Sudoku Solver Web Service

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# General REST Definitions

## Controllers

Noun named endpoints that define a dataset that the defined REST methods act upon.

## Methods

Rest verbs describing a type of client request to a controller

### Delete

Removes a targeted resource from the server.

### Get

Fetches a given resource from the server.

### Head

Fetches the headers that would be returned by the Get verb

*Note: This is typically a peek at the size or other relevant information for a Get request*

### Options

Fetches a list of available methods for the associated controller

### Patch

Edits a targeted resource on the server with given updated fields if it exists

(May) Create a resource on the server with given data if it does not already exist

### Post

Creates a new resource on the server with given data

### Put

Creates a resource on the server with given data if one does not exist

Overwrites a resource on the server with given data if one does exist

## Input Parameter Types

### Body

Key-Value pairs in the request body, typically format is defined in one of the other parameter types

*Note: Typical supported types include Html, Json, PlainText, & Xml*

### Header

Parameters in the request header, usually related to authorization

### Path

Parameters in the URL before the query string indicator ( ? ). Usually set off within curly braces.

### Query

Parameters in the URL after the query string indicator ( ? )

## Defining the format of request / response body

### Header

Content-Type: This header contains a key to describe the format of an associated request body

### Query

alt: This query string parameter defines the client’s desired format of the response

## Http Status Codes

These are not a complete list.

*Note: All codes that are returned from this document will be defined here, common or not.*

### 2xx family (success)

* 200 (OK): The client’s request succeeded
* 201 (Created): The client’s request has succeeded and a new resource has been created as a result
* 202 (Accepted): A noncommittal response, an indication that the client’s request was received, but not yet processed.

*Note: This is normally due to fire and forget actions. For example sending messages (email, text, etc) without a means of confirming they were received*

* 204 (No Content): No content to send for this client request, but the headers might be useful
* 205 (Reset Content): Client should update the document which submitted the client request

Note: Data is cached, server is serving an update

### 3xx family (redirection)

* 301 (Moved Permanently): Server resource has permanently moved, API endpoint depreciated
* 304 (Not Modified): Content is cached with no modification on the resource or the server.

### 4xx family (client error)

* 400 (Bad Request): Server cannot understand client request
* 401 (Unauthorized): Client request missing authorization information
* 403 (Forbidden): Client does not have authorization to access the requested resource
* 404 (Not Found): Client request is on a resource that does not exist
* 405 (Method Not Allowed): Client Request is for a banned Method on associated controller

*Note: Get and Head methods should never be banned*

### 5xx family (server error)

* 500 (Internal Server Error): Unexpected condition
* 501 (Not Implemented): Server is no longer supporting the method on a resource
* 502 (Bad Gateway): The Server itself got an error response from an external resource it is dependent on
* 503 (Service Unavailable): The Server is down due to heavy load or maintenance
* 504 (Gateway Timeout): External resources the server is dependent on is taking too long to respond.

# SudokuSolver Web Service Implementation Definition

## Supports

### Request body format

* application/json

### Response body format

* json

### Difficulty

* Easy

### Dimensions for generated puzzles

* 4
* 9
* 16

## Requires

### Headers

* **Content-Type**: application/json

*Note: This is only if a body is present in the request*

### Query String

* **alt** = json

*Note: This is only if a body is present in the response*

## Exceptions

* If an Options method is defined, it is does not require any specific headers, path, body, or query string parameters defined outside of the lowest definition of that method.

## Authentication / Authorization

### Authentication

There is no Authentication designed for this project at this time.

### Authorization

Authorization for Sudoku Solver is mostly simulation based at this time.

To get a playerId, a player must submit a Post request to the Players Controller with a predefined one time use inviteId. This provides a closed system to starting point while development is underway, and validates the rudiments of system authorization.

The submitted player data for the Post request contains an email address. That email address must be unique to the server in order to qualify for a playerId.

# Moves Service

## General Moves Service Details

*Note: These are in addition to those defined under SudokuSolver Web Service Implementation Definition*

Supports:

* REST Methods:
  + Delete, Get, Options, Post

Requires:

* Headers
  + playerId: Guid
  + puzzleId: Guid

## Delete

### Description

The Delete method on the Moves controller will undo the most recent legal move made for the given puzzleId.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Get

### Description

The Get method on the Moves controller will fetch the current count of legal moves completed

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Options

### Description

The Options Method on the Moves controller will fetch an updated list of available methods for the Moves controller.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Post

### Description

The Post method on the Moves controller will make a move on the puzzle board if it is legal

### Request

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter Input Type** | | | | |
| Parameter Name | | Parameter Type | Is Required | Description |
| **Path Parameters** | | | | |
| *N/A* | | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | | |
| *N/A* | | *N/A* | *N/A* | *N/A* |
| **Header** | | | | |
| *N/A* | | *N/A* | *N/A* | *N/A* |
| **Body** | | | | |
| committedMove | | Object | Yes | The object containing the move the player is making. |
|  | nodeId | Int | Yes | The ID to the target node. |
|  | value | Int? | Yes | The value to be submitted into the target node. |

### Response

Will be defined at a later time.

# Players Service

## General Service Details

*Note: These are in addition to those defined under SudokuSolver Web Service Implementation Definition*

Supports:

* REST Methods:
  + Delete, Get, Options, Patch, Post

## Delete

### Description

The Delete method on the Players controller will delete a target player’s player data from the Server

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| playerId | Guid | Yes | The players provided Id for Authorization |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Get

### Description

The Get method on the Players controller will fetch a target player’s player data from the Server

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| playerId | Guid | Yes | The players provided Id for Authorization |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Options

### Description

The Options method on the Players controller will fetch an updated list of available methods for this controller.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Patch

### Description

The Patch method on the Players controller will update a target player’s player data with the given updates.

### Request

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter Input Type** | | | | |
| Parameter Name | | Parameter Type | Is Required | Description |
| **Path Parameters** | | | | |
| *N/A* | | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | | |
| *N/A* | | *N/A* | *N/A* | *N/A* |
| **Header** | | | | |
| playerId | | Guid | Yes | The players provided Id for Authorization |
| **Body** | | | | |
| playerData | | Object | Yes | A object to hold submitted player data |
|  | email | String | No | Player’s email address |
|  | name | String | No | Player’s chosen identifier |

*Note: While neither email nor name are required specifically, at least one is required.*

### Response

Will be defined at a later time.

## Post

### Description

The Post method on the Players controller will create record containing given player data if the given email is unique.

### Request

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter Input Type** | | | | |
| Parameter Name | | Parameter Type | Is Required | Description |
| **Path Parameters** | | | | |
| *N/A* | | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | | |
| *N/A* | | *N/A* | *N/A* | *N/A* |
| **Header** | | | | |
| inviteId | | Guid | Yes | The players provided Id for Authorization |
| **Body** | | | | |
| playerData | | Object | Yes | A object to hold submitted player data |
|  | email | String | Yes | Player’s email address |
|  | name | String | Yes | Player’s chosen identifier |

### Response

Will be defined at a later time.

# Puzzles Service

## General Service Details

*Note: These are in addition to those defined under SudokuSolver Web Service Implementation Definition*

Supports:

* REST Methods:
  + Delete, Get, Options

Requires:

* Headers
  + playerId: Guid

## Delete

### Description

The Delete method on the Puzzles controller will delete a given puzzleId.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| puzzleId | Guid | Yes | The puzzles provided Id |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Get

### Description

The Get method on the Puzzles controller will fetch a puzzle for the given Id, or create one with given dimension and difficulty.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| puzzleId | Guid | No | The puzzles provided Id |
| difficulty | String | No | The difficulty for the desired puzzle to be created |
| dimension | Int | No | The dimension for the desired square puzzle to be created |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

*Note: Either a puzzleId or the combination of difficulty and dimension are required. Not both. Not neither.*

### Response

Will be defined at a later time.

## Options

### Description

The Options Method on the Puzzles controller will fetch an updated list of available methods for this controller.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

# Solutions Service

## General Service Details

*Note: These are in addition to those defined under SudokuSolver Web Service Implementation Definition*

Supports:

* REST Methods:
  + Get, Options, Post

Requires:

* Headers
  + playerId: Guid

## Get

### Description

The Get method on the Solutions controller will fetch a solution for a given puzzleId.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| puzzleId | Guid | Yes | The puzzles provided Id |
| full | Boolean | Yes | A flag to indicate if a single node or full solution is requested |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Options

### Description

The Options method on the Solutions controller will fetch an updated list of available methods for this controller.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Body** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |

### Response

Will be defined at a later time.

## Post

### Description

The Post method on the Solutions controller will solve the given puzzle.

### Request

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Input Type** | | | |
| Parameter Name | Parameter Type | Is Required | Description |
| **Path Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Query String Parameters** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Header** | | | |
| *N/A* | *N/A* | *N/A* | *N/A* |
| **Body** | | | |
| Will be defined at a later time | Will be defined at a later time | Will be defined at a later time | Will be defined at a later time |

### Response

Will be defined at a later time.