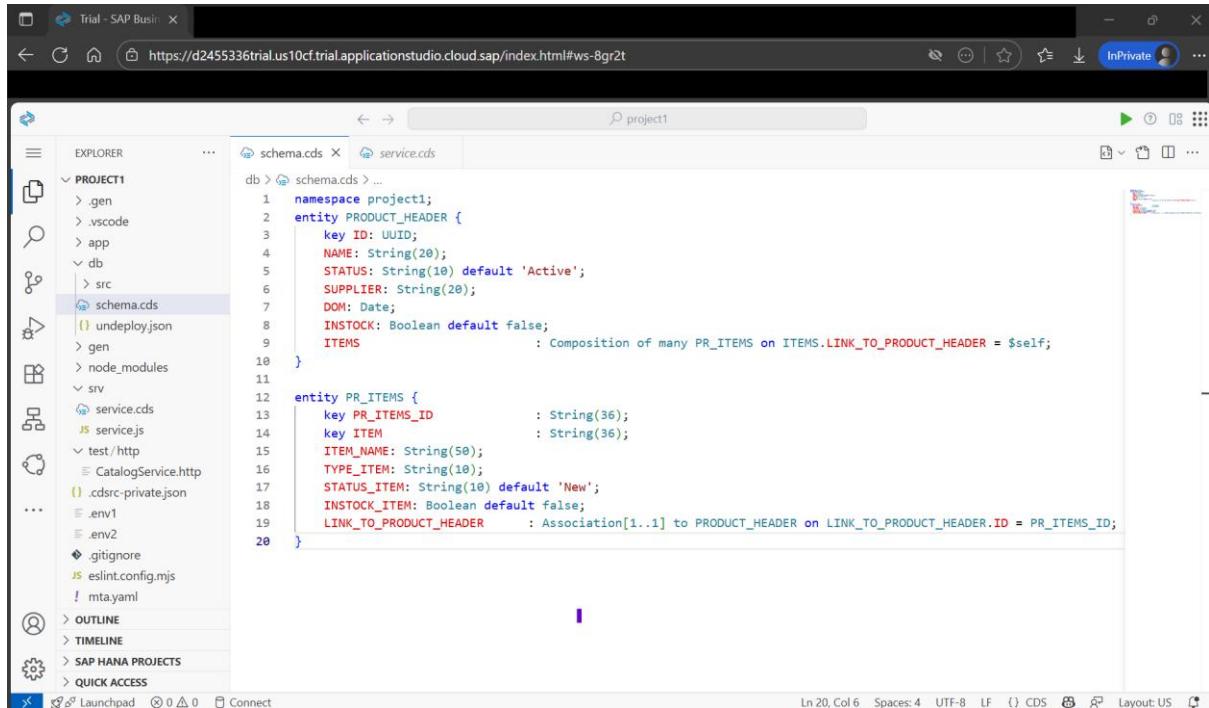


SAP CAP function and action implementation – A project made by Shobhit Srivastava

Prerequisites:

- Understanding SAP CAP model
- Understanding SAP BAS and knowledge on SAP UI5

This is use case to design a data model using SAP CAP. The SAP HANA Cloud database is integrated instead of sqlite. This example is made to understand data modelling, function and action implementation on srv level.



The screenshot shows the SAP Business Application Studio interface. The left sidebar displays the project structure under 'PROJECT1'. The 'schema.cds' tab is selected in the top navigation bar. The main editor area contains the following CDS code:

```
namespace project1;
entity PRODUCT_HEADER {
    key ID: UUID;
    NAME: String(20);
    STATUS: String(10) default 'Active';
    SUPPLIER: String(20);
    DOM: Date;
    INSTOCK: Boolean default false;
    ITEMS : Composition of many PR_ITEMS on ITEMS.LINK_TO_PRODUCT_HEADER = $self;
}
entity PR_ITEMS {
    key PR_ITEMS_ID : String(36);
    key ITEM : String(36);
    ITEM_NAME: String(50);
    TYPE_ITEM: String(10);
    STATUS_ITEM: String(10) default 'New';
    INSTOCK_ITEM: Boolean default false;
    LINK_TO_PRODUCT_HEADER : Association[1..1] to PRODUCT_HEADER on LINK_TO_PRODUCT_HEADER.ID = PR_ITEMS_ID;
}
```

SRV:

```

srv > service.cds > ...
1   using project1 as project1 from '..db/schema';
2
3   service CatalogService @({path: '/odata/v4/catalog'}){
4     entity ProductHeader as projection on project1.PRODUCT_HEADER;
5     function getProductInfo(aName : String) returns array of LargeString;
6     action insertProductData(oID:UUID,oName:String(20),oStatus: String(10),oSupplier:String(20))
7       returns String;
8
9     entity PRItems as projection on project1.PR_ITEMS {
10      *,
11      LINK_TO_PRODUCT_HEADER : redirected to ProductHeader
12    };
13  }

```

Function and action definition in srv folder using node js logic.

```

srv > service.js > [e] <unknown> > ↗ <function> > ↗ srv.on('getProductInfo') callback
1
2   const cds = require('@sap/cds');
3   module.exports = (srv => {
4     const {
5       PRODUCT_HEADER,
6       PR_ITEMS
7     } = cds.entities('project1');
8
9     /* A Function to fetch Product data */
10    srv.on('getProductInfo', async (req) => {
11      let aName=req.data.aName;
12      let customerRequestsData;
13      return customerRequestsData = await cds.run(SELECT.from(PRODUCT_HEADER).where({
14        NAME: aName
15      }));
16
17
18    /* An action to perform insert opeartion in Product Data */
19    srv.on("insertProductData", async (req)=>{
20      let aSaveData = [];
21      const {oID,oName,oStatus,oSupplier} = req.data;
22
23      aSaveData.push({
24        ID: oID,
25        NAME: oName,
26        DOM: '2008-02-14',
27        INSTOCK: true,
28        STATUS: oStatus,

```

```

srv > JS service.js > [②] <unknown> > ④ <function> > ⑤ srv.on('getProductInfo') callback
  3   module.exports = (srv => {
  4     srv.on('getProductInfo', async (req) => {
  5       const {oName} = req.query;
  6       const result = await CDSQuery('SELECT * FROM PRODUCT_HEADER WHERE NAME = ?').execute([oName]);
  7       return result;
  8     });
  9   });
 10
 11   /**
 12    * An action to perform insert operation in Product Data
 13    */
 14   srv.on("insertProductData", async (req)=>{
 15     let aSaveData = [];
 16     const {oID,oName,oStatus,oSupplier} = req.data;
 17
 18     aSaveData.push({
 19       ID: oID,
 20       NAME: oName,
 21       DOM: '2008-02-14',
 22       INSTOCK: true,
 23       STATUS: oStatus,
 24       SUPPLIER: oSupplier
 25     });
 26     await INSERT.into(PRODUCT_HEADER).entries(aSaveData);
 27     return `${oName} inserted successfully`;
 28   });
 29 });
 30
 31 });
 32
 33 });
 34 });
 35 });

```

cds watch --hybrid development

Welcome to @sap/cds Server

Serving project1 1.0.0

These are the paths currently served:

Web Applications:

- none —

Service Endpoints:

/odata/v4/catalog / \$metadata	
ProductHeader	Fiori preview
PrItems	Fiori preview
getProductInfo (aName)	

This is an automatically generated page.
You can replace it with a custom ./app/index.html.

Pretty-print

```
{ "@odata.context": "$metadata#ProductHeader", "value": [ { "DOM": "2008-02-14", "ID": "14953600-3ff5-4ad6-bd2a-94e794fc7b02", "INSTOCK": true, "NAME": "Copper Nitrate", "STATUS": "InActive", "SUPPLIER": "xyz" }, { "DOM": "2008-02-14", "ID": "14953689-3ff5-4ad6-bd2a-94e794fc7b02", "INSTOCK": false, "NAME": "NAME-14953689", "STATUS": "S-14953689", "SUPPLIER": "SUPPLIER-14953689" }, { "DOM": "2008-02-14", "ID": "24953600-3ff5-4ad6-bd2a-94e794fc7b02", "INSTOCK": true, "NAME": "Copper Sulphate", "STATUS": "InActive", "SUPPLIER": "xyz" }, { "DOM": "2008-02-14", "ID": "aa953600-3ff5-4ad6-bd2a-94e794fc7b02", "INSTOCK": true, "NAME": "Ammonia", "STATUS": "InActive", "SUPPLIER": "xyz" }, { "DOM": "2008-02-14", "ID": "aab53600-3ff5-4ac6-bd2a-94e794fc7b02", "INSTOCK": true, "NAME": "Copper phosphate", "STATUS": "InActive", "SUPPLIER": "xyz" }, { "DOM": "2008-02-14", "ID": "aab53600-3ff5-4ad6-bd2a-94e794fc7b02", "INSTOCK": true, "NAME": "Ferric Suplhate", "STATUS": "InActive", "SUPPLIER": "xyz" }, { "DOM": "2025-01-01", "ID": "c3773e0e-eb55-4829-bb47-a0f09c62f5eb", "INSTOCK": true, "NAME": "Stainless Steal", "STATUS": "Active", "SUPPLIER": "Africa Pvt ltd" } ] }
```

Pretty-print

```
{ "@odata.context": "$metadata#PrItems",
  "value": [
    {
      "INSTOCK_ITEM": false,
      "ITEM": "PrItems-7102429",
      "ITEM_NAME": "ITEM_NAME-Copper",
      "PR_ITEMS_ID": "14953689-3ff5-4ad6-bd2a-94e794fc7b02",
      "STATUS_ITEM": "EM-7102429",
      "TYPE_ITEM": "EM-7102429"
    },
    {
      "INSTOCK_ITEM": true,
      "ITEM": "PrItems-7102430",
      "ITEM_NAME": "ITEM_NAME-7102430",
      "PR_ITEMS_ID": "14953689-3ff5-4ad6-bd2a-94e794fc7b02",
      "STATUS_ITEM": "EM-7102430",
      "TYPE_ITEM": "EM-7102430"
    },
    {
      "INSTOCK_ITEM": false,
      "ITEM": "8cbcfdf0-428d-4a2e-9ef3-9c27c2b042ec",
      "ITEM_NAME": "Iron",
      "PR_ITEMS_ID": "c3773e0e-eb55-4829-bb47-a0f09c62f5eb",
      "STATUS_ITEM": "New",
      "TYPE_ITEM": "Grade A"
    },
    {
      "INSTOCK_ITEM": true,
      "ITEM": "a03fad4c-8435-4566-adcb-c2f4251a5eeb",
      "ITEM_NAME": "Carbon",
      "PR_ITEMS_ID": "c3773e0e-eb55-4829-bb47-a0f09c62f5eb",
      "STATUS_ITEM": "Old",
      "TYPE_ITEM": "Grade C"
    }
  ]
}
```

Using http to get output response.

Function http call-

Screenshot of SAP Business Application Studio showing a test script named "test.http".

```

test.http > GET /odata/v4/catalog/getProductInfo(aName=%27Stainless%20Steel%27)
1 Send Request
2 GET http://localhost:4004/odata/v4/catalog/getProductInfo(aName='Stainless Steel')
3
4 POST http://localhost:4004/odata/v4/catalog/insertProductData
5 Content-Type: application/json
6
7 {
8     "oID": "aab53600-3ff5-4ac6-bd2a-94e794fc7b02",
9     "oName": "Copper phosphate",
10    "oStatus": "InActive",
11    "oSupplier": "xyz"
12 }
13

```

Screenshot of SAP Business Application Studio showing the response for the POST request.

```

Response(12ms) X
1 HTTP/1.1 200 OK
2 X-Powered-By: Express
3 X-Correlation-ID: 8b76cb7f-9045-4d5d-aec9-1c3f649098bf
4 OData-Version: 4.0
5 Content-Type: application/json; charset=utf-8
6 Content-Length: 214
7 Date: Wed, 05 Nov 2025 14:59:50 GMT
8 Connection: close
9
10 {
11     "@odata.context": "$metadata#Collection(Edm.String)",
12     "value": [
13         {
14             "DOM": "2025-01-01",
15             "ID": "c3773e0e-eb55-4829-bb47-a0f09c62f5eb",
16             "INSTOCK": true,
17             "NAME": "Stainless Steel",
18             "STATUS": "Active",
19             "SUPPLIER": "Africa Pvt ltd"
20         }
21     ]
22 }

```

See in HANA Cloud table:

The screenshot shows the SAP HANA Database Explorer interface. The title bar indicates the connection is to 'Trial - SAP Business Application' project1 1.0.0. The main area displays a table named 'PROJECT1_PRODUCT_HEADER'. The table has columns: ID, NAME, DOM, INSTOCK, STATUS, and SUPPLIER. There is one row with the following values: ID = c3773e0e-eb55-4829-bb47-a0f09c62f5eb, NAME = Stainless Steel, DOM = 2025-01-01, INSTOCK = true, STATUS = Active, and SUPPLIER = Africa Pvt Ltd. On the left sidebar, under 'Filter Instances', there is a dropdown menu showing '19329b14-2c9e-4bb7-af10-b9ff60fc1be7: DA1D80C6C02A4077A7FBDA89579971C.PROJECT1_PRODUCT_HEADER'. Below this, a list of database objects is shown: Column Views, Cubes, Functions, Graph Workspaces, Indexes, JSON Collections, Libraries, Procedures, Public Synonyms, Remote Subscriptions, and Job Scheduler. A 'Catalog' folder is also listed.

The POST call :

project1

test.http

```

1
2 # GET http://localhost:4004/odata/v4/catalog/getProductInfo(aName='Stainless Steel')
3
4
5 Send Request
6 POST http://localhost:4004/odata/v4/catalog/insertProductData
7 Content-Type: application/json
8
9 {
10   "oID": "ddb53600-3ff5-4ac6-bd2a-94e794fc7b02",
11   "oName": "Argon",
12   "oStatus": "Active",
13   "oSupplier": "US Ltd."
14

```

Response(215ms)

```

1 HTTP/1.1 200 OK
2 X-Powered-By: Express
3 X-Correlation-ID: 836bfe31-b9a3-4ea4-8ae3-251495efd26b
4 OData-Version: 4.0
5 Content-Type: application/json; charset=utf-8
6 Content-Length: 91
7 Date: Wed, 05 Nov 2025 15:03:28 GMT
8 Connection: close
9
10 {
11   "@odata.context": "$metadata#Edm.String",
12   "value": "Product : 'Argon' inserted successfully"
13 }

```

Launchpad Connect 215ms 292 B Layout: US

See data in HANA Cloud:

The screenshot shows the SAP HANA Database Explorer interface. The left sidebar lists database objects: Job Scheduler, Sequences, Synonyms, Table Types, Tables, Tasks, Triggers, Views, and a expanded section for 'Hana-trial-cloud (DBADM)' which includes Catalog, Database Diagnostic FI, and HDI Containers. The main area displays a table titled 'PROJECT1_PRODUCT_HEADER'. The table has columns: ID, NAME, DOM, INSTOCK, STATUS, and SUPPLIER. There is one row with the following values:

	ID	NAME	DOM	INSTOCK	STATUS	SUPPLIER
1	ddb53600-3ff5-4ac6-bd2a-94e794fc7b02	Argon	2008-02-14	true	Active	US Ltd.

Also CRUD is can performed directly on entity set.

PROJECT1

```

test > http > CatalogService.http > ProductHeader_POST
  8 references
  1 #server=http://localhost:4004
  2 #username=alice
  3 #password=1234
  4
  5 ### ProductHeader
  6 # @name ProductHeader_GET
  7 Send Request
  8 GET {{server}}/odata/v4/catalog/ProductHeader
  9 Authorization: Basic {{username}}:{{password}}
 10
 11
 12 ### ProductHeader
 13 # @name ProductHeader_POST
 14 Send Request
 15 POST {{server}}/odata/v4/catalog/ProductHeader
 16 Content-Type: application/json
 17 Authorization: Basic {{username}}:{{password}}
 18
 19 {
 20   "ID": "14953689-3ff5-4ad6-bd2a-94e794fc7b02",
 21   "NAME": "NAME-14953689",
 22   "STATUS": "S-14953689",
 23   "SUPPLIER": "SUPPLIER-14953689",
 24   "DOD": "2008-02-14",
 25   "INSTOCK": false,
 26   "ITEMS": [
 27     {
 28       "PR_ITEMS_ID": "PrItems-7102429",
 29       "ITEM": "PrItems-7102429",
 30       "TYPE_ITEM": "EM-7102429",
 31       "STATUS_ITEM": "EM-7102429",
 32       "ITEM_NAME": "ITEM_NAME-7102429",
 33       "INSTOCK_ITEM": false
 34     }
 35   ]
 36 }
 37
 38
 39
 40
 41
 42
 43 }

### ProductHeader
# @name ProductHeader_PATCH
Send Request
PATCH {{server}}/odata/v4/catalog/ProductHeader/14953689-3ff5-4ad6-bd2a-94e794fc7b02
Content-Type: application/json
Authorization: Basic {{username}}:{{password}}
{
  "ID": "14953689-3ff5-4ad6-bd2a-94e794fc7b02",
  "NAME": "NAME-14953689",
  "STATUS": "S-14953689",
  "SUPPLIER": "SUPPLIER-14953689",
  "DOD": "2008-02-14",
  "INSTOCK": false,
  "ITEMS": [
    {
      "PR_ITEMS_ID": "PrItems-7102429",
      "ITEM": "PrItems-7102429",
      "ITEM_NAME": "ITEM_NAME-Copper",
      "TYPE_ITEM": "EM-7102429",
      "STATUS_ITEM": "EM-7102429"
    }
  ]
}

### ProductHeader
# @name ProductHeader_DELETE
Send Request
DELETE {{server}}/odata/v4/catalog/ProductHeader/aab53600-3ff5-4ac6-bd2a-94e794fc7b02
Content-Type: application/json
Authorization: Basic {{username}}:{{password}}

### PrItems
# @name PrItems_GET
Send Request
GET {{server}}/odata/v4/catalog/PrItems
Authorization: Basic {{username}}:{{password}}

```

PROJECT1

```

test > http > CatalogService.http > ProductHeader_POST
  14 POST {{server}}/odata/v4/catalog/ProductHeader
  15   {
  16     "ITEM_NAME": "ITEM_NAME-7102429",
  17     "INSTOCK_ITEM": false
  18   },
  19   {
  20     "PR_ITEMS_ID": "PrItems-7102430",
  21     "ITEM": "PrItems-7102430",
  22     "ITEM_NAME": "ITEM_NAME-7102430",
  23     "TYPE_ITEM": "EM-7102430",
  24     "STATUS_ITEM": "EM-7102430",
  25     "INSTOCK_ITEM": true
  26   }
  27 }

### ProductHeader
# @name ProductHeader_PATCH
Send Request
PATCH {{server}}/odata/v4/catalog/ProductHeader/14953689-3ff5-4ad6-bd2a-94e794fc7b02
Content-Type: application/json
Authorization: Basic {{username}}:{{password}}
{
  "ID": "14953689-3ff5-4ad6-bd2a-94e794fc7b02",
  "NAME": "NAME-14953689",
  "STATUS": "S-14953689",
  "SUPPLIER": "SUPPLIER-14953689",
  "DOD": "2008-02-14",
  "INSTOCK": false,
  "ITEMS": [
    {
      "PR_ITEMS_ID": "PrItems-7102429",
      "ITEM": "PrItems-7102429",
      "ITEM_NAME": "ITEM_NAME-Copper",
      "TYPE_ITEM": "EM-7102429",
      "STATUS_ITEM": "EM-7102429"
    }
  ]
}

### ProductHeader
# @name ProductHeader_DELETE
Send Request
DELETE {{server}}/odata/v4/catalog/ProductHeader/aab53600-3ff5-4ac6-bd2a-94e794fc7b02
Content-Type: application/json
Authorization: Basic {{username}}:{{password}}

### PrItems
# @name PrItems_POST
Send Request
POST {{server}}/odata/v4/catalog/PrItems

```

PROJECT1

```

test > http > CatalogService.http > ProductHeader_PATCH
  48 PATCH {{server}}/odata/v4/catalog/ProductHeader/14953689-3ff5-4ad6-bd2a-94e794fc7b02
  49   {
  50     "ITEM_NAME": "ITEM_NAME-Copper",
  51     "TYPE_ITEM": "EM-7102429",
  52     "STATUS_ITEM": "EM-7102429",
  53     "INSTOCK_ITEM": false
  54   },
  55   {
  56     "PR_ITEMS_ID": "PrItems-7102430",
  57     "ITEM": "PrItems-7102430",
  58     "ITEM_NAME": "ITEM_NAME-7102430",
  59     "TYPE_ITEM": "EM-7102430",
  60     "STATUS_ITEM": "EM-7102430",
  61     "INSTOCK_ITEM": true
  62   }
  63 }

### ProductHeader
# @name ProductHeader_DELETE
Send Request
DELETE {{server}}/odata/v4/catalog/ProductHeader/aab53600-3ff5-4ac6-bd2a-94e794fc7b02
Content-Type: application/json
Authorization: Basic {{username}}:{{password}}

### PrItems
# @name PrItems_GET
Send Request
GET {{server}}/odata/v4/catalog/PrItems
Authorization: Basic {{username}}:{{password}}

```

The screenshot shows the SAP Studio interface with the following details:

- Project Explorer:** Shows the project structure with files like `PROJECT1`, `gen`, `app`, `db`, `src`, `schema.cds`, `undeploy.json`, `gen`, `node_modules`, `srv`, `service.cds`, and `service.js`.
- Code Editor:** The active file is `CatalogService.http`. It contains a test script for the `PrItems` service, specifically for creating, updating, and deleting items.
- Test Script Content:**

```
test > http > CatalogService.http > ...
94 # @name PrItems_POST
95 Send Request
96 POST {{server}}/odata/v4/catalog/PrItems
97 Content-Type: application/json
98 Authorization: Basic {{username}}:{{password}}
99 {
100   "PR_ITEMS_ID": "PrItems-7102429",
101   "ITEM": "PrItems-7102429",
102   "ITEM_NAME": "ITEM_NAME-7102429",
103   "TYPE_ITEM": "EM-7102429",
104   "STATUS_ITEM": "EM-7102429",
105   "INSTOCK_ITEM": false
106 }
107
108
109 ### PrItems
110 # @name PrItems_PATCH
111 Send Request
112 PATCH {{server}}/odata/v4/catalog/PrItems(PR_ITEMS_ID='PrItems-7102429',ITEM='PrItems-7102429')
113 Content-Type: application/json
114 Authorization: Basic {{username}}:{{password}}
115 {
116   "PR_ITEMS_ID": "PrItems-7102429",
117   "ITEM": "PrItems-7102429",
118   "ITEM_NAME": "ITEM_NAME-7102429",
119   "TYPE_ITEM": "EM-7102429",
120   "STATUS_ITEM": "EM-7102429",
121   "INSTOCK_ITEM": false
122 }
123
124
125 ### PrItems
126 # @name PrItems_DELETE
127 Send Request
128 DELETE {{server}}/odata/v4/catalog/PrItems(PR_ITEMS_ID='PrItems-7102429',ITEM='PrItems-7102429')
```
- Bottom Status Bar:** Shows the current file is `catalogservice.http`, line 177, with 292 B. It also displays system information: Ln 92, Col 1, Spaces: 2, UTF-8, LF, HTTP, No Environment, Layout: US.

The screenshot shows the SAP Studio interface with the following details:

- Project Explorer:** Shows files like .gen, .vscode, app, db, src, schema.cds, undeploy.json, gen, node_modules, svr, service.cds, service.js, test, and CatalogService.http.
- Code Editor:** The CatalogService.http file is open, displaying a POST request to /odata/v4/catalog/PrItems. The request body contains a JSON object with fields: ITEM, ITEM_NAME, TYPE_ITEM, STATUS_ITEM, and INSTOCK_ITEM, all set to "PrItems-7102429".
- Outline View:** Shows sections like OUTLINE, TIMELINE, SAP HANA PROJECTS, and QUICK ACCESS.
- Bottom Bar:** Includes icons for Launchpad, Connect, and various system status indicators.

```
test > http > CatalogService.http >
95 POST {{server}}/odata/v4/catalog/PrItems
101   "ITEM": "PrItems-7102429",
102   "ITEM_NAME": "ITEM_NAME-7102429",
103   "TYPE_ITEM": "EM-7102429",
104   "STATUS_ITEM": "EM-7102429",
105   "INSTOCK_ITEM": false
106 }
107
108
109  ### PrItems
110  # @name PrItems_PATCH
111  Send Request
112 PATCH {{server}}/odata/v4/catalog/PrItems(PR_ITEMS_ID='PrItems-7102429',ITEM='PrItems-7102429')
113 Content-Type: application/json
114 Authorization: Basic {{username}}:{{password}}
115
116  {
117    "PR_ITEMS_ID": "PrItems-7102429",
118    "ITEM": "PrItems-7102429",
119    "ITEM_NAME": "ITEM_NAME-7102429",
120    "TYPE_ITEM": "EM-7102429",
121    "STATUS_ITEM": "EM-7102429",
122    "INSTOCK_ITEM": false
123
124
125  ### PrItems
126  # @name PrItems_DELETE
127  Send Request
128 DELETE {{server}}/odata/v4/catalog/PrItems(PR_ITEMS_ID='PrItems-7102429',ITEM='PrItems-7102429')
129 Content-Type: application/json
130 Authorization: Basic {{username}}:{{password}}
```

-----X-----