

# Requirements [ARCHIVED]

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Joanna Madanat edited this page on Oct 3 · 1 revision

## User

### User Create

Function	User Create
Requirement ID	User_Create
Description	A user is created and persisted to the database
Inputs	Username ( str ), User_Type ( UserType ), First Name ( str ), Last Name ( str ), Email ( str ), Password( str )
Source	User with ATC permissions
Outputs	Success message, or failure message according to the error
Action	After validating that the username and email are not already used, a user is created with the given information and is persisted to the database with a unique, permanent identifier.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in.
Postcondition	A new user is persisted to the database, and the user performing the creation is recorded.
Side Effects	User can access information and change information. Outdated Database risk.

### User Read

Function	User Read
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Function	User Read
Requirement ID	User_Read
Description	User information is retrieved.
Inputs	Logged-in user selects a User fom UI supplying its ID ( int )
Source	User with ATC permissions
Outputs	User information: User Type, Username, Email, First Name, Last Name. OR Error message if error occurs in database OR error if user does not exist.
Action	The system takes the requested user's ID. Then, it checks if the user exists. If the user exists, it displays this user's information. Otherwise it returns an error that the user does not exist.
Requires	Username or Email to find the matching users and display them on the UI.
Precondition	A valid user with ATC permissions is logged in.
Postcondition	<i>None</i>
Side Effects	<i>None</i>

## User Update

Function	User Update
Requirement ID	User_Update
Description	User information is updated
Inputs	Logged-in user selects User from UI supplying its ID ( int ), New Username ( str ), New Email ( str ), New First Name ( str ), New Last Name ( str ), New User Type ( str ).
Source	User with ATC permissions
Outputs	Success message. OR Error message if input is invalid. OR Error message if database error occurred.

Function	User Update
Action	The system takes the user's ID. It then checks if the user exists, and (if applicable) the new username and new email are checked for availability, and the new user type is checked for a valid option. If all validations pass, the user's data is updated and persisted to the database. The user performing the update is also recorded in the database.
Requires	User ID
Precondition	A valid user with ATC permissions is logged in.
Postcondition	The updated user is persisted to the database, and the user performing the update is recorded as the last user to update the user.
Side Effects	Outdated Database risk

## Change User Password

Function	Change User Password
Requirement ID	User_ChangePassword
Description	User's password is modified
Inputs	Logged-in user selects User from UI supplying its ID ( <code>int</code> ), New Password ( <code>str</code> )
Source	User with ATC permissions or Gate user on their own account
Outputs	Success message. OR Error message if input is invalid. OR Error message if database error occurred.
Action	The system takes the user's ID and the new password. The requested user is checked for existence, and the password is checked for passing complexity requirements. If all validation passes, the user's password is updated and the updated data is persisted to the database. The user performing the update is also recorded in the database.
Requires	<i>All inputs are required</i>

Function	Change User Password
Precondition	A valid user with ATC permissions is logged in, or a gate user who is changing his own password.
Postcondition	The updated user data is persisted to the database and the user performing the change is also recorded in the database.
Side Effects	Outdated Database risk

## User Delete

Function	User Delete
Requirement ID	User_Delete
Description	A user is deleted
Inputs	Logged-in user selects User from UI supplying its ID
Source	User with ATC permissions
Outputs	Success message. OR Error message if input is invalid. OR Error message if database error occurred. OR error message if user does not exist.
Action	The system takes the user's ID. It first checks to ensure the user exists. If so, the user is deleted from the database.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in.
Postcondition	The given user is removed from the database.
Side Effects	This user can no longer log into the application. Outdated Database risk

## Airport

### Airport Create

Function	Airport Create
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Function	Airport Create
Requirement ID	Airport_Create
Description	A user creates a new airport for an existing airport.
Inputs	Airport Name ( <i>str</i> ), Location: X and Y ( <i>Vector</i> )
Source	User with ATC permissions
Outputs	Success message. OR Error message if input is invalid. OR Error message if database error occurred. OR error message if Airport name already used.
Action	The system takes the airport name and airport location. It first confirms the airport name is not already used. If all inputs are valid, the airport is persisted to the database (with a unique, permanent identifier being assigned to it). The user creating the airport is also recorded in the database.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in.
Postcondition	A airport with the given name and size now exists in the database. User creating Airport is also persisted.
Side Effects	Outdated Database risk.

## Airport Read

Function	Airport Read
Requirement ID	Airport_Read
Description	System returns information about given airport
Inputs	User selects airport from UI supplying its ID ( <i>int</i> )
Source	User with ATC permissions

Function	Airport Read
Outputs	Information concerning the airport is printed on screen. OR error message if database error occurs. OR error message if Airport does not exist.
Action	The system takes an airport ID. It first checks to ensure the airport exists, then returns the airport's data.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in.
Postcondition	<i>None</i>
Side Effects	<i>None</i>

## Airport Update

Function	Airport Update
Requirement ID	Airport_Update
Description	A User updates information about a given airport.
Inputs	User selects airport from UI supplying its ID ( <code>int</code> ), new airport name ( <code>str</code> ), new airport location ( <code>vector</code> )
Source	User with ATC permissions
Outputs	Success message. OR error message if database error occurs. OR error message if Airport does not exist. OR error message if inputs are invalid.
Action	The system takes at least an Airport ID along with (optionally) its location. It first checks to ensure that the airport exists and (if applicable) the new airport name is available. If these inputs are valid, the system updates the airport's data using the given information.
Requires	Airport ID
Precondition	A valid user with ATC permissions is logged in.
Postcondition	Airport information has changed.

Function	Airport Update
Side Effects	Outdated Database risk.

## Airport Delete

Function	Airport Delete
Requirement ID	Airport_Delete
Description	A user deletes a airport from an existing airport.
Inputs	User selects airport from UI supplying its ID ( int )
Source	User with ATC permissions
Outputs	Success message. OR error message if database error occurs. OR error message if Airport does not exist. OR error message if inputs are invalid.
Action	The system takes an Airport ID. It checks to ensure the airport to be deleted exists. If so, the airport is deleted from the database.
Requires	Airport ID
Precondition	A valid user with ATC permissions is logged in.
Postcondition	The airport with the given name no longer exists for the given airport in the database.
Side Effects	Outdated Database risk. The deleted Airport can no longer be used.

## Runway

### Runway Create

Function	Runway Create
Requirement ID	Runway_Create
Description	A user creates a new runway for an existing airport.

Function	Runway Create
Inputs	Runway Name ( <code>str</code> ), Runway Size ( <code>str</code> )
Source	User with ATC permissions
Outputs	Success or failure message
Action	The system takes two pieces of information: the runway name and runway size. It first confirms the runway to be saved does not already exist and the runway size is a valid option. If all inputs are valid, the runway is persisted to the database (with a unique, permanent identifier being assigned to it). The user creating the runway is also recorded in the database.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in, and user has selected an Airport from UI.
Postcondition	A runway with the given name and size now exists for the given airport in the database.
Side Effects	<i>None</i>

## Runway Read

Function	Runway Read
Requirement ID	Runway_Read
Description	System returns information about given runway
Inputs	User selects runway from UI supplying its ID ( <code>int</code> )
Source	User with ATC permissions
Outputs	Information concerning the runway is printed on screen.
Action	The system takes one piece of information: runway ID. It first checks to ensure the runway exists, then returns the current information concerning the runway.
Requires	<i>All inputs are required</i>



Function	Runway Read
Precondition	A valid user with ATC permissions is logged in, and user has selected an Airport from UI.
Postcondition	<i>None</i>
Side Effects	<i>None</i>

## Runway Update

Function	Runway Update
Requirement ID	Runway_Update
Description	A User updates information about a given runway.
Inputs	User selects runway from UI supplying its ID ( <i>int</i> ), user may select new runway airport from UI supplying its ID ( <i>id</i> ), new runway name ( <i>str</i> ), new runway size ( <i>str</i> )
Source	User with ATC permissions
Outputs	Success or failure message.
Action	The system takes at least one piece of information: Runway ID. It first checks to ensure that the runway exists. If so, the system updates the runway's data using the given information.
Requires	Runway ID
Precondition	A valid user with ATC permissions is logged in, and user has selected an Airport from UI.
Postcondition	Runway information has changed.
Side Effects	<i>None</i>

## Runway Delete

Function	Runway Delete
Requirement ID	Runway_Delete

Function	Runway Delete
Description	A user deletes a runway from an existing airport.
Inputs	User selects runway from UI supplying its ID ( int )
Source	User with ATC permissions
Outputs	Success or failure message
Action	The system takes one piece of information: Runway ID. It first checks to ensure the runway to be deleted exists. If so, the runway is deleted from the database.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in, and user has selected an Airport from UI.
Postcondition	The runway with the given name no longer exists for the given airport in the database.
Side Effects	Airplanes can no longer land on this runway.

## Gate

### Gate Create

Function	Gate Create
Requirement ID	Gate_Create
Description	A user creates a new gate for an existing airport.
Inputs	Gate name ( str ), Gate size ( str )
Source	User with ATC permissions
Outputs	Success or failure message.
Action	The system takes two pieces of information: the new gate name and the gate size. After checking the gate to be saved does not exist and the size is a valid option, the gate is persisted to the database (with a unique, permanent identifier being assigned to it). The user creating the gate is also recorded in the database.

Function	Gate Create
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in, and user has selected an Airport from UI.
Postcondition	A new gate is persisted to the database, and the user performing the creation is also recorded in the database.
Side Effects	<i>None</i>

## Gate Read

Function	Gate Read
Requirement ID	Gate_Read
Description	A user data for a gate.
Inputs	User selects Gate from UI supplying its ID ( int )
Source	User with ATC permissions or gate permission
Outputs	Gate information: name, airport name, size
Action	The system takes one piece of information: the gate ID. After checking the gate exists, information about the gate is returned to the user.
Requires	<i>All inputs are required</i>
Precondition	A user with ATC permissions or gate permission is logged in, and user has selected an Airport from UI.
Postcondition	<i>None</i>
Side Effects	<i>None</i>

## Gate Update

Function	Gate Update
Requirement ID	Gate_Update
Description	A user creates a new gate for an existing airport.

Function	Gate Update
Inputs	User selects Gate from UI supplying its ID ( <code>int</code> ), New gate size ( <code>str</code> ), New airport ID---supplied by UI after user's selection ( <code>str</code> ), New gate size ( <code>str</code> )
Source	User with ATC permissions
Outputs	Success or failure message.
Action	The system takes at least one piece of information: the gate ID, and any gate parameters to update (name, airport, or size). The gate is checked for existence and---if applicable---the new airport is checked for existence, the new name is checked to ensure no other gate uses it, and the size is checked for a valid option. If all validation passes, the gate is updated and persisted to the database. The user updating the gate is also recorded as the user last updating the gate in the database.
Requires	Gate ID
Precondition	A valid user with ATC permissions is logged in, and user has selected an Airport from UI.
Postcondition	The updated gate is persisted to the database, and the user performing the update is recorded as the last user to update the gate.
Side Effects	<i>None</i>

## Gate Delete

Function	Gate Delete
Requirement ID	Gate_Delete
Description	A user deletes an airport gate.
Inputs	User selects Gate from UI supplying its ID ( <code>int</code> )
Source	User with ATC permissions
Outputs	Success or failure message.
Action	The system takes one piece of information: the gate ID. After checking the gate exists, the gate is removed from the database.

Function	Gate Delete
Requires	<i>All inputs required</i>
Precondition	A valid user with ATC permissions is logged in, and user has selected an Airport from UI.
Postcondition	The gate is removed from the database.
Side Effects	<i>None</i>

## Airline

### Airline Create

Function	Airline Create
Requirement ID	Airline_Create
Description	A user creates a new airline.
Inputs	Airline name (str)
Source	User with ATC permissions
Outputs	Success or failure message
Action	The system takes one piece of information: Airline name. It first checks to ensure that the Airline doesn't already exist. If the Airline name is available, a new airline is persisted to the database (with a unique, permanent identifier being assigned to it). The user creating the airline is recorded in the database.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in.
Postcondition	The Airline count is incremented by 1.
Side Effects	<i>None</i>

### Airline Read

Function	Airline Read
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Function	Airline Read
Requirement ID	Airplane_Read
Description	The system returns information about given airline.
Inputs	User selects airline from UI supplying its ID ( <code>int</code> )
Source	User with ATC permissions
Outputs	The information about the given airline is displayed on the screen.
Action	The system takes one piece of information: Airline ID. It first checks to ensure that the Airline exists. If so, the system displays the information about the Airline.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in.
Postcondition	<i>None</i>
Side Effects	<i>None</i>

## Airline Update

Function	Airline Update
Requirement ID	Airline_Update
Description	The given airline is updated.
Inputs	User selects airline from UI supplying its ID ( <code>int</code> ), new airline name ( <code>str</code> )
Source	User with ATC permissions
Outputs	The information about the given airline is updated.
Action	The system takes one piece of information: Airline ID. It first checks to ensure that the Airline exists. If so, the system updates the information about the Airline.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in.

Function	Airline Update
Postcondition	<i>None</i>
Side Effects	<i>None</i>

## Airline Delete

Function	Airline Delete
Requirement ID	Airline_Delete
Description	The given airline is deleted.
Inputs	User selects airline from UI supplying its ID ( <code>int</code> )
Source	User with ATC permissions
Outputs	The airline is deleted.
Action	The system takes one piece of information: Airline ID. It first checks to ensure that the Airline exists. If so, the system deletes the Airline.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in.
Postcondition	The airline is deleted from the database.
Side Effects	Planes can no longer be assigned to the deleted airline.

## Airplane

### Airplane Create

Function	Airplane Create
Requirement ID	Airplane_Create
Description	A user creates a new airplane of given size for an existing airline at an existing airport.

Function	Airplane Create
Inputs	Airplane Name ( <code>str</code> ), Size ( <code>str</code> ), user selects Airline from UI supplying its ID ( <code>int</code> ), user selects Airport from UI supplying its ID ( <code>int</code> )
Source	User with ATC permissions
Outputs	If success, then display success message. If failure
Action	The system takes four pieces of information: the airplane name, airplane size, airline name, and airport name. It first checks to ensure the airline and airport exist, and then it confirms the airplane name is not already used in the airline. If all inputs are valid, the airplane is persisted to the database (with a unique, permanent identifier being assigned to it). The user creating the airplane is also recorded in the database.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in, and user has selected an airport and airline from UI.
Postcondition	An airplane with the given name and size now exists for the given airport. The user creating the airplane is also recorded.
Side Effects	<i>None</i>

## Airplane Read

Function	Airplane Read
Requirement ID	Airplane_Read
Description	The system returns information about given airplane.
Inputs	User selects Airplane from UI supplying its ID ( <code>int</code> )
Source	User with ATC permissions or gate permission.
Outputs	Returns information about given airplane.
Action	The system takes two pieces of information: the airplane name and airline. It first checks to ensure the airline and airplane exist. If both required inputs are valid, the airplane information is displayed on the screen.



Function	Airplane Read
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions or gate permission is logged in, and user has selected an Airline from UI.
Postcondition	<i>None</i>
Side Effects	<i>None</i>

## Airplane Update

Function	Airplane Update
Requirement ID	Airplane_Update
Description	A User updates information about a given airplane.
Inputs	User selects Airplane from UI supplying its ID ( <code>int</code> ), Airplane Size ( <code>str</code> ), Airlines ( <code>str</code> ), Current Airport ID---supplied by UI from user selection ( <code>int</code> ), Destination Airport---supplied by UI from user selection ( <code>int</code> ).
Source	User with ATC permissions or gate permission
Outputs	Success or failure message.
Action	The system takes five pieces of information: the airplane ID, the airplane size, the airline ID, and the airport ID. It first checks to ensure the airplane, the airline, the current airport, and the destination airport exist. If all required inputs are valid, the information about the airplane is updated in the database. The user updating the airplane is also recorded in the database.
Requires	Airplane ID
Precondition	A valid user with ATC permissions or gate permission is logged in. User has selected an Airline from UI. Airplane must be at an airport but not at a gate or a runway.
Postcondition	The given airplane detailed are changed depending on given information. The user updating the airplane is also recorded in the database.

Function	Airplane Update
Side Effects	<i>None</i>

## Airplane Delete

Function	Airplane Delete
Requirement ID	Airplane_Delete
Description	The given airplane is deleted.
Inputs	User selects Airplane from UI supplying its ID ( int )
Source	User with ATC permissions
Outputs	Success or failure message.
Action	The system takes two pieces of information: the airplane name and airline. It first checks to ensure the airline and airplane exist. If both required inputs are valid, the airplane information is deleted from the database.
Requires	<i>All inputs are required</i>
Precondition	A valid user with ATC permissions is logged in. User has selected an Airline from UI. Airplane must be at an airport but not at a gate or a runway.
Postcondition	Airplane must have been deleted from database.
Side Effects	<i>None</i>