Model

OptiGrade CRUD Pattern and Conventions

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Release: 0.0.1

Creation date: 04/17/2014

Export/Print date: 04/19/2014

Model

OptiGrade CRUD Pattern and Conventions (M1)

Description

Establish general patterns for entities supporting CRUD (Create, Retrieve, Update, and Delete) operations use cases and guidelines on how to name each use case.

Notes

Most entities supporting CRUD operations will have use cases that follow the described patterns, provided the actors have the corresponding access privileges. Strong recommendation is made to follow the proposed use case naming conventions.

Actors

<User> (A1)

Use cases

Create <entity> (UC1)

Configure <entity> (UC2)

View <entity> (UC3)

Retrieve <entity> (UC4)

Update <entity> (UC5)

Delete <entity> (UC6)

View <list> (UC7)

Retrieve <list> (UC8)

Search <entity> (UC9)

Actor

<User> (A1)

Use case

Create <entity> (UC1)

Description

The user can instance an entity with its default set of properties and attributes, change its configuration, and create and insert a new object of that instance to the collection of entities.

Notes

This use case depicts a common pattern for the creation of a new entity. Specific kind of entities may require procedures which are not contemplated here.

It includes the following use cases: "*Configure <entity>*".
It extends the following use cases: "*View <list>*".

Pre-conditions

1. The user has the required permissions to create entities.

Post-conditions

• If the operation was successful, a new entity has been added to the system's collection of entities.
• If not, the system state is unchanged.

Trigger event

External

Trigger description

This use case starts when the user wishes to create a new entity into the system. E.g., the user issues a <CREATE> command.

Active actors

<User>

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed
Implementation	Deferred
Assigned to	Designer
Release	Pattern specification

Flow of events

1	The system instances an <entity> with the default configuration.
2	<<include>> "*Configure <entity>*" — The system launches the configuration user interface for this <entity>.
3	The system returns from the configuration interface / The previous attempt failed:
3.A	If the user confirmed the operation, the system creates a new <entity> object.
3.B	If the user cancelled the operation, this use case terminates.
4	The system inserts the new <entity> object into its <collection of entities>.
5	The system signals the task is complete.
5.A	If the operation was successful, the system notifies the user.
5.B	If the operation failed, the system notifies the user about the error and asks the user to try again or to abort the operation. The flow continues in "Step 3

Use case

Configure <entity> (UC2)

Description

The user is able to change a provided set of configuration values for an entity.

Notes

This use case depicts a common pattern for changing the configuration of an entity. Specific kind of entities may require procedures which are not contemplated here.

It is included by the following use cases: "*Create <entity>*", "*Update <entity>*".

Pre-conditions

1. An initial set of entity's configuration values is available.

Post-conditions

- If the operation was successful, a new set of configuration values be available.
- If not, the initial set of configuration values is unchanged.
- The system state is unchanged.

Trigger event

Internal

Trigger description

This use case starts when dependent use cases want to modify an entity's configuration.

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed
Implementation	Deferred
Assigned to	Designer
Release	Pattern specification

Flow of events

1	The system instances and shows a user interface initialized with a provided set of <entity> configuration initial values.
2	The user changes property values, assign resources, and add or remove elements to the configuration, as desired.
3	The user completes the configuration.
3.A	If the user issues a <CONFIRM> command, the system validates the user's inputs.
3.B	If the user issues a <CANCEL> command, the system left the initial set of configuration values unchanged and this use case ends.
4	The system completes the validation.
4.A	If the user entered valid data, overwrite the initial set of configuration values with new values.
4.B	If there are invalid data, the system shows a error message signalling which values are not accepted, and the flow continues in "Step 2

Use case

View <entity> (UC3)

Description

The user is able to visualize the information of an entity.

Notes

This use case depicts a common pattern to visualize the information of an entity. Specific kind of entities may require procedures which are not contemplated here.

It includes the following use cases: "*Retrieve <entity>*".
It extends the following use cases: "*View <list>*".
It is extended by the following use cases: "*Delete <entity>*", "*Update <entity>*".

Pre-conditions

1. An entity's ID is available.
2. The user has the required permissions to retrieve and view information about entities.

Post-conditions

- If the operation was successful, information for the entity with the given ID is visualized.
- If not, the system state is unchanged.

Trigger event

External

Trigger description

This use case starts when the user wishes to display entity information. E.g., the user issues a <VIEW> command.

Active actors

<User>

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed
Implementation	Deferred
Assigned to	Designer
Release	Pattern specification

Flow of events

1	<<include>> "*Retrieve <entity>*" — The system performs a retrieval operation on the given <entity> ID.
2	The system returns from the retrieval operation:
2.A	If an <entity> was retrieved, the system sets up a user interface visualizing the <entity> information.
2.B	If no <entity> was retrieved, this use case terminates.

3	The user chooses an action or leave the user interface, in which point this use case ends.
3.A	If the user issues an <UPDATE> command:
3.A.1	<<use>> "*Update <entity>*" — The system launches the information update interface.
3.A.2	The system returns from the previous operation and updates the information viewer interface accordingly. The flow continues in "Step 1
3.B	If the user issues a <DELETE> command:
3.B.1	<<use>> "*Delete <entity>*" — The system deletes the current <entity>.
3.B.2	The system returns from the previous operation and close the information viewer interface.

Use case

Retrieve <entity> (UC4)

Description

The user is able to retrieve the information for an entity.

Notes

This use case depicts a common pattern to retrieve information of an entity. Specific kind of entities may require procedures which are not contemplated here.

It is included by the following use cases: "*Update <entity>*", "*View <entity>*".

Pre-conditions

1. An entity's ID is available.
2. The user has the required permissions to retrieve information about entities.

Post-conditions

- If the operation was successful, an entity for the given entity's ID is returned.
- If not, a null entity is returned.
- The system state is unchanged.

Trigger event

Internal

Trigger description

This use case starts when dependent use cases want to retrieve entity information.

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed
Implementation	Deferred
Assigned to	Designer
Release	Pattern specification

Flow of events

1	The system tries to retrieve an <entity> with the given ID from its <collection of entities>.
1.A	If an <entity> was found, the system instances an <entity> object with the retrieved data.
1.B	If the operation fails, e.g., no <entity> was found with the given ID or any database error, the system notifies the user about the error.

Use case

Update <entity> (UC5)

Description

The user is able to modify the set of configuration values of an existing entity.

Notes

This use case depicts a common pattern for updating the information of an entity. Specific kind of entities may require procedures which are not contemplated here.

It includes the following use cases: "*Configure <entity>*", "*Retrieve <entity>*".
It extends the following use cases: "*View <entity>*", "*View <list>*".

Pre-conditions

1. An entity's ID is available.
2. The user has the required permissions to update entities.

Post-conditions

- If the operation was successful, the entity's information for the given entity's ID is updated.
- If not, the system state is unchanged.

Trigger event

External

Trigger description

This use case starts when the user wishes to update an entity's information. E.g., the user issues a <UPDATE> command.

Active actors

<User>

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed
Implementation	Deferred

Assigned to	Designer
Release	Pattern specification

Flow of events

1	<<include>> "*Retrieve <entity>*" — The system performs a retrieval operation on the given <entity> ID.
2	The system returns from the retrieval operation:
2.A	If an <entity> was retrieved, the system prepares its information for modification.
2.B	If no <entity> was retrieved, this use case terminates.
3	<<include>> "*Configure <entity>*" — The system launches the configuration user interface for the retrieved <entity>.
4	The system returns from the configuration interface / The previous attempt failed:
4.A	If the user confirmed the operation, the system prepares the <entity> for updating.
4.B	If the user cancelled the operation, this use case terminates.
5	The system saves the updated <entity> into its <collection of entities>.
6	The system signals the task is complete.
6.A	If the operation was successful, the system notifies the user.
6.B	If the operation failed, the system notifies the user about the error and asks the user to try again or to abort the operation. The flow continues in "Step 4

Use case

Delete <entity> (UC6)

Description

The user is able to delete an entity from the collection of entities.

Notes

This use case depicts a common pattern for updating the information of an entity. Specific kind of entities may require procedures which are not contemplated here.

It extends the following use cases: "*View <entity>*", "*View <list>*".

Pre-conditions

1. An entity's ID is available.
2. The user has the required permissions to delete entities.

Post-conditions

- If the operation was successful, the entity with the given ID has been removed from the system's collection of entities.
- If not, the system state is unchanged.

Trigger event

External

Trigger description

This use case starts when the user wishes to delete an entity from the system. E.g., the user issues a <DELETE> command.

Active actors

<User>

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed
Implementation	Deferred
Assigned to	Designer
Release	Pattern specification

Flow of events

1	The system tries to delete an <entity> with the given ID from its <collection of entities>.

1.A	If the operation was successful, the system notifies the user, at which point this use case ends.
1.B	If the operation failed, the system notifies the user about the error.
2	The system asks the user to try again or to abort the operation.
2.A	If the user chooses to try again, the flow continues in "Step 1
2.B	If the user chooses to abort, this use case terminates.

Use case

View <list> (UC7)

Description

The user is able to visualize a list of entities given a definition of a subset of entities or search criteria. If neither a subset definition nor search criteria is provided, the default subset definition is the system's entire collection of entities.

Notes

This use case depicts a common pattern to visualize a list of entities. Specific kind of entities may require procedures which are not contemplated here.

It includes the following use cases: "*Retrieve <list>*".
It is included by the following use cases: "*Search <entity>*".
It is extended by the following use cases: "*Create <entity>*", "*Delete <entity>*", "*Update <entity>*", "*View <entity>*".

Pre-conditions

1. The definition of a subset of entities or some search criteria is available.
2. The user has the required permissions to retrieve and view information about entities.

Post-conditions

- If the operation was successful, a list of entities is displayed.
- If not, the system state is unchanged.

Trigger event

External

Trigger description

This use case starts when the user wishes to display a list of entities. E.g., the user issues a <LIST> command.

Active actors

<User>

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed
Implementation	Deferred
Assigned to	Designer
Release	Pattern specification

Flow of events

1	<<include>> "*Retrieve <list>*" — The system performs a retrieval operation on a given search criteria or subset definition.
2	The system returns from the retrieval operation:
2.A	If a non-empty <set of entities> was retrieved, the system sets up a user interface visualizing a list with the items in the set.
2.B	If an empty <set of entities> was retrieved, the system displays an empty list and a message informing the user that no entity meeting the requirements was found.
3	The user chooses an action or leave the user interface, in which point this use case ends.
3.A	If the user issues a <VIEW> command on a specific item from the list:
3.A.1	<<use>> "*View <entity>*" — The system launches the <entity> detail viewer interface.
3.A.2	The system returns from the previous operation. The flow continues in "Step 3
3.B	If the user issues an <UPDATE> command on a specific item from the list: <<use>> "*Update <entity>*" — The system launches the information update interface.

3.C	If the user issues a <DELETE> command on a specific item from the list: <<use>> "*Delete <entity>*" — The system deletes the current <entity>.
3.D	If the user issues a <CREATE> command: <<use>> "*Create <entity>*" — The system launches the <entity> creation interface.
4	The system returns from the previous operation and updates the list interface accordingly. The flow continues in "Step 1

Use case

Retrieve <list> (UC8)

Description

The user is able to retrieve information of a subset of entities.

Notes

This use case depicts a common pattern to retrieve information for of a subset of entities. Specific kind of entities may require procedures which are not contemplated here.

It is included by the following use cases: "*View <list>*".

Pre-conditions

1. The definition of a subset of entities or some search criteria is available.
2. The user has the required permissions to retrieve information about entities.

Post-conditions

- If the operation was successful, a set of entities is returned.
- If not, a null entity is returned.
- The system state is unchanged.

Trigger event

Internal

Trigger description

This use case starts when dependent use cases want to retrieve a set of entities.

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed
Implementation	Deferred
Assigned to	Designer
Release	Pattern specification

Flow of events

1	The system tries to retrieve a subset <entity> items from its <collection of entities>, given a subset definition or some search criteria.
1.A	If successful, the system instance a set of <entity> objects with the retrieved data. If no <entity> meets the requirement, an empty set is retrieved and it is not considered an error.
1.B	If the operation fails, i.e., there was a data transaction error, the system notifies the user about the error.

Use case

Search <entity> (UC9)

Description

The user is able to visualize a list of entities that meets some search criteria.

Notes

This use case depicts a common pattern to visualize a list of entities that meets some search criteria. Specific kind of entities may require procedures which are not contemplated here.

It includes the following use cases: "*Retrieve <list>*".

It extends the following use cases: "*Search <entity>*".

It is extended by the following use cases: "*Create <entity>*", "*Delete <entity>*", "*Update <entity>*", "*View <entity>*".

Pre-conditions

1. The definition of some search criteria is available.
2. The user has the required permissions to retrieve and view information about entities.

Post-conditions

- If the operation was successful, a list of entities that meets the search criteria is displayed.
- If not, the system state is unchanged.

Trigger event

External

Trigger description

This use case starts when the user wishes to display a list of entities that follow some search criteria. E.g., the user issues a <SEARCH> command from the "Advanced Search" user interface or from the "Quick Search

Active actors

<User>

Details

Priority	1
Level	Summary
Complexity	Low
Status	Completed

Implementation	Deferred
Assigned to	Designer
Release	Pattern specification

Flow of events	
1	The user establishes the filter keywords in the text box, and sets up the search boundaries.
2	The user issues a <SEARCH> command.
3	The system performs the search:
3.1	The system sets up the search criteria.
3.2	<<include>> "*View <list>*" — The control is transferred to the list viewer interface with the given search criteria.

Glossary

Glossary item	Description
Attribute	An attribute is a characteristic that is non inherent to an entity, the entity can exists by itself without the attribute. An attribute can be added or removed from the entity. An attribute also may stand alone.
Create	A create (C) operation is the addition of a new entity into the system's collection of such entities. It requires writing access to the system and implies the assignment of a default set of properties, attributes, resources, and elements. The state of the system is changed after a successful creation. Usual command terminology: Create [new] <entity>, and Add [new] <entity>.
CRUD	The acronym stands for the set of create (C), retrieve (R), update (U), and delete (D) operations. Similar acronyms may be used for a subset of these operations, e.g., CRU, CRD, CR, etc.
Delete	A delete (D) operation is the elimination of an existing entity from the system's collection of such entities. It requires writing access to the system. The state of the system is changed after a successful deletion. Usual command terminology: Delete <entity>, Remove <entity>, and Erase <entity>.
Insert	An insert operation is a variation of the create operation (see Create). In a sequence of entities, it has the semantic meaning of placing a new entity between two existing entities. In general, this operation is extended by the create operation. The state of the system is changed after a successful insertion. Usual command terminology: Insert [new] <entity>.
Property	A property is an inherent characteristic of an entity; the entity cannot exist by itself without the property. A property cannot be added nor removed from the entity. A property does not stand alone since it is not meaningful outside the entity context.
Retrieve	A retrieve (R) operation is the recovering of entity information from the system. It requires reading access to the system. The state of the system is not changed after a successful retrieval operation. Usual command terminology: Retrieve <entity> [data | information], View <entity> [data | information], and Get <entity> [data | information].
Update	An update (U) operation is the modification of a subset of the data corresponding to an entity. It requires writing access to the system. The state of the system is changed after a successful update operation. Usual command terminology: Update <entity>, Modify <entity>, and Set <entity> [data | information].

Stakeholders

Stakeholder	Description