Internship Report

Aishwarya Ganesh
1901

REPORT OF INTERNSHIP DONE AT ZAPCOM SOLUTIONS PRIVATE LIMITED

SUBMITTED BY:

AISHWARYA GANESH

1901

UNDER THE GUIDANCE OF

Mr. Manikanta Garikipati
(Solutions Architect, ZapCom)

Mr. Digvijay Solanki
(Software Engineer, ZapCom)

WITH

Mr. Nahuel Defosse

(CTO, Hello Tractor)

zapcom.

3rd June 2022

INTERNSHIP LETTER

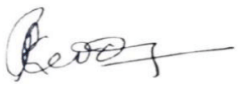
This is to certify that **Ms. Aishwarya Ganesh**, student of MCA, 6th Semester from Goa University is working as an Intern with our Organization at Bangalore location since 10-Jan-2022, her six months internship period will get over on 30-June-2022.

During the period of her Internship program with us, she is found punctual, hardworking and inquisitive.

We wish her a successful career ahead.

Yours Sincerely,

For **ZapCom Solutions Pvt Ltd**.



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GOA UNIVERSITY

GOA BUSINESS SCHOOL

CERTIFICATE OF EVALUATION

This is to certify that **Ms. Aishwarya Ganesh** has been evaluated for the project work titled "**Report of Internship done at ZapCom Solutions Private Limited,**" undertaken at **ZapCom Solutions Private Limited, Bangalore** in partial fulfilment for the award of the degree in Master of Computer Application.

_____ _____

Examiner 1 Examiner 2

Place: Goa University

Date: 11th June 2022

_____

Dean, Goa Business School

Acknowledgement

This Internship has been a lifechanging opportunity for me and I would like to express my gratitude to everyone involved without whom I wouldn't have been able to come this far.

I would like to thank Mr. Kishore Pallamreddy (CEO, ZapCom) for giving me the opportunity to intern at ZapCom.

My sincerest gratitude to Mr. Manikanta Garikipati (Solutions Architect, ZapCom) for being a great manager and believing in me and Mr. Digvijay Solanki (Software Engineer, ZapCom) for being an amazing mentor and giving me all the necessary guidance and support.

I would also like to thank Mr. Nahuel Defosse (CTO, Hello Tractor) for being patient with me and guiding me whenever I required his help.

My deepest gratitude to my HT team at ZapCom for always being supportive and constantly guiding me and never turning me down whenever I needed their help.

A big thank you to Mr Srinivas Kothakota (Sr.VP & COO, Zapcom), Ms Shilpi Jalota (HR Manager operations, ZapCom), Ms Savitha Cariappa (HR Admin manager, ZapCom) and Ms Vanessa Crasto (Associate HR Generalist, ZapCom) and the rest of the HR team who helped us settle in and made us feel at home at ZapCom

I would also like to convey my deepest gratitude to my Seniors from Goa University, and now colleagues in ZapCom, who made us comfortable in a new city and in this new phase of life.

I thank Mr. Jarret Stevan Anthony Fernandes (Assistant Professor, MCA, Goa Business School, Goa University), Mr. Ramdas Karmali (Professor, MCA, Goa Business School, Goa University) and all the faculty of MCA, Goa University for their constant encouragement and support during this internship

I will forever be indebted to my family and friends for encouraging me to pursue this internship and grow personally and professionally, their constant love and support will be deeply cherished.

Finally, I'd like to thank my ZapCom family for their constant support, guidance and encouragement, which I will always be grateful for.

- Aishwarya Ganesh

Table of Contents

Introduction

This report is a short description of my full-time on-site internship at ZapCom, Bangalore.

I joined as an Intern at ZapCom on 10th January 2022. This report contains necessary information about the organization, the projects and mini projects I worked on and the other tasks and special trainings I completed during the internship period.

In the chapters that will follow, I will talk about the company, the work here, the culture, etc. Then, I shall elaborate on the projects I worked on, a brief information about the projects, the features I built and the tasks I completed for those features.

This report highlights my learning experience and my contributions to the organization as an intern. This will describe the knowledge that I gained by successfully completing the tasks that were assigned to me.

I'll also be talking about the tools and technologies that were used followed by my internship timeline.

I shall conclude by sharing my experience and how it has helped me to grow, both, on the personal and professional front.

Company Profile

ZapCom is a global Product Engineering and Technology Services company that designs and develops custom software solutions, enabling partners to achieve their business goals.

Globally specialized in building scalable platforms for Travel, Hospitality, Fin-Tech and Retail; ZapCom is made up of a high performing team with competency in disruptive innovative ideas and emerging technologies

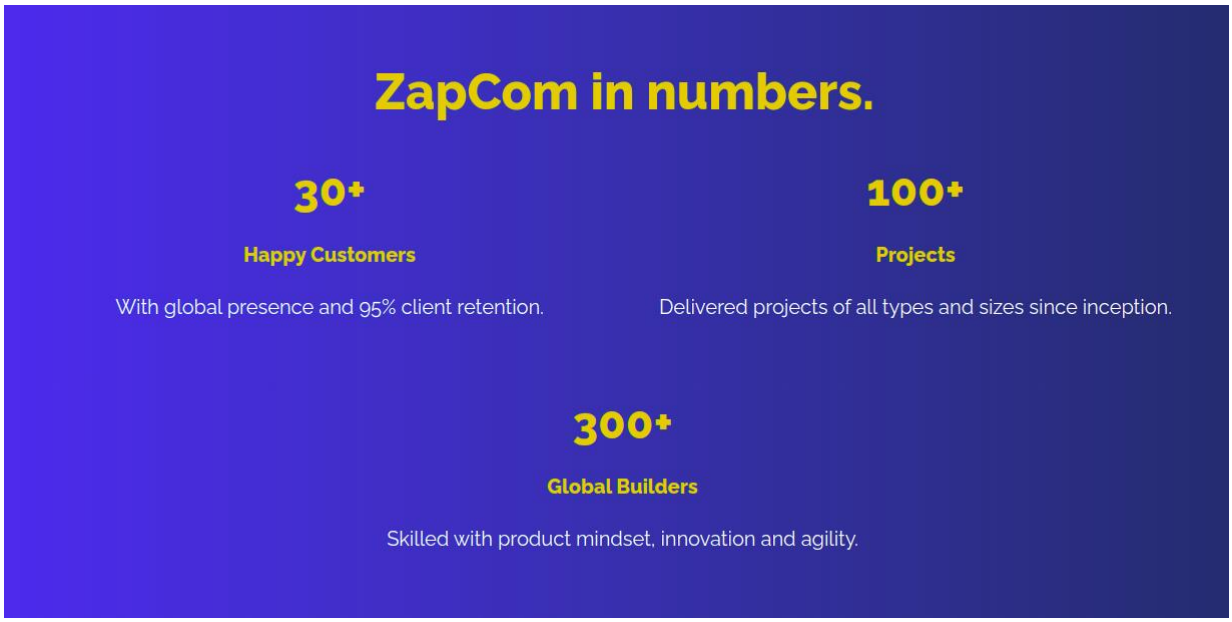
Offices:
Headquarters:

- Dublin – California, USA

Support offices:

- Bangalore, Hyderabad - India,
- Dallas – Texas, USA
- Heredia – Costa Rica

With extensive experience in understanding the digital economy, ZapCom is strategically placed to help clients deliver better products, services and business processes through Disruptive Technologies, Insights & Processes. By hiring the right people, motivating them to give their best and fostering an environment of continuous learning, innovation, mutual trust and fun, we are able achieve exceptional productivity and results.



Some of our clients include:

Project –Hello Tractor: HT-API

(Django Rest API) [Live]

Overview:

Hello Tractor is an award winning diversified ag-tech company focused on improving food and income security throughout sub-Saharan Africa. Resource poor farmers often face labour constraints that result in under cultivation, late planting, and lost income. Hello Tractor facilitates convenient and affordable tractor services to these farmers while providing additional income by turning tractors into Smart Tractors. For tractor owners, our platform provides remote tracking of assets, preventing fraud and machine misuse, through virtual tractor monitoring.

HT-API is Hello Tractor's Rest API built using the Django Rest Framework, This API is used by both the Android app as well as React Web App and is the main backbone for their backend logic

Tools and Technologies

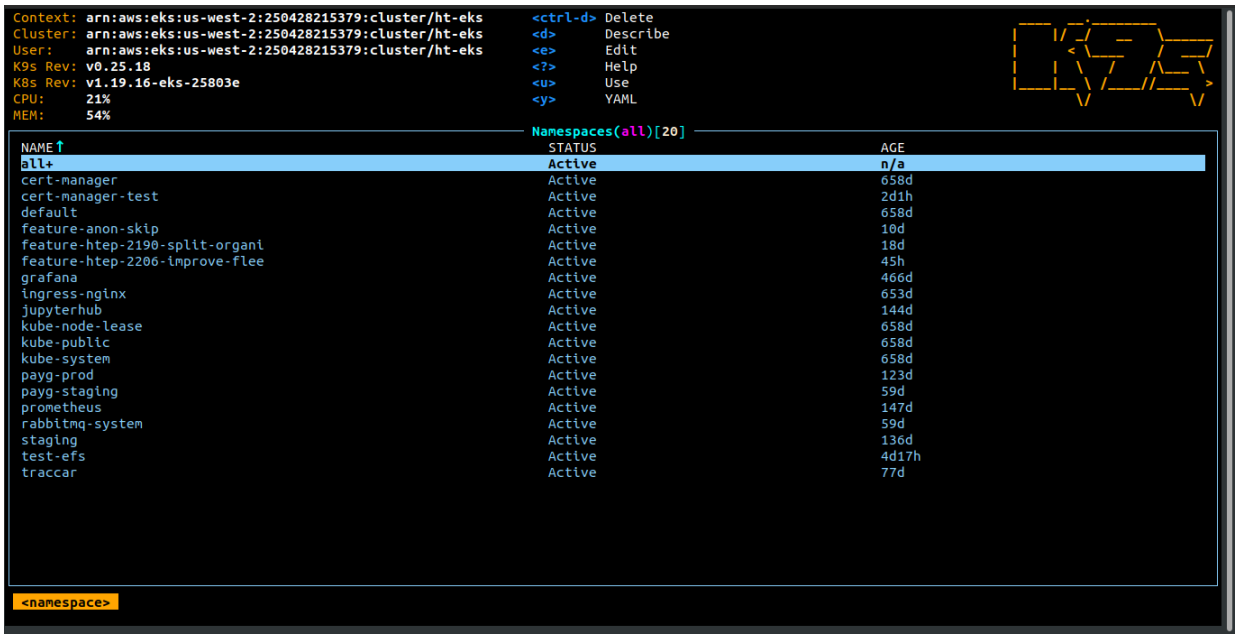
- Django Rest Framework
- PostgreSQL
- Bitbucket
- Jira
- Swagger
- AWS
- K9s
- Sentry
- Grafana
- VSCode

My Contributions:

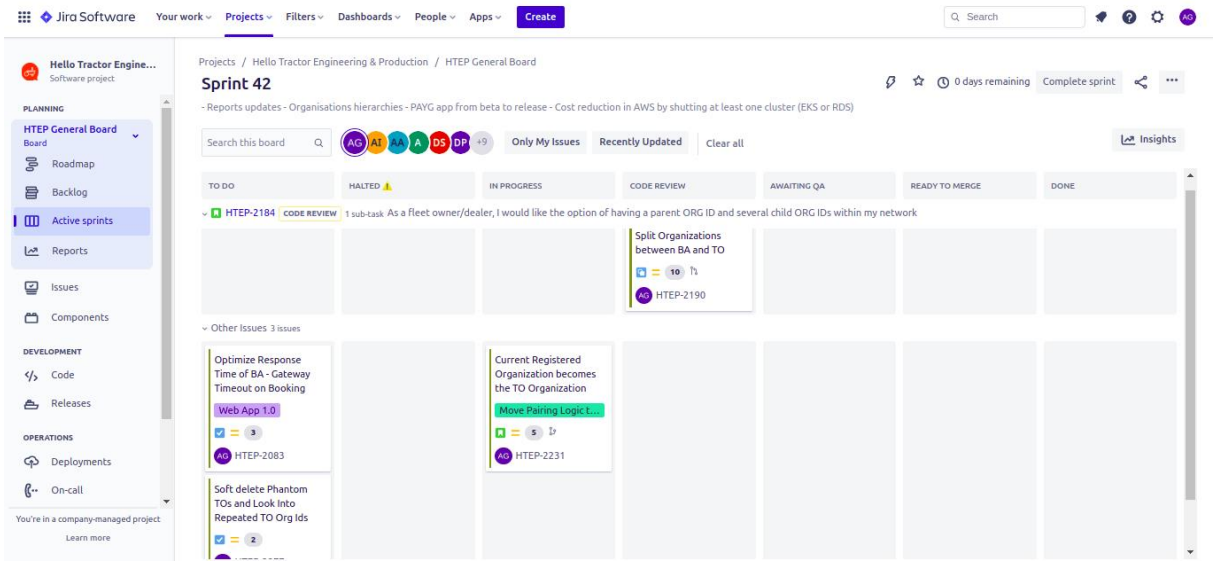
I have contributed to this project by doing the following Tasks:

1. Added SMS endpoint for general SMS
2. Added an endpoint to act as health check
3. Soft Deleted redundant data which was causing a bug and added a filter to prevent bug from occurring again
4. Added ownership filter to fix bug on WebApp
5. Created an endpoint for Operators of Tractors
6. Added Validators and reset the ID sequence for Implements Model
7. Added an endpoint to allow Immobilization of Tractors

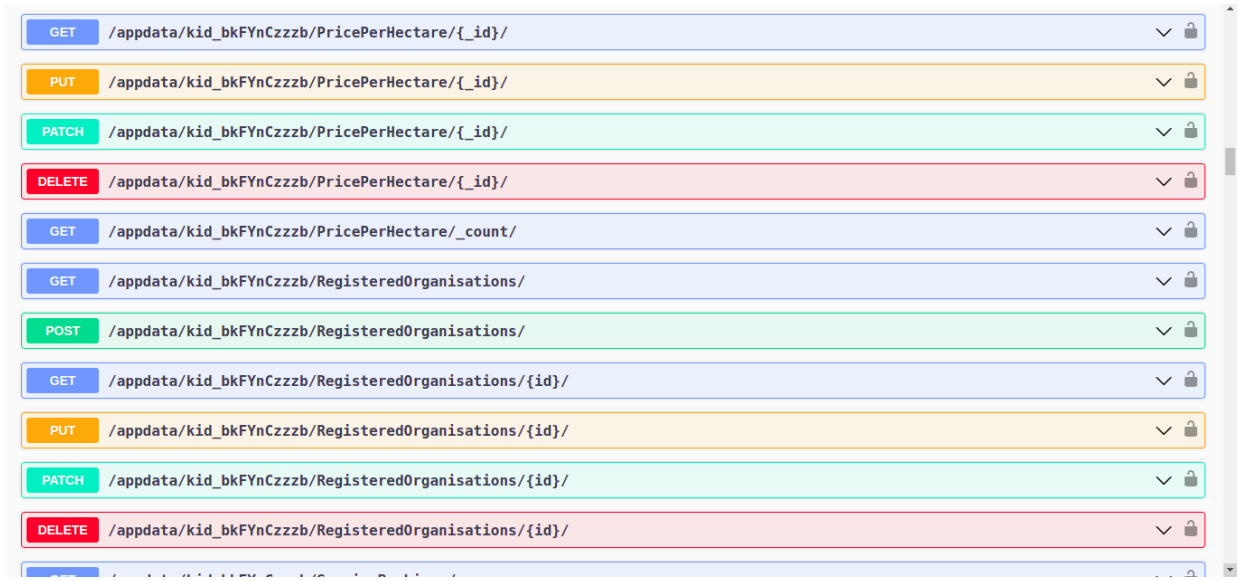
8. Changed URL char fields to FileFields to allow for easier storage of Pictures
9. Investigated and confirmed report generation Endpoint is working
10. Removed proxy views and added Endpoints to check if urls using Proxy Views are still in use in the app/webapp
11. Investigated and confirmed SMS endpoint is working as intended
12. Fixed error caused by division by zero
13. Added Optimisations using Indexes to improve performance of endpoints
14. Fixed a serialisation bug caused due to FileFields
15. Investigated Bugs on webapp and reported the cause
16. Restructured Organisations by Splitting Tractor Owner and Booking agent Organisations and added Organisation Hierarchy for Booking agents, currently working on Adding Tractor Owner Orgnaization Manager (On going Task)
17. Investigated and Worked on Cleaning up Data related to Tractor Owner Organisations (on going Task)
18. Investigated cause of Production Bug
19. Edited Documentation on Creating APK connected to review environments: Added Steps for Building App using Postman
20. Helped Onboard new member of team by showing



List of Namespaces in K9s



My tickets during sprint 42



Some of the Endpoints in HT-API

Other Tasks:

Movies API:

Overview

A RestAPI made using the DjangoRestFramework. It consists of two endpoints Movies and Movie details.

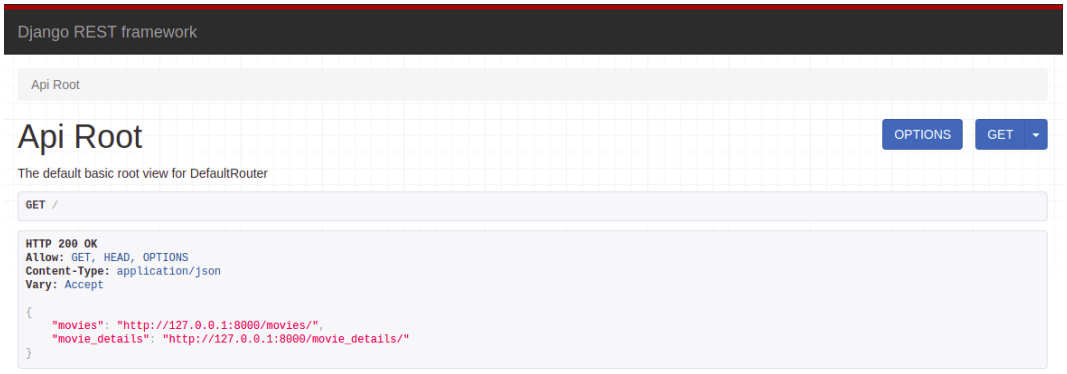
This project was as a way for me to familiarise myself with various aspects of Django, DRF, CI, and other tools used in HT-API.

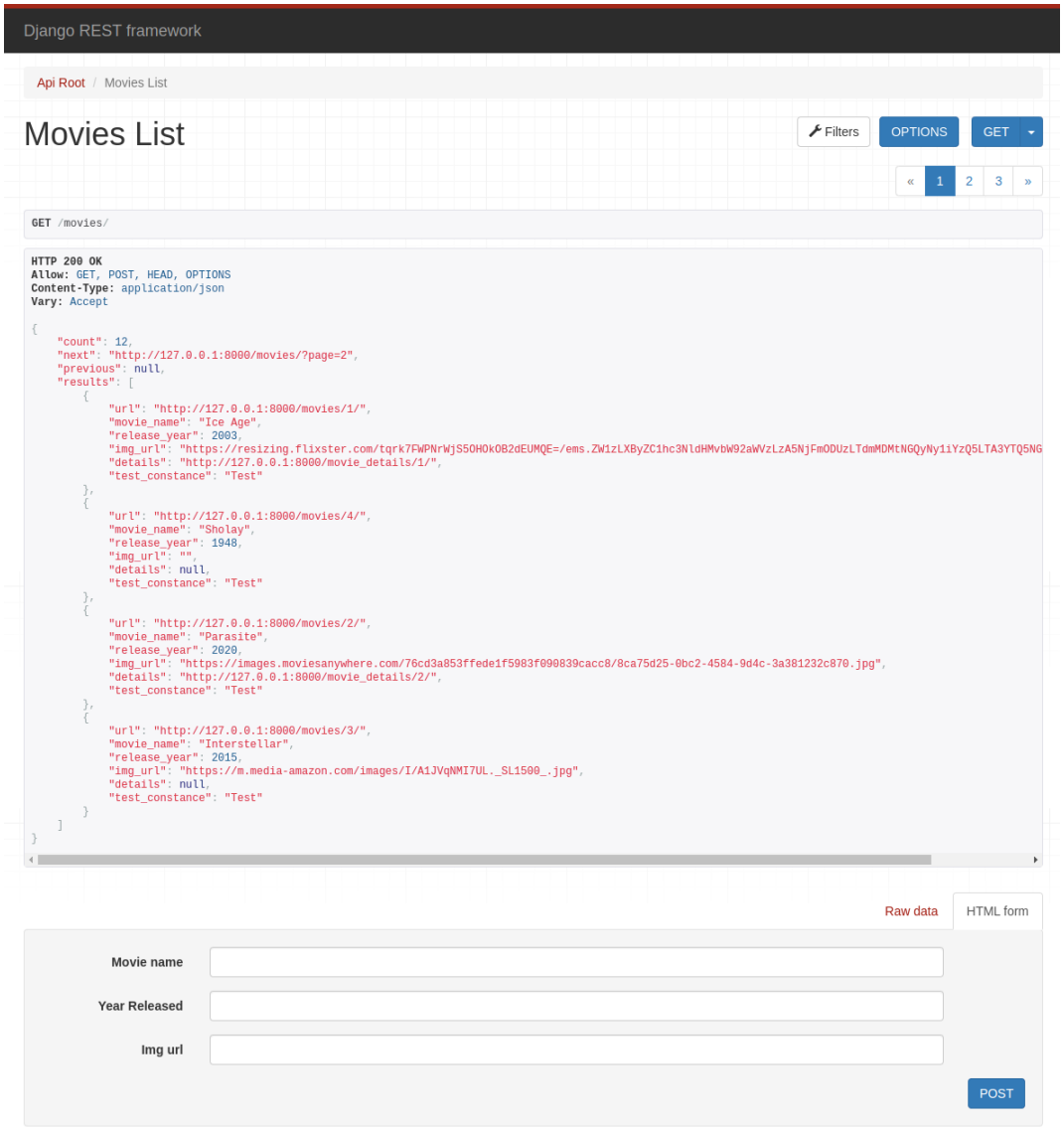
Problem Statement:

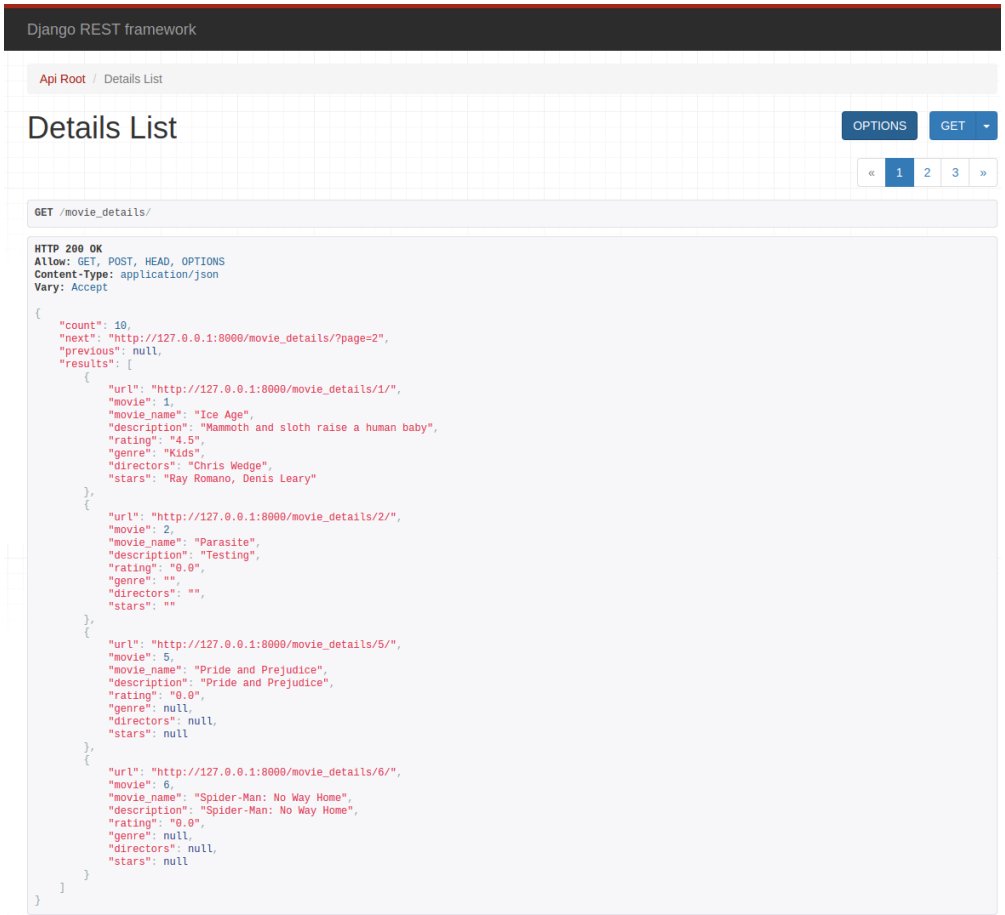
Create an API with two EndPoints: Movie and Movie Details with a one to one relationship.

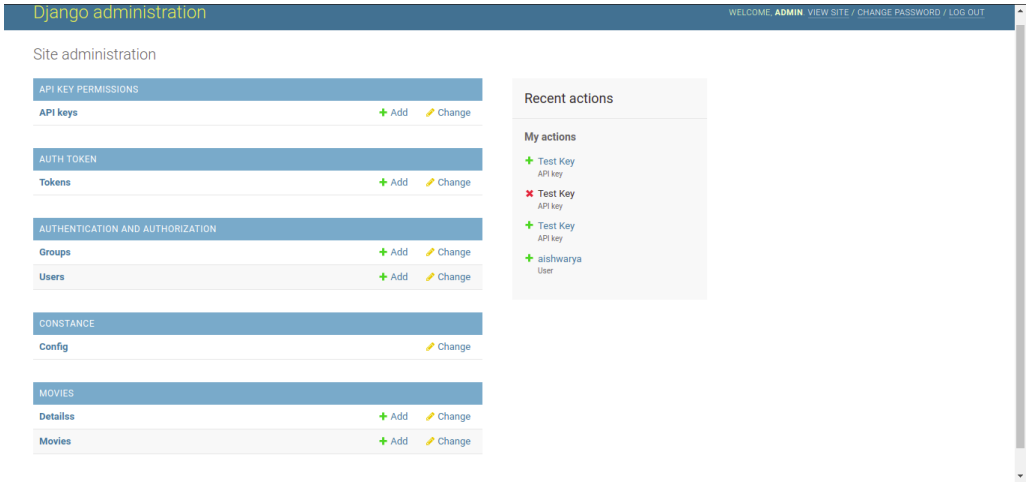
Tools and Technologies

- Django Rest Framework
- PostgreSQL
- Redis
- Constance
- Jupyter
- Gitlab – Version control + CI




Django REST framework
Api Root / Movies List
Movies List
Filters
OPTIONS
GET
« 1 2 3 »
GET /movies/
HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept
{
"count": 12,
"next": "http://127.0.0.1:8000/movies/?page=2",
"previous": null,
"results": [
{
"url": "http://127.0.0.1:8000/movies/1/",
"movie_name": "Ice Age",
"release_year": 2003,
"img_url": "https://resizing.flixster.com/tqrk7FWPNrWjS5OHOkOB2dEUMQE=/ems.ZW1zLXByZC1hc3NldHMvbW92aWVzLzA5NjFmODUzLTdmMDMtNGQyNy1iYzQ5LTA3YTQ5NG
"details": "http://127.0.0.1:8000/movie_details/1/",
"test_constance": "Test"
},
{
"url": "http://127.0.0.1:8000/movies/4/",
"movie_name": "Sholay",
"release_year": 1948,
"img_url": "",
"details": null,
"test_constance": "Test"
},
{
"url": "http://127.0.0.1:8000/movies/2/",
"movie_name": "Parasite",
"release_year": 2020,
"img_url": "https://images.moviesanywhere.com/76cd3a853ffede1f5983f090839cacc8/8ca75d25-0bc2-4584-9d4c-3a381232c870.jpg",
"details": "http://127.0.0.1:8000/movie_details/2/",
"test_constance": "Test"
},
{
"url": "http://127.0.0.1:8000/movies/3/",
"movie_name": "Interstellar",
"release_year": 2015,
"img_url": "https://m.media-amazon.com/images/I/A1JVqNMI7UL._SL1500_.jpg",
"details": null,
"test_constance": "Test"
}
]
}
Raw data
HTML form
Movie name
Year Released
Img url
POST


Django REST framework
Api Root / Details List
Details List
OPTIONS
GET
« 1 2 3 »
GET /movie_details/
HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept
{
"count": 10,
"next": "http://127.0.0.1:8000/movie_details/?page=2",
"previous": null,
"results": [
{
"url": "http://127.0.0.1:8000/movie_details/1/",
"movie": 1,
"movie_name": "Ice Age",
"description": "Mammoth and sloth raise a human baby",
"rating": "4.5",
"genre": "Kids",
"directors": "Chris Wedge",
"stars": "Ray Romano, Denis Leary"
},
{
"url": "http://127.0.0.1:8000/movie_details/2/",
"movie": 2,
"movie_name": "Parasite",
"description": "Testing",
"rating": "0.0",
"genre": "",
"directors": "",
"stars": ""
},
{
"url": "http://127.0.0.1:8000/movie_details/5/",
"movie": 5,
"movie_name": "Pride and Prejudice",
"description": "Pride and Prejudice",
"rating": "0.0",
"genre": null,
"directors": null,
"stars": null
},
{
"url": "http://127.0.0.1:8000/movie_details/6/",
"movie": 6,
"movie_name": "Spider-Man: No Way Home",
"description": "Spider-Man: No Way Home",
"rating": "0.0",
"genre": null,
"directors": null,
"stars": null
}
]
}
Raw data
HTML form
Movie
Ice Age
Description
Rating
Genre
Directors
Stars
POST

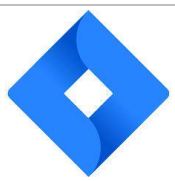

Django administration
WELCOME, ADMIN. VIEW SITE / CHANGE PASSWORD / LOG OUT
Site administration
API KEY PERMISSIONS
API keys + Add Change
AUTH TOKEN
Tokens + Add Change
AUTHENTICATION AND AUTHORIZATION
Groups + Add Change
Users + Add Change
CONSTANCE
Config Change
MOVIES
Detailss + Add Change
Movies + Add Change
Recent actions
My actions
+ Test Key
API key
Test Key
API key
+ Test Key
API key
+ aishwarya
User

Certifications and Trainings Completed under Internship and Self Study:

Udemy Courses:

1. Build a Backend REST API with Python & Django – Beginner: https://www.udemy.com/course/django-python/
2. Build a Backend REST API with Python & Django – Advanced: https://www.udemy.com/course/django-python-advanced/
3. SOLID Principles: Introducing Software Architecture & Design: https://www.udemy.com/course/solid-design/
4. Ultimate AWS Certified Solutions Architect Associate 2022: https://www.udemy.com/course/aws-certified-solutions-architect-associate-saa-c02/
    4.1. Section 12: Amazon S3 Introduction
    4.2. Section 14: Advanced Amazon S3 and Athena
5. Information Security Awareness-ISO 27001:2013: https://www.udemy.com/course/isms-awareness/

Tools and Technologies Used

	**Django** Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. Built by experienced developers, it takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It's free and open source.
	**Django Rest Framework** Django REST framework is a wrapper over default Django Framework, and is a powerful and flexible toolkit for building Web APIs.
	**PostgreSQL** PostgreSQL, also known as Postgres, is a free and open-source relational database management system emphasizing extensibility and SQL compliance.
	**Git** Git is a distributed version-control system for tracking changes in source code during software development. It is designed for coordinating work among programmers, but it can be used to track changes in any set of files.
	**Swagger** Swagger is an open-source software framework backed by a large ecosystem of tools that helps developers design, build, document, and consume RESTful web services
	**Postman** Postman is an API platform for building and using APIs. Postman simplifies each step of the API lifecycle and streamlines collaboration so you can create better APIs—faster.
	**BitBucket** Bitbucket is a Git-based source code repository hosting service owned by Atlassian. Bitbucket offers both commercial plans and free accounts with an unlimited number of private repositories.
	**Jira** Jira is a proprietary issue tracking product developed by Atlassian that allows bug tracking and agile project management.
	**Confluence** Confluence is a team workspace where knowledge and collaboration meet. Trusted for documentation, decisions, project collaboration & Jira integrations.

	Docker Docker is a software platform that allows you to build, test, and deploy applications quickly. Docker packages software into standardized units called containers that have everything the software needs to run including libraries, system tools, code, and runtime. Using Docker, you can quickly deploy and scale applications into any environment and know your code will run.
	K9s K9s is a terminal-based UI to interact with your Kubernetes clusters.
	Jupyter JupyterLab is the latest web-based interactive development environment for notebooks, code, and data. Its flexible interface allows users to configure and arrange workflows in data science, scientific computing, computational journalism, and machine learning.
	CircleCI CircleCI is a continuous integration and continuous delivery platform that can be used to implement DevOps practices.
	GitLab GitLab Inc. is an open-core company that provides GitLab, a DevOps software package that combines the ability to develop, secure, and operate software in a single application.
	Grafana Grafana is a multi-platform open-source analytics and interactive visualization web application. It provides charts, graphs, and alerts for the web when connected to supported data sources.
	Sentry Sentry.io is an open-source full-stack error tracking system which supports a wide range of server, browser, desktop and native mobile languages and frameworks including PHP, Node. js, Python, Ruby, C#, Java, Go, React, Angular, Vue, JavaScript and more.
	AWS Amazon Web Services, Inc. is a subsidiary of Amazon that provides on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis.
	VSCode Visual Studio Code is a code editor redefined and optimized for building and debugging modern web and cloud applications. Visual Studio Code is free and available on your favorite platform - Linux, macOS, and Windows.

Project timeline/Project diary

Date of Joining: 10th January 2022

January 2022

- *Week 1: 11th – 16th Jan*
    1. Formal Orientation and Set up Laptop with Ubuntu
    2. Set up Django and Started working on Movie API
- *Week 2: 17th – 23rd Jan*
    1. Added following to Movie API
        - Docker
        - PostgreSQL Database
        - Unit Tests
        - Custom Data Migration
        - Authentication Protection for end Points
        - CI Pipeline in Gitlab
- *Week 3: 24th - 28th Jan*
    1. Configured CI pipeline for Movie API
    2. Demonstrated Movie API done so Far
    3. Started learning Android

February 2022

- *Week 4: 31st Jan – 4th Feb*
    1. Connected Android App to Movie API
    2. Added Filters on Django Admin
    3. Added Search filter, Redis, Constance
    4. Learnt SOLID Principles
- *Week 5: 7th – 13th Feb*
    1. Added Pagination and Search bar to the APP
    2. Added a PostSave Hook to Movie API
- *Week 6: 14th – 20th Feb*
    1. Spent more time on CodeLabs Android course
    2. **Onboarded onto Hello Tractor for HT-API**
- *Week 7: 21th – 25th Feb*
    1. Implemented Endpoints to fix errors
    2. Added Filter for Endpoint

March 2022

- *Week 8: 28th Feb – 4th Mar*
    1. Soft deleted redundant data
    2. Fixed Bug assigned to me
- Week 9: 7th – 11th Mar
    1. Added Endpoints Operator for Tractor Endpoint
    2. Started working on Immobilisation Feature
- *Week 10: 14th Mar – 18th Mar*
    1. Continued Working on Immobilisation Feature
- *Week 11: 21st – 25th Mar*
    1. Worked on Fixing Bugs
    2. RnD and implementation of Feature Using FileFields
    3. Learnt about AWS Buckets
- *Week 12: 28th Mar – 1st Apr*
    1. Continued working on Feature Using FileFields
    2. Worked on fixing errors
    3. KT to QA
    4. Deployed Feature to Review env to be tested

April 2022

- *Week 13: 4th – 8th Apr*
    1. Finished FileField Feature with improved Error logging
    2. Fixed error
    3. Added Optimisation to improve Performance for Notification Endpoint
- *Week 14: 11th – 15th Apr*
    1. Added fixes for Endpoints
    2. RnD on Optimisation for other Endpoints
- *Week 15: 18th – 22nd Apr*
    1. Learnt More about AWS buckets
    2. Learnt about PayG feature
    3. Started working on Improving Admin UI (OrgID as FK)
- *Week 16: 25th – 29th Apr*
    1. Groomed Org Hierarchy and Management
    2. Started Working on Org Hierarchy

May 2022

- *Week 17: 2nd – 6th May*

1. Investigated Bugs
2. Worked on Org Hierarchy

- *Week 18: 9th – 13th May*
    1. Continued working on Org Hierarchy
- *Week 19: 16th – 20th May*
    1. Deployed Org Hierarchy to review env for testing
    2. Started working on Org Management
    3. Investigated Data for Org Management
- *Week 20: 23rd – 27th May*
    1. Looked into Reversions
    2. Investigated Production Bug

June 2022

- *Week 21: 30th May – 03rd Jun*
    1. Investigated Org Hierarchy bug after rebase

My reflections/ experiences of internship.

Working at Zapcom has been a wonderful and fulfilling experience. Every day, we are encouraged to learn and pursue new challenges.

With a warm and friendly work environment, the work culture here encourages us to seek out our seniors and those with more experience and to never be afraid to ask anything we may be looking for.

Zapcom has provided me with the support and motivation to learn as much as possible and has also made sure we have fun while we work.

As the pandemic restrictions receded, we were able to meet more and more of our senior colleagues and interact with them thanks to fun events such as Fun Fridays, Happy Hour, Birthday Celebrations, Festive celebrations such as Holi, Women's Day and more.

I am very excited to continue working and growing here professionally, and I wish everyone here the best of my wishes.

References

1. https://docs.djangoproject.com/en/4.0/
2. https://www.geeksforgeeks.org/python-programming-language/
3. https://www.postgresql.org/docs/
4. https://www.atlassian.com/git/tutorials
5. https://rogerdudler.github.io/git-guide/
6. https://www.tutorialspoint.com/sql/index.htm
7. https://www.postgresqltutorial.com/
8. https://www.django-rest-framework.org
9. https://k9scli.io/
10. https://docs.sentry.io/platforms/python/guides/django/usage/
11. https://grafana.com/docs/loki/latest/logql/
12. https://megamorf.gitlab.io/cheat-sheets/loki/
13. https://docs.pytest.org/en/7.1.x/
14. https://pandas.pydata.org/docs/reference/frame.html
15. https://developer.android.com/courses/android-basics-kotlin/course