

lab 3 (mONITORING & Profiling)

Configure Django debug toolbar, Silk and cProfile into your Django project.
Select any of your apps views contains ORM Queries / Functions / any code with room for optimization , monitor & profile it using above 3 tools.
Analyze important profiling data (functions timing, queries count & timing, request info, render time, longest & heaviest requests)
Bonus: Detect any bottleneck/low performance query, enhance it and re analyze the monitoring and report it.

LAB 1 (ORM I)

Select any of these datasets from Kaggle (Northwind Traders Dataset, Movie Lens Small Latest Dataset) , download it , design proper database schema (achieves modelling , relationships , constraints)
Build Django models for the designed schema, then load data to the database
Run Query to retrieve all data , then print related key field for each of returned records, observe N+1 query analysis (queries and queries count) from any of monitoring tools
Enhance above query using 'select_related' and analyze difference.
Apply 'prefetch_related' if you have many to many relationships.

LAB 2 (ORM ii)

Build dynamic filter query using Q() expression.
Update any field values directly in SQL using F() expression.
Select specific fields using only() and defer() methods.
Retrieve data as dict using proper ORM method for this.
Retrieve data as tuple using proper ORM method for this.
Apply index on proper fields in your models
Select n values from both indexed and non indexed column, monitor their performance and compare it.
Change conn max age and observe the changes.

