

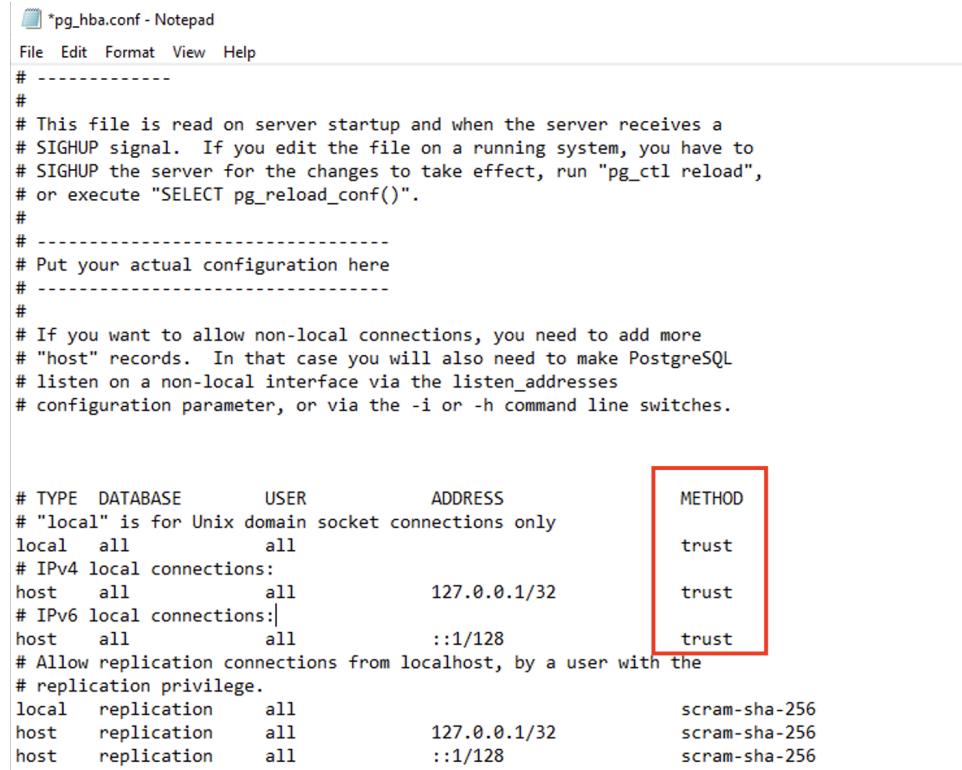
Guide to install and configure the SonarQube with PostgreSQL on a Windows Server.

Step 1: Install PostgreSQL

- 1.1. Download and install PostgreSQL from [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`

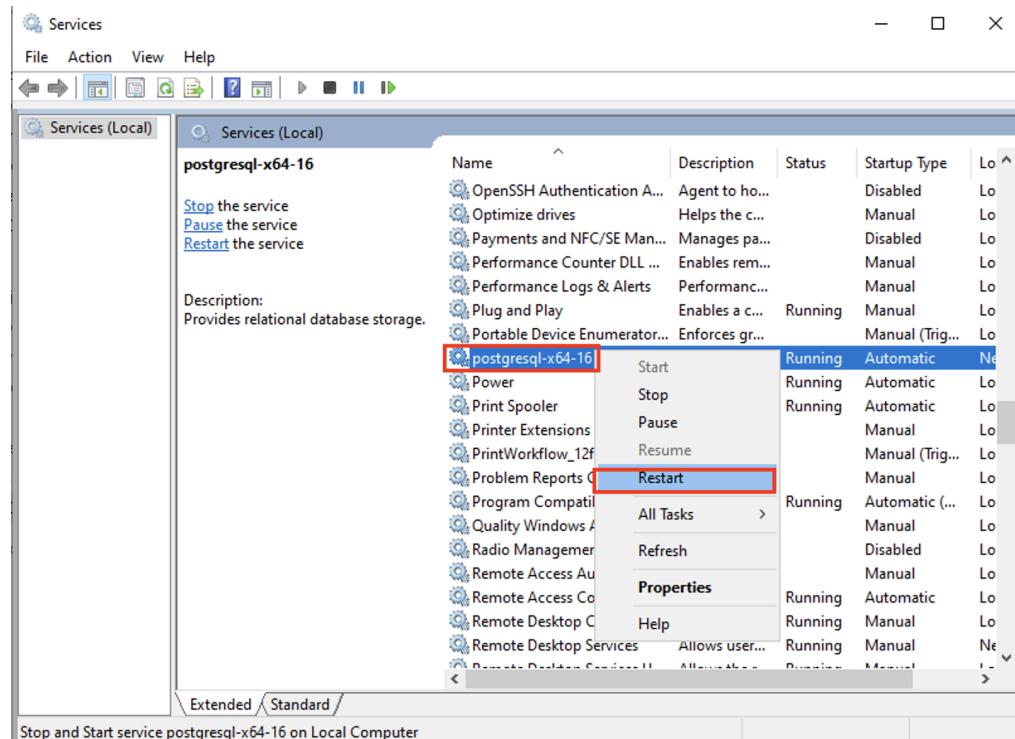
- b. Edit `pg_hba.conf`, setting the auth mode to `trust` instead of the default `scram-sha-256`



```
*pg_hba.conf - Notepad
File Edit Format View Help
# -----
#
# This file is read on server startup and when the server receives a
# SIGHUP signal. If you edit the file on a running system, you have to
# SIGHUP the server for the changes to take effect, run "pg_ctl reload",
# or execute "SELECT pg_reload_conf()".
#
# -----
# Put your actual configuration here
# -----
#
# If you want to allow non-local connections, you need to add more
# "host" records. In that case you will also need to make PostgreSQL
# listen on a non-local interface via the listen_addresses
# configuration parameter, or via the -i or -h command line switches.

# TYPE DATABASE USER ADDRESS METHOD
# "local" is for Unix domain socket connections only
local all all
# IPv4 local connections:
host all all 127.0.0.1/32 trust
# IPv6 local connections:
host all all ::1/128 trust
# Allow replication connections from localhost, by a user with the
# replication privilege.
local replication all scram-sha-256
host replication all 127.0.0.1/32 scram-sha-256
host replication all ::1/128 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

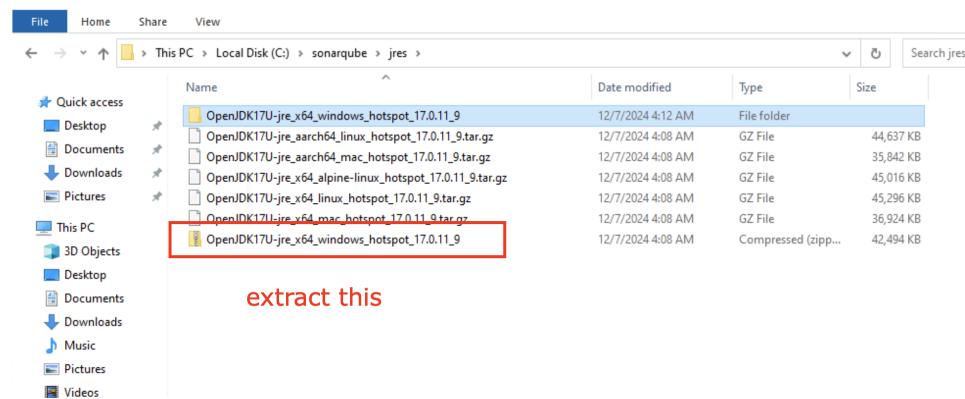
```
ALTER USER postgres PASSWORD 'mynewpassword';
```

- 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.

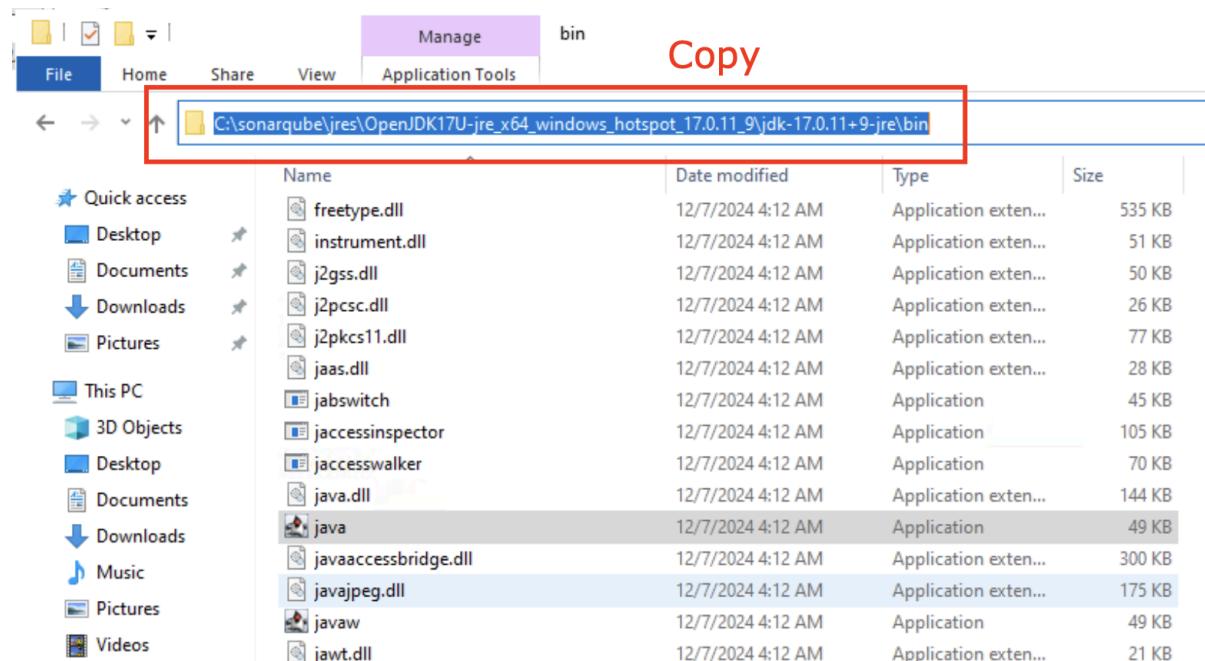
```
CREATE DATABASE sonarqube;
CREATE USER sonar WITH ENCRYPTED PASSWORD 'sonar_password';
GRANT ALL PRIVILEGES ON DATABASE sonarqube TO sonar;
```

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

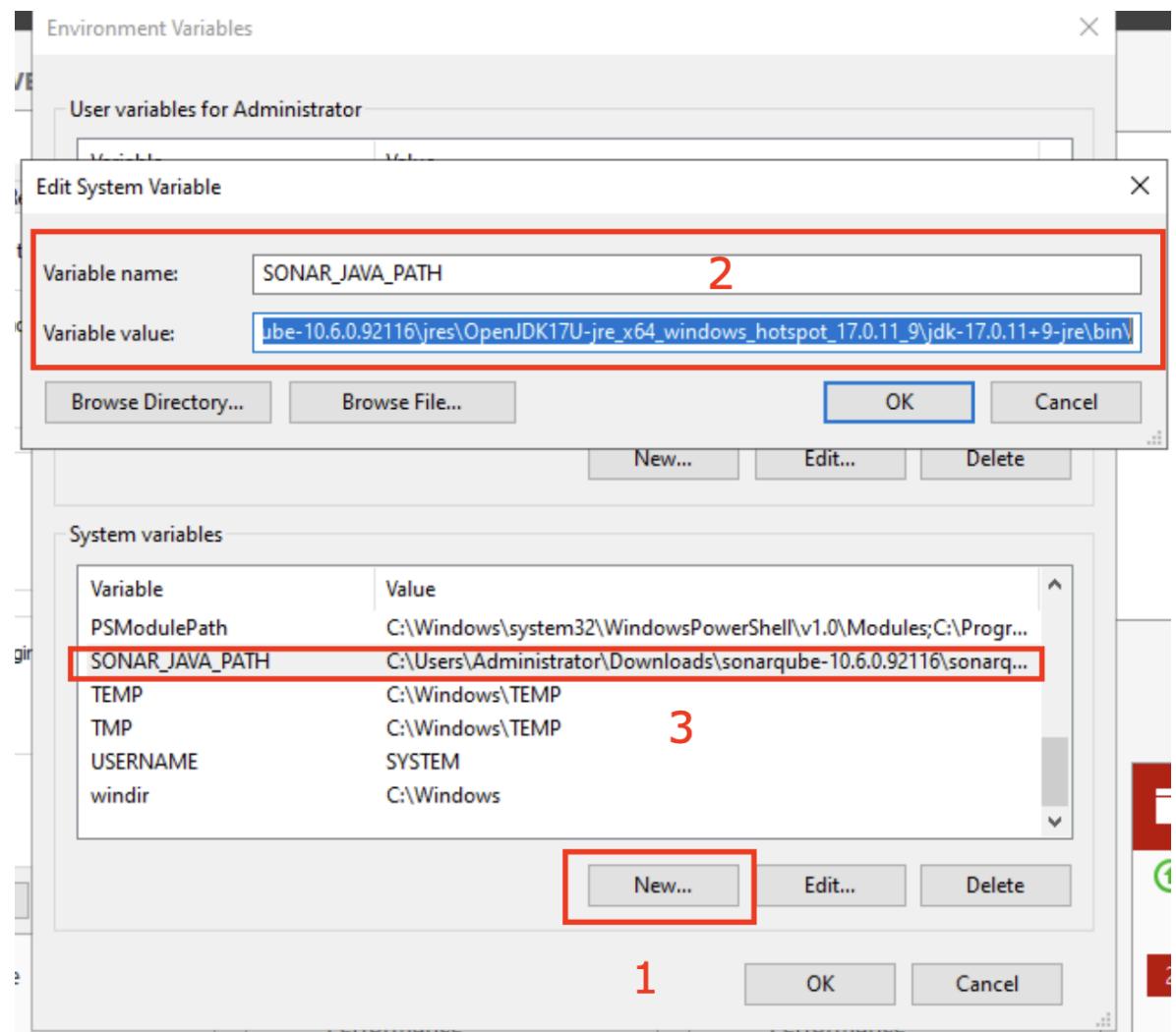


- Navigate to the **bin** directory within the JDK folder, and then copy its full path.



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_1
7.0.11_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.

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.

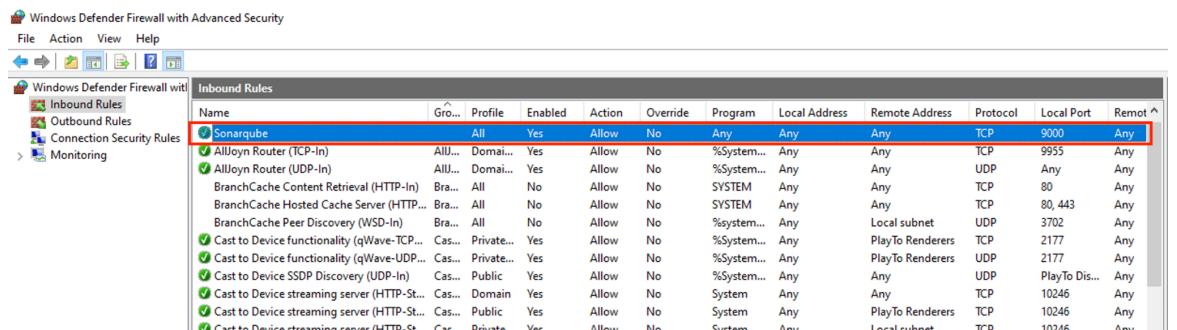
3.6. **Verify:**

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

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.

Step 5: Manual Code Quality Scanning with Sonar-Scanner

5.1. Install Sonar-Scanner:

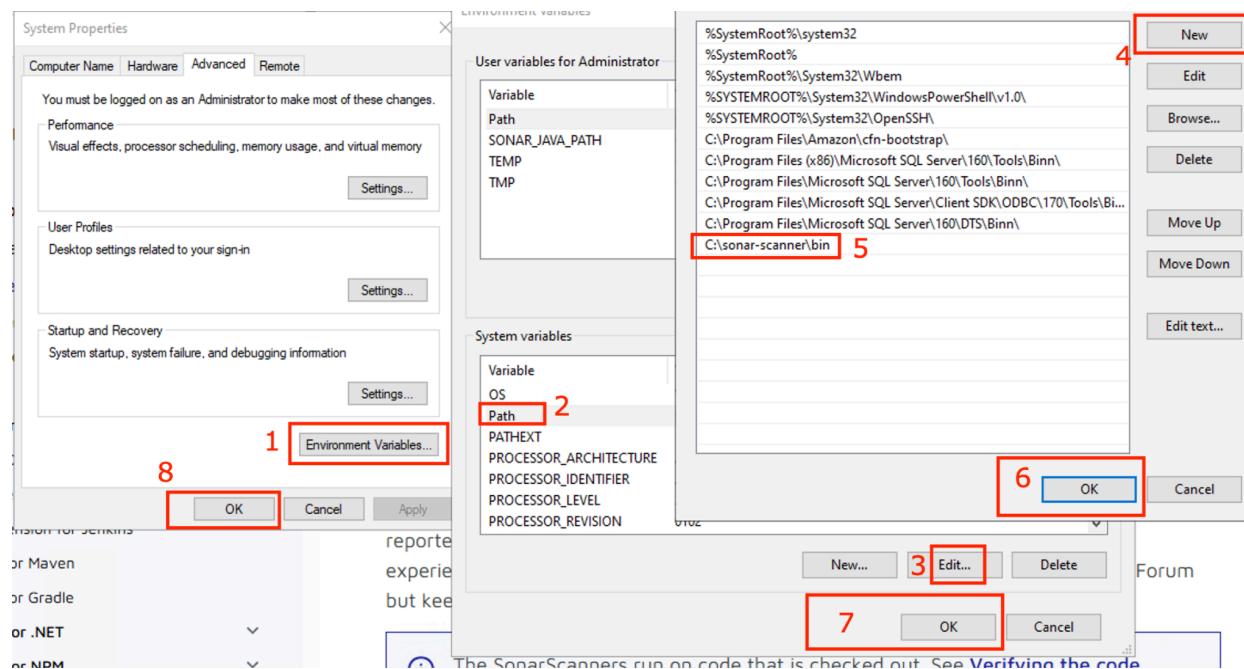
- [Download Sonar-Scanner](#) for Windows from the SonarQube Downloads page.
- Extract the archive to `C:\sonar-scanner`

File Explorer showing Local Disk (C:) contents:

	Name	Date modified	Type	Size
ESS	EFI	8/19/2021 6:24 AM	File folder	
nts	inetpub	8/10/2024 8:05 AM	File folder	
ids	logs	8/10/2024 7:42 AM	File folder	
ik (C:)	PerfLogs	5/8/2021 8:20 AM	File folder	
ts	Program Files	8/11/2024 3:31 AM	File folder	
:ts	Program Files (x86)	8/10/2024 8:43 AM	File folder	
ts	sonarqube	12/7/2024 4:11 AM	File folder	
	sonar-scanner	12/10/2024 6:06 AM	File folder	
	SQL2022	8/10/2024 8:42 AM	File folder	
	Users	8/10/2024 2:35 AM	File folder	

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>

The screenshot shows the SonarQube interface for a project named 'test'. The top navigation bar includes links for Projects, Issues, Rules, Quality Profiles, Quality Gates, Administration, More, and a search icon. Below the navigation is a breadcrumb trail: test / main. The main content area has tabs for Overview, Issues, Security Hotspots, Measures, Code, and Activity. A sub-header 'Analysis Method > Locally' is visible. The main section is titled 'Analyze your project' with the sub-instruction 'We initialized your project on SonarQube, now it's up to you to launch analyses!'. A step-by-step guide is shown:

- 1 Provide a token**

Two buttons are available: 'Generate a project token' and 'Use existing token'. A 'Token name' input field contains 'Analyze "test"'. A dropdown 'Expires in' shows 'No expiration' with a 'Generate' button next to it. A note below states: 'Please note that this token will only allow you to analyze the current project. If you want to use the same token to analyze multiple projects, you need to generate a global token in your [user account](#). See the [documentation](#) for more information.'
- 2 Run analysis on your project**

A note below states: 'The token is used to identify you when an analysis is performed. If it has been compromised, you can revoke it at any point in time in your [user account](#)'.

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=sq...3d818d034cefa5cda30  
33724fc"
```

- 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_42ddfcfb8646f90535077b/b4de8439/aa572d3"
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-AZObUvAFRgeroS6M0lrD
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.

The screenshot shows the SonarQube project dashboard for the 'test-project'. The main summary area displays a green checkmark icon and the word 'Passed'. It also shows 36 Lines of Code and a 'Last analysis 23 minutes ago'. Below this, there are several cards with metrics: Security (0 Open issues, A grade), Reliability (0 Open issues, A grade), Maintainability (0 Open issues, A grade), Accepted issues (0), Coverage (0.0%, On 30 lines to cover), and Duplications (0.0%, On 82 lines). A note at the bottom left says '⚠️ The last analysis has warnings. See details'.

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