



链滴

JSONSchema

作者: [devcui](#)

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1.什么是JSONSchema

JSON Schema 是一个允许您**注释** 和**验证** JSON 文档的词汇表。

2.构建JSONSchema

2.1 Example

```
{
  "productId": 1,
  "productName": "A green door",
  "price": 12.50,
  "tags": [ "home", "green" ]
}
```

如上json有一些问题, 比如 **productId**是什么,**productName**是什么,如何验证里面的字段,**price**可不以为0, 上述JSON只是一份不完备的JSON文档

2.2 开始构建

```
{
  "$schema": "https://json-schema.org/draft/2020-12/schema",
  "$id": "https://example.com/product.schema.json",
  "title": "Product",
  "description": "A product in the catalog",
  "type": "object"
}
```

- **\$schema**: 根据哪个json草案/标准进行编写的, 还有版本信息
- **\$id**: 定义了Schema的 URI, 以及Schema内其他 URI 引用解析所依据的基本 URI
- **title,description**: 描述这个JSON文档的一些信息
- **type**: 这个字段是对JSON文档的第一个**约束**, 如上表明json文档为对象类型

type还有如下几种类型

类型	描述
null	空
boolean	布尔
object	对象
array	数组
number	数字
string	字符串
integer	数字

2.3 属性

```
{
  "$schema": "https://json-schema.org/draft/2020-12/schema",
  "$id": "https://example.com/product.schema.json",
  "title": "Product",
  "description": "A product from Acme's catalog",
  "type": "object",
  "properties": {
    "productId": {
      "description": "The unique identifier for a product",
      "type": "integer"
    }
  },
  "required": [ "productId" ]
}
```

- 使用 `properties` 定义属性，属性必须为一个对象，此对象的每个值都必须有效的 JSON 模式。
- `productId` 是对象中的一个属性，拥有类型和描述两个字段
- `required` 的值必须是一个数组，如上表明 `productId` 是必须要验证的

2.4 更多限制

```
{
  "$schema": "https://json-schema.org/draft/2020-12/schema",
  "$id": "https://example.com/product.schema.json",
  "title": "Product",
  "description": "A product from Acme's catalog",
  "type": "object",
  "properties": {
    "productId": {
      "description": "The unique identifier for a product",
      "type": "integer"
    },
    "productName": {
      "description": "Name of the product",
      "type": "string"
    },
    "price": {
      "description": "The price of the product",
      "type": "number",
      "exclusiveMinimum": 0
    }
  },
  "required": [ "productId", "productName", "price" ]
}
```

- `price` 增加了 `exclusiveMinimum`，`exclusiveMinimum` 装饰的属性的值必须不是零。
- 如果你需要包含 0，那么可以使用 `minimum` 最小值来控制

2.5 验证 Numeric 类型

- multipleOf 其中之一
- maximum 最大限度
- exclusiveMaximum 不包含最大限度
- minimum 最小限度
- exclusiveMinimum 不包含最小限度

2.6 验证 String类型

- maxLength 最大长度
- minLength 最小长度
- pattern 正则

2.7 验证 array 类型

```
{
  "$schema": "https://json-schema.org/draft/2020-12/schema",
  "$id": "https://example.com/product.schema.json",
  "title": "Product",
  "description": "A product from Acme's catalog",
  "type": "object",
  "properties": {
    "productId": {
      "description": "The unique identifier for a product",
      "type": "integer"
    },
    "productName": {
      "description": "Name of the product",
      "type": "string"
    },
    "price": {
      "description": "The price of the product",
      "type": "number",
      "exclusiveMinimum": 0
    },
    "tags": {
      "description": "Tags for the product",
      "type": "array",
      "items": {
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true
    }
  },
  "required": [ "productId", "productName", "price" ]
}
```

- maxItems 最大数量
- minItems 最小数量

- `uniqueItems` 每个元素是不是都是唯一的
- `maxContains`
- `minContains`

2.8 验证 Objects 类型

```
{
  "$id": "https://example.com/address.schema.json",
  "$schema": "https://json-schema.org/draft/2020-12/schema",
  "description": "An address similar to http://microformats.org/wiki/h-card",
  "type": "object",
  "properties": {
    "post-office-box": {
      "type": "string"
    },
    "extended-address": {
      "type": "string"
    },
    "street-address": {
      "type": "string"
    },
    "locality": {
      "type": "string"
    },
    "region": {
      "type": "string"
    },
    "postal-code": {
      "type": "string"
    },
    "country-name": {
      "type": "string"
    }
  },
  "required": [ "locality", "region", "country-name" ],
  "dependentRequired": {
    "post-office-box": [ "street-address" ],
    "extended-address": [ "street-address" ]
  }
}
```

- `maxProperties` 最大属性数量
- `minProperties` 最小属性数量
- `required` 必须有的属性列表
- `dependentRequired` 标记属性需要哪些属性依赖

2.9 嵌套数据结构

```
{
  "$schema": "https://json-schema.org/draft/2020-12/schema",
```

```

"$id": "https://example.com/product.schema.json",
"title": "Product",
"description": "A product from Acme's catalog",
"type": "object",
"properties": {
  "productId": {
    "description": "The unique identifier for a product",
    "type": "integer"
  },
  "productName": {
    "description": "Name of the product",
    "type": "string"
  },
  "price": {
    "description": "The price of the product",
    "type": "number",
    "exclusiveMinimum": 0
  },
  "tags": {
    "description": "Tags for the product",
    "type": "array",
    "items": {
      "type": "string"
    },
    "minItems": 1,
    "uniqueItems": true
  },
  "dimensions": {
    "type": "object",
    "properties": {
      "length": {
        "type": "number"
      },
      "width": {
        "type": "number"
      },
      "height": {
        "type": "number"
      }
    },
    "required": [ "length", "width", "height" ]
  }
},
"required": [ "productId", "productName", "price" ]
}

```

- dimensions 作为 `properties` 中还有一层 `properties` 和 `required`

2.10 引用外部定义 Schema

```

{
  "$id": "https://example.com/geographical-location.schema.json",
  "$schema": "https://json-schema.org/draft/2020-12/schema",

```

```
"title": "Longitude and Latitude",
"description": "A geographical coordinate on a planet (most commonly Earth).",
"required": [ "latitude", "longitude" ],
"type": "object",
"properties": {
  "latitude": {
    "type": "number",
    "minimum": -90,
    "maximum": 90
  },
  "longitude": {
    "type": "number",
    "minimum": -180,
    "maximum": 180
  }
}
}
```

如上定义了一个object

```
{
  "$schema": "https://json-schema.org/draft/2020-12/schema",
  "$id": "https://example.com/product.schema.json",
  "title": "Product",
  "description": "A product from Acme's catalog",
  "type": "object",
  "properties": {
    "productId": {
      "description": "The unique identifier for a product",
      "type": "integer"
    },
    "productName": {
      "description": "Name of the product",
      "type": "string"
    },
    "price": {
      "description": "The price of the product",
      "type": "number",
      "exclusiveMinimum": 0
    },
    "tags": {
      "description": "Tags for the product",
      "type": "array",
      "items": {
        "type": "string"
      },
      "minItems": 1,
      "uniqueItems": true
    },
    "dimensions": {
      "type": "object",
      "properties": {
        "length": {
          "type": "number"
        }
      }
    }
  }
}
```

```
    },
    "width": {
      "type": "number"
    },
    "height": {
      "type": "number"
    }
  },
  "required": [ "length", "width", "height" ]
},
"warehouseLocation": {
  "description": "Coordinates of the warehouse where the product is located.",
  "$ref": "https://example.com/geographical-location.schema.json"
}
},
"required": [ "productId", "productName", "price" ]
}
```

- **warehouseLocation**使用此属性名称来包含外部JSONSchema