

The serverless application

we would like you to create is a microservice that is part of micro-service architecture. For the serverless application,

you can either use the Serverless framework or AWS CDK (a technology we love and frequently use). The choice however is yours. The microservice you're going to build is the Person Service.

The person service stores information about persons and allows users of its API to create new persons and list existing persons. For the assessment we will focus on the process of creating a new person. The microservice should expose a Rest API endpoint (/person) to create a new person. When a new person is created via this endpoint it should be saved to a database (preferably NoSQL).

Firstly, its first name, last name, phone number, and address information should all be stored. Secondly, **a person-created-event should be fired into the microservice landscape**. The microservice should be easily deployable multiple times (for example once to a development environment and once to a production environment) and we expect that you use a serverless approach to ensure the microservice can scale on its own based on usage without having to manage infrastructure. It would be great if you can share the solution you created by sharing a repository (a day before the assessment talk).

We are looking forward to discussing your ideas, solutions and design decisions!

Implementation & thought process:

Suggested Database Schema:

Collection / Table name: **Persons**

Attributes: personId(uuid), First Name, Last Name, Phone Number, email, Address (Street, House Number, Zip Code, City, State, Country), createdBy, Created_at, Updated_at

CI/CD:

Let's setup two branches on git to handle development & production releases via code commit & code pipeline.

Microservice Security:

As person is created by API users and let suppose that we will be getting a JWT token in header which will have user information who is creating the Person.

USER-JWT:

eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MTIzLCJmaXJzdE5hbWUiOiJOYWRIZW0iLCJsYXN0TmFtZSI6IkFrahRhcilslmlhdCI6MTY2NDQwMTU0N30.H0FtWmDYATIGR1S3fLu8pZHuSJUGSlc20uhV2wiY0YXVDMvFeultTpFtFLRJ

VtO4CXcMgNK8p412ew1Kt94pd_nC1Bo48lsWTO9oPIQN0Rs7jyncFsluL9AjhD91nIxUjFSHhxZf9x7xOGKleuCZTZxGdi
ZVxfVpE9iGf7BMhrU

APIS:

Before designing the api flow we need to think about retrieve mechanism of the persons, which depends on business need and requirements.

1: suppose that a person can have a single address:

personId, createdBy, firstName, lastName, email, phoneNumber, address

2: suppose that a person can have multiple address:

personId, createdBy, addressId, firstName, lastName, email, phoneNumber, address

Here we have introduced addressId key so we can apply filter on the address data.

Suppose the List of data access patterns:

- Get List of persons
- Get list of persons by person ID
- Get List of persons createdBy
- Get a person by person ID
- Store a person - With Validation of data

Let's suppose we have

List of Persons:

EndPoint: /api/persons/filter

An API will return all the persons and should be able to apply advanced search on the collections.

Filters Definition:

Created By: Show only persons who was created by me(A Logged in user)

Keywords: Show all persons by keywords (first name, last name)

Phone Number: Show persons by phone number.

Type: POST

1: Get List of persons

```
curl --location --request POST
'https://1pu506v15i.execute-api.us-east-1.amazonaws.com/dev/persons/filter' \
--header 'Content-Type: application/json' \
--header 'USER-JWT:
eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MTIzLzIwIiwiaWF0IjE5OTYxMjUyMjUwMTU0N30.H0FtWmDYATIGRlS3fLu8pZHuSJUGSic20uhV2wiY0YX
VDMvFeultTpFtflRJVtO4CXcMgNK8p412ewlKt94pd_nC1Bo48IsWTO9oPIQN0Rs7jyncFsluL9Ajd91nIxUj
FSHxZf9x7xOGKIeuCZTZxGdiZVxfVpE9iGf7BMhrU' \
--data-raw '{
  "listType": "all"
}'
```

Response:

```
{
  "Items": [
    {
      "phoneNumber": "+31627114785",
      "lastName": "Khwaha",
      "addressId": "a84b41a415c8fbdb542246ba27664578a201565d",
      "address": {
        "houseNumber": "20",
        "country": "Netherlands",
        "state": "Almere",
        "city": "Almere",
        "street": "oosterhoutstarat 3",
        "postalCode": "1034KL"
      },
      "email": "nadeem@crickslab.com",
      "firstName": "Kho",
      "personId": "89de71ad6c1a271eb808ce18b36680f609514e8b"
    },
    {
      "phoneNumber": "+31627114785",
      "lastName": "Khwaha",
      "addressId": "a84b41a415c8fbdb542246ba27664578a201565d",
      "address": {
```

```

        "houseNumber": "20",
        "country": "Netherlands",
        "state": "Almere",
        "city": "Almere",
        "street": "oosterhoutstarat 3",
        "postalCode": "1034KL"
    },
    "email": "nadeem@crickslab.com",
    "firstName": "Usman",
    "personId": "8e91ac84a93558d3ba7a911db1baf8c2370b559c"
}
],
"Count": 2,
"ScannedCount": 2
}

```

2: Get Persons List by Person ID

```

curl --location --request POST
'https://1pu506v15i.execute-api.us-east-1.amazonaws.com/dev/persons/filter' \
--header 'Content-Type: application/json' \
--header 'USER-JWT:
eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MTIzLCJmaXJzdE5hbWUiOiJOYWRLZW0iLCJsYXN0TmFtZSI6IkkFraHRhcnR5ImlhdCI6MTY2NDQwMTU0N30.H0FtWmDYATIGRlS3fLu8pZHUSJuGSic20uhV2wiY0YXVDMvFeultTpFtflRJVtO4CXcMgNK8p412ew1Kt94pd_nC1Bo48IsWTO9oPIQN0Rs7jyncFsluL9Ajd91nIxUjFSHhxZf9x7xOGKIeuCZTZxGdiZVxfVpE9iGf7BMhrU' \
--data-raw '{
    "personId": "8e91ac84a93558d3ba7a911db1baf8c2370b559c"
}'

```

Response:

```

{
    "Items": [
        {
            "phoneNumber": "+31627114785",
            "lastName": "Khwaha",
            "addressId": "a84b41a415c8fbdb542246ba27664578a201565d",
            "address": {
                "houseNumber": "20",
                "country": "Netherlands",

```

```

        "state": "Almere",
        "city": "Almere",
        "street": "oosterhoutstarat 3",
        "postalCode": "1034KL"
    },
    "email": "nadeem@crickslab.com",
    "firstName": "Usman",
    "personId": "8e91ac84a93558d3ba7a911db1baf8c2370b559c"
}
],
"Count": 1,
"ScannedCount": 1
}

```

3: Get List of persons createdBy

```

curl --location --request POST
'https://1pu506v15i.execute-api.us-east-1.amazonaws.com/dev/persons/filter' \
--header 'Content-Type: application/json' \
--header 'USER-JWT:
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MTIzLCJmaXJzdE5hbWUiOiJOYWRLZW0iLCJsYXN0TmFtZSI6IkFrahRhciIsIm1hdCI6MTY2NDQwMTU0N30.H0FtWmDYATIGRlS3fLu8pZHusJuGSic20uhV2wiY0YXVDMvFeultTpFtfLRJVtO4CXcMgNK8p412ewlKt94pd_nC1Bo48IsWT09oPIQN0Rs7jjyncFsluL9Ajhd91nIxUjFSHhxZf9x7xOGKIEuCZTZxGdiZVxfVpE9iGf7BMhrU' \
--data-raw '{
    "listType": "mine"
}'

```

Response:

```

{
  "Items": [
    {
      "phoneNumber": "+31627114785",
      "lastName": "Khwaha",
      "addressId": "a84b41a415c8fbdb542246ba27664578a201565d",
      "address": {
        "houseNumber": "20",
        "country": "Netherlands",
        "state": "Almere",
        "city": "Almere",

```

```

        "street": "oosterhoutstarat 3",
        "postalCode": "1034KL"
    },
    "email": "nadeem@crickslab.com",
    "firstName": "Usman",
    "personId": "8e91ac84a93558d3ba7a911db1baf8c2370b559c"
},
{
    "phoneNumber": "+31627114785",
    "lastName": "Khwaha",
    "addressId": "a84b41a415c8fddb542246ba27664578a201565d",
    "address": {
        "houseNumber": "20",
        "country": "Netherlands",
        "state": "Almere",
        "city": "Almere",
        "street": "oosterhoutstarat 3",
        "postalCode": "1034KL"
    },
    "email": "nadeem@crickslab.com",
    "firstName": "Kho",
    "personId": "89de71ad6c1a271eb808ce18b36680f609514e8b"
}
],
"Count": 2,
"ScannedCount": 2
}

```

4: Get a person by person ID

```

curl --location --request GET
'https://1pu506v15i.execute-api.us-east-1.amazonaws.com/dev/persons/89de71ad6c1a271eb808ce18b36680f609514e8b' \
--header 'Content-Type: application/json' \
--header 'USER-JWT:
eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MTIzLlZlZlE5bWUiOiJOYWRLZW0iLCJ0IjYXN0TmFtZSI6IkhraHRhZiIsImhhdCI6MTY2NDQwMTU0N30.H0FtWmDYATIGR1S3fLu8pZHUSJuGSic20uhV2wiY0YX

```

```
VDMvFeultTpFtflRJvtO4CXcMgNK8p412ewlKt94pd_nC1Bo48IsWTO9oPIQN0Rs7jjyncFsluL9Ajd91nIxUj
FSHhxZf9x7xOGKIeuCZTZxGdiZVxfVpE9iGf7BMhrU' \
--header 'Authorization: Bearer
eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MTIzLCJmaXJzdE5hbWUiOiJOYWRLZW0iLCJsYXN0T
mFtZSI6IkJraHRhcnR5cCI6ImlhdCI6MTY2NDQwMDM3MX0.MJ8s_iZb8Fxs3ajQ0lSeo0jJnZTq_oVBsv9wPIo57Ln
YJHCgoiSaUeqMjseV4txvd70Wp9upoTdafgUWCzAqKAP7Xwr-slTanfojkzgtN6KLFPL1bEbm_rlh4BayizKn
6SWK9_6XYQOFsPlYqwrHw19lgMmGHsyZlW0h2bpW88dVUDZ8X9TySzuGTgwLpp3xELCAO0NjJMSH6P_YMNFkm
ouCCrkjj9FMWreFlHZNDm7ITQWGRXyrWkQcUcK0fhCHu7MqkS4QtHTZaYiLzwwv7_kYkliD91YfUAu56K7dVAi
7DjU7TlO_cTfczbeRdpusMZv-plY45ab2vjCbMXSA' \
--data-raw ''

{
  "phoneNumber": "+31627114785",
  "updateAt": 1664474435647,
  "lastName": "Khwaha",
  "addressId": "a84b41a415c8fbdb542246ba27664578a201565d",
  "createdAt": 1664474435647,
  "address": {
    "houseNumber": "20",
    "country": "Netherlands",
    "state": "Almere",
    "city": "Almere",
    "street": "oosterhoutstarat 3",
    "postalCode": "1034KL"
  },
  "email": "nadeem@crickslab.com",
  "createdBy": 123,
  "firstName": "Kho",
  "personId": "89de71ad6c1a271eb808ce18b36680f609514e8b"
}
```

5: Store a Person

```
curl --location --request POST
'https://1pu506v15i.execute-api.us-east-1.amazonaws.com/dev/persons' \
--header 'Content-Type: application/json' \
--header 'USER-JWT:
eyJhbGciOiJSUzI1NiIsInR5cCI6IkpXVCJ9.eyJpZCI6MTIzLCJmaXJzdE5hbWUiOiJOYWRLZW0iLCJsYXN0T
mFtZSI6IkJraHRhcnR5cCI6ImlhdCI6MTY2NDQwMTU0N30.H0FtWmDYATIGR1S3fLu8pZHuSJUGSic20uhV2wiY0YX
```

```
VDMvFeultTpFtflRJvtO4CXcMgNK8p412ewlKt94pd_nC1Bo48IsWTO9oPIQN0Rs7jjyncFsluL9Ajd91nIxUj
FSHhxZf9x7xOGKIeuCZTZxGdiZVxfVpE9iGf7BMhrU' \
```

```
--data-row '{
  "firstName": "Usman",
  "lastName": "Khwaha",
  "phoneNumber": "+31627114785",
  "email": "nadeem@crickslab.com",
  "address": {
    "street": "oosterhoutstarat 3",
    "houseNumber": "20",
    "postalCode": "1034KL",
    "state": "Almere",
    "city": "Almere",
    "country": "Netherlands"
  }
}'

{
  "status": "OK",
  "message": "Person created successfully.",
  "person": {
    "personId": "8e91ac84a93558d3ba7a911db1baf8c2370b559c",
    "createdBy": 123,
    "addressId": "a84b41a415c8fbdb542246ba27664578a201565d",
    "firstName": "Usman",
    "lastName": "Khwaha",
    "phoneNumber": "+31627114785",
    "email": "nadeem@crickslab.com",
    "address": {
      "street": "oosterhoutstarat 3",
      "houseNumber": "20",
      "postalCode": "1034KL",
      "state": "Almere",
      "city": "Almere",
      "country": "Netherlands"
    },
    "createdAt": 1664474530086,
    "updatedAt": 1664474530086
  }
}
```