Name:	Create Movie
Description:	Create a new movie and add detail data.The user must give a title. The title does not have to be unique.The user must confirm the change.The user can trigger the functions save and undo whenever there are unsaved changes.
Preconditions:	None
Input:	W0.1 Movie MasterView, Movie Detail Dat
Postconditions:	The new movie is stored
Output:	W0.1 Movie MasterView, movies list is updated with new entry at the corresponding position according to the currently active sorting criterion.
Exception:	(E1) user does not confirm the action
Rules:	(R1) A movie must have a title

Name:	Filter and Sort Movies
Description:	Filter movies and sort it according to a sorting criterium and a sorting direction. All movies matching the filter string are shown sorted according to the sorting criterion and in the sorting direction. When no filter string is given, all movies are sorted.
Preconditions:	None
Input:	W0.1: Movie MasterView, filter string, sorting criterion, sorting direction
Postconditions:	Nothing changed
Output:	W0.1: Movie MasterView, list of movies which match the fitler string sorted according to the sorting criterion and sorting direction
Exception:	None
Rules:	(R1) The sorting criteria and sorting directions are: - title (descending/ascending) - rating (descending/ascending) - overall rating (descending/ascending) (R2) a movie matches the filter string when its title contains the string

Name:	Start Movie Manager
Description:	Initialize and start the application by loading all the data from the persistent storage. All movies are shown as a list.
Preconditions:	None
Input:	User event to start the movie manager application; existing movies and performers data from storage
Postconditions:	Persistent data from storage is loaded
Output:	W0.1 Movie MasterView with all existing movies sorted by title ascending
Exception:	(E1) no connection to the persistent storage
Rules:	

Name:	List Movies
Description:	Show all movies in a list together with their title, overall rating and image. If there does not exist a movie, an empty list is shown. This function is triggered by the start of the app and when selected by the user
Preconditions:	None
Input:	W0.1: Movie MasterView OR W1.1: Performer MasterView OR 2.1 Search MasterView
Postconditions:	Nothing changed
Output:	W0.1: Movie MasterView show all movies with title, overall rating and image, the list is sorted by title ascending.
Exception:	None
Rules:	

Name:	Change Movie Detail Data
Description:	Change the data of an existing movie. It is possible to change the following data: the strings 'title', 'description', the integer 'runtime', the lists 'languages', 'releases', 'filmingLocations', 'countriesOfOrigin' and the image. The user has to confirm the changes.The user can trigger the functions save and undo within this function whenever there are unsaved changes.
Preconditions:	Movie exists
Input:	W0.2: Movie DetailView, new dat
Postconditions:	Movie is updated with the new data
Output:	W0.2: Movie DetailView, Movie is updated with the new data
Exception:	(E1) user does not confirm the action
Rules:	

Name:	Show Movie Details
Description:	Show movie details of an existing movie.
Preconditions:	Movie exists
Input:	W0.1: Movie MasterView OR W1.2 Performer DetailView OR W2.1 Search MasterView, Movie
Postconditions:	Nothing changed
Output:	W0.2: Movie DetailView
Exception:	none
Rules:	

Name:	Unlink Performer
Description:	Remove the link between a performer and a movie. If the performer is not linked to any other movie, the user is warned that the performer will be removed. If the user confirms, the performer is removed. When a performer is unlinked from a movie, the overall rating of the movie is recalculated. The user must confirm the change. The user can trigger the functions save and undo within this function whenever there are unsaved changes
Preconditions:	Performer exists and is linked to a movie
Input:	W0.2 Movie DetailView, Performer
Postconditions:	W0.2 Movie DetailView, Performer
Output:	W0.2: Movie DetailView, Linked Performers list of the movie does no longer contain the performer
Exception:	(E1) the user does not confirm the change
Rules:	(R1) performer must be linked with a movie

Name:	Rate Movie
Description:	Set the rating of a movie. Then the overall rating of the movie is re-calculated.The user has to confirm the change. The user can trigger the functions save and undo within this function whenever there are unsaved change
Preconditions:	Movie exists
Input:	W0.2: Movie DetailView, Movie rating value
Postconditions:	Movie is updated with the rating value and overall rating value
Output:	W0.2: Movie DetailView, movie updated with the rating value and updated overall rating
Exception:	(E1) the user does not confirm the change
Rules:	(R1) The movie can be rated from 0 to 5 stars in 0.5 star steps. (R2) If the movie is not rated, it is marked as not rated (grey stars, black stars = 0 rated)

Name:	Filter and Sort Performers
Description:	Filter performers according to a filter string and sort it according to a sorting criterion and a sorting direction. All performers matching the filter string are shown sorted according to the sorting criterion and in the sorting direction. When no filter string is given, all performers are sorted
Preconditions:	None
Input:	
Postconditions:	Nothing changed
Output:	W1.1: Performer MasterView, list of performers matching the filter string and sorted according to the sorting criterion and sorting direction
Exception:	none
Rules:	

Name:	Undo Movie Changes
Description:	Undo the unsaved changes. The user can undo all unsaved changes step by step in reverse order. Thus, the last unsaved change is undone first.
Preconditions:	Movie exists and has unsaved changes
Input:	W0.2: Movie DetailView, unsaved changes
Postconditions:	At least one unsaved change is undone
Output:	W0.2: Movie DetailView, Movie shows the values before the unsaved changes
Exception:	
Rules:	(R1) Unsaved changes are undone in reverse order. The last unsaved change is undone first.

Name:	Rate Performer
Description:	Set the rating of a performer. The overall rating for all linked movies is re-calculated.The user has to confirm the change. The user can trigger the functions save and undo within this function whenever there are unsaved changes
Preconditions:	Performer exists
Input:	W1.2: Performer DetailView, Performer rating value
Postconditions:	Performer is updated with the rating value and the overall rating of all linked movies is updated
Output:	W1.2: Performer DetailView shows performer updated with new rating
Exception:	(E1) the user does not confirm the change
Rules:	(R1) The performer can be rated from 0 to 5 stars in 0.5 star steps. (R2) If the performer is not rated, it is marked as not rated. (grey stars, black stars = 0 rated)

Name:	Stop Movie Manager
Description:	Stop the movie manager application. If changes are unsaved, they are dropped.
Preconditions:	None
Input:	User input to stop the application
Postconditions:	All unsaved changes are dropped, application is inactive
Output:	The application UI is closed.
Exception:	None
Rules:	None

Name:	Link Existing Movie
Description:	Link an existing movie to the performer. The user is shown the list of existing movies not yet linked to the performer. The user can select one or cancel the linking. If a movie is linked to the performer, the overall rating of the movie is recalculated. The user has to confirm the change. The user can trigger the functions save and undo within this function whenever there are unsaved changes
Preconditions:	Performer and Movie exist which are not yet linked
Input:	W1.2: Performer DetailView
Postconditions:	Performer and selected existing movie are linked. The overall rating of the movie is recalculated
Output:	W1.2: Performer DetailView, Linked Movie list of the performer includes the movie
Exception:	(E1) the user does not confirm the change; (E2) the user cancels the linking
Rules:	

Name:	List Performers
Description:	Show all existing performers in a list. If there does not exist a performer, an empty list is shown.
Preconditions:	None
Input:	W01. Movie Masterview OR W1.1: Performer MasterView OR W2.1 Search MasterView
Postconditions:	Nothing Changed
Output:	W1.1: Performer MasterView shows all performers with name, rating and image, the list is sorted by name ascending.
Exception:	none
Rules:	

Name:	Undo Performer Changes
Description:	Undo the unsaved changes. The user can undo all unsaved changes step by step in reverse order. Thus, the last unsaved change is undone first.
Preconditions:	Performer exists and has unsaved changes
Input:	W1.2: Performer DetailView, unsaved changes
Postconditions:	At least one unsaved change is undone
Output:	W1.2: Performer DetailView, Performer shows the values before the unsaved change
Exception:	
Rules:	(R1) Unsaved changes are undone in reverse order. The last unsaved change is undone first.

Name:	Show Performer Details
Description:	Show performer details of a selected performer.
Preconditions:	Performer exists
Input:	W1.1: Performer MasterView OR W0.2 Movie DetailView OR W2.1 Search MasterView, Performer
Postconditions:	Nothing changed
Output:	W1.2: Performer DetailView
Exception:	none
Rules:	

Name:	Calculate Overall Rating
Description:	Calculate the overall rating of a movie based on the movies rating and on the ratings of the performers linked to the movie. This function is triggered as soon as a rating of a movie or performer is changed or a a link between a performer and a movie is added or removed
Preconditions:	Movie exists
Input:	None
Postconditions:	Movie data is updated with the overall rating of the movie.
Output:	None
Exception:	None
Rules:	(R1) If the movie is not rated, then overall rating = not rated (R2) If the movie is rated and there exists a rated performer linked with the movie, the overall rating is calculated by the following formula: overall rating = 1/2 * (average performer rating + movie rating) and the average Performer rating is calculated as: average Performer rating = sum of linked performer ratings for performers /number of linked performers (R3) If the movie is rated and there does not exist a rated linked performer, then overall rating = movie rating. (R4) The overall rating is always shown with the exact value in the format x.y and the corresponding star rating (R5) Rating numbers are mapped to the nearest star value as follows: * x.8, x.9 are mapped to x+1 stars * x.3, x.4, x.5, x.6, x.7 are mapped to x.5 stars * x.1, x.2 are mapped to x stars (R6) not rated is shown as grey stars and 0 rated is shown as black stars. Rating > 0 is shown as yellow stars

Name:	Link new performer
Description:	Create a performer and link it to an existing movie. The user can edit and change the performer details before confirming the change. The overall rating of the movie is recalculated. The user can trigger the functions save and undo within this function whenever there are unsaved changes.
Preconditions:	Movie exists
Input:	W0.2 Movie DetailView, new performer data
Postconditions:	The performer exists and is linked with the movie. The overall rating of the linked movie is recalculated.
Output:	W0.2 Movie DetailView, shows the new performer in the linked performers list
Exception:	(E1) the user does not confirm the change (E2) The user cancels the performer creation
Rules:	

Name:	Create Performer
Description:	Create a new performer and link it to a movie. The user is prompted to link a movie. The user can select an existing one or create a new one or cancel the linking. The user can edit the detail data of the performer. If the performer has a rating, the overall rating of all linked movies is recalculated. The user has to link a movie, give a name and to confirm the changes. The user can trigger the functions save and undo whenever there are unsaved changes.
Preconditions:	None
Input:	W1.1: Performer MasterView, Performer data
Postconditions:	Movie and a new created performer are linked. The performer data is updated with the new data. The overall rating of the linked movie is recalculated. The new performer is stored.
Output:	W1.1: Performer MasterView, performers list is updated with new entry at the corresponding position according to the currently active sorting criterion.
Exception:	(E1) the user does not confirm the change; (E2) the user does not link the performer to a movie
Rules:	(R1) A performer always has to be linked to a movie (R2) A performer must have a name

Name:	Save Performer Changes
Description:	Save all unsaved changes of a performer.
Preconditions:	Performer exists and has unsaved changes.
Input:	W1.2: Performer DetailView, unsaved changes
Postconditions:	No unsaved changes exist. Performer is updated.
Output:	W1.2: Performer DetailView, Performer shows updates
Exception:	none

Rules:	(R1) after a save the edit mode is left and the view before the switch to the edit mode is shown

Name:	Remove Movie
Description:	Remove an existing movie. This includes the removal of all links to performers from this movie. If the removal of the movie results in any performers not linked with a movie anymore, the user is warned. If the user accepts, the movie and the performers linked only to it are removed. The user can undo the change
Preconditions:	At least one movie exists
Input:	W0.1 Movie MasterView, Movie
Postconditions:	The movie is removed as well as all performers only linked to Movie. The movie is unlinked from all other performers.
Output:	W0.1 Movie MasterView, movie list without the movie
Exception:	(E1) the user cancels the action; (E2) the user undoes the change
Rules:	

Name:	Watch Movie
Description:	Set the watch date of a movie. If a watch date already was set, it is overwritten. The user has to confirm the change The user can trigger the functions save and undo within this function whenever there are unsaved changes
Preconditions:	Movie exists
Input:	W0.2 Movie DetailView, Watch Date
Postconditions:	Movie is updated as watched and the watch date is set to Watch Date
Output:	W0.2 Movie DetailView, movie with Watch Date as watch date
Exception:	(E1) the user does not confirm the change, (E2) the user cancels the action
Rules:	(R1) The watch date cannot be in the future

Name:	Link Existing Performer
Description:	Link an existing performer to the movie. The user is shown the list of existing performers not yet linked to the movie and can select one of them or cancel the linking. When a new performer is linked to a movie, the overall rating of the movie is recalculated. The user has to confirm the changes. The user can trigger the functions save and undo within this function whenever there are unsaved changes.
Preconditions:	Movie and Performer exist
Input:	W0.2: Movie DetailView
Postconditions:	Movie and selected existing performer are linked. The overall rating of the movie is recalculated.
Output:	W0.2: Movie DetailView, Linked Performer list of the movie includes the performer
Exception:	(E1) the user does not confirm the change; (E2) the user cancels the linking
Rules:	

Name:	Remove Performer
Description:	Removes an existing Performer
Preconditions:	Performer exists.
Input:	W1.1: Performer MasterView, Performer
Postconditions:	Performer is deleted.
Output:	
Exception:	
Rules:	

Name:	Change Performer Detail Data
Description:	Change the data of an existing performer. It is possible to change the following data: the strings 'name', 'biography' and 'birthName' the date 'dateOfBirth', the list 'occupations' and the image. The user has to confirm the changes The user can trigger the functions save and undo within this function whenever there are unsaved changes.
Preconditions:	Performer exists
Input:	W1.2: Performer DetailView, new data
Postconditions:	Performer is updated according to the new data
Output:	W1.2: Performer DetailView, Performer is updated with the new data
Exception:	(E1) user does not confirm the action
Rules:	

Name:	Unlink Movie
Description:	Remove the link between a performer and a movie. If the performer is not linked to any other movie, the user is warned. If the user confirms, the performer is removed from the storage. When a movie is unlinked from a performer, the overall rating of the movie is recalculated. The user has to confirm the change. The user can trigger the functions save and undo within this function whenever there are unsaved changes
Preconditions:	
Input:	W1.2: Performer DetailView, Movie
Postconditions:	Performer is updated according to the new data
Output:	W1.2: Performer DetailView, Linked Movies list of the performer does no longer contain the movie

Exception:	
Rules:	(R1) A performer has to be linked to at least one movie.

Name:	Search
Description:	Search for movies by title and for performers by name. The titles and images of the resulting movies and the names and images of the resulting performers are shown. The user can select where to search. If no search text is given, no results are shown.
Preconditions:	
Input:	W2.1: Search MasterView, search string
Postconditions:	
Output:	W2.1: Search MasterView, movie and/or performer results sorted from closest to farthest. MOvies with title and image. Performers with name and image
Exception:	
Rules:	(R1) The distance is computed via the normalized minimum edit distance algorithm.
	(R2) Items are results when they are conforming to the following threshold distances: 0.0 for a search string length of 0, 0.02 for a length of 1, 0.03 for a length of 2, 0.05 length 3, 0.1 length 4, 0.25 length 5, 0.4 length 6, 0.5 length 7, 0.55 length 8, 0.65 length 9, 0.7 length 10 and beyond.
	(R3) When returning to the search view from a result, the results of the previous search are shown. Changes to performers or movies are represented in the search results.
	(R4) The search modes and corresponding outputs are:

	- performers and movies => list of 5 closest movies and 5 closest performers and possibility to search in movies or performers. The category with the closest candidate is displayed first - only movies => list of result movies sorted - only performers => list of result performers sorted

Name:	Link New Movie
Description:	Create a movie and link it to the performer. The user can edit and change the movie details before confirming the change. The overall rating of the new movie is calculated. The user can trigger the functions save and undo within this function whenever there are unsaved changes.
Preconditions:	Performer exists
Input:	W1.2: Performer DetailView, new movie data
Postconditions:	The movie exists and is linked to the performer. The overall rating of the movie is calculated.
Output:	W1.2: Performer DetailView, shows the new movie in the linked movies list
Exception:	(E1) the user does not confirm the change (E2) The user cancels the movie creation
Rules:	

Name:	Save Movie Changes
Description:	Save all unsaved changes of a movie.
Preconditions:	Movie exists and has unsaved changes.
Input:	W0.2: Movie DetailView, unsaved changes
Postconditions:	No unsaved changes exist. Movie is updated.
Output:	W0.2: Movie DetailView, Movie shows updated
Exception:	

Rules:	(R1) after a save the edit mode is left and the view before the switch to edit mode is shown