECIFICATION

for

TEST DELIVERY TO TEST INTEGRATION

AND

TEST INTEGRATION TO DATA WAREHOUSE

Authored by
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DRAFT – 8 August 2014

Revision History

Revision Description	Author/Modifier	Date
0.1: Initial Release (DRAFT)	Rami Levy	April 28, 2014
0.2: Clarified that this specification covers both the TDS-to-TIS and TIS-to-DW interfaces, as they are exactly the same.	Rami Levy	July 8, 2014
0.3: Removed Opportunity/windowStart	Rami Levy	July 18, 2014
0.4: Added/updated complete list of acceptable values for ExamineeAttributes and Accommodations	Rami Levy	August 3, 2014

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Purpose

The purpose of this document is to provide a format specification describing the output of the Test Delivery System (TDS), which feeds into the Test Integration System (TIS), which feeds into the Data Warehouse (DW). The interface is exactly the same for both; that is, the TDS output contains the complete specification for TDS-to-TIS and TIS-to-DW. The specification includes a table describing each XML node and attribute. In addition, the XSD and a sample XML file are included for reference.

This specification represents the combined work of Smarter Balanced and various vendors working on related contracts.

References

Ref	Reference	Author	Version
1	Common Education Data Standards (CEDS) specification (https://ceds.ed.gov/elements.aspx)	ceds.ed.gov	4.0
2	Administration And Registration Tool Upload File Formats	AIR / Smarter Balanced	0.3

Test Integration Data Flow Overview

This document describes the data interface between the Test Integration component and one or more Data Warehouses (an interface labeled as arrow 8 in Figure 1).
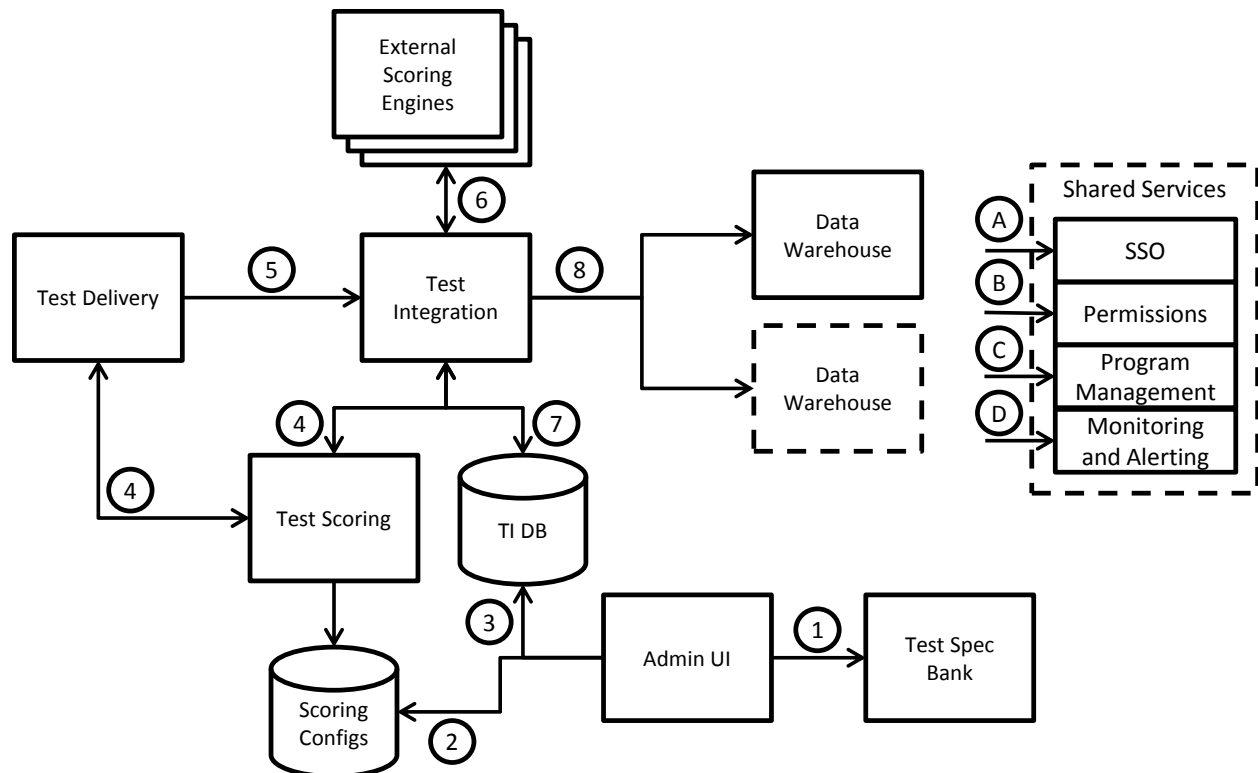
Figure 1: Test Integration and Scoring Data Interfaces

Table 1 summarizes the elements in Figure 1 that are relevant to this document.

Diagram Element	Description
Test Delivery (TDS)	Test Delivery is responsible for the real time, interactive portion of a student assessment. Test Delivery holds a student's assessment result for a test opportunity until that opportunity has been completed.
Test Integration (TIS)	Test Integration holds an assessment result when the real time, interactive portion of the assessment is completed.
Test Integration Database	The Test Integration Database stores: (1) in-process assessments that have items that are awaiting are awaiting scoring by external scoring engines, and (2) storing configuration information about how to process assessment opportunities for particular assessments. The configuration information about a particular assessment is provided by a test package via the Admin UI that contains the scoring rules.
External Scoring Engines	External Scoring Engines are typically hand scoring systems, but may also be other types of item scoring engines such as automated essay scoring engines that may take more time than is reasonable to be used during a live assessment event. There is no vendor that is building these scoring engines, so AIR will design the protocol to these scoring engines and develop a stub that satisfies the other end of this protocol.

Diagram Element	Description
Data Warehouse (DW)	The Data Warehouse is being developed for Smarter Balanced under Contract 15. The Test Integration component will deliver fully scale scored XML documents to the Data Warehouse that represents a complete test opportunity for a student.
Test Scoring	The Test Scoring component is responsible for scale scoring an assessment based on preconfigured scoring rules that are provided by means of test packages authored by Test Authoring and stored in the Test Spec Bank.
Scoring Configs Database	The Scoring Configs Database stores scoring configurations that the Test Scoring component uses to know how to score a particular assessment. The configuration information about a particular assessment is provided by a test package via the Admin UI that contains the scoring rules.

Table 1: Component Definitions

Test Integration receives the completed assessment from Test Delivery (arrow 5), delivers responses to external scoring engines (arrow 6), receives and collates results from external scoring engines (arrow 4). *The interfaces associated to arrows 5 and 8 are identical and are specified in this document*. Their format has been designed with optimal flexibility, in order to capture information for any type of assessment. For this reason, many of the nodes and attributes are normalized to name/value pairs, rather than being hard-coded to accept specific data fields.

Test Integration Data Format Conventions

Table 2 provides information regarding the XML output format and its associated XSD, such as the allowable values, sizes, and descriptions, as well as any standards alignment. Also included in this document are the XSD and a sample XML output. The fields in Table 2 below follow these conventions:

- **Case sensitivity:** Field names are case sensitive and follow the guideline that the XML *Node/Element* is in UpperCamelCase, while node *attributes* are in lowerCamelCase.
- **Order sensitivity:** Fields are not order-sensitive.
- **Non-required (optional) fields:** By default, these fields do not need to be included in the XML file. A missing optional field is simply treated as not present or not applicable.
- **Cardinality:** The number of possible instances of a particular node is defined clearly in the XSD (see Test Integration Format XSD).

Test Integration Format Specification

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Requir ed	Data Element Description	Acceptable Values	Data Type	Reference
Test	name	TDSReport:Test	250	Y	Name of the test. This usually consists of the testID with some extra information indicating the client and the season. E.g. (Oregon)OAKS-Math-5-Fall-2012-2013	one or more printable ASCII characters	xsd:token	CEDS [1]: K12 -> Assessments -> Assessment Administration -> AssessmentAdministration Name ID #977
	subject		10	Y	Subject of the test. E.g. ELPA or MA.	one or more printable ASCII characters	xsd:token	
	testId		255	Y	The Test Authoring ID of the test, independent of client, season and year	one or more printable ASCII characters	xsd:token	CEDS [1]: K12 -> Assessments -> Assessment -> AssessmentIdentifier ID #1067
	bankKey		8	Y	ITS bank of blueprint. This value may be deprecated and eventually removed.	positive 32-bit integer	xsd:unsignedInt	Used for the Spring 2014 Field Test, but not on operational tests.
	handScoreProject		8	N	If this test has items that need to be scored by hand, this is the ID of the handscore project (either in own handscoring center, or an ID to identify a subcontractor's handscoring project).	positive 32-bit integer	xsd:unsignedInt	
	contract		100	N	Contract of this test (e.g. ELPA or OAKS for Oregon's tests).	one or more printable ASCII characters	xsd:token	
	mode		50	Y	Mode of the test. Either 'online', 'paper' or 'scanned'. Here 'paper' means it was a data entry test (meaning the student took the test on paper and someone else then entered the responses in the online system).	online paper scanned	xsd:token	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	grade		100	Y	Tested grade.	IT - Infant/toddler PR - Preschool PK - Prekindergarten TK - Transitional Kindergarten KG - Kindergarten 01 - First grade 02 - Second grade 03 - Third grade 04 - Fourth grade 05 - Fifth grade 06 - Sixth grade 07 - Seventh grade 08 - Eighth grade 09 - Ninth grade 10 - Tenth grade 11 - Eleventh grade 12 - Twelfth grade 13 - Grade 13 PS - Postsecondary UG - Ungraded	xsd:token	CEDS [1]: K12 -> Assessments -> Assessment -> AssessmentLevelForWhichDesigned ID #177
	assessmentType		20	Y	Type of assessment	one or more printable ASCII characters, preferably from the list in CEDS. Examples: Summative Formative Interim	xsd:token	[CEDS [1]: K12 -> Assessments -> Assessment -> AssessmentType ID #29
	academicYear		4	Y	Current academic year	1900 <= YYYY <= 9999	xsd:integer	CEDS [1]: K12 -> K12 School -> Session -> SchoolYear ID #243
	assessmentVersion		30	Y	Version of this assessment	string	xsd:token	
Examinee	key	TDSReport: Examinee	16	N	Internal examinee key	UUID – 36 characters	xsd:token	

The table has these columns: Category/Node, TDS Field Name, XML Hierarchy, Width, Required, Data Element Description, Acceptable Values, Data Type, Reference.

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
ExamineeAttribute	name	TDSReport: Examinee : ExamineeAttribute	50	Y	Name of the attribute.	LastOrSurname FirstName MiddleName Birthdate StudentIdentifier AlternateSSID GradeLevelWhenAssessed Sex HispanicOrLatinoEthnicity AmericanIndianOrAlaskaNative Asian BlackOrAfricanAmerican White NativeHawaiianOrOtherPacificIslander DemographicRaceTwoOrMoreRaces IDEAIndicator LEPStatus Section504Status EconomicDisadvantageStatus LanguageCode EnglishLanguageProficiencyLevel MigrantStatus FirstEntryDateIntoUSSchool LimitedEnglishProficiencyEntryDate LEPExitDate TitleIIILanguageInstructionProgramType PrimaryDisabilityType	xsd:token	CEDS [1] and ART spec [2]
	value		500	Y	attribute value	varies per attribute	xsd:token	
	context		50	Y	Context of the attribute (currently either INITIAL or FINAL).	INITIAL FINAL	xsd:token	-
	contextDate		23	Y	Date and time the attribute was fetched from TR	time+date	xsd:dateTime	-
ExamineeRelationship	entityKey	TDSReport: Examinee: ExamineeRelationship	22	Y	TR unique identifier	entity identifier + state abbreviation	xsd:token	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	name		100	Y	Name of the attribute.	DistrictID DistrictName SchoolID SchoolName StateName GroupId GroupText	xsd:token	
	value		500	Y	attribute value	one or more printable ASCII characters	xsd:token	
	context		50	Y	Context of the attribute (currently either INITIAL or FINAL).	INITIAL FINAL	xsd:token	
	contextDate		23	Y	Date and time the attribute was fetched from TR	date+time	xsd:dateTime	-
Opportunity	server	TDSReport: Opportunity	128	Y	Name of the TDS server that was used to administer this test.	one or more printable ASCII characters	xsd:token	
	database		128	N	Name of the TDS DB that was used to administer this test.	zero or more printable ASCII characters	xsd:token	
	key		36	Y	A globally unique identifier for the opportunity (GUID)	one or more printable ASCII characters	xsd:token	
	oppId		16	Y	Opportunity ID, formerly known as vndr_test_event_id. A unique identifier (within client) of the test opportunity.	Positive 64-bit integer	xsd:unsignedLong	
	startDate		23	Y	Date and time the student started the opportunity.	date+time	xsd:dateTime	CEDS [1]: K12 -> Assessments -> Assessment Administration ID #962, #963
	status		50	Y	Status of the opportunity.	appeal completed expired handscoring invalidated paused reported reset scored submitted	xsd:token	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	opportunity		8	Y	A counter that counts the number of times a student has taken this test.	positive 32-bit integer	xsd:unsignedInt	
	statusDate		23	Y	The date and time the status of this opportunity last changed. Generally this is close to the opportunityDateCompleted, but it can be much later, e.g. for resets, invalidations, hand scores being added, etc.	date+time	xsd:dateTime	-
	dateCompleted		23	N	Date the student submitted the opportunity for scoring.	date+time	xsd:dateTime	CEDS [1]: K12 -> Assessments -> Assessment Administration ID #964
	pauseCount		8	Y	number of times Examinee paused the opportunity	positive 32-bit integer	xsd:unsignedInt	
	itemCount		8	Y	Number of items in the XML file. Note these are presented items plus prefetched items (there could be items the student never saw).	positive 32-bit integer	xsd:unsignedInt	
	ftCount		8	Y	number of field test items in count	positive 32-bit integer	xsd:unsignedInt	
	abnormalStarts		8	Y	The number of times the test was restarted after an abrupt end to a test (browser crash, power shutdown, network loss etc.).	positive 32-bit integer	xsd:unsignedInt	
	gracePeriodRestarts		8	Y	The number of times the student paused the test and restarted it within the grace period (20 minutes).	positive 32-bit integer	xsd:unsignedInt	
	TAID		128	N	ID of the Test Administrator that administered this test (often the TA's e-mail address)	zero or more printable ASCII characters	xsd:token	CEDS [1]: K12 -> K12 Staff -> Contact -> Email ID #88
	TAName		128	N	Name of the Test Administrator that administered this test.	zero or more printable ASCII characters	xsd:token	
	sessionId		128	N	TDS's ID for the session in which this test was taken.	zero or more printable ASCII characters	xsd:token	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Requir ed	Data Element Description	Acceptable Values	Data Type	Reference
	windowId		50	Y	the ID of the window in which the test was administered (E.g. EOC-Spring)	one or more printable ASCII characters	xsd:token	
	windowOpportunity		8	N	A counter that counts the number of times a student has taken this test in this window.	zero or more printable ASCII characters	xsd:token	
	dateForceCompleted		8	N	If a test is actually complete (all items responded to) at the time it expires it might (depending on per-client configuration) instead be "force completed". That is, it is submitted for the student. It will not have status 'expired', but 'scored'. This is the date the "force completion" was done.	date+time	xsd:dateTime	
	clientName		255	Y	Name of the client this test is for (e.g. Oregon).	one or more printable ASCII characters	xsd:token	
	assessmentParticipant SessionPlatformUserA gent		512	Y	A list of product tokens (keywords) with optional comments that identifies the client hardware and software with which the assessment was delivered to the student during the assessment session.Implementation Note: The recommended approach is to store the User-Agent string returned as part of an HTTP header. For example, an assessment session delivery via iPad might have "Mozilla/5.0 (iPad; U; CPU OS 3_2_1 like Mac OS X; en-us) AppleWebKit/531.21.10 (KHTML, like Gecko) Mobile/7B405"	<User-Agent string>	xsd:string	CEDS [1]: K12 -> Assessments -> Assessment Participant Session -> AssessmentParticipantSe ssionPlatformUserAgent ID #1152
Segment	id	TDSReport: Opportunity: Segment	250	Y	Segment the item was administered on.	one or more printable ASCII characters	xsd:token	
	position		8	Y	Position of the segment on the test.	positive 32-bit integer, null allowed	xsd:unsignedInt	
	formKey		100	N	ITS key of the form (if algorithm = fixedform).	one or more printable ASCII characters	xsd:token	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	formId		150	N	If the algorithm is fixedform then this is the ID of the form for the segment. Otherwise null.	one or more printable ASCII characters	xsd:token	
	algorithm		50	Y	Item selection algorithm that was used for this segment.	one or more printable ASCII characters	xsd:token	
	algorithmVersion		50	Y	Item selection algorithm version	one or more printable ASCII characters	xsd:token	
Accommodation	type	TDSReport: Opportunity: Accommodation	510	Y	accommodation type (e.g. 'ColorContrast')	AmericanSignLanguage ColorContrast ClosedCaptioning Language Masking PermissiveMode PrintOnDemand PrintSize StreamlinedInterface TexttoSpeech Translation (Glossary) NonEmbeddedDesignatedSupports NonEmbeddedAccommodations Other	xsd:token	CEDS [1]: K12 -> Assessments -> Assessment Participant Session ID #385 And ART spec [2]
	value		510	Y	accommodation value (e.g. 'Magenta'). Note that there is a one to one relationship between value and code.	one or more printable ASCII characters	xsd:token	
	code		510	Y	Accommodation code (e.g. 'TDS_CCMagenta')	one or more printable ASCII characters	xsd:token	
	segment		8	Y	Segment number the accomodation applies to. A 0 means the accomodation applies to the entire test (all segments).	positive 32-bit integer, Null allowed	xsd:unsignedInt	
	context		50	Y	Context of the attribute (currently either INITIAL or FINAL).	INITIAL FINAL	xsd:token	
	contextDate		23	Y	Date and time the attribute was fetched from TR	date+time	xsd:dateTime	
Score	measureOf	TDSReport: Opportunity: Score	150	Y	The set of items this value measures. Usually a strand or an AffinityGroup. E.g. Overall or Mathematics-10.2 or Listening.	one or more printable ASCII characters	xsd:token	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	measureLabel		150	Y	Label of this measure. E.g. ScaleScore, PerformanceLevel, Attempted.	one or more printable ASCII characters	xsd:token	
	value		64	Y	Value of the measure. E.g. 1034 (for ScaleScore) or Y (for Attempted).	one or more printable ASCII characters	xsd:token	CEDS [1]: K12 -> Assessments -> Assessment Item -> Assessment Item Response ID #724
	standardError		8	N	Standard error of the measure.	float, null allowed	xsd:token	
GenericVariable	context	TDSReport: Opportunity: GenericVariable	50	Y	This node is optional but if used all of these attributes are required	one or more printable ASCII characters	xsd:token	
	name		50	Y	general use	one or more printable ASCII characters	xsd:token	
	value		255	Y	general use	one or more printable ASCII characters	xsd:string	
Item	position	TDSReport: Opportunity: Item	8	Y	ordinal position of item on test	positive 32-bit integer, null allowed	xsd:unsignedInt	
	segmentId		250	Y	Segment the item was administered on.	one or more printable ASCII characters	xsd:token	
	bankKey		40	Y	Permits items from multiple Item Authoring banks	one or more printable ASCII characters	xsd:token	CEDS [1]: K12 -> Assessments -> Assessment Item ID #1181 Used only in the Spring 2014 field test.
	key		40	Y	internal ID from Item Authoring. This is the item identifier.	UUID – 36 characters	xsd:token	
	clientId		80	N	how client identifies the item	one or more printable ASCII characters	xsd:token	
	operational		8	Y	1 if operational, 0 if field test	0,1	xsd:unsignedInt	
	isSelected		8	Y	Whether the student submitted his response for scoring or not. Possible values 0 (not submitted) or 1 (submitted).	0,1	xsd:unsignedInt	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	format		50	Y	Item type (e.g. MC (multiple choice) or GI (grid item)).	associateInteraction choiceInteraction customInteraction drawingInteraction endAttemptInteraction extendedTextInteraction gapMatchInteraction graphicAssociateInteraction graphicGapMatchInteraction graphicOrderInteraction hotspotInteraction hottextInteraction inlineChoiceInteraction matchInteraction mediaInteraction orderInteraction positionObjectInteraction selectPointInteraction sliderInteraction textEntryInteraction uploadInteraction EBSR EQ ER GI HT HTQ MC MI MS NL SA TI TUT WER WORDLIST Stimulus	xsd:token	CEDS [1]: K12 -> Assessments -> Assessment Item -> Assessment Item APIP Interaction ID #1158
	score		8	Y	number of scorepoints earned by Examinee. -1 means not scored	unsigned float, -1 allowed	xsd:float	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	scoreStatus		50	N	Provided by independent item scoring engine	NOTSCORED SCORED SCORINGERROR WAITINGFORMACHINESCORE		
	adminDate		23	Y	Date and time item was administered to Examinee	date+time	xsd:dateTime	
	numberVisits		8	Y	Number of times the student modifies his response to the item.	positive 32-bit integer	xsd:unsignedInt	
	mimeType		255	Y	MIME type of item response.	one or more printable ASCII characters		
	strand		150	Y	Top level strand in the strand hierarchy the item is on.	one or more printable ASCII characters		
	contentLevel		150	Y	Lowest level strand in the strand hierarchy the item is part of.	one or more printable ASCII characters		
	pageNumber		8	Y	Number of the (online) page the item appears on.	positive 32-bit integer	xsd:unsignedInt	
	pageVisits		8	Y	Number of times the student visited the (online) page this item is on.	positive 32-bit integer	xsd:unsignedInt	
	pageTime		8	Y	Time (in milliseconds) the student spent on the (online) page this item is on.	signed 32-bit integer	xsd:int	
	dropped		8	Y	Whether the item is dropped. If an item was administered but later inactivated the DW might receive a new record with this flag turned on.	0 or 1	xsd:unsignedInt	
Response	type	TDSReport: Opportunity: Item: Response	10	N	Type of responseValue. Possible values 'value' or 'reference'. 'reference' is used for scanned paper tests where the scanned response is not included, but only a reference to the file containing the scanned response.	value reference <blank allowed>	xsd:token	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	<node text>		unlimited	N	If responseType is 'value', then the actual response. Note that both MC responses and CR responses are captured here. If responseType is 'reference' then the filename where the scanned response is saved.		xsd:string	CEDS [1]: K12 -> Assessments -> Assessment Item -> Assessment Item Response ID #724
	date		23	N	Date and time the student responded to the item	date+time	xsd:dateTime	CEDS [1]: K12 -> Assessments -> Assessment Item -> Assessment Item Response ID #959, #958
ScoreInfo	scorePoint	TDSReport: Opportunity: Item: ScoreInfo	8	N	Output of the machine scorer giving reasons for the assigned score. Now also contains dimension scores for certain items.	float, -1 allowed	xsd:float	
	scoreDimension		255	N	Dimension the score is for.	one or more printable ASCII characters	xsd:token	
	scoreStatus		22	N	Provided by independent item scoring engine	NotScored Scored ScoringError WaitingForMachineScore	xsd:token	
	conditionCode		1	N	For hand-scored items and machine-scored NL items	A-Z	xsd:token	
ScoreRationale	<node text>	TDSReport: Opportunity: Item: ScoreInfo: ScoreRationale	unlimited	N			xsd:string	
SubScoreList		TDSReport: Opportunity: Item: ScoreInfo: ScoreRationale: SubScoreList		N	SubsccoreList has no attrs, but can have nested ScoreInfo nodes for multi-dimensional items.			
Comment	context	TDSReport: comment	200	Y	Context of the comment (e.g. TESTITEM or GlobalNotes).	one or more printable ASCII characters	xsd:token	

Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Requir ed	Data Element Description	Acceptable Values	Data Type	Reference
	itemPosition		8	Y	If this was an item level comment (context = TESTITEM), the position of the item the comment was for.	positive 32-bit integer, Null allowed	xsd:unsignedInt	
	date		23	Y	Date and time comment was entered.	date+time	xsd:dateTime	
	<node text>		unlimited	N			xsd:string	
Score	value	TDSReport: Opportunity: score	10	Y	Score (or ConditionCode if type isn't Final).	one or more printable ASCII characters	xsd:token	
	compName		50	Y	Component name. Dimension: if the score is a dimension score. ScorePoints: if there are no dimensions and this is just a score for the whole item. ConditionCodes: if the score value is actually a condition code (these usually apply to all dimensions).	one or more printable ASCII characters	xsd:token	
	dimension		50	Y	Dimension the score is for.	one or more printable ASCII characters	xsd:token	
	sequence		8	Y	Used to count backreads. 1 for all other types.	positive 32-bit integer	xsd:unsignedInt	
	conditionCode		10	N	Blank if this record is for a regular score, otherwise the condition code. Only used for final scores.	one or more printable ASCII characters	xsd:token	
	type		50	Y	Type of the score.	Initial Reliability Resolution Backread Final	xsd:token	
	userId		50	Y	ID of the scorer.	one or more printable ASCII characters	xsd:token	
	userLastName		50	N	Last name of the scorer.	one or more printable ASCII characters	xsd:token	
	userFirstName		50	N	First name of the scorer.	one or more printable ASCII characters	xsd:token	
ToolUsage	toolType	TDSReport: ToolUsage	100	Y	Tools used on certain items or item groups (passages). For instance TTS (TextToSpeech). Type of the tool.	one or more printable ASCII characters	xsd:token	

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Category / Node (XML Element)	TDS Field Name (attribute)	XML Hierarchy	Width (chars)	Required	Data Element Description	Acceptable Values	Data Type	Reference
	toolCode		100	Y	Code for the tool.	one or more printable ASCII characters	xsd:token	
ToolPage	page	TDSReport: ToolUsage: ToolPage	8	Y	(Online) page the tool was used on.	positive 32-bit integer	xsd:unsignedInt	
	groupId		59	Y	Item or Passage ID	one or more printable ASCII characters	xsd:token	
	count		8	Y	Number of times the tool was used.	positive 32-bit integer	xsd:unsignedInt	

Table 2: Test Integration XML Output Format Description

The examineeAttribute values are the same as used for test registration. Student identity information (name, birthdate and studentIdentifier) is required at registration but may be removed before the data is transmitted from the test delivery system to the data warehouse. Removal is in accordance with local privacy policies. Fields for which this applies are marked "Reg – Y, Rep – N" in the "Required" column below.

Attribute Name	Reference	Width	Required	Data Element Description	Type	Acceptable Values	Definitions	Examples	Comments
LastOrSurname	CEDS ID 172 K12->K12 Student->Identity->Name	35	Reg – Y Rep - N	Student Last Name	Alphanumeric/special xsd:token	One or more printable ASCII characters		Sojka	
FirstName	CEDS ID 115 K12->K12 Student->Identity->Name	35	Reg – Y Rep - N	Student First Name	Alphanumeric/special xsd:token	One or more printable ASCII characters		Bud	
MiddleName	CEDS ID 184 K12->K12 Student->Identity->Name	35	N	Student Middle Name	Alphanumeric/special xsd:token	One or more printable ASCII characters		Johan	
Birthdate	CEDS ID 33 K12->K12 Student->Demographic	10	Reg – N Rep - N	The year, month and day on which a person was born, in the format YYYY-MM-DD (zero-padded)	Numeric+dash xsd:string	1900 <= YYYY <= 9999 01 <= MM <= 12 01 <= DD <= 31		2013-08-31	

Attribute Name	Reference	Width	Required	Data Element Description	Type	Acceptable Values	Definitions	Examples	Comments
StudentIdentifier	CEDS ID 1071 K12->K12 Student->Identity->Identification	40	Reg – Y Rep - N	State assigned student Identifier which is unique within that state. Every student should have a unique SSID within their state.	Alphanum xsd:token	One or more printable ASCII characters		82811007	
AlternateSSID	N/A	50	Y	A State assigned student Identifier which is unique within that state. This identifier is used by states that do not wish to share student personal identifying information outside of state-deployed systems. Components sending data to Consortium-deployed systems would use this alternate identifier rather than the student's SSID.	Alphanum xsd:token	One or more printable ASCII characters		32547685 ABC	.
GradeLevelWhenAssessed	CEDS ID 126 K12 -> Assessments -> Assessment Registration	2	Y	Student's enrolled grade.	Alphanum xsd:token	IT PR PK TK KG 01 02 03 04 05 06 07 08 09 10 11 12 13 PS UG	IT - Infant/toddler PR - Preschool PK - Prekindergarten TK - Transitional Kindergarten KG - Kindergarten 01 - First grade 02 - Second grade 03 - Third grade 04 - Fourth grade 05 - Fifth grade 06 - Sixth grade 07 - Seventh grade 08 - Eighth grade 09 - Ninth grade 10 - Tenth grade 11 - Eleventh grade 12 - Twelfth grade 13 - Grade 13 PS - Postsecondary UG - Ungraded	05	
Sex	CEDS ID 255 K12->K12 Student->Demographic	6	Y	Student's gender	enum xsd:token	Male Female		Female	

Attribute Name	Reference	Width	Required	Data Element Description	Type	Acceptable Values	Definitions	Examples	Comments
HispanicOrLatinoEthnicity	CEDS ID 144 K12->K12 Student->Demographic	3	Y	Hispanic Ethnic Flag	enum xsd:token	Yes No		No	One or more race fields (below) must also be marked 'Yes'
AmericanIndianOrAlaskaNative	CEDS ID 16 K12->K12 Student->Demographic	3	Y	American Indian/Alaskan Native Race Flag	enum xsd:token	Yes No		Yes	At least one race field must be marked Yes
Asian	CEDS ID 20 K12->K12 Student->Demographic	3	Y	Asian Race Flag	enum xsd:token	Yes No		No	At least one race field must be marked Yes
BlackOrAfricanAmerican	CEDS ID 34 K12->K12 Student->Demographic	3	Y	African American Race Flag	enum xsd:token	Yes No		Yes	At least one race field must be marked Yes
White	CEDS ID 301 K12->K12 Student->Demographic	3	Y	White Race Flag	enum xsd:token	Yes No		No	At least one race field must be marked Yes
NativeHawaiianOrOtherPacificIslander	CEDS ID 192 K12->K12 Student->Demographic	3	Y	Native Hawaiian/Other Pacific Islander Race Flag	enum xsd:token	Yes No		Yes	At least one race field must be marked Yes
DemographicRaceTwoOrMoreRaces	CEDS ID 973 K12 -> K12 Student -> Demographic	3	Y	A person having origins in any of more than one of the racial groups.	enum xsd:token	Yes No		Yes	At least one race field must be marked Yes
IDEAIndicator	CEDS ID 151 K12->K12 Student->Disability	3	Y	Student Enrolled in IEP	enum xsd:token	Yes No		No	
LEPStatus	CEDS ID 180 K12 -> K12 Student -> Limited English Proficiency	3	Y	Student identified as LEP	enum xsd:token	Yes No		Yes	

Attribute Name	Reference	Width	Required	Data Element Description	Type	Acceptable Values	Definitions	Examples	Comments
Section504Status	CEDS ID 249 K12 -> K12 Student -> Disability	22	Y	Student with 504 plan	enum xsd:token	Yes No Unknown/Cannot Provide		No	
EconomicDisadvantageStatus	CEDS ID 86 K12 -> K12 Student -> Economically Disadvantaged -> EconomicDisadvantageStatus	3	Y	An indication that the student met the State criteria for classification as having an economic disadvantage.	enum xsd:token	Yes No		Yes	This field is not CEDS compliant due to the name change from TitleITargetedAssistanceParticipationStatus
LanguageCode	CEDS ID 317 K12 -> K12 Student -> Language and CEDS Language Codes	3	N	The code for the specific language or dialect that a person uses to communicate.	enum xsd:token	see http://ceds.ed.gov/languageCodes.aspx		fiu	
EnglishLanguageProficiencyLevel	N/A	20	N	An indication of the progress made by a student toward English proficiency	Alphanum xsd:token	One or more printable ASCII characters		PROGRESS	This field is not CEDS compliant due to the name change from TitleIIIAccountabilityProgressStatus (CEDS ID 536). Furthermore, the Acceptable Values have changed to non-enum, alphanum entry.
MigrantStatus	CEDS ID 189 K12 -> K12 Student -> Migrant -> MigrantStatus	3	N	Persons who are, or whose parents or spouses are, migratory agricultural workers, including migratory dairy workers, or migratory fishers, and who, in the preceding 36 months, in order to obtain, or accompany such parents or spouses, in order to obtain, temporary or seasonal employment in agricultural or fishing work (A) have moved from one LEA to another; (B) in a state that comprises a single LEA, have moved from one administrative area to another within such LEA; or (C) reside in an LEA	enum xsd:token	Yes No <blank>		Yes	

Attribute Name	Reference	Width	Required	Data Element Description	Type	Acceptable Values	Definitions	Examples	Comments
				of more than 15,000 square miles, and migrate a distance of 20 miles or more to a temporary residence to engage in a fishing activity.					
FirstEntryDateInto USSchool	CEDS ID 529 K12 -> K12 Student -> Immigrant	10	N	The year, month and day of a person's initial enrollment into a United States school.	Numeric+ dash xsd:string	YYYY-MM-DD <blank>		2013-08-31	
LimitedEnglishProficiencyEntryDate	CEDS ID 1247 K12 -> K12 Student -> Limited English Proficiency	10	N	The year, month and day a student classified as limited English proficient entered the LEP program.	Numeric+ dash xsd:token	YYYY-MM-DD <blank>		2013-08-31	
LEPExitDate	CEDS ID 570 K12 -> K12 Student -> Limited English Proficiency	10	N	The year, month and day a student classified as limited English proficient exited the LEP program.	Numeric+ dash xsd:token	YYYY-MM-DD <blank>		2013-08-31	
TitleIIILanguageInstructionProgramType	CEDS ID 447 K12 -> K12 School -> Institution Characteristics	27	N	Title III Language Instruction Program Type	enum xsd:token	DualLanguage, TwoWayImmersion, TransitionalBilingual, DevelopmentalBilingual, HeritageLanguage, ShelteredEnglishInstruction, StructuredEnglishImmersion, SDAIE, ContentBasedESL, PullOutESL, Other	DualLanguage - Dual language TwoWayImmersion - Two-way immersion TransitionalBilingual - Transitional bilingual DevelopmentalBilingual - Developmental bilingual HeritageLanguage - Heritage language ShelteredEnglishInstruction - Sheltered English instruction StructuredEnglishImmersion - Structured English immersion SDAIE - Specially designed academic instruction delivered in English (SDAIE) ContentBasedESL - Content-based ESL PullOutESL - Pull-out ESL	HeritageLanguage	

Attribute Name	Reference	Width	Required	Data Element Description	Type	Acceptable Values	Definitions	Examples	Comments
							Other - Other		
PrimaryDisabilityType	CEDS ID 218 K12 -> K12 Student -> Disability	3	N	The major or overriding disability condition that best describes a person's impairment.	enum xsd:token	AUT, DB, DD, EMN, HI, ID, MD, OI, OHI, SLD, SLI, TBI, VI	AUT - Autism DB - Deaf-blindness DD - Developmental delay EMN - Emotional disturbance HI - Hearing impairment ID - Intellectual Disability MD - Multiple disabilities OI - Orthopedic impairment OHI - Other health impairment SLD - Specific learning disability SLI - Speech or language impairment TBI - Traumatic brain injury VI - Visual impairment	EMN	
Delete	N/A	6	N	Delete this record iff value = DELETE	Alpha xsd:token	DELETE <blank> or other value	DELETE: Delete record Any other value or <blank>: add/update as necessary	DELETE	

Table 3: examineeAttribute Detail

The following table offers detail about the examineeRelationship attributes.

Attribute Name	Reference	Width	Required	Data Element Description	Type	Acceptable Values	Definitions	Examples	Comments
StateAbbreviation	CEDS ID 267 K12 -> SEA -> Address USPS	2	Y	2 character state code	enum xsd:token	Two-character US State identifier as defined by CEDS and extended as follows:	AA: Armed Forces Americas AE: Armed Forces Africa, Canada, Europe	WA	

Attribute Name	Reference	Width	Required	Data Element Description	Type	Acceptable Values	Definitions	Examples	Comments
						AA, AE, AP, TS, OT.	and Mideast AP: Armed Forces Pacific TS: Test State OT: Other		
DistrictID	CEDS ID 637 K12 -> K12 Student -> Enrollment	40	Y	The district responsible for specific educational services and/or instruction of the student.	Alphanum xsd:token	One or more printable ASCII characters		71715	
DistrictName									
SchoolID	CEDS ID 1069 K12->K12 Student->Enrollment	40	Y	The school responsible for specific education services and/or instruction of the student.	Alphanum xsd:token	One or more printable ASCII characters		8716411	
SchoolName									
GroupId									
GroupText									

Table 4: examineeRelationship Detail

Test Integration Format XSD

The following section contains the XSD describing the TDSReport XML file, which is the file sent by the Test Integration component to the Data Warehouse(s).

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
	<xs:element name="TDSReport">
		<xs:complexType>
			<xs:sequence>
				<xs:element name="Test" minOccurs="1" maxOccurs="1">
					<xs:complexType>
						<xs:attribute name="name" use="required" />
						<xs:attribute name="subject" use="required" />
						<xs:attribute name="testId" use="required" />
						<xs:attribute name="bankKey" type="xs:unsignedInt" />
						<xs:attribute name="contract" use="required" />
						<xs:attribute name="mode" use="required">
							<xs:simpleType>
								<xs:restriction base="xs:token">
									<xs:enumeration value="online" />
									<xs:enumeration value="paper" />
									<xs:enumeration value="scanned" />
								</xs:restriction>
							</xs:simpleType>
						</xs:attribute>
						<xs:attribute name="grade" use="required" />
		<!-- not expected to be used for open source, but may be needed for internal purposes -->
						<xs:attribute name="handScoreProject" type="xs:unsignedInt" />
		<!-- new fields requested for open source -->
		<xs:attribute name="assessmentType" use="required" />
		<xs:attribute name="academicYear" use="required" type="xs:unsignedInt" />
		<xs:attribute name="assessmentVersion" use="required" />
	</xs:complexType>
				</xs:element>
				<xs:element name="Examinee" minOccurs="1" maxOccurs="1">
					<xs:complexType>
		<xs:choice minOccurs="0" maxOccurs="unbounded">
							<xs:element name="ExamineeAttribute">
								<xs:complexType>
									<xs:attribute name="context" use="required" type="Context" />
									<xs:attribute name="name" use="required" />
									<xs:attribute name="value" />
									<xs:attribute name="contextDate" use="required" type="xs:dateTime" />
								</xs:complexType>
```

```xml
                </xs:element>
                <xs:element name="ExamineeRelationship">
                    <xs:complexType>
                        <xs:attribute name="context" use="required" type="Context" />
                        <xs:attribute name="name" use="required" />
                        <xs:attribute name="entityKey" type="xs:unsignedLong" />
                        <xs:attribute name="value" />
                        <xs:attribute name="contextDate" use="required" type="xs:dateTime" />
                    </xs:complexType>
                </xs:element>
            </xs:choice>
<!-- negative values are used by TDS for testing. -->
            <xs:attribute name="key" type="xs:long" />
        </xs:complexType>
    </xs:element>
    <xs:element name="Opportunity" minOccurs="1" maxOccurs="1">
        <xs:complexType>
            <xs:sequence>
<!-- note: DTD has minOccurs=1, but we could get an invalidation for a joined but
not-started test; no seg will have been initialized in this case -->
                <xs:element name="Segment" minOccurs="0" maxOccurs="unbounded">
                    <xs:complexType>
                        <xs:attribute name="id" use="required" />
                        <xs:attribute name="position" use="required">
                            <xs:simpleType>
                                <xs:restriction base="xs:unsignedByte">
                                    <xs:minInclusive value="1" />
                                </xs:restriction>
                            </xs:simpleType>
                        </xs:attribute>
                        <xs:attribute name="formId" />
                        <xs:attribute name="formKey" />
                        <xs:attribute name="algorithm" use="required" />
<!-- new field requested for open source -->
<xs:attribute name="algorithmVersion" use="required" />
                    </xs:complexType>
                </xs:element>
                <xs:element name="Accommodation" minOccurs="0" maxOccurs="unbounded">
                    <xs:complexType>
                        <xs:attribute name="type" use="required" />
                        <xs:attribute name="value" use="required" />
<!-- DTD says implied, but this cannot be null -->
                        <xs:attribute name="code" use="required" />
<!-- DTD says implied, but this will always be populated; 0 if not segment-oriented -->
<xs:attribute name="segment" use="required">
  <xs:simpleType>
```

```
                    <xs:restriction base="xs:unsignedInt">
                      <xs:minInclusive value="0" />
                    </xs:restriction>
                  </xs:simpleType>
                </xs:attribute>
                <xs:attribute name="context" use="required" type="Context" />
                <xs:attribute name="contextDate" use="required" type="xs:dateTime" />
                                          </xs:complexType>
                                    </xs:element>
                                    <xs:element name="Score" minOccurs="0" maxOccurs="unbounded">
                                          <xs:complexType>
                                                <xs:attribute name="measureOf" use="required" />
                                                <xs:attribute name="measureLabel" use="required" />
                                                <xs:attribute name="value" use="required" />
                                                <xs:attribute name="standardError" type="NullableFloat" />
                                          </xs:complexType>
                                    </xs:element>
                                    <xs:element name="GenericVariable" minOccurs="0" maxOccurs="unbounded">
                                          <xs:complexType>
                                                <xs:attribute name="context" use="required" />
                                                <xs:attribute name="name" use="required" />
                                                <xs:attribute name="value" use="required" />
                                          </xs:complexType>
                                    </xs:element>
                                    <xs:element name="Item" minOccurs="0" maxOccurs="unbounded">
                                          <xs:complexType>
                                                <xs:sequence>
                                                      <xs:element name="Response" minOccurs="0" maxOccurs="1">
                                                            <xs:complexType mixed="true">
                <xs:attribute name="date" type="xs:dateTime" />
                <xs:attribute name="type">
                  <xs:simpleType>
                    <xs:restriction base="xs:token">
                      <xs:enumeration value="value" />
                      <xs:enumeration value="reference" />
                      <xs:enumeration value="" />
                    </xs:restriction>
                  </xs:simpleType>
                </xs:attribute>
                                                            </xs:complexType>
                                                      </xs:element>
                <xs:element name="ScoreInfo" type="ScoreInfoType" minOccurs="0" maxOccurs="1" />
                                                </xs:sequence>
                                                <xs:attribute name="position" use="required" type="xs:unsignedInt" />
                                                <xs:attribute name="segmentId" use="required" />
                                                <xs:attribute name="bankKey" use="required" type="xs:unsignedInt" />
```

27

```xml
                                                        <xs:attribute name="key" use="required" type="xs:unsignedInt" />
                                                        <xs:attribute name="operational" use="required" type="Bit" />
                                                        <xs:attribute name="isSelected" use="required" type="Bit" />
                                                        <xs:attribute name="format" use="required" />
                                                        <xs:attribute name="score" use="required" type="UFloatAllowNegativeOne" />
        <!-- may not be set for unselected items, or may be set to NOTSCORED -->
        <xs:attribute name="scoreStatus">
          <xs:simpleType>
            <xs:restriction base="xs:token">
              <xs:enumeration value="NOTSCORED" />
              <xs:enumeration value="SCORED" />
              <xs:enumeration value="WAITINGFORMACHINESCORE" />
              <xs:enumeration value="SCORINGERROR" />
              <!-- future -->
              <xs:enumeration value="APPEALED" />
            </xs:restriction>
          </xs:simpleType>
        </xs:attribute>
                                                        <xs:attribute name="adminDate" use="required" type="xs:dateTime" />
                                                        <xs:attribute name="numberVisits" use="required" type="xs:unsignedInt" />

        <xs:attribute name="mimeType" use="required">
          <xs:simpleType>
            <xs:restriction base="xs:token">
              <xs:enumeration value="text/plain" />
              <xs:enumeration value="text/xml" />
              <xs:enumeration value="text/html" />
              <xs:enumeration value="audio/ogg" />
            </xs:restriction>
          </xs:simpleType>
        </xs:attribute>
                                                        <xs:attribute name="clientId" />
                                                        <xs:attribute name="strand" use="required" />
                                                        <xs:attribute name="contentLevel" use="required" />
                                                        <xs:attribute name="pageNumber" use="required" type="xs:unsignedInt" />
                                                        <xs:attribute name="pageVisits" use="required" type="xs:unsignedInt" />
        <!-- this should really be unsignedInt, but there are rare occassions
        where it cannot be calculated correctly and we get a negative value.  -->
                                                        <xs:attribute name="pageTime" use="required" type="xs:int" />
                                                        <xs:attribute name="dropped" use="required" type="Bit" />
                                              </xs:complexType>
                                          </xs:element>
                                 </xs:sequence>
                                 <xs:attribute name="server" use="required" />
                                 <xs:attribute name="database" />
                                 <xs:attribute name="clientName" use="required" />
                                 <xs:attribute name="key" use="required" />
```

```xml
                            <xs:attribute name="oppId" use="required" />
        <!-- note: DTD says required, but may get invalidation for joined, not-started test -->
                            <xs:attribute name="startDate" type="NullableDateTime" />
                            <xs:attribute name="status" use="required">
                                <xs:simpleType>
                                    <xs:restriction base="xs:token">
                                        <xs:enumeration value="appeal" />
                                        <xs:enumeration value="completed" />
                                        <xs:enumeration value="expired" />
                                        <xs:enumeration value="handscoring" />
                                        <xs:enumeration value="invalidated" />
                                        <xs:enumeration value="paused" />
                                        <xs:enumeration value="reported" />
                                        <xs:enumeration value="reset" />
                                        <xs:enumeration value="scored" />
                                        <xs:enumeration value="submitted" />
            <xs:enumeration value="pending" />
                                    </xs:restriction>
                                </xs:simpleType>
                            </xs:attribute>
                            <xs:attribute name="opportunity" use="required" type="xs:unsignedInt" />
                            <xs:attribute name="statusDate" use="required" type="xs:dateTime" />
                            <xs:attribute name="dateCompleted" type="NullableDateTime" />
                            <xs:attribute name="pauseCount" use="required" type="xs:unsignedInt" />
                            <xs:attribute name="itemCount" use="required" type="xs:unsignedInt" />
                            <xs:attribute name="ftCount" use="required" type="xs:unsignedInt" />
                            <xs:attribute name="abnormalStarts" use="required" type="xs:unsignedInt" />
                            <xs:attribute name="gracePeriodRestarts" use="required" type="xs:unsignedInt" />
                            <xs:attribute name="taId" />
                            <xs:attribute name="taName" />
                            <xs:attribute name="sessionId" />
                            <xs:attribute name="windowId" use="required" />
                            <xs:attribute name="windowOpportunity" type="NullableUInt" />
                            <xs:attribute name="dateForceCompleted" type="NullableDateTime" />
                            <xs:attribute name="qaLevel" />
        <!-- new field requested for open source -->
        <xs:attribute name="assessmentParticipantSessionPlatformUserAgent" use="required" />
                            </xs:complexType>
                        </xs:element>
                        <xs:element name="Comment" minOccurs="0" maxOccurs="unbounded">
                            <xs:complexType mixed="true">
        <!-- TODO: domain values; I've seen GlobalNotes and TESTITEM, but I'm not sure how rigid this is. -->
                                <xs:attribute name="context" use="required" />
                                <xs:attribute name="itemPosition" type="NullableUInt" />
                                <xs:attribute name="date" use="required" type="xs:dateTime" />
                            </xs:complexType>
```

```xml
                        </xs:element>
                        <xs:element name="ToolUsage" minOccurs="0" maxOccurs="unbounded">
                                <xs:complexType>
                                        <xs:sequence>
                                                <xs:element name="ToolPage" minOccurs="1" maxOccurs="unbounded">
                                                        <xs:complexType>
                                                                <xs:attribute name="page" use="required" type="xs:unsignedInt" />
                                                                <xs:attribute name="groupId" use="required" />
                                                                <xs:attribute name="count" use="required" type="xs:unsignedInt" />
                                                        </xs:complexType>
                                                </xs:element>
                                        </xs:sequence>
                                        <xs:attribute name="type" use="required" />
                                        <xs:attribute name="code" use="required" />
                                </xs:complexType>
                        </xs:element>
                </xs:sequence>
        </xs:complexType>
    </xs:element>
<!-- recursive node requires global type so that it can be named -->
        <xs:complexType name="ScoreInfoType">
                <xs:sequence>
    <xs:element name="ScoreRationale" minOccurs="0" maxOccurs="1" />
                        <xs:element name="SubScoreList" minOccurs="0" maxOccurs="1">
                                <xs:complexType>
                                        <xs:sequence>
                                                <xs:element minOccurs="0" maxOccurs="unbounded" name="ScoreInfo" type="ScoreInfoType" />
                                        </xs:sequence>
                                </xs:complexType>
                        </xs:element>
                </xs:sequence>
<!-- same constaints as item/@score -->
                <xs:attribute name="scorePoint" type="UFloatAllowNegativeOne" />
<!-- top level will always be "overall" (if not null); this represents the item score.  Nested ScoreInfo nodes will have dimention level scores
if applicable, so this will be the dimension name. -->
                <xs:attribute name="scoreDimension" />
<xs:attribute name="scoreStatus">
  <xs:simpleType>
    <xs:restriction base="xs:token">
      <xs:enumeration value="Scored" />
      <xs:enumeration value="NotScored" />
      <xs:enumeration value="WaitingForMachineScore" />
      <xs:enumeration value="ScoringError" />
    </xs:restriction>
  </xs:simpleType>
</xs:attribute>
```

```xml
        <xs:attribute name="conditionCode">
          <xs:simpleType>
            <xs:restriction base="xs:string">
              <xs:pattern value="(|[A-Z])"/>
              <xs:maxLength value="1" />
            </xs:restriction>
          </xs:simpleType>
        </xs:attribute>
            </xs:complexType>
            <!-- some reusable types -->
            <xs:simpleType name="Bit">
                    <xs:restriction base="xs:unsignedByte">
                            <xs:minInclusive value="0" />
                            <xs:maxInclusive value="1" />
                    </xs:restriction>
            </xs:simpleType>
            <xs:simpleType name="Empty">
                    <xs:restriction base="xs:string">
                            <xs:enumeration value="" />
                    </xs:restriction>
            </xs:simpleType>
<xs:simpleType name="NegativeOne">
  <xs:restriction base="xs:string">
    <xs:enumeration value="-1" />
  </xs:restriction>
</xs:simpleType>
            <xs:simpleType name="NullableDateTime">
                    <xs:union memberTypes="xs:dateTime Empty  ">
                    </xs:union>
            </xs:simpleType>
<xs:simpleType name="NullableUInt">
  <xs:union memberTypes="xs:unsignedInt Empty  ">
  </xs:union>
</xs:simpleType>
<xs:simpleType name="NullableFloat">
  <xs:union memberTypes="xs:float Empty  ">
  </xs:union>
</xs:simpleType>
            <xs:simpleType name="Context">
                    <xs:restriction base="xs:token">
                            <xs:enumeration value="INITIAL" />
                            <xs:enumeration value="FINAL" />
                    </xs:restriction>
            </xs:simpleType>
<xs:simpleType name="UFloat">
  <xs:restriction base="xs:float">
```

```xml
      <xs:minInclusive value="0" />
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="UFloatAllowNegativeOne">
    <xs:union memberTypes="UFloat NegativeOne  ">
    </xs:union>
  </xs:simpleType>

</xs:schema>
```

Sample XML Output

Based on the XSD, the following section contains a sample XML output that can aid in the understanding of the implementation.

```xml
<TDSReport>
  <Test name="(SBAC)SBAC-FT-SomeDescription-MATH-7-Fall-2013-2014" subject="MA" testId="SBAC-FT-SomeDescription-MATH-7" bankKey="200" contract="SBAC"
mode="online" grade="3-12" assessmentType="Formative" academicYear="2014" assessmentVersion="SomeNewVersion" />
  <Examinee key="922171">
    <ExamineeAttribute context="FINAL" name="DOB" value="07242001" contextDate="2014-04-14T11:13:41.803" />
    <ExamineeAttribute context="FINAL" name="Ethnicity" value="4" contextDate="2014-04-14T11:13:41.803" />
    <ExamineeAttribute context="FINAL" name="FirstName" value="John" contextDate="2014-04-14T11:13:41.803" />
    <ExamineeAttribute context="FINAL" name="Gender" value="M" contextDate="2014-04-14T11:13:41.803" />
    <ExamineeAttribute context="FINAL" name="Grade" value="07" contextDate="2014-04-14T11:13:41.803" />
    <ExamineeAttribute context="FINAL" name="LastName" value="Smith" contextDate="2014-04-14T11:13:41.803" />
    <ExamineeAttribute context="FINAL" name="SSID" value="CA-9999999598" contextDate="2014-04-14T11:13:41.803" />
    <ExamineeAttribute context="INITIAL" name="DOB" value="" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeAttribute context="INITIAL" name="Ethnicity" value="4" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeAttribute context="INITIAL" name="FirstName" value="John" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeAttribute context="INITIAL" name="Gender" value="M" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeAttribute context="INITIAL" name="Grade" value="07" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeAttribute context="INITIAL" name="LastName" value="Smith" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeAttribute context="INITIAL" name="SSID" value="CA-9999999598" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeRelationship context="FINAL" name="DistrictID" entityKey="709" value="CA_9999827" contextDate="2014-04-14T11:13:41.810" />
    <ExamineeRelationship context="FINAL" name="DistrictName" entityKey="709" value="This Elementary School District" contextDate="2014-04-14T11:13:41.810"
/>
    <ExamineeRelationship context="FINAL" name="SchoolID" entityKey="9426" value="CA_9999827_9999928" contextDate="2014-04-14T11:13:41.810" />
    <ExamineeRelationship context="FINAL" name="SchoolName" entityKey="9426" value="My Elementary School" contextDate="2014-04-14T11:13:41.810" />
    <ExamineeRelationship context="FINAL" name="StateName" entityKey="3" value="California" contextDate="2014-04-14T11:13:41.810" />
    <ExamineeRelationship context="INITIAL" name="DistrictID" entityKey="709" value="CA_9999827" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeRelationship context="INITIAL" name="DistrictName" entityKey="709" value="This Elementary School District" contextDate="2014-04-
14T10:48:43.433" />
    <ExamineeRelationship context="INITIAL" name="SchoolID" entityKey="9426" value="CA_999927_9999928" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeRelationship context="INITIAL" name="SchoolName" entityKey="9426" value="My Elementary School" contextDate="2014-04-14T10:48:43.433" />
    <ExamineeRelationship context="INITIAL" name="StateName" entityKey="3" value="California" contextDate="2014-04-14T10:48:43.433" />
  </Examinee>
  <Opportunity server="562299-SBASQL8" database="CASBAC_SHARD_2013sp" clientName="California" key="71A3EE01-F215-4CCD-B74D-DF1097A01A0C" oppId="1855629"
startDate="2014-04-14T10:49:08.437" status="completed" opportunity="1" statusDate="2014-04-14T11:13:40.900" dateCompleted="2014-04-14T11:13:40.900"
pauseCount="0" itemCount="6" ftCount="6" abnormalStarts="0" gracePeriodRestarts="0" taId="NA" taName="Ringnell, Brandi" sessionId="BLUE-5752-4"
windowId="California" windowOpportunity="1" assessmentParticipantSessionPlatformUserAgent="Mozilla/5.0 (iPad; U; CPU OS 3_2_1 like Mac OS X; en-us)
AppleWebKit/531.21.10 (KHTML, like Gecko) Mobile/7B405">
    <Segment id="(SBAC)SBAC-FT-SomeDescriptionS1-MATH-7-Fall-2013-2014" position="1" formKey="200-10545" formId="SBAC-FT-Perf-7-Math-SomeDesc-2"
algorithm="fixedform" algorithmVersion="0" />
    <Segment id="(SBAC)SBAC-FT-SomeDescriptionS2-MATH-7-Fall-2013-2014" position="2" formKey="200-10894" formId="SBAC::FT::Perf::7::Math::SomeDesc::999::2"
algorithm="fixedform" algorithmVersion="0" />
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    <Accommodation type="Non-Embedded Designated Supports" value="None" code="NEDS0" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Audio Playback Controls" value="Play Stop and Pause" code="TDS_APC_PSP" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="American Sign Language" value="Do not show ASL videos" code="TDS_ASL0" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Calculator" value="Scientific" code="TDS_CalcSciInv" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Color Choices" value="Black on White" code="TDS_CC0" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Expandable Passages" value="Expandable Passages On" code="TDS_ExpandablePassages1" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Passage Font Size" value="14pt" code="TDS_F_S14" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Highlight" value="True" code="TDS_Highlight1" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Item Font Size" value="14pt Items" code="TDS_IF_S14" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Masking" value="Masking Not Available" code="TDS_Masking0" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Mark for Review" value="True" code="TDS_MfR1" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
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    <Accommodation type="Print on Request" value="None" code="TDS_PoD0" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Student Comments" value="Notepad" code="TDS_SCNotepad" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Strikethrough" value="True" code="TDS_ST1" segment="2" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="System Volume Control" value="Show widget" code="TDS_SVC1" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
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    <Accommodation type="Test Progress Indicator" value="Show indicator as a fraction and adjust to test length" code="TDS_TPI_ResponsesFix" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="Test Shell" value="Standard Test Shell" code="TDS_TS_Modern" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
    <Accommodation type="TTS" value="None" code="TDS_TTS0" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
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    <Accommodation type="TTX Business Rules" value="A203" code="TDS_TTX_A203" segment="0" context="INITIAL" contextDate="2014-04-14T10:48:43.433" />
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    <Accommodation type="Mark for Review" value="True" code="TDS_MfR1" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
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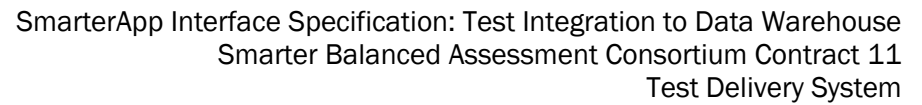
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    <Accommodation type="Permissive Mode" value="Permissive Mode Disabled" code="TDS_PM0" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="Print on Request" value="None" code="TDS_PoD0" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="Student Comments" value="Notepad" code="TDS_SCNotepad" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="Strikethrough" value="True" code="TDS_ST1" segment="2" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="System Volume Control" value="Show widget" code="TDS_SVC1" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="Tutorial" value="True" code="TDS_T1" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
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    <Accommodation type="Test Shell" value="Standard Test Shell" code="TDS_TS_Modern" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="TTS" value="None" code="TDS_TTS0" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="TTS Pausing" value="TTS Pausing On" code="TDS_TTSPause1" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="TTX Business Rules" value="A203" code="TDS_TTX_A203" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
    <Accommodation type="Word List" value="No Glossary" code="TDS_WL0" segment="0" context="FINAL" contextDate="2014-04-14T11:13:41.810" />
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    <Score measureOf="RI" measureLabel="ThetaScore" value="-0.990806340600612" standardError="0.763270835347112" />
    <Score measureOf="W" measureLabel="ThetaScore" value="-1.59280291740104" standardError="0.787167977466516" />
    <Score measureOf="Overall" measureLabel="ScaleScore" value="245.174914080214" standardError="19.3617008392283" />
    <Score measureOf="L" measureLabel="ScaleScore" value="252.162148917585" standardError="35.7639802907321" />
    <Score measureOf="RI" measureLabel="ScaleScore" value="254.784135710183" standardError="30.902114975099" />
    <Score measureOf="W" measureLabel="ScaleScore" value="230.411440502403" standardError="31.8696250634601" />
    <Score measureOf="Overall" measureLabel="PerformanceLevel" value="1" />
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    <Score measureOf="RI" measureLabel="PerformanceLevel" value="1" />
    <Score measureOf="W" measureLabel="PerformanceLevel" value="1" />
    <Score measureOf="Overall" measureLabel="RawScore" value="9" standardError="0" />
    <Score measureOf="L" measureLabel="RawScore" value="4" standardError="0" />
    <Score measureOf="RI" measureLabel="RawScore" value="2" standardError="0" />
    <Score measureOf="W" measureLabel="RawScore" value="3" standardError="0" />
    <Score measureOf="Overall" measureLabel="ItemCount" value="16" standardError="0" />
    <Score measureOf="L" measureLabel="ItemCount" value="8" standardError="0" />
    <Score measureOf="RI" measureLabel="ItemCount" value="5" standardError="0" />
    <Score measureOf="W" measureLabel="ItemCount" value="3" standardError="0" />
    <Score measureOf="Overall" measureLabel="ItemCountScored" value="16" standardError="0" />
    <Score measureOf="L" measureLabel="ItemCountScored" value="8" standardError="0" />
    <Score measureOf="RI" measureLabel="ItemCountScored" value="5" standardError="0" />
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    <Score measureOf="Overall" measureLabel="Attempted" value="1" standardError="0" />
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    </Item>
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pageNumber="1" pageVisits="1" pageTime="69834" dropped="0">
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        &lt;mstyle displaystyle="true"&gt;
        &lt;mn&gt;4&lt;/mn&gt;
        &lt;mn&gt;4&lt;/mn&gt;
        &lt;mn&gt;1&lt;/mn&gt;
        &lt;mn&gt;0&lt;/mn&gt;
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        &lt;/math&gt;&lt;/response&gt;
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    </Item>
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format="EQ" score="-1" scoreStatus="NOTSCORED" adminDate="2014-04-14T10:49:10.327" numberVisits="1" mimeType="text/plain" strand="2"
contentLevel="2|EE|NA|A" pageNumber="1" pageVisits="1" pageTime="69834" dropped="0">
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        &lt;mn&gt;2&lt;/mn&gt;
        &lt;/mstyle&gt;
        &lt;/math&gt;&lt;/response&gt;
    </Response>
    </Item>
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format="EQ" score="-1" scoreStatus="NOTSCORED" adminDate="2014-04-14T10:49:10.327" numberVisits="1" mimeType="text/plain" strand="4"
contentLevel="4|EE|NA|E" pageNumber="1" pageVisits="1" pageTime="69834" dropped="0">
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        &lt;mfrac&gt;
        &lt;mi&gt;x&lt;/mi&gt;
        &lt;mi&gt;y&lt;/mi&gt;
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        &lt;mo&gt;&amp;#x2217;&lt;/mo&gt;
        &lt;mfrac&gt;
        &lt;mi&gt;x&lt;/mi&gt;
        &lt;mrow&gt;
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        &lt;/mrow&gt;
        &lt;/mfrac&gt;
        &lt;mo&gt;=&lt;/mo&gt;
        &lt;mo&gt;&amp;#x2212;&lt;/mo&gt;
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```

```
        &lt;mo&gt;=&lt;/mo&gt;
        &lt;/mstyle&gt;
        &lt;/math&gt;&lt;/response&gt;
      </Response>
    </Item>
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format="SA" score="-1" scoreStatus="NOTSCORED" adminDate="2014-04-14T10:49:10.327" numberVisits="1" mimeType="text/html" strand="3" contentLevel="3|RP|NA|B"
pageNumber="1" pageVisits="1" pageTime="69834" dropped="0">
      <Response date="2014-04-14T11:03:10.913">
      &lt;p&gt;2 miles away from the beginning&lt;/p&gt;
      </Response>
    </Item>
    <Item position="6" segmentId="(SBAC)SBAC-FT-SomeDescriptionS1-MATH-7-Fall-2013-2014" bankKey="200" key="15573" operational="0" isSelected="1"
format="GI" score="-1" scoreStatus="NOTSCORED" adminDate="2014-04-14T10:49:10.327" numberVisits="1" mimeType="text/xml" strand="4" contentLevel="4|EE|NA|E"
pageNumber="1" pageVisits="1" pageTime="69834" dropped="0">
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      &lt;?xml version="1.0" encoding="utf-16"?&gt;
      &lt;!-- MACHINE GENERATED 4/14/14  8:18 AM. DO NOT EDIT --&gt;
      &lt;!DOCTYPE AnswerSet [
      &lt;!ELEMENT AnswerSet (Question+)&gt;
      &lt;!ELEMENT AtomicObject (#PCDATA)&gt;
      &lt;!ELEMENT EdgeVector (#PCDATA)&gt;
      &lt;!ELEMENT GridImageTestPoints (TestPoint*)&gt;
      &lt;!ELEMENT LabelList (#PCDATA)&gt;
      &lt;!ELEMENT Object (PointVector,EdgeVector,LabelList,ValueList)&gt;
      &lt;!ELEMENT ObjectSet (Object,AtomicObject+)&gt;
      &lt;!ELEMENT PointVector (#PCDATA)&gt;
      &lt;!ELEMENT Question (QuestionPart)&gt;
      &lt;!ATTLIST Question id NMTOKEN #REQUIRED&gt;
      &lt;!ELEMENT QuestionPart (LabelList,GridImageTestPoints,ObjectSet)&gt;
      &lt;!ATTLIST QuestionPart id NMTOKEN #REQUIRED&gt;
      &lt;!ELEMENT TestPoint (#PCDATA)&gt;
      &lt;!ELEMENT ValueList (#PCDATA)&gt;
      ]&gt;
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id="1"&gt;&lt;ObjectSet&gt;&lt;Object&gt;&lt;PointVector&gt;{(390,290)(390,200)(180,290)(300,110)(180,200)(210,110)}&lt;/PointVector&gt;&lt;EdgeVector&gt;{
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&lt;/LabelList&gt;&lt;ValueList&gt; {}
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style="solid"/&gt;&lt;Line sourceX="390" sourceY="120" targetX="180" targetY="120" dir="none" style="solid"/&gt;&lt;Line sourceX="390" sourceY="210"
targetX="300" targetY="300" dir="none" style="solid"/&gt;&lt;Line sourceX="180" sourceY="120" targetX="180" targetY="210" dir="none"
style="solid"/&gt;&lt;Line sourceX="180" sourceY="210" targetX="210" targetY="300" dir="none"
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      </Response>
    </Item>
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    <Item position="7" segmentId="(SBAC)SBAC-FT-SomeDescriptionS2-MATH-7-Fall-2013-2014" bankKey="200" key="22489" operational="1" isSelected="1"
format="ER" score="3" scoreStatus="SCORED" adminDate="2014-03-25T14:10:36.853" pageNumber="2" pageTime="0" pageVisits="0" numberVisits="15"
mimeType="text/html" dropped="0" strand="W" contentLevel="W|W.11-12.2a">
      <Response date="2014-03-25T15:53:17.637" >
        &lt;p&gt;&amp;nbsp;&amp;nbsp;&amp;nbsp;&amp;nbsp; For historical reasons, the word &amp;quot;algebra&amp;quot; has several related meanings in
mathematics, as a single word or with qualifiers. Such a situation, where a single word has many meanings in the same area of mathematics, may be confusing.
However the distinction is easier if one recalls that the name of a scientific area is usually singular and without an article and the name of a specific
structure requires an article or the plural.&lt;/p&gt;

        &lt;p&gt;&amp;nbsp;&lt;/p&gt;

        &lt;p&gt;&amp;nbsp;&amp;nbsp;&amp;nbsp;&amp;nbsp;&lt;/p&gt;
      </Response>
      <ScoreInfo scorePoint="4" scoreDimension="overall" scoreStatus="Scored">
        <ScoreRationale>Some information here about the score</ScoreRationale>
        <SubScoreList>
          <ScoreInfo scorePoint="2" scoreDimension="Conventions" scoreStatus="Scored">
            <SubScoreList />
          </ScoreInfo>
          <ScoreInfo scorePoint="1" scoreDimension="Purpose" scoreStatus="Scored">
            <ScoreRationale>Possibly some information here about this dimension score</ScoreRationale>
            <SubScoreList />
          </ScoreInfo>
          <ScoreInfo scorePoint="1" scoreDimension="Evidence" scoreStatus="Scored">
            <SubScoreList />
          </ScoreInfo>
        </SubScoreList>
      </ScoreInfo>
    </Item>
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score="0" scoreStatus="SCORED" adminDate="2014-04-24T12:27:26.203" numberVisits="1" mimeType="text/plain" strand="SC-ES" contentLevel="SC-ES|4.I|1|d"
pageNumber="3" pageVisits="1" pageTime="0" dropped="0">
      <Response date="2014-04-24T12:32:46.377">A,B,C,F</Response>
      <ScoreInfo scorePoint="0" scoreDimension="overall" scoreStatus="Scored">
        <ScoreRationale>A,F</ScoreRationale>
        <SubScoreList />
      </ScoreInfo>
    </Item>
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score="-1" scoreStatus="NOTSCORED" adminDate="2014-04-24T12:01:14.983" numberVisits="1" mimeType="text/plain" strand="SC-LS" contentLevel="SC-LS|4.V|4|b"
pageNumber="4" pageVisits="1" pageTime="0" dropped="0">
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&lt;th id = "season"&gt;season&lt;/th&gt;
&lt;th id = "bobcat"&gt;bobcat&lt;/th&gt;
&lt;th id = "duck"&gt;duck&lt;/th&gt;
&lt;th id = "snake"&gt;snake&lt;/th&gt;
&lt;th id = "hare"&gt;hare&lt;/th&gt;
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