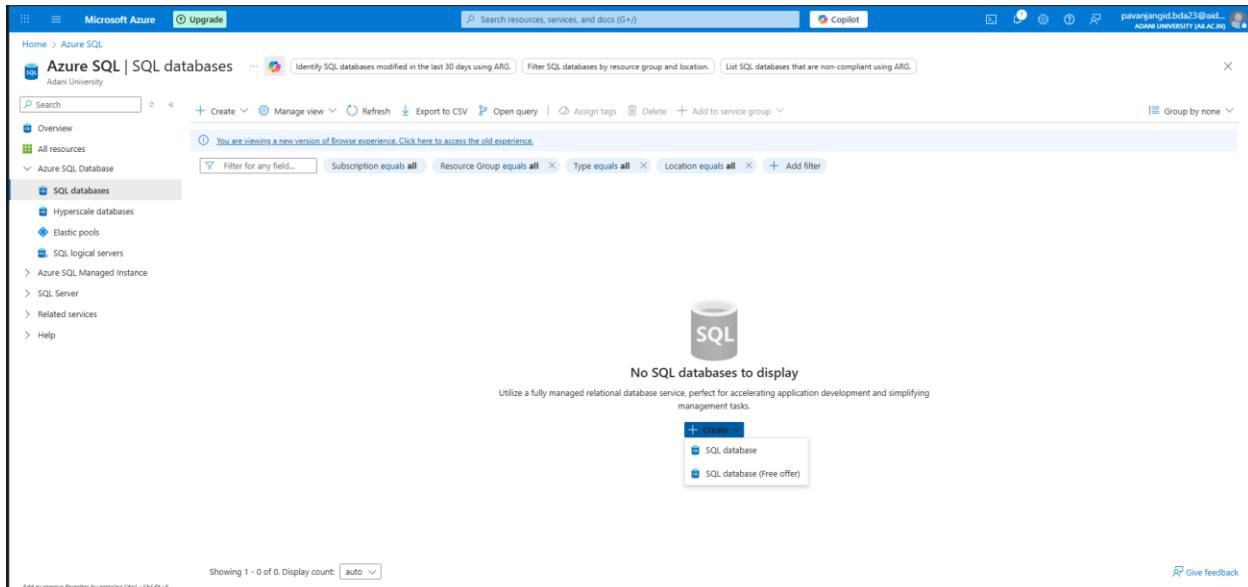


# 1. Go to SQL Database



No SQL databases to display

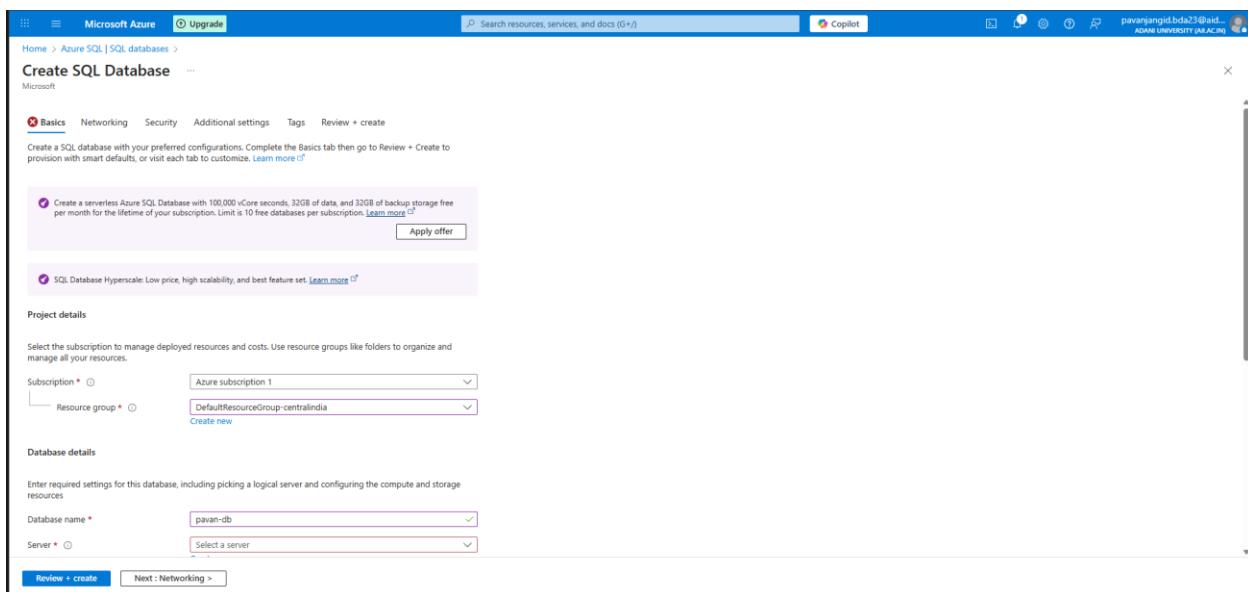
Utilize a fully managed relational database service, perfect for accelerating application development and simplifying management tasks.

+ Create

SQL database

SQL database (Free offer)

# 2. Create New Database



### 3. Create New Database Server

The screenshot shows the 'Create SQL Database Server' step in the Azure portal. It includes fields for 'Server name' (pavanjangid.bda23@aidtm.ac.in), 'Location' (US East US), and 'Authentication' (Azure Active Directory). A note indicates that Azure Active Directory is now Microsoft Entra ID. The 'Set Microsoft Entra admin' section shows the user pavanjangid.bda23@aidtm.ac.in with Admin Object/App ID: f6396ecf-5f68-445c-a9cb-4a669d5f16b and Set admin selected. The 'OK' button is at the bottom.

### 4. Fill remaining details in SQL Database

The screenshot shows the 'Create SQL Database' step in the Azure portal. It includes sections for 'Server' (selected), 'Want to use SQL elastic pool?' (No), 'Workload environment' (Development), 'Compute + storage' (General Purpose - Serverless, Standard-series (Gen5), 1 vCore, 32 GB storage, zone redundant disabled), 'Configure database' (link), 'Backup storage redundancy' (Geo-redundant backup storage selected, warning about geo-replication), and 'Review + create' and 'Next : Networking >' buttons at the bottom.

## 5. Review and Create

The screenshot shows the 'Create SQL Database' review step in the Azure portal. The 'Review + create' tab is selected. On the left, under 'Basics', settings include: Subscription (Azure subscription 1), Resource group (DefaultResourceGroup-centralindia), Region (Central India), Database name (pavan-db), Server (new\_pavan-db-server), Authentication method (Microsoft Entra-only authentication), Microsoft Entra Admin (pavanjngid.bda23@adtm.ac.in), Compute + storage (General Purpose - Serverless: Standard-series (Gen5), 1 vCore, 32 GB storage, zone redundant disabled), and Backup storage redundancy (Geo-redundant backup storage). On the right, the 'Cost summary' section shows estimated costs: General Purpose (GP\_S\_Gen5\_1) at 0.13 USD per month, with a max storage of 41.6 GB, resulting in an estimated storage cost of 5.45 USD per month and a compute cost of 0.000159 USD per second. A note states that serverless databases are billed in vCore seconds based on a combination of CPU and memory utilization. At the bottom, there are 'Create', '< Previous', and 'Download a template for automation' buttons.

## 6. Review cont.. and click Create

The screenshot shows the 'Create SQL Database' review step in the Azure portal. The 'Review + create' tab is selected. The page is divided into sections: 'Networking' (Allow Azure services and resources to access this server: No, Private endpoint: None, Minimum TLS version: 1.2, Connection Policy: Default); 'Security' (Identity: Not enabled, Transient data encryption (Server level): Service-managed key selected, Database level customer-managed key: Not configured, Database level user assigned managed identity: Not configured, Advanced data security: Not now, Always Encrypted with secure enclaves: Not configured, Sql Ledger(Database): Disabled, Digest Storage: Disabled); and 'Additional settings' (Use existing data: Blank, Collation: SQL\_Latin1\_General\_CI\_AS, Maintenance window: System default (5pm to 8am)). At the bottom, there are 'Create', '< Previous', and 'Download a template for automation' buttons.

## 7. Deployment is completed

The screenshot shows the Microsoft Azure Overview page for a deployment named "Microsoft.SQLDatabase.newDatabaseNewServer\_b384895422394162aea00". The main message is "Your deployment is complete". Deployment details include a start time of 12/20/2025, 6:08:11 AM, and a correlation ID of d3e6bb173-ebf2-43da-9d35-ce791599f1ba. A resource group named "DefaultResourceGroup-centralindia" is listed. On the right side, there are several promotional cards: "Cost management" (Get notified to stay within your budget and prevent unexpected charges on your bill. Set up cost alerts), "Microsoft Defender for Cloud" (Secure your apps and infrastructure. Go to Microsoft Defender for Cloud), "Free Microsoft tutorials" (Start learning today), "Work with an expert" (Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support. Find an Azure expert), and a "Next steps" section with a "Go to resource" button.

## 8. Click on Go to resources

The screenshot shows the Microsoft Azure SQL database overview page for a database named "pavan-db" (pavan-db-server/pavan-db). The main navigation bar includes "Overview", "Activity log", "Tags", "Diagnose and solve problems", "Query editor (preview)", "Mirror database in Fabric (preview)", "Resource visualizer", "Settings", "Data management", "Integrations", "Power Platform", "Security", "Intelligent performance", "Monitoring", "Automation", and "Help". The "Overview" tab is selected. Key details shown include Resource group: "DefaultResourceGroup-centralindia", Status: "Online", Location: "Central India", Subscription: "Azure subscription 1", Subscription ID: "c740d430-b579-42ba-a3d1-f932890c69c3", and Tags: "Add tags". The "Getting started" section features links to "Configure access", "Connect to application", "Start developing", and "Mirror database in Fabric". Other sections include "Start working with your database" (Connect to your database and start working with data with a few simple steps. Learn more), "Open Azure Data Studio", "Open in Visual Studio", and "Open in Visual Studio Code".

## 9. Click on configure access under getting started

The screenshot shows the Azure portal interface for managing a SQL database's networking settings. The left sidebar has a 'Networking' section selected. The main area shows the 'Public access' tab is active, with the 'Selected networks' option selected. Below it, there are sections for 'Virtual networks' and 'Firewall rules'. At the bottom, there are 'Save' and 'Discard' buttons.

## 10. Add / Click on Add your client IPv4 address

The screenshot shows the Azure portal interface for managing a SQL database's networking settings. The left sidebar has a 'Networking' section selected. The main area shows the 'Public network access' tab is active, with the 'Selected networks' option selected. Below it, there are sections for 'Virtual networks' and 'Firewall rules'. In the 'Firewall rules' section, a new rule is being added with the 'Rule name' set to 'ClientIPaddress\_2025-12-20\_8-17-15', 'Start IPv4 address' set to '223.228.0.183', and 'End IPv4 address' left empty. An 'Exceptions' section is also visible. At the bottom, there are 'Save' and 'Discard' buttons.

## 11. Head back to Overview

The screenshot shows the Microsoft Azure portal with the URL <https://pavanjainidb23@aditm.ac.in/pavan-db/pavan-db-server/pavan-db>. The page title is "Microsoft Azure" and the sub-page title is "Overview". The main content area displays the "pavan-db-server" SQL server configuration. On the left, there is a navigation sidebar with various options like Overview, Activity log, Access control (IAM), Tags, Quick start, Diagnose and solve problems, Resource visualizer, Settings, Data management, Security, Networking, Microsoft Defender for Cloud, Transparent data encryption, Identity, Auditing, Intelligent performance, Monitoring, Automation, and Help. The "Essentials" section shows the following details:

Setting	Value
Resource group (move)	DefaultResourceGroup-centralindia
Status	Available
Location	Central India
Subscription (move)	Azure subscription_1
Subscription ID	c740d430-b579-42ba-a3d1-f932890c69c3
Tags (edit)	Add tags

The "Features (6)" section lists the following features with their status:

Feature	Status
Microsoft Entra admin	CONFIGURED
Microsoft Defender for SQL	NOT CONFIGURED
Automatic tuning	CONFIGURED
Failover groups	NOT CONFIGURED
Transparent data encryption	SERVICE-MANAGED KEY
Auditing	NOT CONFIGURED

At the bottom, there is a "Available resources" section with a search bar and a dropdown menu set to "All types".

## 12. Copy required things like:

- Server: pavan-db-server.database.windows.net
- Database: pavan-db

## 13. Head over to Microsoft Entra ID under Settings

The screenshot shows the Azure portal interface for managing a SQL server named 'pavan-db-server'. The left sidebar has a 'Microsoft Entra ID' section expanded, showing options like Overview, Activity log, Access control (IAM), Tags, Quick start, Diagnose and solve problems, Resource visualizer, and Settings. Under Settings, 'Microsoft Entra ID' is selected, showing sub-options for SQL databases, SQL elastic pools, Properties, Locks, Data management, Security, Intelligent performance, Monitoring, Automation, and Help. The main content area displays information about Microsoft Entra authentication, including a note that only Microsoft Entra ID will be used for authentication and a checkbox for 'Support only Microsoft Entra authentication for this server'. It also shows Microsoft Purview access policies and a 'Check for Microsoft Purview Governance' button. The URL in the browser bar is <https://portal.azure.com/#@aiidm.ac.in/resource/subscriptions/740d439-579-42ba-a3d1-#1200c6fcresourceGroups/DefaultResourceGroup/providers/Microsoft.Sql/servers/pavan-db-server/activeDirectoryAdmin>.

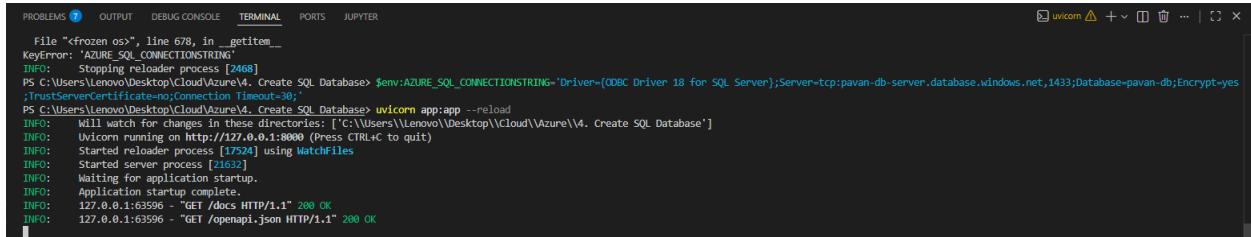
## 14. Now install following libraries in python

The screenshot shows a terminal window with a dark background. It lists several Python packages that have been installed: pyodbc, fastapi, uvicorn[standard], pydantic, and azure-identity. There is a 'Copy' button in the top right corner of the terminal window.

## 15. Use this below command to authenticate the user

```
$env:AZURE_SQL_CONNECTIONSTRING='Driver={ODBC Driver 18 for SQL Server};Server=tcp:pavan-db-server.database.windows.net,1433;Database=pavan-db;Encrypt=yes;TrustServerCertificate=no;Connection Timeout=30;'
```

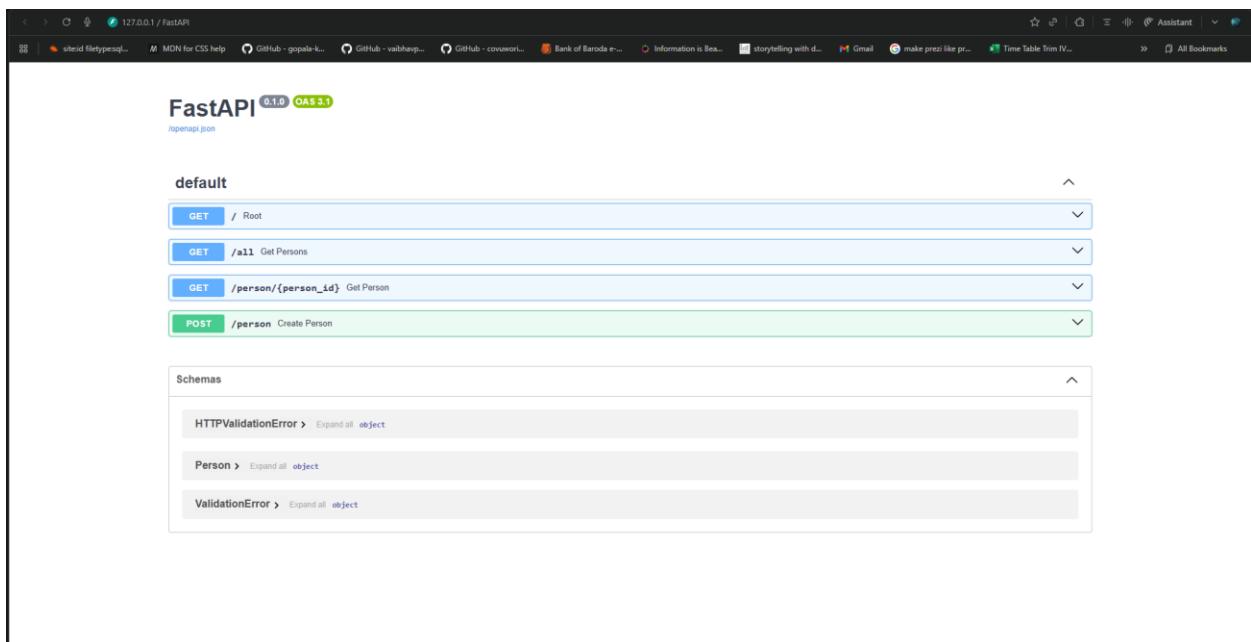
## 16. Use existing shell from vs code (Ctrl+` ) to run this command and set the environment variables



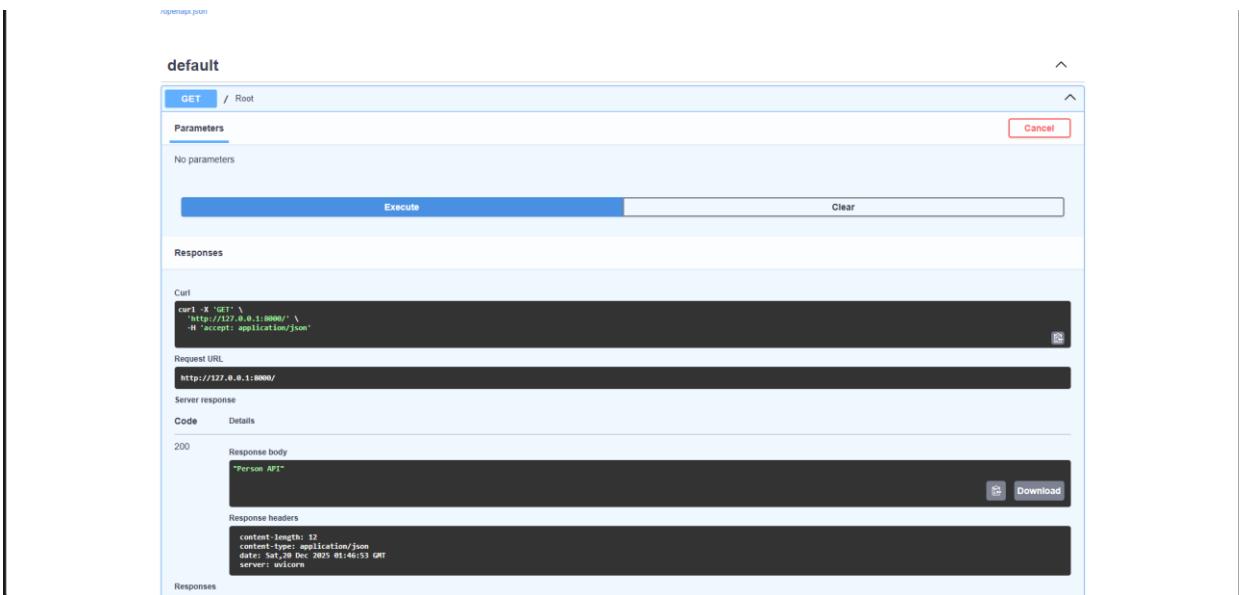
```
PROBLEMS 7 OUTPUT DEBUG CONSOLE TERMINAL PORTS JUPYTER
File "<frozen os>", line 678, in _getitem__
KeyError: 'AZURE_SQL_CONNECTIONSTRING'
INFO: Stopping reloader process [2468]
PS C:\Users\Lenovo\Desktop\CloudAzureV4. Create SQL Database> $env:AZURE_SQL_CONNECTIONSTRING='Driver={ODBC Driver 17 for SQL Server};Server=tcp:pavan-db-server.database.windows.net,1433;Database=pavan-db;Encrypt=yes;TrustServerCertificate=no;Connection Timeout=30;'
PS C:\Users\Lenovo\Desktop\CloudAzureV4. Create SQL Database> uvicorn app:app --reload
INFO: Will watch for changes in these directories: ['C:\Users\Lenovo\Desktop\CloudAzureV4. Create SQL Database']
INFO: Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: Started reloader process [17524] using WatchFiles
INFO: Started server process [21632]
INFO: Waiting for application startup.
INFO: Application startup complete.
INFO: 127.0.0.1:63596 - "GET /docs HTTP/1.1" 200 OK
INFO: 127.0.0.1:63596 - "GET /openapi.json HTTP/1.1" 200 OK
```

## 17. Use app.py in Repository: Load it using unicorn app:app –reload

## 18. Head over to <http://127.0.0.1:8000/docs>



19. Before this step, make sure you have ODBC Driver installed. Now, Lets add table “Person” to database.



The screenshot shows the OpenAPI JSON interface for a "default" API. A "GET / Root" request is selected. The "Responses" section shows a successful 200 response with a JSON body containing the string "Person API".

20. Now add a person in database



The screenshot shows the OpenAPI JSON interface for a "default" API. A "POST /person" request is selected. The "Responses" section shows a successful 200 response with a JSON body containing a single object with "first\_name": "Janven" and "last\_name": "Jangid".