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| **Name** | Aman Agarwal | | |
| **Email** | amanag029@gmail.com | | |
| **Current Role** | Senior Python Developer | **Number of Years/Months in the role** | 40 |
| **Current Responsibilities** | 1. Development of APIs using frameworks as per business requirements  and responsible for their future look after and enhancement and  integration.  2. Development of Database Schema for the application.  3. APIfication and Integration of AI/ML models with the application.  4. Communicate all release related activities to all stakeholders  5. Maintain the complete IP safe and Legal activity for the product.  6. Support globally distributed teams. | | |

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| **Please describe 1-2 of your technical competences you specialize in. Note: use N/A if no experience.** |
| **Front-end Technologies:** HTML, CSS  **Back-end Technologies:** Python, Flask, RestAPI, FastAPI, Django, ORM  **Databases:** SQL, SQLAlchemy,PostgreSQL  **Cloud Platforms:** AWS, GCP |

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| **What is your exposure to building web applications that leverage AI/ML Models? How is the ML model integrated with the application? Please describe using a project you have worked on.** |
| I had a good interaction with web applications that leverage AI/ML models. While working on projects like **Development of chatbot framework** and **Artificial Intelligence for Contextual Masters** there comes various business requirements for which as a developer we are responsible for developments of APIs using frameworks which in turn basically leverages the AI/ML models and moreover we are responsible for their performance and optimization.Since, I am not involved in the development of AI/ML models but had integrated many of them as per business requirements.  Considering a scenario, from one of my recent project **AI4CM** in which there is component **NMT** where we have to convert the given sentences of stories to the given target language. So, I had received the model from TCS Research Team for this functionality but the enhancements that I had bring to it are mentioned below:  1. Model loading should happen only once when the server gets started, thus preventing model  loading for every request.  2. Since, model is highly dependent on source and target language, there it should be  configurable for every request. Here, source language is detected using lang detect package.  3. APIfication of NMT model and integration with existing application. Here, we need to make  ensure all prerequisites should met for running model. |
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| **Are you open to learn new programming languages and frameworks like Python and Django? If yes, how long (in #of days) would you need to become productive with training.** |
| Yes, I am open to learn new programming languages and its corresponding frameworks. If we say about Python and Django, then I could say that for Python I need to enrich my existing knowledge for some advance concepts and for Django I need some time ( around 30-35 days ) and have to do some projects/hands-on/user-stories covering almost all important and common aspects to become skilled in that framework. |

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| **Design and implement a web application that would allow users to:**   * **Upload and persist pricing feeds from retail stores using CSV files which contain Store ID, SKU, Product Name, Price, Date** * **Search for pricing records using various criteria and be able to edit/save changes to any record**   **Please feel free to choose the technology stack and frameworks you are comfortable with and implement a single page web application. Upload the source to your Github repository and include a reference to it as part of the response. Also document the assumptions you have made and any questions to the SME/Panel members.** |
| **Technology Stack –** Python, Flask, HTML, ORM, SQLAlchemy  **GitHub Repo Link -** <https://github.com/amanag1/retail_analytics_case_study> **OS used for development –** Linux **Database –** PostgreSQL ( basically its web interface i.e. pgAdmin4 )  Various assumptions and prerequisites made while doing the development were listed in forth coming pages.  **Prerequisites:**  1. Miniconda installed for package management and environment management.  2. pgAdmin installed which open source PostgreSQL administration and development platform  that runs on Linux.  3. Sample data is handy with us i.e. csv file having pricing records from retail stores which  contain Store ID, SKU, Product Name, Price, Date.  4. Rest all common utilities like file editor, browser and other have to be present in system.  **Assumptions:**  **1.** It is assumed that database i.e. **retail\_analytics** and schema i.e. **retail** are already created  in database server and **git** is installed in the system.  **2.** When user will upload the data the response will show all data present in database sorted on  the basis of **Store ID.**  **3.** **Search** Operation for pricing records can be made by entering the details requested in pop up  form on click **Search** button, where it basically asks user to enter Store ID, SKU, Product Name  and Price. Out of these any of the fields can be left blank but it is recommended to have  atleast enter value for one of them.  Therefore, whatever information entered in form have to matched with ORM query in the  method defined on its call and post matching within database it will show records that  satisfies the given condition else it will return with a message **“There are no records to**  **display”.**  **4. Update** Operation for pricing records can be made by entering the details requested in pop  up form on click **Update** button, where it was assumed that the details will not be auto  populated and details have to entered manually by user in form which post interaction with  corresponding ORM query firsts find out whether record exists or not , if yes then it will  update record ( can either update a single record or multiple records ) as per ORM update  query and will display all results else it will return with a message **“There is no record to**  **undergo update operation”.**  **5. Delete** Operation for pricing records can be made by entering the details requested in pop  up form on click **Delete** button, where it was assumed that the details will not be auto  populated and details have to entered manually by user in form which post interaction with  corresponding ORM query firsts find out whether record exists or not , if yes then it will  delete record ( can either update a single record or multiple records ) as per ORM update  query and will display all results else it will return with a message **“There is no record to**  **undergo delete operation”.**  **6.** Since, it had been asked to make web application that could perform search for pricing  records using various criteria so, for this it totally depends on ORM query that will be present  in code. Therefore, I had tried to put on various formats of query that could do search  operation but yeah there are many more also and I believe while doing PoC it is not  possible to cover up all scenarios.  **7.** As logging was implemented in application and it basically needs some location in system  to create logs. Therefore, at the given path -  “retail\_analytics/utils/logger/config/applicationconfig.ini” , it requires a change in two  parameters values i.e. **logRoot** and **logDir** and therefore was assumed their locations  exists in system.  **8.** Sample document is attached in retail\_analytics\_case\_study/retail\_analytics/retail.csv.  **9.** It was assumed that post doing any operation user will have to move back to the  page displaying all buttons.  **ReadME.md --**  **# retail\_analytics\_case\_study**  This is about how the retail stores data is used for doing various kind of analysis which could be in turn to find out their most selled products or many more such occurrences.  **Steps to run the application (Considering all prerequisites and assumptions listed above are met ) :**  **1.** We have to clone the repository using the command given below :   **git clone** [**https://github.com/amanag1/retail\_analytics\_case\_study.git**](https://github.com/amanag1/retail_analytics_case_study.git)  **2.**  Go to retail\_analytics\_case\_study/retail\_analytics foler.  **3.** Create conda environment using the command given below :  conda create -n <ENV\_NAME> python=3.9 , here replace <ENV\_NAME> with the nane of environnment you want to give, for reference see below:  conda create -n retail\_env python=3.9  To activate this environment, use  conda activate retail\_env  To deactivate an active environment, use  conda deactivate  **4.** Post successful creation of conda environment now it comes to install few more packages required to run the application.  First, we need to activate the environment as mentioned in Step 1 and then have to execute the following commands in same terminal to install  dependencies:  pip install Flask-SQLAlchemy  pip install pandas  pip install jsonformatter  pip install psycopg2  pip install SQLAlchemy  pip install Flask  pip install pytest  **5.** Now, open a terminal and activate respected conda environment using the command mentioned in Step 1.  Post activation execute the following commands to start the flask application:  export FLASK\_APP=retail.py  export FLASK\_ENV=development  export FLASK\_DEBUG=1  flask run  Application will start on url : **http://127.0.0.1:5000/home**  Therefore, user can perform file upload, search, update and delete operation.  **6.** Now, open a terminal and activate respected conda environment using the command  mentioned in Step 1.  Post activation execute the following command to test for various test cases:  **pytest**  Moreover, test results and inputs and outputs of various operations of application can  be seen in another document attached named as  Retail\_Case\_Study\_Test\_Cases/**Retail\_Case\_Study\_Test\_Results.docx**  **Questions to SME/Panel Members:**  **Q1.**  Since, this case study belongs to retail domain, thus, I believe for conducting any analysis  we need some more details along with the mentioned ones in case study. What’s your  opinion on this as presently, many factors influence retail industry ?  **Q2.** As per the given fields, we can do analysis but out of them there must be something  crucial which can’t be ignored while doing such activity. So what could be those fields? |
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