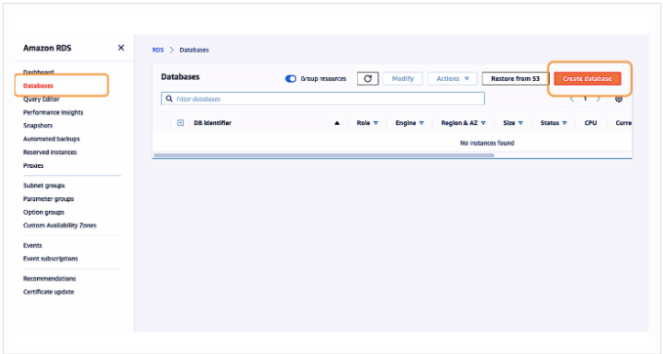
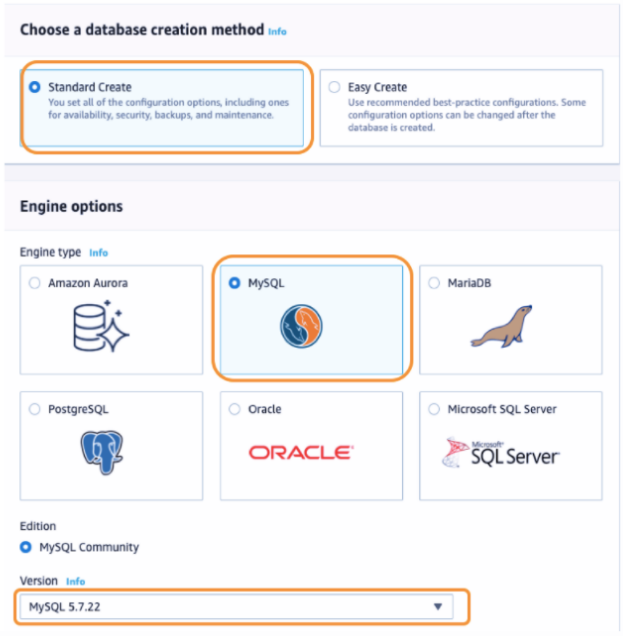
Creating DB Instance



Creating DB Instance

- First, go to the Amazon RDS Service and select **Database** section from the left-hand menu and then click **Creating Database** as you see in the picture above.



Creation Method & Engine Options

When the page opens,

- **Choose a Database Creation Method:**

We have two options here, **Standard Create** or **Easy Create**. If you choose the Standard Create option you'll prefer to create instance according to your needs step by step. But, the Easy Create option provides you a best-practice configurations. We choose the **Standard Create** option.

- **Engine Options:**
  - **Engine Type:** Here we choose the RDS Database Engine type. We select open-source **MySQL** since it has a free tier version. **Except Amazon Aurora**, all of the database engine types also have a free tier version.
  - **Version:** We choose the version of MySQL. The last version is always more secure and advanced but it is important to consider that version of MySQL is compatible with the database infrastructure that we use. We choose the last version, **MySQL 5.7.22**

Templates

- **Templates:**

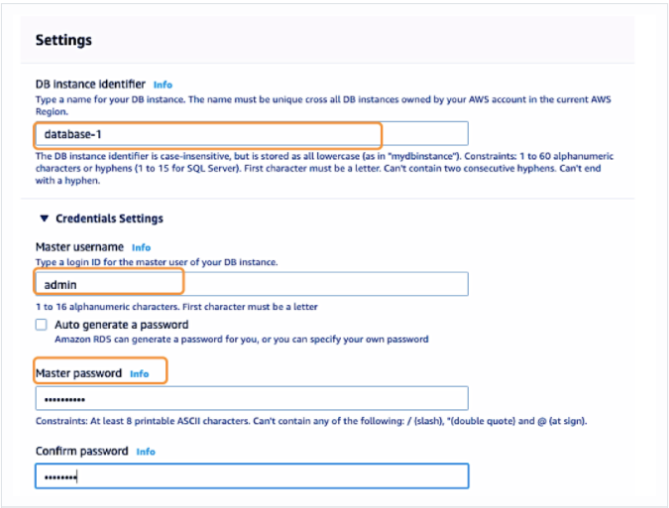
We have three options here, **Production**, **Dev/Test**, and **Free Tier**.

If you need high availability and fast, consistent performance you can choose **Production** option.

As for **Dev/Test**, it is suitable for the developer.

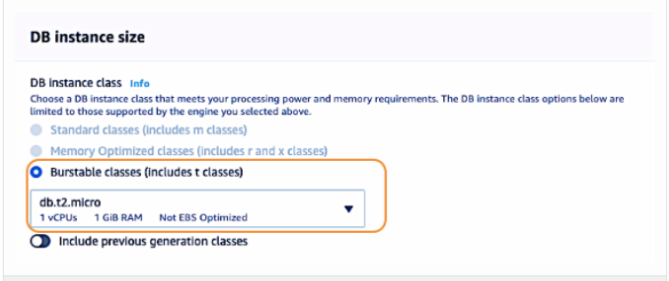
So, we choose **Free Tier** for now.

⚠Avoid ! :
- If you select Production or Dev/Test options, most probably you'll be charged. So don't forget to check the end of the page where you can see whether you are charged.



Settings

- **Settings:**
  - **DB Instance Identifier:** We leave it as is **database-1**
  - **Credentials Settings:** Here we determine user name and password for accessing the database. We can also create other users after connecting to the database. We'll use these credentials while connecting the database via **MySQL Workbench**. We leave it as **admin**.



DB Instance Size

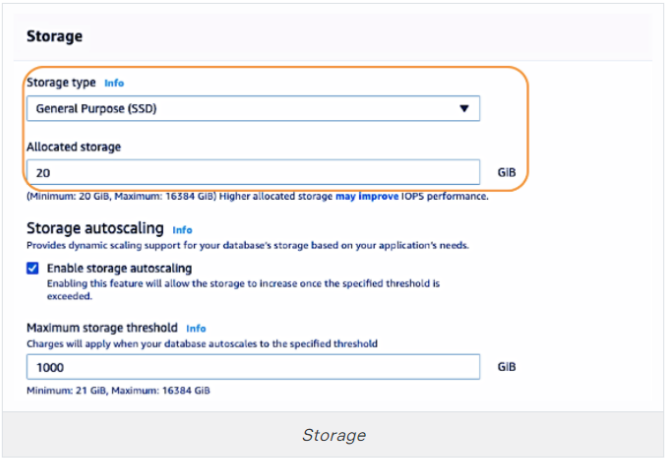
- **DB Instance Size:**
  - **DB instance Class:** Here have we 3 options;

    -Standard Classes (includes m classes),

    -Memory Optimized Classes (includes r and x classes)

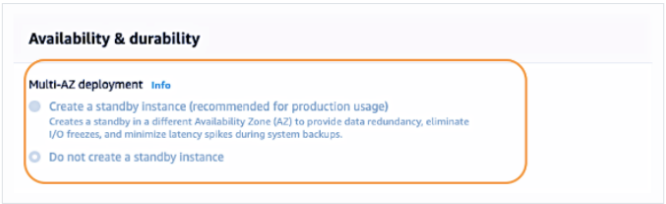
    -Burstable Classes (includes t classes).

Since we select the Free Tier Template above, we can only choose **db.t2.micro** as DB instance in **Burstable Classes**.



Storage

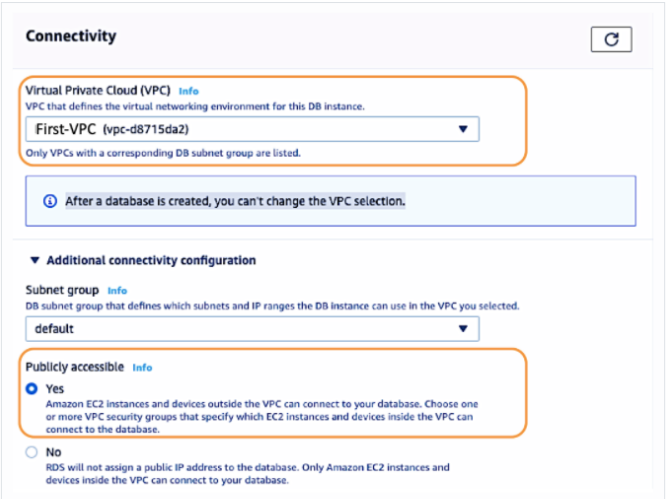
- Storage:
  - **Storage Type:** We can choose **General Purpose** or **Provisioned IOPS**. Since we don't need extra performance we choose **General Purpose**.
  - **Allocated Storage:** 20 GB disk capacity is enough for now.



Availability & Durability

- Availability & Durability:

We choose whether we want Multi-AZ here. But Free Tier doesn't allow to use Multi-AZ function with **db.t2.micro** instance. So let's skip this part for now. We'll see this function in the following lessons.

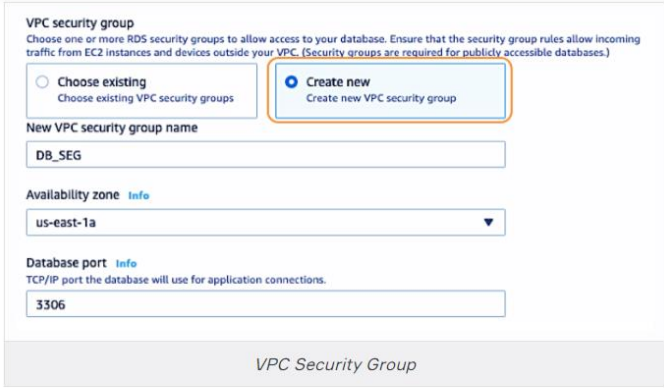


Connectivity

- Connectivity:
  - **Virtual Private Cloud (VPC):** Here we can choose the Virtual Private Cloud (VPC) that defines the virtual networking environment for this DB instance. We choose our existing VPC, First VPC, or you may leave it as default for now.
- Additional Connectivity Configuration:
  - **Subnet Group:** We can choose the DB subnet group that defines which subnets and IP range the DB instance can use in the Virtual Private Cloud (VPC) you chose. Since we select default VPC above, leave it as is, default. Then click the **Additional Connectivity Configuration** for following advanced settings.
  - **Publicly Accessible:** If you select **Yes** it means you want your DB instance to be accessible from the public internet. And you also need to specify your security group for DB instance's connectivity.

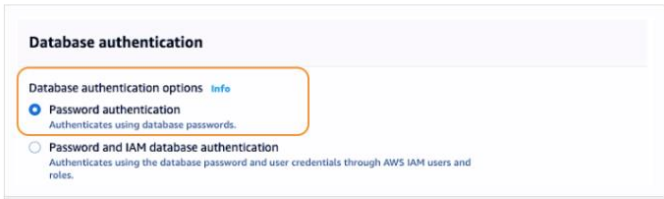
    If you select **No**, Amazon RDS will not assign a public IP address to the DB instance and **no** EC2 instance or devices outside of the VPC will be able to connect.

    Normally, we don't want our DB instance to be accessed from the public internet. But this time we choose **Yes**



VPC Security Group

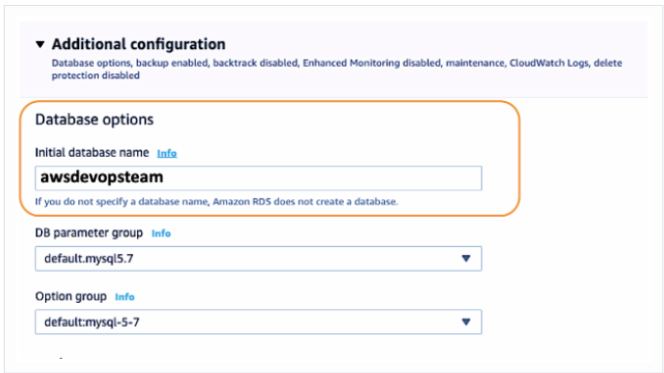
- **VPC Security Group:** We choose **Create a New VPC Security Group** option.
- **New VPC Security Group Name:** We determine the name of the VPC Security Groupname as **DB_SEG**
- **Availability Zone (AZ):** We choose **us-east-1a** as AZ.
- **Database Port:** We leave as default, **3306**



Database Authentication

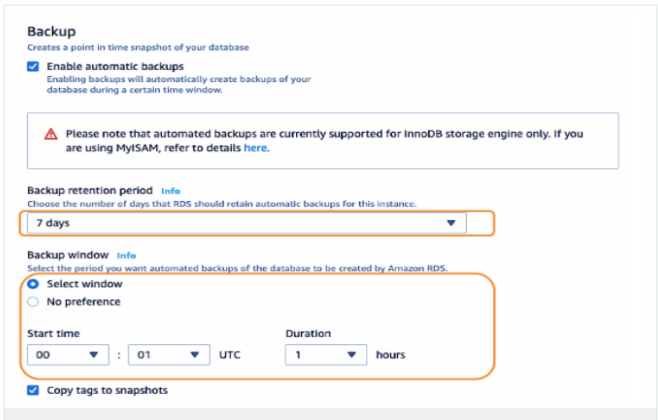
- **Database Authentication:** We have 2 Database Authentication options. In the first option, RDS can authenticate just using database passwords. In the second option, in addition to the database password, RDS authenticates using the user credentials through AWS IAM users and roles.

We choose **Password Authentication** for now.



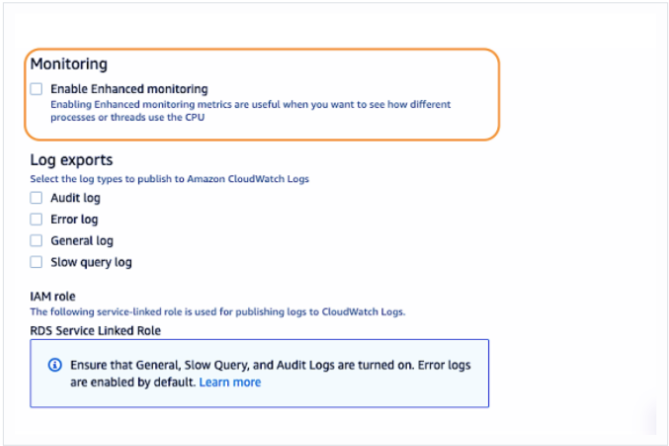
Additional Configuration

- Additional Configuration:
- Database Options:
  - **Initial Database Name:** We enter **awsdevopsteam** as the name of the database and enter your unique name.
  - Leave **DB Parameter Group** and **Option Group** as default.



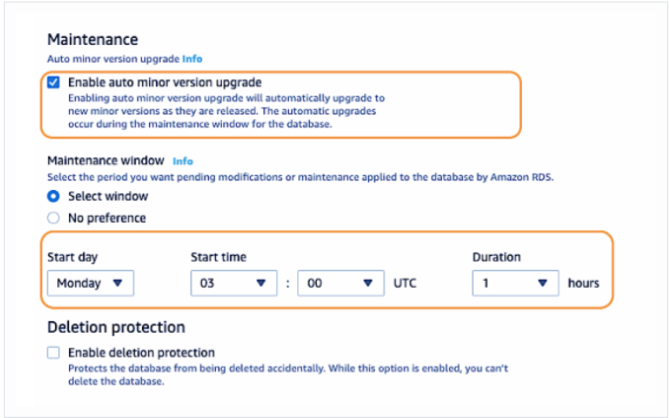
Backup

- **Backup:**
  - **Enable Automatic Backups:** Set the Automatic Backups flag to enable so that RDS can backup automatically.
  - **Backup Retention Period:** We can choose the number of days that RDS should retain automatic backups for this instance. It can choose from a scale between 7 and 35 days. We leave it as default (7)
  - **Backup Window:** We can select the period we want automated backups of the database to be conducted by Amazon RDS or you may not determine any specific time interval. Now, we choose **Select Window** option.
  - **Start Time and Duration:** Here we determine the backup time. We want automated backup to be started at **00:01 UTC**. And it will last 1 hour so, we choose duration as **1**.



Monitoring

- **Monitoring:** We don't need enhanced monitoring for now. So leave it as uncheck
- **Log Exports:** We can select the log types to publish to Amazon CloudWatch Logs but we leave it as default for now.



Maintenance

- **Maintenance:**
  - **Enable Auto Minor Version Upgrade:** Assume that the version of your MySQL is 5.7.**22**. If you upgrade the version to 5.7.**23** or 5.7.**28** it is called **Minor Version Upgrade**. But, if you upgrade the version from 5.**7**.22 to 5.**8**.0.11 it is called **Major Version Upgrade**. AWS allows auto minor version upgrades during the maintenance window for the database if you check this flag. Since the Major Version Upgrade sometimes causes a problem, AWS recommends you to make these shifts manually.
  - **Maintenance Window:** You can select the period you want pending modifications or maintenance applied to the database by Amazon RDS like Backups. So we can choose the maintenance window or select **No Preference** option. But we choose **Select Window** option and we determine the window:

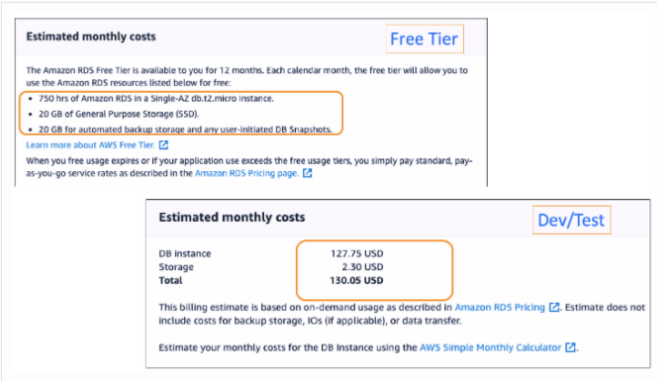
Start Day: Monday

Start Time: 03:00 UTC

Duration: 1 hour

⚠Avoid ! :
- The maintenance window and the backup window for the DB instance cannot overlap

- **Deletion Protection:** You can protect the database from being deleted accidentally. While this option is enabled, you can't delete the database. Since we create this database for the test, no need to enable deletion protection for now. So uncheck the **Enable Deletion Protection** flag.



Estimated Monthly Costs

- **Estimated Monthly Costs:** At the bottom of the page you can see the **Estimated Monthly Costs**. Since we choose free tier we don't need to pay the extra charge as long as we stay within the limits. But, if we selected **Dev/Test** template instead of Free Tier, we would need to pay the extra charge as you see in the picture above.