# Guide to install and configure the SonarQube with PostgreSQL on a Windows Server.

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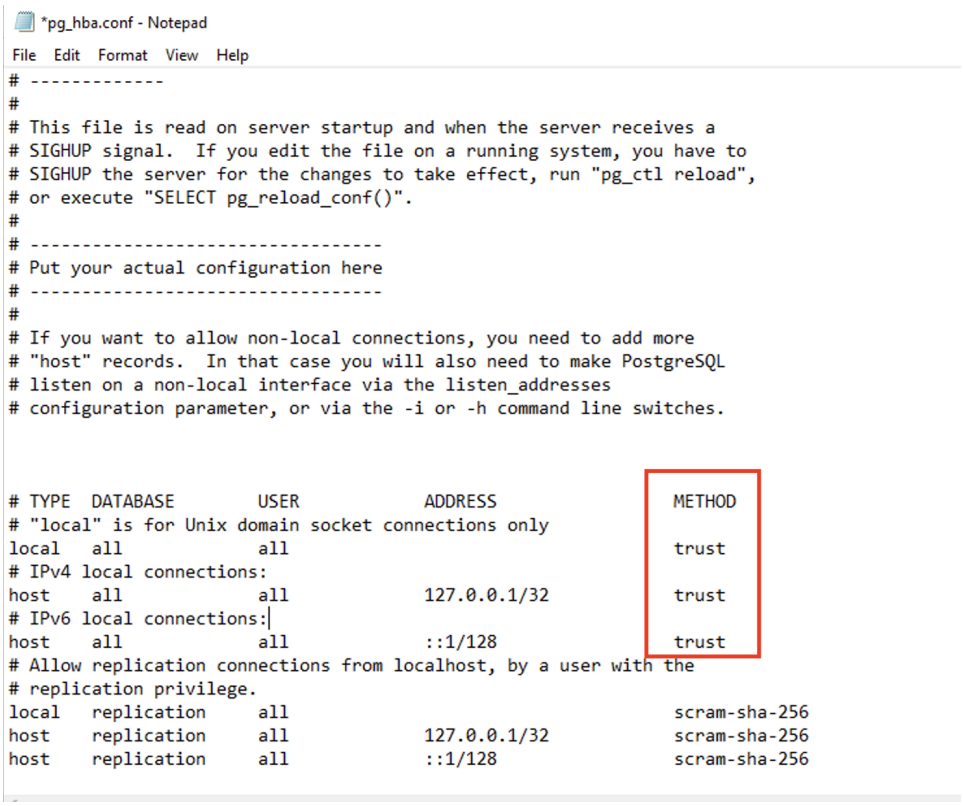
## Step 1: Install PostgreSQL

1.1. Download and install PostgreSQL from [PostgreSQL Downloads](PostgreSQL Downloads).
1.2. During installation, note down the username (default: `postgres`).
1.3. Setting PostgreSQL password for Windows

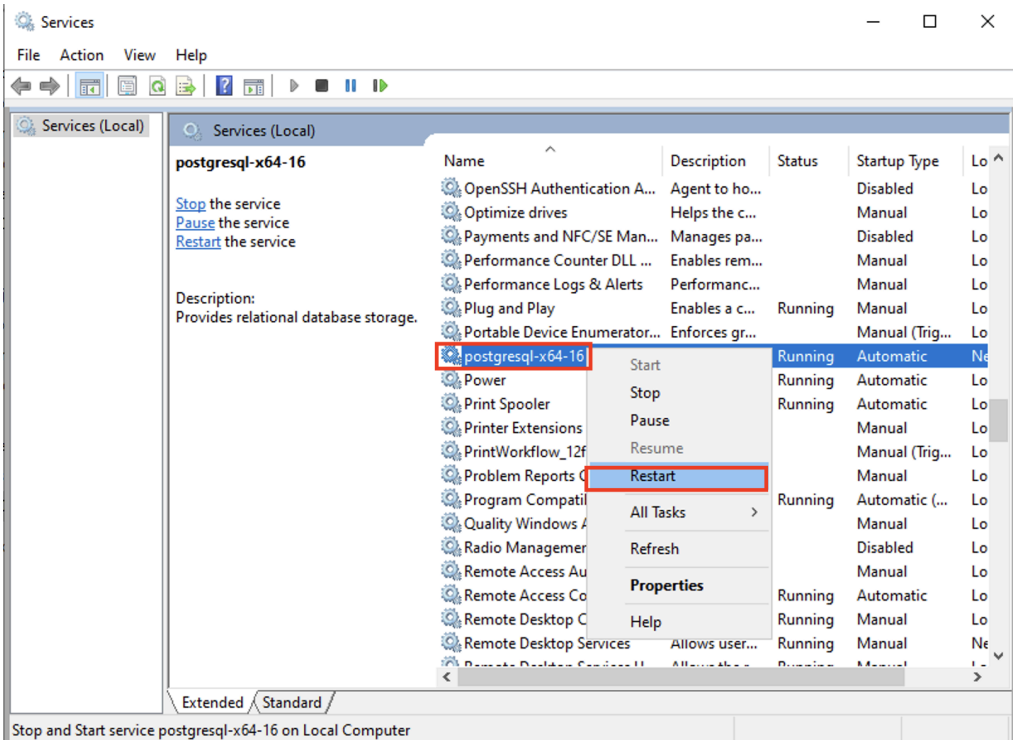
a. Navigate to the **pg_hba.conf** location

```
C:\Program Files\PostgreSQL\16\data
```

b. Edit **pg_hba.conf**, setting the auth mode to **`trust`** instead of the default **`scram-sha-256`**




c. In the Services control panel restart the **PostgreSQL** service




d. Connect to **PSQL** or **PgAdmin** using the username **'postgres'** without being prompted for a password
e. Run SQL Command to reset the password

```
ALTER USER postgres PASSWORD 'mynewpassword';
```

f. Edit **pg_hba.conf** again and set the auth mode back to **scram-sha-256**
g. Restart PostgreSQL again

1.4. Create a database and create account for SonarQube

a. Connect to the Postgres server with SQL Client e.g. DBeaver
   - Host: localhost
   - Port: 5432
   - Username: `postgres`
   - Password: `'mynewpassword'`

b. Run this SQL script, replacing sonar_password with a secure password.

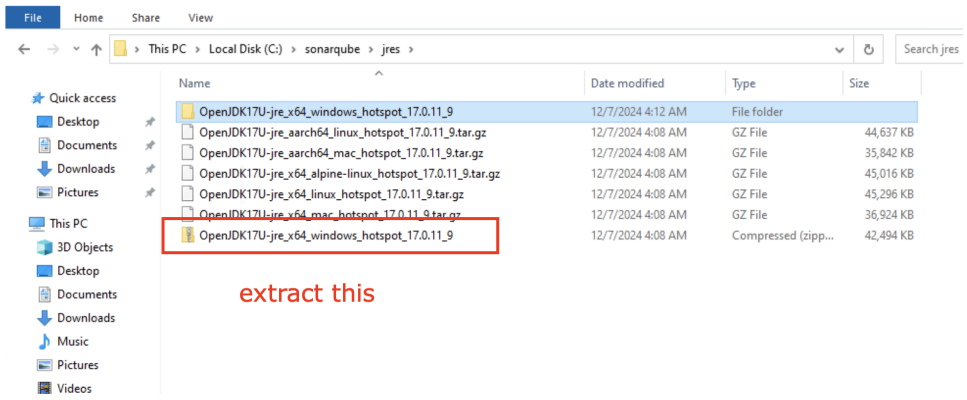
```
CREATE DATABASE sonarqube;
CREATE USER sonar WITH ENCRYPTED PASSWORD 'sonar_password';
GRANT ALL PRIVILEGES ON DATABASE sonarqube TO sonar;
```

## Step 2: Install SonarQube

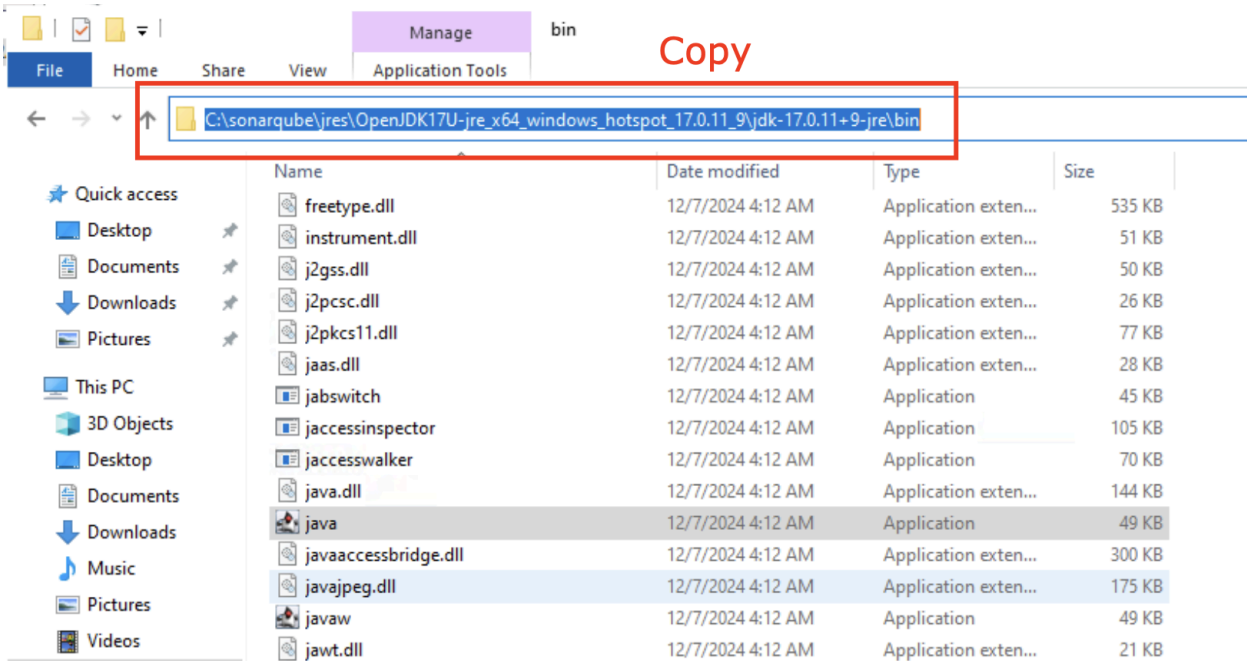
2.1. **Download SonarQube**:
- Download the latest SonarQube Community Edition from the official website.

2.2. **Extract and Configure SonarQube**:
- Extract the SonarQube files to a desired location (e.g., `C:\SonarQube`).

2.3. **Locate SonarQube's Bundled JDK**:
- Navigate to the SonarQube installation directory, e.g., `C:\SonarQube`.
- The bundled JDK is usually located at `C:\SonarQube\jres`
- Extract the JDK compressed file

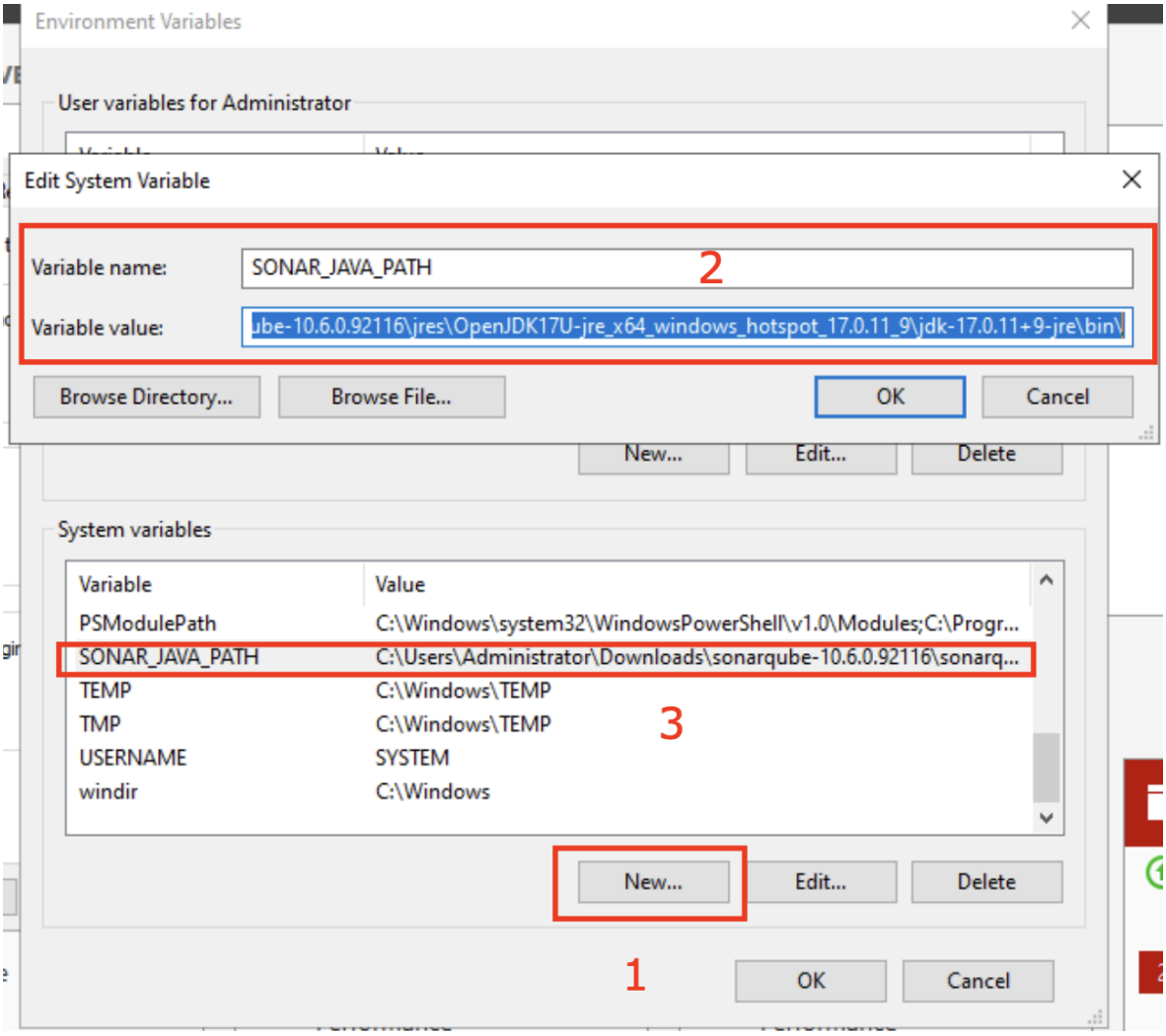



- Navigate to the **bin** directory within the JDK folder, and then copy its full path.



2.4. **Set `SONAR_JAVA_PATH` Environment Variable**:

- Open the Start menu and search for "Environment Variables."
- Click **Edit the system environment variables**.
- In the **System Properties** window, click **Environment Variables**.
- Under **System Variables**, click **New** (if `SONAR_JAVA_PATH` does not exist) or **Edit** (if `SONAR_JAVA_PATH` is already set).
  - **Variable Name**: `SONAR_JAVA_PATH`
  - **Variable Value**: Enter the path to SonarQube's JDK, e.g., `C:\sonarqube\jres\OpenJDK17U-jre_x64_windows_hotspot_17.0.11_9\jdk-17.0.11+9-jre\bin`




- Click **OK** to save.

2.5. **Edit `C:\SonarQube\conf\sonar.properties`:**

```
sonar.jdbc.username=sonar
sonar.jdbc.password=sonar_password
sonar.jdbc.url=jdbc:postgresql://localhost:5432/sonarqube
sonar.web.port=9000
```

- Replace `sonar_password` with the password you set during PostgreSQL configuration.

2.6. **Start SonarQube**:

- Navigate to the SonarQube `bin` directory corresponding to your system (e.g., `C:\SonarQube\bin\windows-x86-64`).
- Run `StartSonar.bat`.

2.7. **Verify SonarQube**:

- Open a browser and navigate to `http://localhost:9000`.
- Log in with default credentials (`admin` / `admin`) and update the password when prompted.

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## Step 3: Configure IIS as a Reverse Proxy (Optional)

3.1. **Install IIS and URL Rewrite**:

- Install IIS using Server Manager if not already installed.
- Download and install the **URL Rewrite** module for IIS.

3.2. **Configure IIS Reverse Proxy**:

- Open the **IIS Manager**.
- Select the server name in the left panel, and double-click on **Application Request Routing**.
- Click **Server Proxy Settings** in the right panel, and enable proxy functionality.

3.3. **Create a New Website or Modify Default Site**:

- Point the site to a root directory (e.g., `C:\inetpub\wwwroot`).
- Bind it to port 80.

3.4. **Add Rewrite Rules**:

- Select the site in IIS Manager, and double-click **URL Rewrite**.
- Add a new inbound rule:
  - Condition: `{HTTP_HOST}` matches the hostname you want.
  - Action: Redirect requests to `http://localhost:9000`.
- Example rule:

```
<rule name="ReverseProxyInboundRule" stopProcessing="true">
  <match url="(.*)" />
  <conditions>
    <add input="{HTTP_HOST}" pattern="yourdomain.com" />
  </conditions>
  <action type="Rewrite" url="http://localhost:9000/{R:1}" />
</rule>
```

3.5. **Restart IIS**:
- Run `iisreset` in the command prompt.

3.6. **Verify**:
- Navigate to `http://yourdomain.com` (or `http://localhost` if no domain is configured).
- You should see the SonarQube interface.

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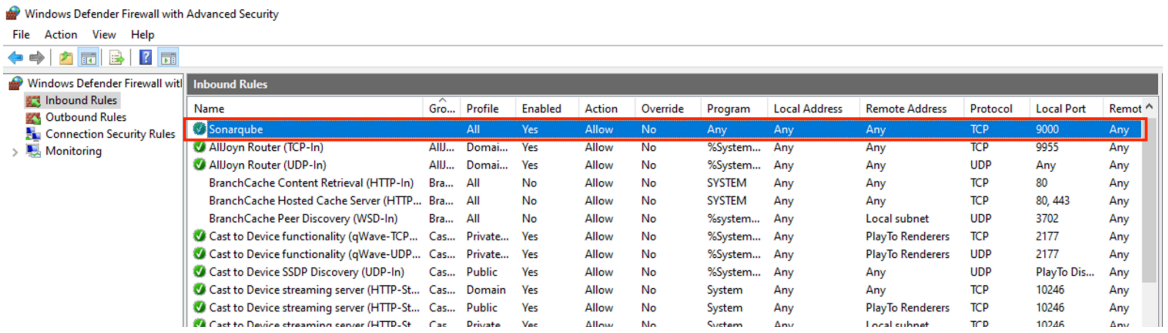
## Step 4: Additional Configuration

4.1. **Firewall Rules**:
- Ensure port 9000 is open on the Windows Firewall or any network firewall.




4.2. **Set SonarQube as a Service**:
- **Using `nssm` (Non-Sucking Service Manager)**: SonarQube doesn't natively run as a service on Windows, so you can use a tool like `nssm` to create a Windows service.
  **Steps to Configure `nssm`:**
  - Download `nssm` from https://nssm.cc/.
  - Extract it to a directory (e.g., `C:\nssm`).

        - Open a command prompt as Administrator and navigate to the `nssm` directory.

```
nssm install SonarQube
```

    - **In the GUI that appears:**
        - **Path**: Point to the `StartSonar.bat` file in the SonarQube installation directory (e.g., `C:\SonarQube\bin\windows-x86-64\StartSonar.bat`).
        - **Startup Directory**: Set to the SonarQube `bin` directory.
    - **Verify and Enable Automatic Start:**
        - Open the **Services** application (`services.msc`).
        - Locate the `SonarQube` service.
        - Right-click and select **Properties**.
        - Set the **Startup Type** to **Automatic**.
        - Click **Start** to ensure it works correctly.
        - **Reboot the Machine**:
            - Restart your Windows Server and verify that both services (PostgreSQL and SonarQube) are running.
    - **Access SonarQube**:
        - Open a browser and go to `http://localhost:9000` or the URL configured with your IIS proxy.

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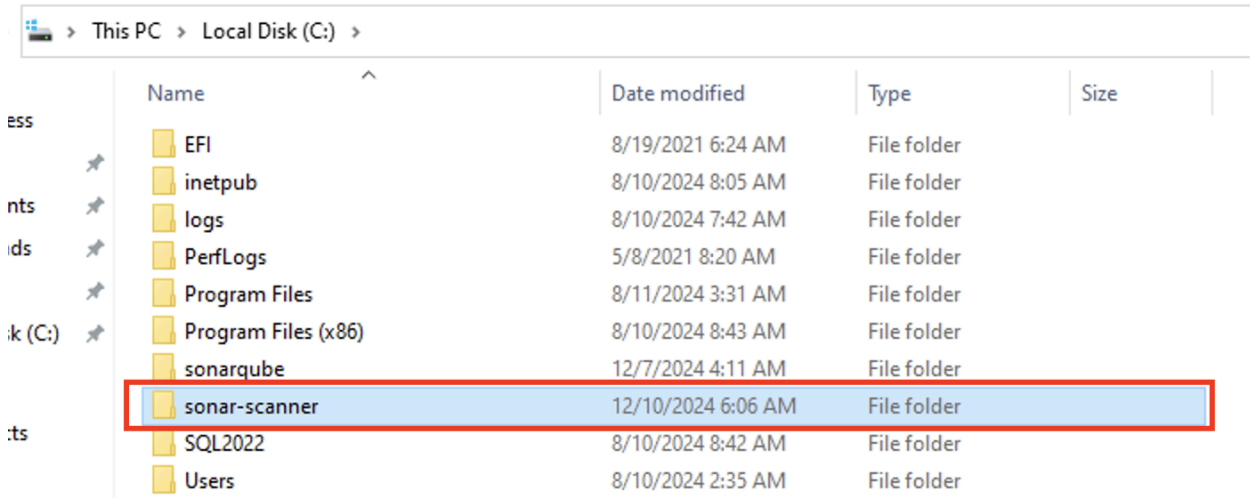
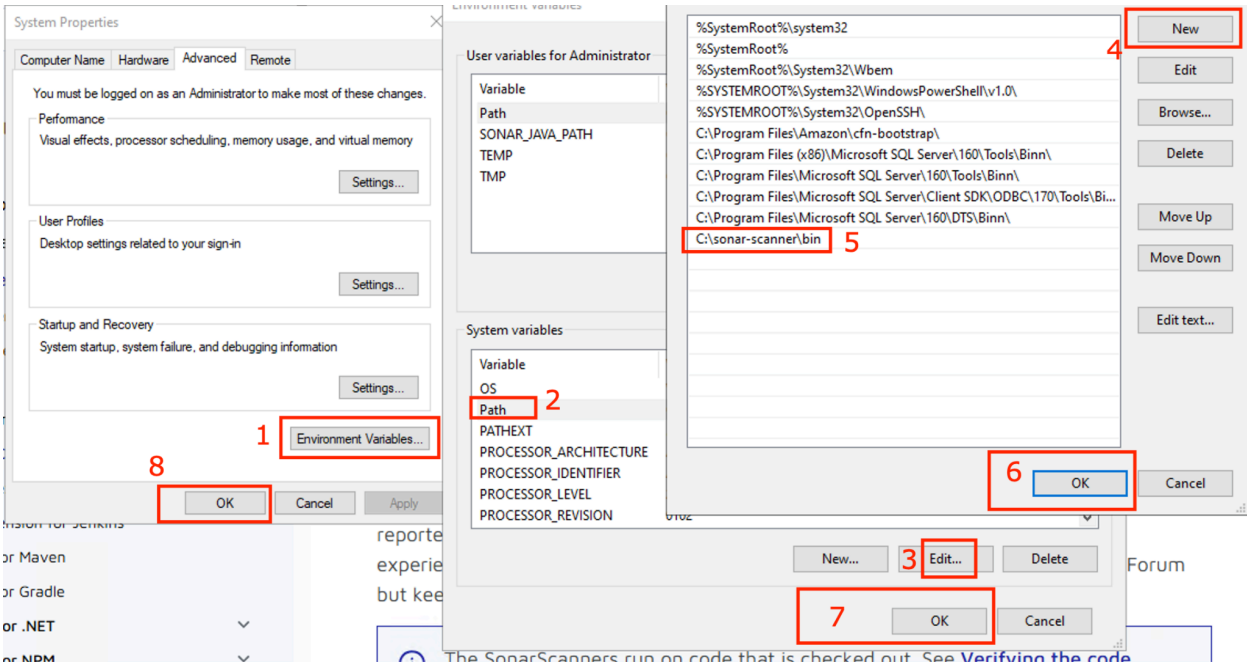
## Step 5: Manual Code Quality Scanning with Sonar-Scanner

5.1. Install Sonar-Scanner:
    - Download Sonar-Scanner for Windows from the SonarQube Downloads page.
    - Extract the archive to `C:\sonar-scanner`

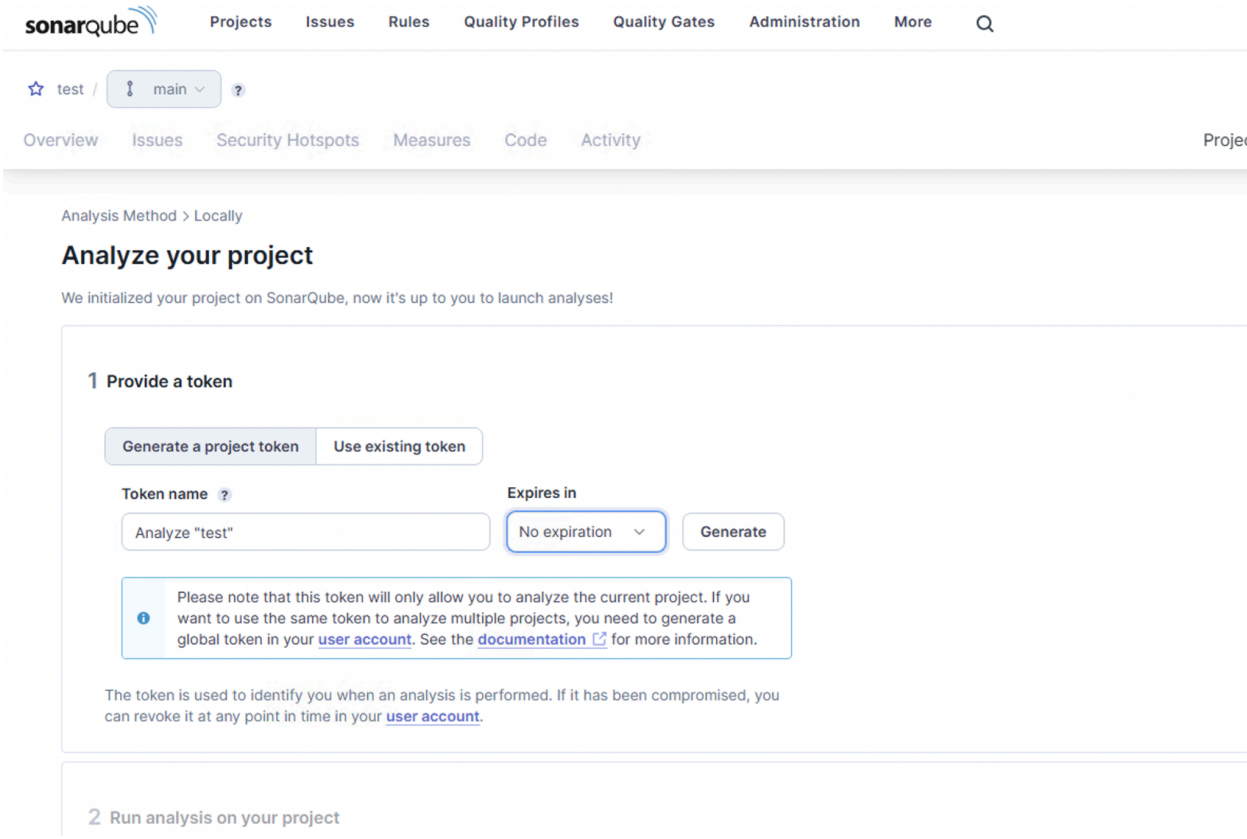



5.2. Add the `bin` directory to the system `PATH`.

- Open System Environment Variables:
  - Press **Win + S** and search for **"Environment Variables"**.
  - Select **"Edit the system environment variables"**.
  - In the **System Properties** window, click **Environment Variables...**., Then follow these steps:




5.3. Configure Sonarqube Project on http://localhost:9000




5.4. Run Sonar-Scanner

- Open a Command Prompt and navigate to your project directory:

```
cd path\to\your\project
```

- Run the Sonar-Scanner command:

```
sonar-scanner.bat -D"sonar.projectKey=test"
-D"sonar.sources=."
-D"sonar.host.url=http://localhost:9000"
-D"sonar.token=sqp_2d0722b9d578fd3d818d034cefa5cda3033724fc"
```

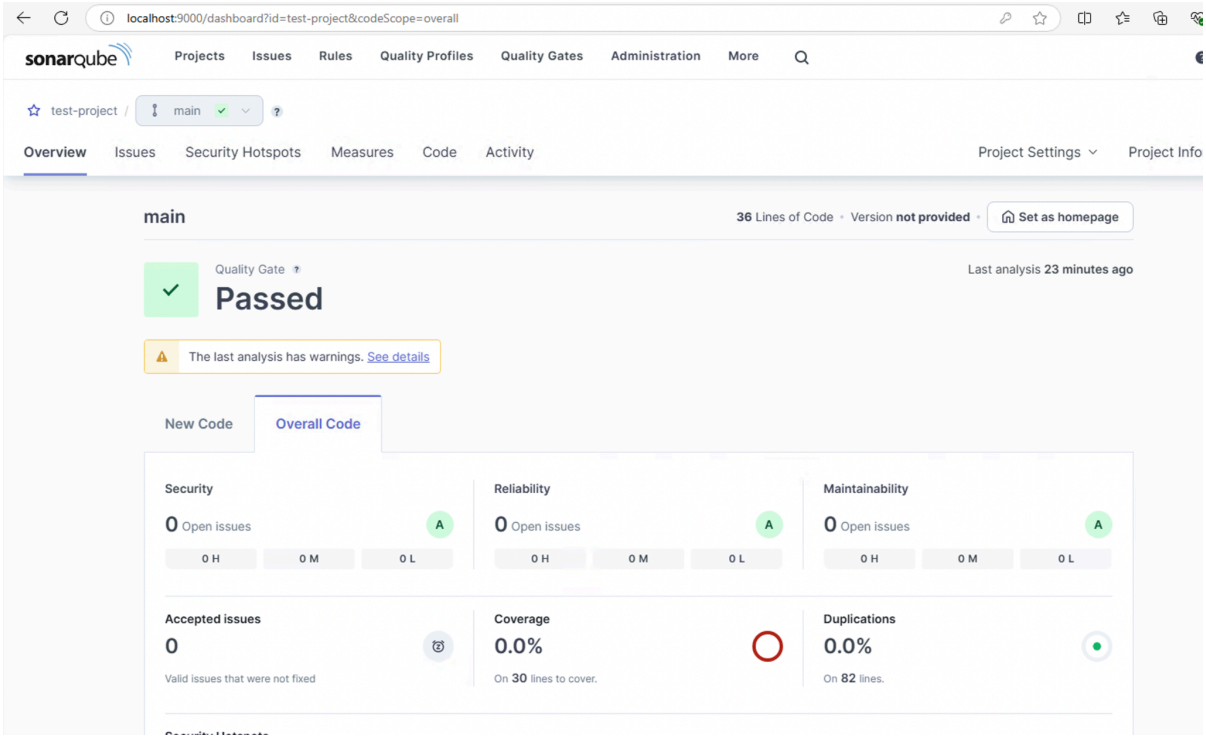
  - customized based on the project:
    1. **sonar.projectKey**

2. sonar.host.url
3. sonar.token

```
PS C:\sampleproject-main> sonar-scanner.bat -D"sonar.projectKey=test-project" -D"sonar.sources=." -D"sonar.host.url=http
://localhost:9000" -D"sonar.token=sqp_42ddf1cfb8646f90535077b7b4de84397aa572d3"
06:20:24.721 INFO  Scanner configuration file: C:\sonar-scanner\bin\..\conf\sonar-scanner.properties
06:20:24.736 INFO  Project root configuration file: NONE
06:20:24.801 INFO  SonarScanner CLI 6.2.1.4610
06:20:24.817 INFO  Java 17.0.12 Eclipse Adoptium (64-bit)
06:20:24.817 INFO  Windows Server 2022 10.0 amd64
06:20:24.864 INFO  User cache: C:\Users\Administrator\.sonar\cache
06:20:25.946 INFO  JRE provisioning: os[windows], arch[amd64]
06:20:32.631 INFO  Communicating with SonarQube Server 10.6.0.92116
06:20:33.473 INFO  Starting SonarScanner Engine...
06:20:33.473 INFO  Java 17.0.11 Eclipse Adoptium (64-bit)
06:20:35.444 INFO  Load global settings
06:20:35.711 INFO  Load global settings (done) | time=267ms
06:20:35.726 INFO  Server id: 147B411E-AZObUvAFRgerOS6MOlrD
06:20:35.759 INFO  Loading required plugins
06:20:35.759 INFO  Load plugins index
06:20:35.840 INFO  Load plugins index (done) | time=65ms
06:20:35.840 INFO  Load/download plugins
06:20:40.643 INFO  Load/download plugins (done) | time=4819ms
06:20:41.324 INFO  Process project properties
06:20:41.340 INFO  Process project properties (done) | time=16ms
06:20:41.356 INFO  Project key: test-project
06:20:41.356 INFO  Base dir: C:\sampleproject-main
06:20:41.380 INFO  Working dir: C:\sampleproject-main\.scannerwork
06:20:41.388 INFO  Load project settings for component key: 'test-project'
06:20:41.500 INFO  Load project settings for component key: 'test-project' (done) | time=93ms
06:20:41.629 INFO  Load quality profiles
06:20:42.434 INFO  Load quality profiles (done) | time=836ms
06:20:42.527 WARN  SCM provider autodetection failed. Please use "sonar.scm.provider" to define SCM of your project, or
disable the SCM Sensor in the project settings.
06:20:42.557 INFO  Load active rules
```

5.5. Review Results

- The scanner sends the results to the SonarQube server.
- Visit http://localhost:9000 and navigate to your project dashboard to view the results.



## Step 6: Integrate Sonarqube with Azure DevOps CI/CD Pipeline (Optional)