

VOLKSWAGEN PAYMENT SYSTEMS

G M B H

Test Task for Software Developers

Software Requirements

The goal of the test task is to develop a web API of a task planning system. The web API must allow to create and edit a task hierarchy, as well as perform calculations on the data fields of the tasks in the hierarchy.

General Process Description

The web API operates on the Task entity, which has the following attributes:

Attribute	Data type	Comment
identifier	number(5)	
title	string(30)	
description	string(100)	
effortEstimation	number(3)	
aggregatedEffortEstimation	number(3)	
creationDate	string(24)	
status	string(11)	New, In progress, On hold, Completed
subTasks	Array of Task objects	

The capabilities of the web API must be as follows:

1. Tasks can be created / edited / deleted.
2. Task data including its sub-tasks can be retrieved.
3. Only the following task status transitions are allowed:

From Status	To Status
-	New
New	In progress
In progress	Completed
In progress	On hold
On hold	In progress

4. A task can be assigned as a sub-task to any other task.
5. Only a task which does not have sub-tasks can be deleted.
6. If a task has sub-tasks, additionally calculate the effort estimation of the hierarchy of its subtasks in the aggregatedEffortEstimation response parameter.
7. Use corresponding HTTP status codes to handle error situations. Any details can be provided in the response parameter "errorMessage".

Endpoints

Create

POST {baseUrl}/tasks

Request parameters

Parameter name	Data type	Required
title	string(30)	YES
description	string(100)	NO
effortEstimation	number(3)	YES

Response parameters

Parameter name	Data type
task	Task object

Edit

PUT {baseUrl}/tasks/{identifier}

Request parameters

Parameter name	Data type	Required
identifier (URL parameter)	number(5)	YES
title	string(30)	NO
description	string(100)	NO
effortEstimation	number(3)	NO
status	string(11)	NO

Response parameters

Parameter name	Data type
task	Task object

Retrieve

GET {baseUrl}/tasks/{identifier}

Request parameters

Parameter name	Data type	Required
identifier (URL parameter)	number(5)	YES

Response parameters

Parameter name	Data type
task	Task object

Delete

DELETE {baseUrl}/tasks/{identifier}

Request parameters

Parameter name	Data type	Required
identifier (URL parameter)	number(5)	YES

Response parameters

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Assign Sub-task

PUT {baseUrl}/tasks/{identifier}

Request parameters

Parameter name	Data type	Required
identifier (URL parameter)	number(5)	YES
parentIdentifier	number(5)	YES

Response parameters

Parameter name	Data type
task	Task object

Note: in the response return the task identified by the parentIdentifier request parameter.

Tools and Technologies

Data must be stored in the MS SQL Server Database.

Programming language must be c#.

Application framework must be ASP.NET Core.

Design and Architectural Requirements

- Object oriented design and programming principles must be used to build the software.
- A single approach to handling exceptions must be followed. Use different exception types for different situations.
- Microsoft naming conventions for .Net applications or any similar naming conventions must be followed.
- Usage of a multi-layer architecture with different layers for data access and application business logic is an advantage.
- Unit / integration tests and dockerization of the application are also an advantage.