Backend Task

Level: **Standard** (part A) and **Pro** (part A and part B)
Duration ≈ **2+ hours**
Deadline: **13 May 23:59 EEST**

Dump storage

A) **Task**: Write a server, which will handle upload of big files (usually - a dump a DB or video archive: 1 - 100Gb) and can perform two types of requests:
1. Upload of files or data. They should support versioning of files/data and access to them should be restricted by authTokens.
2. Download of files or data. They should support versioning of files/data and access to them should be restricted by authTokens.

The client will use chunked upload and download.
For the test, set of valid auth tokens in the file (line per token) is provided.

Provide a file, which contains:
1. Project (in any programming language: from Scala to PHP)
2. Instruction for compiling and starting/installing. (Preparing install package is not requirements, run from project root is fine).
3. Instruction, how to upload and download a file.

B) CDN: Imagine, we have a set of servers in different datacenters and want to replicate files according to following rules:
1. When client upload file, it automatically replicated on *r* servers.
2. For file download, the client can connect to any server. The server will determinate the nearest server in a CDN and will redirect or proxy chunks. For the client, all servers should look identical and provide 'all' files.
3. When one of the servers becomes unavailable, uploaded files should be available from replicas.
4. Note, that each server have limited storage, so the distribution of files among serves should know this.
5. Note, that if client download file from a given datacenter, then exists probability, that next time this file will be downloaded with the same server.

Task:
1. Write a description of the service architecture.
    1.1. What parts will be custom and what – standard.
    1.2. How you will split the functionality into microservices if needed.
    1.3. How you will store and replicate information about service availability.
    1.4. How this will be tested.

Result presentation format for Standard & Pro
1. Implement service of your choice: Standard (part A) and Pro (part A and part B).
2. Provide project (in any programming language, from Scala to PHP).
3. Provide file in any format (from markdown to .pdf) with description.

4. Upload your result at your Account https://devchallenge.it/user/ in ONE archive named Name_Surname.zip. Please note that the name of the archive is the only place where you specify your personal data. Names of files inside the archive should not contain your name or last name.
5. The organizers and judges can disqualify the work of the participant if the work:
    a. contains any indication of the name, surname, e-mail, company, address or other personal data of the participant;
    b. done in a different format than specified in the task;
    c. done with the help of others, and not the participant personally.

Get more information about judges.

Criteria for Standard	Max points you can get
Basic Upload	32 points
Basic Download	32 points
Upload/download with versions	16 points
Upload/download with authentication	16 points
Support of big files (larger than 10MB)	16 points
General quality of code	16 points
∑ for Standard	128 points

Criteria for Pro	Max points you can get
Upload to 1 server	20
Replicate on "r" servers	20
Determination of nearest server for download	20
Failover of downloading files from other replicas	20
Acknowledge of free space on other services, choice of the server with the freest space	20
Mechanism of possible choices of the same server for downloading as uploading for the same customer	20
General code quality	8
∑ for Pro	128 points

32 bonus points goes to the most effective and creative solution on the judge's opinion.

Please note that:

1. The results must be uploaded at your Account https://devchallenge.it/user/ in ONE archive named Name_Surname.zip. Please note that the name of the archive is the only place where you specify your personal data. Names of files inside the archive should not contain your name or last name. The results must be uploaded by May 13, 23:59 (EEST), after that time it will be blocked automatically.
2. You can ask questions and clarify the content of the task by filling in the Form. Then look up for the answer to your question in the Document. Before submitting a question, check out the Document. Perhaps your question has an answer already :)
3. Judges will ignore questions that are not relevant to the Championship.
4. Your support **team@devchallenge.it.**
5. The announcement of the results will be held on May 23.

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