Web Semântica
Projeto 1

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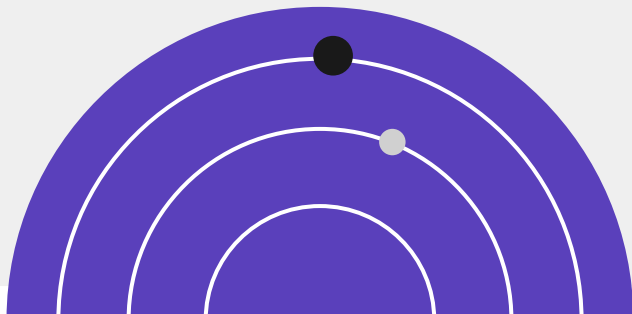
Website, Endpoints e Queries ao GraphDB

01

Introdução

Breve Introdução ao tema do trabalho

Introdução

Anime, palavra japonesa derivada da palavra inglesa *animation*, é um tipo de animação feita à mão ou gerada por computadores com origem japonesa.

Decidimos neste projeto fazer um site com uma estrutura de dados em N3 que mostrasse dados acerca de anime, usando a framework django com a estrutura template-model-view.

02

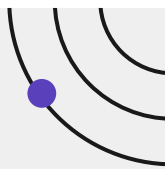## RDF e Dados

Dados e a sua transformação

Dataset

# Rank	▲ Title	⚭ Link	# Score	▲ Type	▲ # Episodes	▲ Source	▲ Status	▲ Premiered	▲ Aired Date	▲ Studios	▲ Genres	▲ Themes
1.0	Fullmetal Alchemist: Brotherhood	https://myanimelist.net/anime/5114/Fullmetal_Alchemist__Brotherhood	9.11	TV	64	Manga	Finished Airing	Spring 2009	Apr 5, 2009 to Jul 4, 2010	Bones	Action,Adventure,Drama,Fantasy,	Military,

▲ Themes	▲ Demograp...	▲ Duration	▲ Age Rating	# Number of...	▲ Popularity	# Members	# Favorites	▲ Adaptation	▲ Sequel	▲ Prequel
Military,	Shounen	24 min. per ep.	R - 17+ (violence & profanity)	1964982.0	#3	3,090,885	213,428	Fullmetal Alchemist		

▲ Openings	▲ Opening A...	▲ Endings	▲ Ending Art...		▲ Characters	▲ Role	▲ Voice Acto...
['again', 'Hologram (ホログラム)', 'Golden Time Lover (ゴールデンタイムラバー)', 'Period', 'Rain (レイン)']	['YUI', 'NICO Touches the Walls', 'Sukima Switch', 'Chemistry', 'SID']	['Uso (嘘)', 'LET IT OUT', 'Tsunaida Te (つないだ手)', 'Shunkan Sentimental (瞬間センチメンタル)', 'RAY OF LIGHT', ...	['SID', 'Miho Fukuhara', "Lil'B", 'SCANDAL', 'Nakagawa Shouko', 'SID', 'NICO Touches the Walls']		['Elric, Edward', 'Elric, Alphonse', 'Mustang, Roy', 'Hughes, Maes', 'Greed', 'Hawkeye, Riza', 'Yao,...	['Main', 'Main', 'Supporting', 'Supporting', 'Supporting', 'Supporting', 'Supporting',...	['Park, Romi', 'Kugimiya, Rie', 'Miki, Shinichiro', 'Fujiwara, Keiji', 'Nakamura, Yuuichi', 'Orikasa...

Entidades

Anime

Rank, Score, Link, Music, Characters, ...

Character

Name, Role

Voice Actor

Name, Character Played

Singer

Name, Music Played

Music

Name

N-Triples e N3

```
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/rank> "1".
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/title> "Fullmetal Alchemist: Brotherhood".
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/score> "9.11".
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/type> "TV".
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/num_episodes> "64".
...
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/genre> "Drama".
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/genre> "Fantasy".
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/theme> "Military".
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/adapted_from> "Fullmetal Alchemist".
<http://anin3/ent/ElricEdward> <http://anin3/pred/role> "Main".
<http://anin3/ent/ElricEdward> <http://anin3/pred/name> "Elric, Edward".
<http://anin3/ent/ParkRomi> <http://anin3/pred/played> <http://anin3/ent/ElricEdward>.
<http://anin3/ent/ParkRomi> <http://anin3/pred/name> "Park Romi".
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/voiced_at> <http://anin3/ent/ParkRomi>.
<http://anin3/ent/FullmetalAlchemistBrotherhood> <http://anin3/pred/starring> <http://anin3/ent/ElricEdward>.
```

```
@prefix ent: <http://anin3/ent/> .
@prefix pred: <http://anin3/pred/> .

ent:AnimeID pred:adapted_from "Manga Source" ;
    pred:age_rating "Age Rating" ;
    pred:aired_date "Date" ;
    ...
    pred:ending ent:Ending1,
        ent:Ending2 ;
    pred:opening ent:Opening1,
        ent:Opening2 ;
    pred:premired "Date" ;
    pred:sequel ent:AnimeSequel;
    pred:starring ent:Character1,
        ent:Character2 ;
    pred:voiced_at ent:VoiceActor1,
        ent:VoiceActor2 .

ent:Character1 pred:name "Character Name" ;
    pred:role "Role" .

ent:VoiceActor1 pred:name "Voice Actor Name" ;
    pred:played ent:Character1 .

ent:Opening1 pred:name "Opening 1 Name" ;
    pred:played_by ent:OpeningArtist1 .

ent:Ending1 pred:name "Ending 1 Name" ;
    pred:played_by ent:EndingArtist1 .

ent:OpeningArtist1 pred:name "Opening Artist 1 Name" .

ent:EndingArtist1 pred:name "Ending Artist 1 Name" .
```
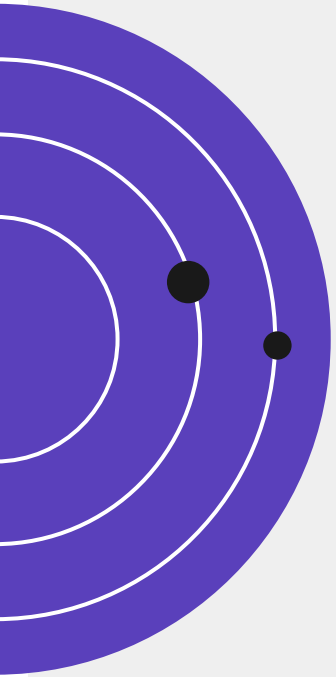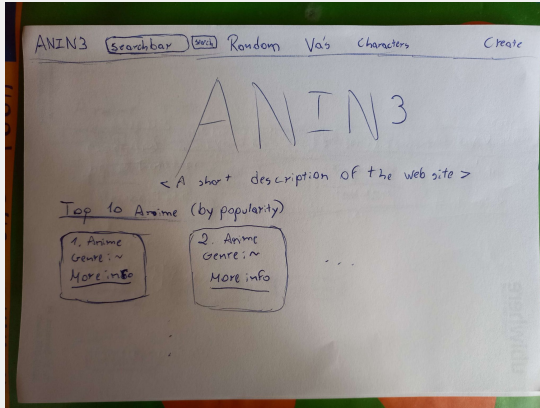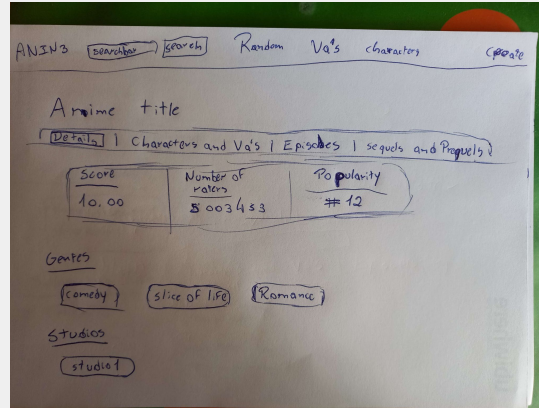
03
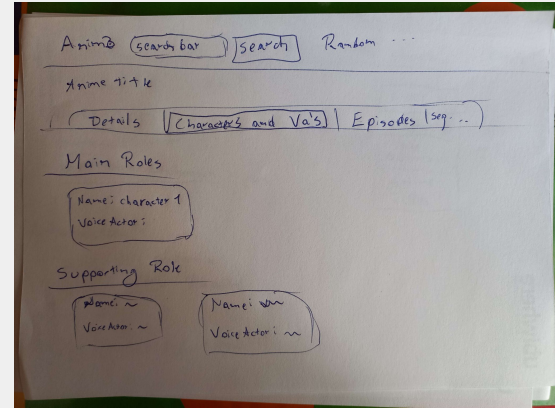
User Interface

Website, Endpoints e Queries ao GraphDB

Mock**Ups**

Home Page

Anime Page

Characters Page

Mock**Ups**

Search Page

Create Page

Home**Page**

AniN3 | Search | Search | Random | Genres | Create

AniN3

An anime database based on N3 and GraphDB made by students in Universidade de Aveiro in context of the Web semantica classes

Search | Search

Top 10 Anime

Rank: #1
Name: Fullmetal Alchemist: Brotherhood

Rank: #2
Name: Bleach: Sennen Kessen-hen

Rank: #3
Name: Steins;Gate

Rank: #4
Name: Gintama°

Rank: #5
Name: Kaguya-sama wa Kokurasetai: Ultra Romantic

Rank: #6
Name: Shingeki no Kyojin Season 3 Part 2

Rank: #7
Name: Gintama: The Final

Rank: #8
Name: Gintama'

Rank: #9
Name: Hunter x Hunter (2011)

Rank: #10
Name: Gintama': Enchousen

```python
def homePage(request):

    query = f"""
        PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
        PREFIX pred:<http://anin3/pred/>
        PREFIX ent:<http://anin3/ent/>
        SELECT ?title ?rk
        WHERE {{
            ?anime pred:rank ?rk .
            ?anime pred:title ?title .
            FILTER ( xsd:integer(?rk) < xsd:integer("11") )
        }} LIMIT 10
    """

    payload_query = {"query": query}
    res = accessor.sparql_select(body=payload_query, repo_name=repo_name)

    res = json.loads(res)

    data = {"animes": []}

    for a in res['results']['bindings']:
        data["animes"].append({"Title": a['title']['value'], "Rank": a['rk']['value']})

    data = sorted(data["animes"], key=lambda a: int(a["Rank"]))
    return render(request, "index.html", {'data': data})
```

Search**Page**

Searched for: park

Animes:

Name: Sparkle	Name: Beyblade Burst Sparking	Name: Himitsu Spark

Characters:

Name: Sparks, Dino Anime: Legendz: Yomigaeru Ryuuou Densetsu	Name: Spark Anime: Lodoss-tou Senki: Eiyuu Kishi Den	Name: Sparkle Anime: Spider Riders: Yomigaeru Taiyou	Name: Sparkle Anime: Spider Riders: Oracle no Yuusha-tachi

Name: Spark Anime: Youkoso Lodoss-tou e!

Voice Actors:

```python
query = f"""
        PREFIX ent: <http://anin3/ent/>
        PREFIX pred: <http://anin3/pred/>
        SELECT ?charname ?title ?vcname
        WHERE {{
            {{
                ?s pred:title ?title .
                FILTER (contains(?title, "{text}"))
            }}
            UNION
            {{
                ?s pred:starring ?character .
                ?character pred:name ?charname .
                ?s pred:title ?title .
                FILTER (contains(?charname, "{text}"))

            }}
            UNION
            {{
                ?s pred:voiced_at ?vc .
                ?vc pred:name ?vcname .
                ?s pred:title ?title .
                FILTER (contains(?vcname, "{text}"))
            }}
        }}
    """
```

All Genres

All genres

Genre: Military	Genre: Psychological	Genre: Time Travel	Genre: Gag Humor
Genre: Historical	Genre: Parody	Genre: Samurai	Genre: School
Genre: Romantic Subtext	Genre: Gore	Genre: Survival	Genre: Music
Genre: Adult Cast	Genre: Space	Genre: Childcare	Genre: Iyashikei
Genre: Strategy Game	Genre: Love Polygon	Genre: CGDCT	Genre: Mecha
Genre: Super Power	Genre: Vampire	Genre: Mythology	Genre: Team Sports
Genre: Combat Sports	Genre: Performing Arts	Genre: Isekai	Genre: Reincarnation
Genre: Martial Arts	Genre: Anthropomorphic	Genre: Delinquents	Genre: Workplace

```python
query = f"""
        PREFIX ent: <http://anin3/ent/>
        PREFIX pred: <http://anin3/pred/>
        SELECT DISTINCT ?genres
        WHERE {{
            {{
                ?s pred:theme ?genres .
            }}
            UNION
            {{
                ?s pred:genre ?genres .
            }}
        }}
    """
```

Genre **Page**

Genre: Military

Rank: 1 Name: Fullmetal Alchemist: Brotherhood	**Rank: 6** Name: Shingeki no Kyojin Season 3 Part 2	**Rank: 11** Name: Ginga Eiyuu Densetsu	**Rank: 21** Name: Code Geass: Hangyaku no Lelouch R2
Rank: 29 Name: Kingdom 3rd Season	**Rank: 31** Name: Shingeki no Kyojin: The Final Season	**Rank: 36** Name: Shingeki no Kyojin: The Final Season Part 2	**Rank: 41** Name: Kingdom 4th Season
Rank: 48 Name: 86 Part 2	**Rank: 50** Name: Code Geass: Hangyaku no Lelouch	**Rank: 77** Name: Shingeki no Kyojin Season 3	**Rank: 100** Name: Kenpuu Denki Berserk
Rank: 110 Name: Shingeki no Kyojin	**Rank: 120** Name: Koukaku Kidoutai: Stand Alone Complex 2nd GIG	**Rank: 128** Name: Shingeki no Kyojin Season 2	**Rank: 147** Name: Golden Kamuy 3rd Season

```python
query = f"""
    PREFIX ent: <http://anin3/ent/>
    PREFIX pred: <http://anin3/pred/>
    PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
    SELECT DISTINCT ?title ?rank
    WHERE {{
        {{
            ?anime pred:theme "{genre}" .
        }}
        UNION
        {{
            ?anime pred:genre "{genre}" .
        }}
        {{
            ?anime pred:rank ?rank .
            ?anime pred:title ?title.
        }}
    }} ORDER BY ASC(xsd:integer(?rank)) LIMIT 20
    """
```

Voice Actor Page

VA: Fuku Sanae

Role: Main	Role: Main	Role: Main	Role: Main
Name: Levi	Name: Levi	Name: Levi	Name: Levi
Shingeki no Kyojin Season 3 Part 2	Shingeki no Kyojin: The Final Season	Shingeki no Kyojin Season 3	Shingeki no Kyojin: The Final Season Part 2

Role: Main	Role: Main	Role: Main	Role: Main
Name: Levi	Name: Levi	Name: Levi	Name: Levi
Shingeki no Kyojin Season 2	Shingeki no Kyojin	Shingeki no Kyojin: Kuinaki Sentaku	Shingeki no Kyojin OVA

Role: Main	Role: Main	Role: Main	Role: Main
Name: Levi	Name: Levi	Name: Levi	Name: Levi
Planetarian: Hoshi no Hito	Shingeki no Kyojin Movie 2: Jiyuu no Tsubasa	Shingeki no Kyojin Season 2 Movie: Kakusei no Houkou	Shingeki no Kyojin Movie 1: Guren no Yumiya

Role: Main	Role: Main	Role: Main	Role: Main
Name: Levi	Name: Levi	Name: Levi	Name: Levi
Shingeki no Kyojin: Chronicle	Shingeki no Kyojin Picture Drama	Shingeki no Kyojin: Ano Hi Kara	Shingeki! Kyojin Chuugakkou

```
query = f"""
    PREFIX ent: <http://anin3/ent/>
    PREFIX pred: <http://anin3/pred/>
    SELECT ?character_name ?role ?animename
    WHERE {{
        ?voice_actor pred:name "{nome}".
        ?voice_actor pred:played ?character .
        ?character pred:name ?character_name .
        ?character pred:role ?role .
        ?anime pred:starring ?character .
        ?anime pred:title ?animename .
    }}
    """
```

Create Page

Add Anime

Title	Genre	Score
Number of Episodes	Rank	Status
Duration	Studio	Demographic

Add Anime

```python
res = requests.post(
    endpoint+f"/repositories/{repo_name}/statements",
    params=payload_query,
    headers={"Content-Type": "application/rdf+xml", 'Accept': 'application/json'}
)
```

```python
query = f"""
        PREFIX ent: <http://anin3/ent/>
        PREFIX pred: <http://anin3/pred/>
        INSERT DATA
        {{
            ent:{identification} pred:title "{title}" ;
                pred:rank "{rank}" ;
                pred:website "" ;
                pred:score "{score}" ;
                pred:type "" ;
                pred:num_episodes "{eps}" ;
                pred:source "" ;
                pred:status "{status}" ;
                pred:aired_date "" ;
                pred:age_rating "" ;
                pred:popularity "" ;
                pred:num_members "" ;
                pred:made_by "{studio}" ;
                pred:duration "{duration}" ;
                pred:premiered "" ;
                pred:demographic "{demographic}" ;
                pred:genre "{genre}" ;
                pred:adapted_from "" .
        }}
    """
```

Anime **Information**

Ninin ga Shinobuden

Details | Characters and Voice Actors | Openings and Endings

| Score:6.9 | Rank:4502 | Number of Raters:33,765 |

Genres

`Comedy`

Studios

`ufotable`

Themes

`Parody` `Martial Arts`

Other Information

Type	Number of Episodes
TV	12

Duration	Source
24 min per ep	Manga

Download Anime Info

```
query = f"""
    PREFIX ent: <http://anin3/ent/>
    PREFIX pred: <http://anin3/pred/>
    SELECT *
    WHERE {{
        {{
            ?anime pred:title "{title}" .
            ?anime ?pred ?object .
            FILTER (isliteral(?object))
        }}
        UNION
        {{
            ?anime pred:title "{title}" .
            ?anime ?pred ?object .
            ?object pred:name ?charname .
            ?object pred:role ?charrole .
            ?vc pred:played ?object .
            ?vc pred:name ?vcname .
        }}
        UNION
        {{
            ?anime pred:title "{title}" .
            ?anime ?pred ?object .
            ?object pred:name ?opname .
            ?object pred:played_by ?op .
            ?op pred:name ?opa .
        }}
    }}
"""
```

Anime **Information**

Ninin ga Shinobuden

Details | **Characters and Voice Actors** | Openings and Endings

Role: Main	Role: Main	Role: Main	Role: Main
Name: Izumi	Name: Izumi	Name: Izumi	Name: Izumi
Voice Actor:Takeuchi Junko	Voice Actor:Shimamoto Sumi	Voice Actor:Neya Michiko	Voice Actor:Kosugi Juurouta

Role: Main	Role: Main	Role: Supporting	Role: Supporting
Name: Izumi	Name: Izumi	Name: Izumi	Name: Izumi
Voice Actor:Asai Kiyomi	Voice Actor:Takamori Nao	Voice Actor:Takeuchi Junko	Voice Actor:Shimamoto Sumi

Role: Supporting	Role: Supporting	Role: Supporting	Role: Supporting
Name: Izumi	Name: Izumi	Name: Izumi	Name: Izumi
Voice Actor:Neya Michiko	Voice Actor:Kosugi Juurouta	Voice Actor:Asai Kiyomi	Voice Actor:Takamori Nao

Role: Main	Role: Main	Role: Main	Role: Main
Name: Midori	Name: Midori	Name: Midori	Name: Midori
Voice Actor:Okiayu Ryoutarou	Voice Actor:Saitou Chiwa	Voice Actor:Ootsuka Akio	Voice Actor:Aso Kumiko

Anime **Information**

Ninin ga Shinobuden

Details   Characters and Voice Actors   Openings and Endings

Openings

Name: Shinobu Sanjou!

Artist:Kumano Kiyomi

Endings

Name: Kuru Kururin

Artist:Kaoru

Name: Kuru Kururin

Artist:, Kaoru

Random Anime Information

```python
def randomAnime(request):

    rank = random.randint(1,10000-1)

    query = f"""
        PREFIX ent: <http://anin3/ent/>
        PREFIX pred: <http://anin3/pred/>
        SELECT ?title
        WHERE {{
            ?anime pred:rank "{rank}" .
            ?anime pred:title ?title .
        }}
    """
    payload_query = {"query": query}
    res = accessor.sparql_select(body=payload_query, repo_name=repo_name)

    res = json.loads(res)

    return redirect(f'/anime/{res["results"]["bindings"][0]["title"]["value"]}/')
```
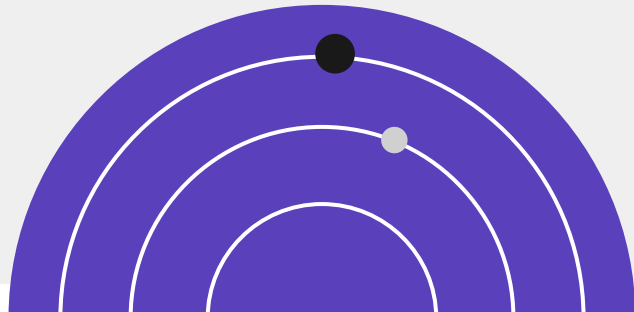
Conclusão

Conclusão

- Trabalho interessante e diferente
- Podíamos ter melhorado a utilização de prefixos em N3
- Conseguimos apresentar diferentes complexidades de query e trabalhar bastante bem sobre elas
- A UI é simples mas eficaz e intuitiva
- O projeto cumpre todos os requisitos
- O sistema mostra de forma clara todos os dados e as suas relações