# Test Project

# Instructions

1. Please develop Apex code for each of the components defined within this document (or as much as can be completed within 4 hours):
   1. [ActionDataRecord](#_ActionDataRecord) (Object)
   2. [ActionDataObject](#_ActionDataObject) (Object)
   3. [DataController](#_DataController) (3 Methods)
2. If something is not clear, please make the best assumptions you can based upon the information provided.
3. Test code coverage is not expected.
4. Your response should be delivered via email and include the following:
   1. Files containing the code you developed for the 3 classes.
   2. Brief summary of any/all assumptions you made.
   3. Total time spent (hours/minutes) for each item.

# ActionDataRecord

ActionDataRecord is a data container for real data involved in a transaction. It contains record values differentiated by data state ("old" values versus "new" values.)

Create an Apex class, ActionDataRecord, from this JSON object definition.

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| {  "SourceRecordId":"",  "TargetRecordId":"",  "NewData":  {  "Field1":"",  "Field2":""  },  "OldData":  {  "Field1":"",  "Field2":""  },  "ChildDataObjects":  [  {ActionDataObject},  {ActionDataObject}  ]  } |

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| --- | --- | --- |
| Element name | Type | Description |
| SourceRecordId | String | The unique Id of the record from which this ActionDataRecord was built. |
| TargetRecordId | String | The unique Id of the record that has been created in a target connector record using this ActionDataRecord as source data. |
| NewData | Map<String, String> | A map of name+value pairs representing the record's current state data. |
| OldData | Map<String, String> | A map of name+value pairs representing the record's previous state data. Not all systems support previous state data. |
| ChildDataObjects | Array<ActionDataObject> | An array of ActionDataObjects containing records related as children to the current ActionDataRecord. |

# ActionDataObject

Class ActionDataObject is used as the standard communication container for sharing data between system components. It contains metadata about the data source, the data destination, transaction acknowledgement requirements, and ActionDataRecord objects representing the real data.

Create an Apex class, ActionDataObject, from this JSON object definition

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| {  "EventQueueId":"",  "ActionQueueId":"",  "Error":"",  "SourceConnection":"",  "SourceObject":"",  "TargetConnection":"",  "TargetObject":"",  "TargetParentRecordId": "",    "Parameters":  {  "Parameter1":"",  "Parameter2":""  },    "Records":  [  {ActionDataRecord}  ],  "Response":  {  "key1":"value1",  "key2":"value2"  }  } |

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| --- | --- | --- |
| Element name | Type | Description |
| EventQueueId | String | Populated with the record Id from the Event\_Queue object when the instance is associated with an Event Queue record. |
| ActionQueueId | String | Populated with the record Id from the Action\_Queue object when the instance is associated with an Action Queue record. |
| Error | String | Contains any error messages to be used by the recipient of the ActionDataObject. |
| SourceConnection | String | When the AciontDataObject is the result of an event, the Source Connection specifies the connection that created the event. |
| SourceObject | String | The specific object in the Source Connection from which the event originated. |
| TargetConnection | String | The target connector to which and event-based ActionDataObject is being sent. |
| TargetObject | String | An object known to the target connector to which the ActionDataObject values will be applied. |
| TargetParentRecordId | String | An Id for the record that was created as a result of a TargetConnector handling an ActionDataObject. |
| Parameters | Map<String, String> | A map of name+value pairs meant to be used by a TargetConnector adapter for special handling instructions.. |
| Records | Array<ActionDataRecord> | An array of ActionDataRecord objects that contain data and child data, representing source or target data. |
| Response | Map<String, String> | A map of name+value pairs that define data that should be returned from the target connection by field name ("key,") and which field in SourceObject the data should be sent to ("value.") |

# DataController

Class DataController interacts with the Salesforce data layer to create, retrieve, update, and delete records. Consumers communicate with the DataController using ActionDataObjects. All CRUD operations are performed in the context of the current Salesforce organization.

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| --- | --- | --- | --- |
| Method | Arguments | Returns | Description |
| SaveData | ActionDataObject  "sourceData" | ActionDataObject | Upserts a record into Salesforce using the sourceData's "SourceObject" to identify the appropriate SObject, and the name+value pairs in "Records[n]"."NewData" to specify values for fields. |
|  |  |  | Return a new ActionDataObject to the requester containing data from the newly created or updated record.  "SourceObject" will be the original "TargetObject"  The "name" set from original Response section will become the list of fields in the "NewData" records.  Each field will receive the value of the corresponding fetched record's field, identified by the value's "key". |
|  |  |  | Convert data types where necessary to prevent DML errors. |
|  |  |  | Any errors should be set in the Error property. |
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|  |  |  |  |
| ReadData | ActionDataObject queryDefinition | ActionDataObject | Creates a SOQL query dynamically from information in queryDefinition, then executes the query.  queryDefinition.SourceObject is the SObject from which to retrieve data.  The "value" set from queryDefinition.Response name+value pairs will be the list of fields to retrieve.  The name+value pairs in Records[0].NewData will create a "WHERE" clause where the logical operator joining each field filter is "AND." |
|  |  |  | The query's result set will be used to create a new ActionDataObject to be returned to the caller.  "SourceObject" will be the queryDefinition.TargetObject  The "name" set from original Response section will become the list of fields in the queryDefinition."NewData" records.  Each field will receive the value of the corresponding fetched record's field, identified by the value's "key". |
|  |  |  | Any errors should be set in the Error property. |
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| ReadData | string queryString | ActionDataObject | Execute a SOQL query using "queryString." Return the result in an ActionDataObject where:  SourceObject = the SObject from the query  Records[] is populated with and ActionDataRecord for each returned record (limit to 10 records)  Records[n].[NewData] is populated with the fields and values returned by the query. |