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Rapport du projet IDM : VideoGen

Introduction :

As part of the IDM module of the Master 2 Software Engineering, we had to develop a video generator from a meta-model. The pincipe was therefore of our own DSL with a dedicated grammar. To do this, we have used xtext, a framework dedicated to this use.
The subject of this DSL was therefore to propose to a user a video generator from a model. The model consists of a video list broken down into 3 types: mandatory, alternative and optional.

We titled our project: Meme Generator, a craziest video compilation generator on the internet!

User side, we used Jhipster, a set of tool and framework dedicated to the creation of web application.

Our projects are divided into 2 deposits github dictinct:

- https://github.com/simon-ldlv/IDM_web : The jhipster application
- https://github.com/simon-ldlv/IDM_project_video : Videogen library

Video Treatment :

To concatenate and process our videos, we used FFMPEG, an online video / audio processing control software. The API has several features:

-Generate the longest video from an input model.
- Generate a video (choice of alternative and optional random videos) from an input model
- Generate a gif from an input video
- Generate thumbnails from a directory containing .mp4 videos
- Generate a CSV file describing all possible combinations of videos.

Our API has been imported into our Jhipster project as an archive named VideoGen.jar.
Our main API class is named VideoGenStation.java
Our API has also been tested with Junit for unit testing.

A example of ffmpeg command to generate video:
ffmpeg -f concat -safe 0 -i ~/IDM_project/VideoGen2/VideoGenTools/ffmpeg_args/videogen_1516404663348.txt -framerate 30 -vcodec libx264 -acodec aac -ac 2 -strict -2 -c copy output/videogen/videogen_1516404663348.mp4

The Web Application :

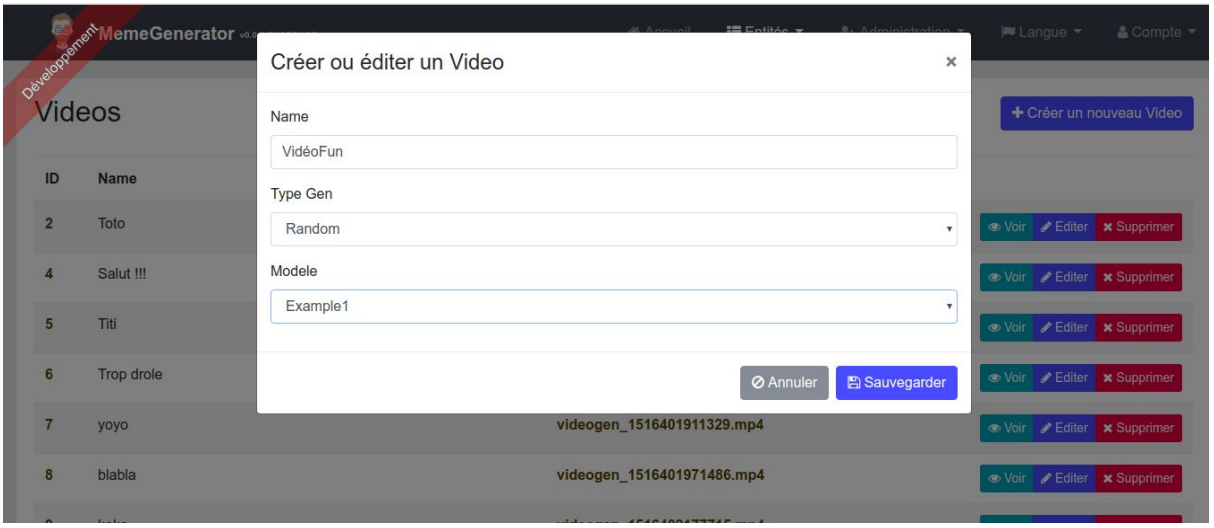
We have developed a web application using our VideoGen library.

Our data model is composed of:
- Video Entity: Contains a name, a URL, and the associated template
- Model entity: contains a name and path to the model

Beforehand, the references to the models must be inserted in the database:

INSERT INTO Modele VALUES (1, 'Example1', 'example1.videogen')
INSERT INTO Modele VALUES (2, 'Example2', 'example2.videogen')
INSERT INTO Modele VALUES (3, 'Example3', 'example3.videogen')
INSERT INTO Modele VALUES (4, 'Example4', 'example4.videogen')
INSERT INTO Modele VALUES (5, 'Example5', 'example5.videogen')

Or with the user interface of jhipster in the screen management of the entity Modele. (create new Modele)



The Xtext language :

Xtext is an open-source software framework for developing programming languages and domain-specific languages (DSLs). In this project we used this kind of language to create a grammar for specify the kind of video (Optional , mandatory, Alternative).

Here is a sample of our grammar :

```
VideoGeneratorModel:
    (information=VideoGenInformation)?
    'VideoGen' LEFT_BRACKET
    medias+=Media+
    RIGHT_BRACKET;
```

```
VideoGenInformation:
    {VideoGenInformation}
    ('@author' authorName=STRING)
    ('@version' version=STRING)?
    ('@creation' creationDate=STRING)?;

Media :     (MandatoryMedia | OptionalMedia | AlternativesMedia)
;

MandatoryMedia : 'mandatory' description=MediaDescription;
OptionalMedia : 'optional' description=MediaDescription;
AlternativesMedia : 'alternatives' (id=ID)? LEFT_BRACKET medias+=MediaDescription+
RIGHT_BRACKET;

MediaDescription: (ImageDescription|VideoDescription);
```

Motivation :

Both of us are huge fan of dank meme video. This project give us the idea of generate some video like compilation that you can find on youtube. Our project is not perfect but we had a lot of fun by create meme compilation video. We would liked to be able to give to users the possibility to choose the alternative and optional video in the generation of the compilation, but didn't have time to implement this feature.

Thanks to this project, we tested the model transformation. It was a good introduction of this domain, more or more use in IT industry.

Conclusion :

That was a real pleasure to have that kind of project for making something fun with a real freedom on the subject. However we don't have a lot of time with our status of coop-op students to make a solid project. In the future we would implement some new feature and incorporate a better GUI for maybe upload it in a real website .

Bonus :

You will find a demonstration video of our application in :
https://github.com/simon-ldlv/IDM_web/Screencast - démo projet IDM.mp4

You will find a generated video of ou project in :
https://github.com/simon-ldlv/IDM_web//Vidéo pour le concours.mp4