**QUESTION ANSWER SYSTEM**

**Question Answer System using transformers pretrained model and using Fast API:**

FastAPI application for question answering using the DistilBERT model.

1. Importing Libraries.

2. Creating the FastAPI application:

- `app = FastAPI()`: Create a FastAPI application instance.

3. Loading the DistilBERT model and tokenizer

1. Defining the data model

5. Defining API routes:

- `@app.get("/")`: Define a GET route for the root endpoint ("/") that returns a welcome message.

- `@app.post("/answer")`: Define a POST route for the "/answer" endpoint to accept question and context inputs.

6. Answering the question:

- `def answer\_question(question: str, context: str)`: Define a function to handle the "/answer" endpoint.

- `inputs = tokenizer.encode\_plus(question, context, add\_special\_tokens=True, return\_tensors="pt")`: Tokenize the question and context inputs using the tokenizer.

- `start\_logits, end\_logits = model(\*\*inputs).values()`: Pass the tokenized inputs to the DistilBERT model to get start and end logits.

- Extract the start and end indices with the highest logits and convert them to tokens.

- `answer = tokenizer.convert\_tokens\_to\_string(answer\_tokens)`: Convert the answer tokens back to a string.

- Return the question and answer in the response.

A FastAPI application that exposes a GET route for the root endpoint ("/") and a POST route for the "/answer" endpoint. The "/answer" endpoint expects a JSON payload with a question and context, and it returns the answer to the question using the DistilBERT model.

To Run this API:

1. Open Command Prompt and navigate to the folder location.
2. Run ‘uvicorn main:app --reload’ in it.
3. Then open ‘http://localhost:8000/docs’ to get the FastAPI website.
4. Click Try it Out and type the question and Context for it.
5. Then click execute to get the answer.

To Run the Docker:

1. Build the Docker image by running the following command in the terminal or command prompt:

docker build -t fastapi-qa .

This command builds the Docker image with the tag fastapi-qa. The . indicates that the build context is the current directory.

1. Once the Docker image is built successfully, you can run the container using the following command:

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docker run -p 8000:8000 fastapi-qa

This command runs the container and forwards the host's port 8000 to the container's port 8000. You can choose a different port if desired.

The FastAPI server inside the Docker container will be accessible at http://localhost:8000. You can make POST requests to http://localhost:8000/answer