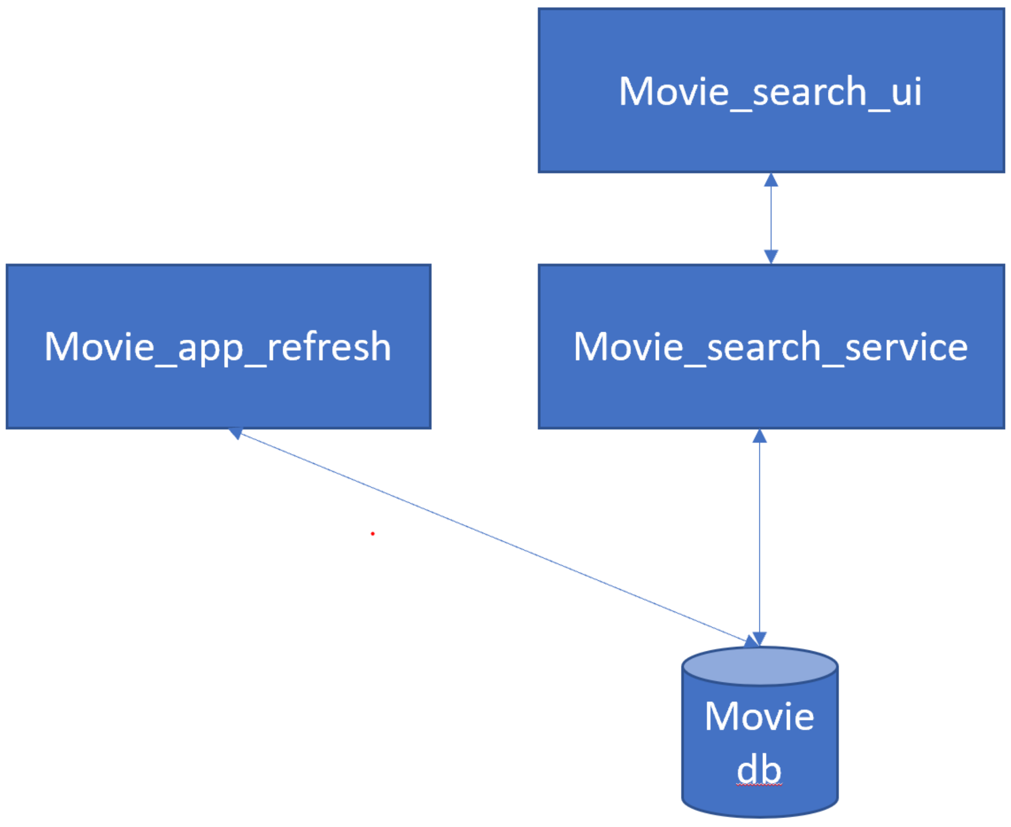
Architecture and Design of Movies Search App

Monolithic vs Microservice

- The Architecture of the Movies Search App started with a monolithic architecture in mind which included a single front end code talking to a backend code and a persistence storage.
- Given that system design was a key consideration, this design would have been tightly coupled making it not extensible and scalable in future.
- As search was a key functionality, the choice of persistence would also be hampered due to monolithic architecture
- Hence, i decided to design the app as a microservice app consisting of 3 microservices:



- movie_app_refresh : a atmoic microservice NodeJS app that allows to refresh the movie data on demand . this microservice has a single http end that can be called whenever a refresh of the movie data is required.
- movie_search_service : consisting of a NodeJS app that only deals handling search queries and returning responses.
- movie_search_ui : front end react app that communicates with movie_search_service to show the search GUI and results to users.

MonoRepo Vs PolyRepo in github

Since each microservice will have its own deployment life cycle , a poly repo approach was more feasable for this task :

Service	Repository
`movies_app_refresh`	https://github.com/AkshayRsenal/movie-app-backend
`movies_search_service`	https://github.com/AkshayRsenal/search-movies-service
`movies_search_ui`	https://github.com/AkshayRsenal/search-movies-ui

Choice of database

- the microservice architecture made the choice of database little easier. Since we are mainly interested in search i chose Elastic Search as the document store to store the movie related data.
- At first i tried to install Elastic Search on my local machine for local development. After the first successfully document ingest, i realised hosting Elastic Search for demo purposes will not be an easy task so i used the 14-day free trial Elastic Search Cloud (Note after the Cloud Elastic Search account will expire on 22 May 2021 and the app may not behave as expected post that)

Deployment Consideration

- Having a good understanding that running code on local machine will never be the same as running it on a productive environment, I wanted to deploy all my code on free hoisting server for it to be publicly available
- I chose Heroku as a free hosting provider . All my Apps are now publicly available

Service	Deployed URL
`movies_app_refresh : NodeJS`	https://obscure-sands-07920.herokuapp.com/
`movies_search_service : NodeJS`	https://afternoon-river-45089.herokuapp.com/
`movies_search_ui : React App`	https://blooming-waters-11910.herokuapp.com/

Open Points and further improvements

- The password for the cloud elastic search must not be store in free text and if possible as a environment variable in Heroku.
- Elastic Search is the simple text and can be extended to include fuzzy matching to make the search more effective.
- Although the poster url is fetched in the react app, the app is not currently rendering the image
- .env files provided should not have been put on GitHub, added them for anyone who clones the repositories to test locally
- unit testing was not performed and should be included

Getting Started with running the app locally

movie_search_ui

Make sure you have Node.js and npm installed.

clone the repo and install the npm dependencies

```
git clone https://github.com/AkshayRsenal/search-movies-ui
```

```
cd search-movies-ui
```

```
npm install
```

```
npm run start
```

the react app must be available at `localhost:3000`

Note : the microservice `movie_search_ui` will speak to `movie_search_service` to fetch movie details so make sure to begin `movie_search_service` as well

movie_search_service

Make sure you have Node.js and npm installed.

clone the repo and install the npm dependencies

```
git clone https://github.com/AkshayRsenal/search-movies-service
```

```
cd search-movies-service
```

```
npm install
```

```
npm run start
```

the node app must be available at `localhost:5000`

the search URL end point is : `localhost:5000/movies/:category/:keyword`

movie_app_refresh

Make sure you have Node.js and npm installed.

clone the repo and install the npm dependencies

```
git clone https://github.com/AkshayRsenal/movie-app-backend
```

```
cd movie-app-backend
```

```
npm install
```

```
npm run start
```

the node app must be available at `localhost:3000`

the refresh URL end point is : `localhost:3000/refresh`