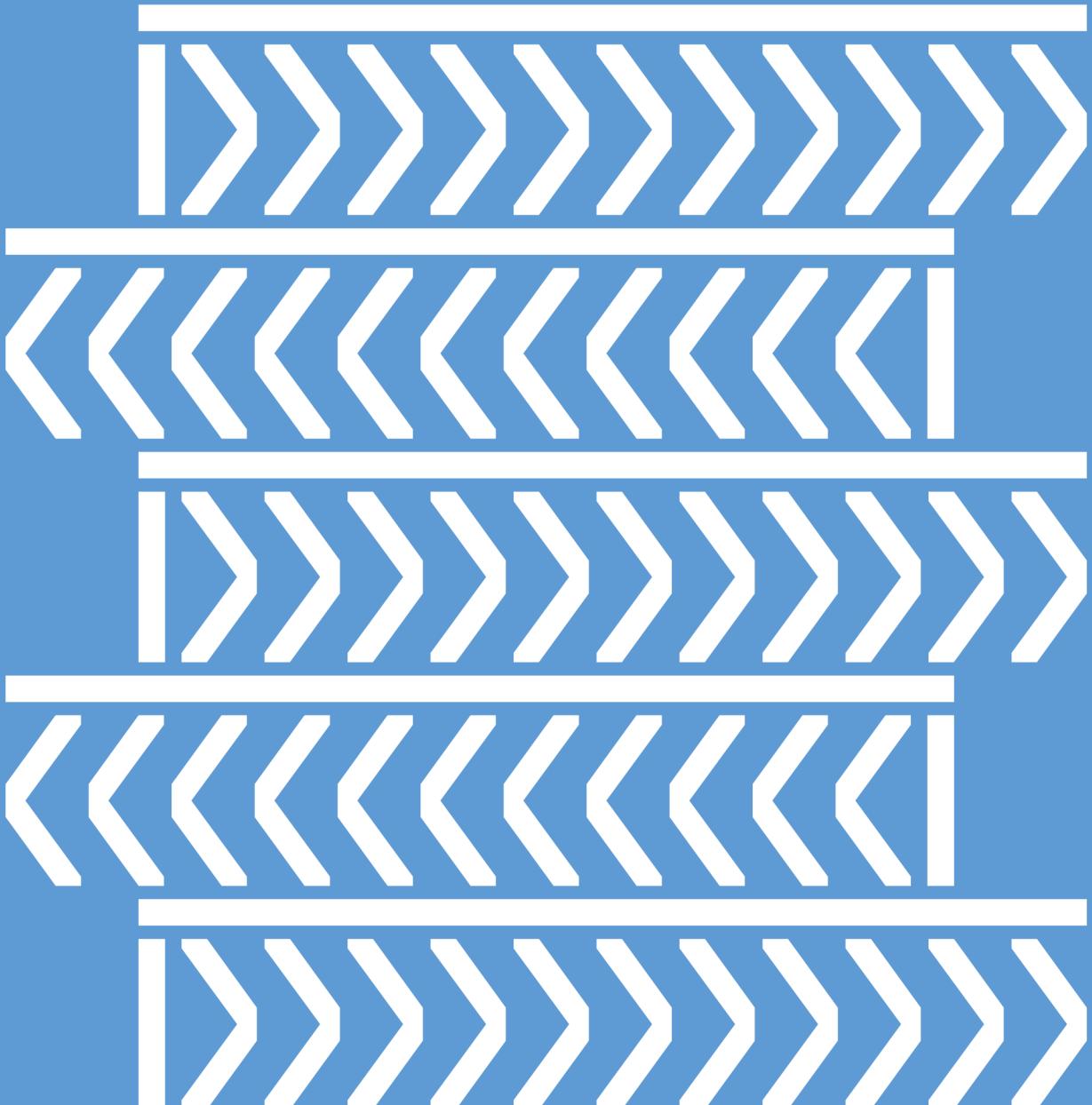




Backend developer

Assignment



Assignment

We have formulated a three-part assignment to see how you code and think about problems, related to:

- RESTful APIs
- DBs / SQL
- Python coding (separate file)

The time limit for this assignment is **3 hours**. With this in mind, try not to get stuck on details.

To submit your answers, collect all deliverables into a **zip file** and send it to us over email.

APIs

Consider a natural language processing application where you can upload your digital library and analyse it to extract some linguistic insights.

For this part of the assignment we ask you to design a RESTful API to support the below functionality:

1. Create a book. A book has the following fields: name, author, publisher, publicationDate, ISBN, coverPhoto.
2. Update a book's coverPhoto.
3. List books allowing pagination, filtering (on single or multiple fields) and sorting (on single or multiple fields, ascending or descending) on all fields.
4. Upload a book's contents as a file.
5. A book can be processed to extract some insights, but the process takes some time.
Design endpoints to enable running this process in a non-blocking way.

Requirements:

While designing the API, make sure to describe:

- the endpoints (paths), with short descriptions
- the allowed HTTP method(s) per endpoint
- the query parameters or/and request body, if applicable
- the response status code(s)
- the response body, if applicable

Here is a simple example for retrieving a single book:

```
GET /books/{ID}/  
Retrieve a single book by ID.
```

Responses:

200: Book was successfully retrieved.

Response body:

```
{  
    'title': 'The Lord of the Rings',  
    ...  
}
```

404: No book was found with the specified ID.

Deliverable:

A text file documenting the API. Feel free to send any other relevant format if preferred.

DBs and SQL

Consider the below schema where companies assign different projects to their employees:



For this part of the assignment we ask you to write the SQL query for each of the below questions:

1. get the names of the running Projects
2. get the number of finished Projects per Company
3. get the Company Names that have 2 or more different Projects with the same Name

Requirements:

- You can use SQL syntax compatible with any database system.
- Do not spend time in minor syntax errors, but focus on whether the queries would return the correct results.

Deliverable:

A text file describing the SQL statements. Feel free to send any other relevant format if preferred.

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