Project README

Instructions on how/where to access the documented code, how to compile it / set it up, and how to run it.

How to Access the Code

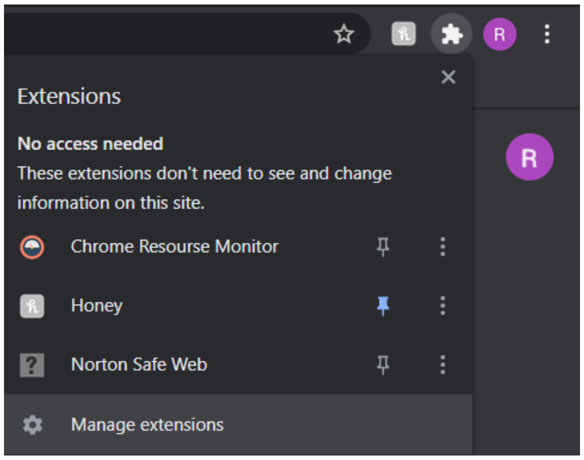
You can access the documented source code at https://github.com/rbouldin/Chrome-Power-and-Resource-Monitor/.

The project code has been included in this submission as a .zip file for convenience, but we recommend using GitHub to access and download the source code in case submitting a compressed file to canvas effects any of the .jar or .exe files in the project.

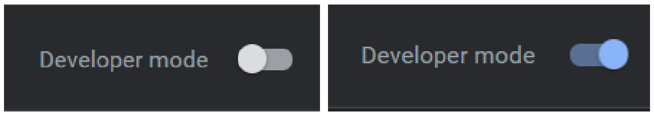
How to Compile / Setup the Code

1. **Download the source code as a ZIP file and extract it in a folder with a simple path.** Placing the source code in a folder with a complex path name may cause Native Messaging to fail (e.g. a file path containing a folder named with spaces like "CS 4284 Final Projects", or a deeply buried folder). A simple path could be something like C:\Users\user\Documents\Chrome-Power-and-Resource-Monitor.

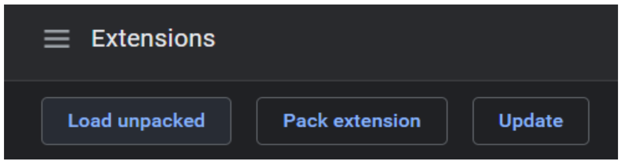
2. **Set up the extension in your Chrome browser.**
   a. Open Chrome and click on the puzzle-piece icon in the top right corner of the browser window and select the "Manage extension" option.

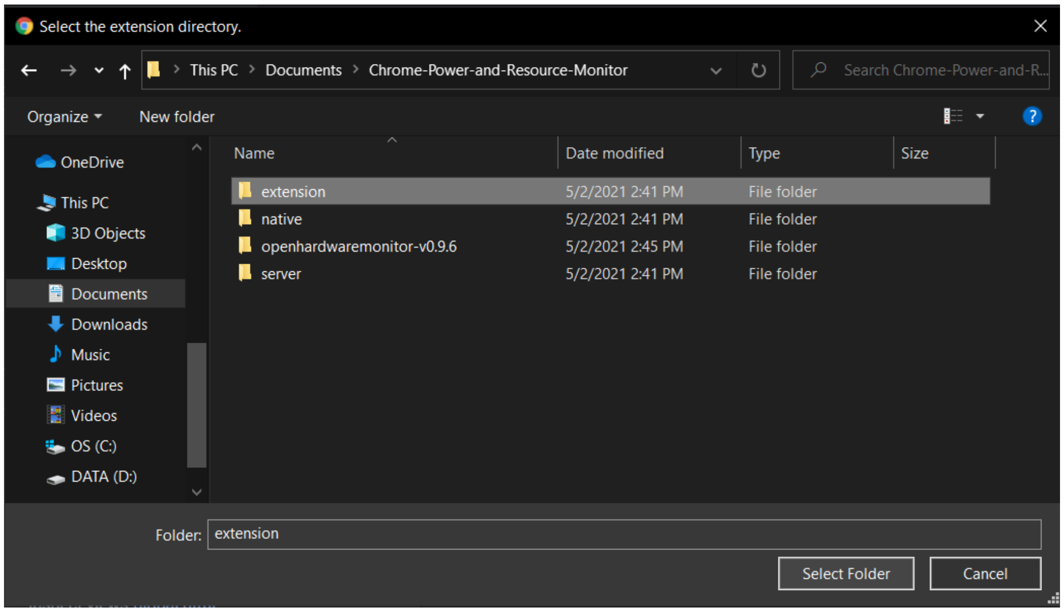


   b. Look in the top-right corner of the Extensions page and enable "Developer Mode."



c. Click on “Load unpacked,” navigate to the unzipped source code, and select the “extension” directory.




Select the extension directory.

This PC > Documents > Chrome-Power-and-Resource-Monitor

Search Chrome-Power-and-R...

Organize ▾ New folder

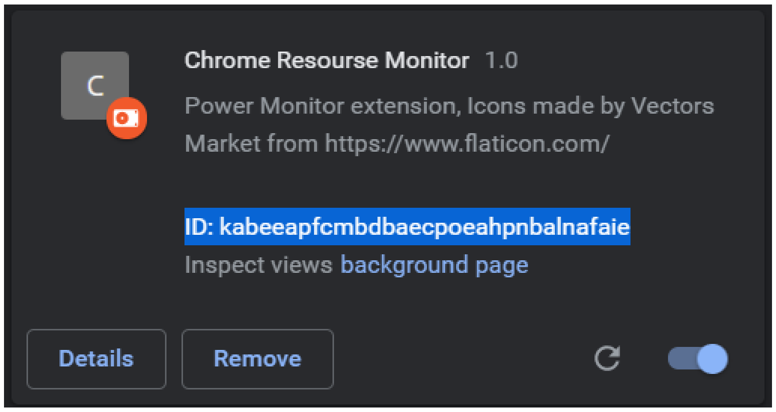
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
OS (C:)
DATA (D:)

Name	Date modified	Type	Size
extension	5/2/2021 2:41 PM	File folder	
native	5/2/2021 2:41 PM	File folder	
openhardwaremonitor-v0.9.6	5/2/2021 2:45 PM	File folder	
server	5/2/2021 2:41 PM	File folder	

Folder: extension

Select Folder   Cancel

d. You should see the unpacked Chrome Resource Monitor extension on your Extensions page now. Make a note of the extension ID; you will need it to set up native messaging in the next step.


Chrome Resourse Monitor 1.0

Power Monitor extension, Icons made by Vectors Market from https://www.flaticon.com/

ID: kabeeapfcmbdbaecpoeahpnbalnafaie

Inspect views background page

Details   Remove

3. Set up native messaging.

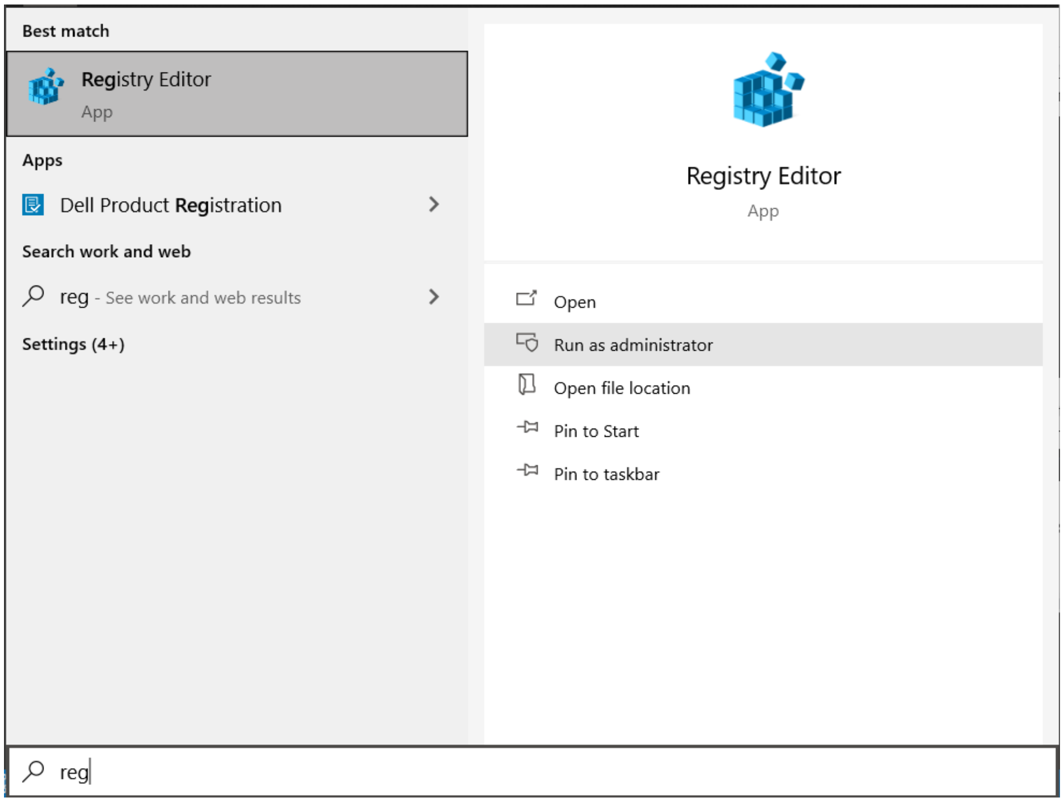
a. Navigate to the “native_app” directory in the source code and open “native.json.” Change the text “paste_your_extension_ID_here” under “allowed_origins” to match the extension ID you recorded in the last step. For the example in this README, that would be "chrome-extension://kabeeapfcmbdbaecpoeahpnbalnafaie/".

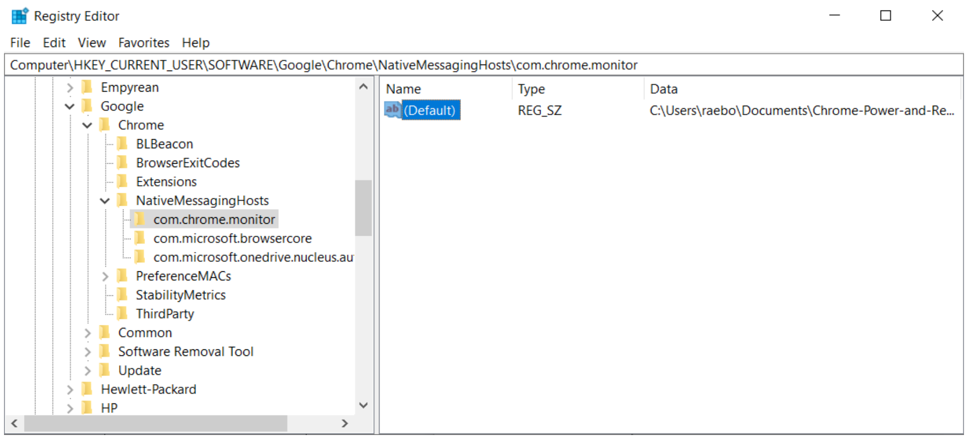
```
{
    "name" : "com.chrome.monitor",
    "description" : "Power and Resource Monitor native host",
    "path" : "run_native.bat",
    "type" : "stdio",
    "allowed_origins": [
        "chrome-extension://paste_your_extension_ID_here/"
    ]
}
```

b. Set up the native messaging host by running the add_com_chrome_monitor.bat from the command line.

```
C:\Users\raebo\Documents\Chrome-Power-and-Resource-Monitor\native>add_com_chrome_monitor.bat
```

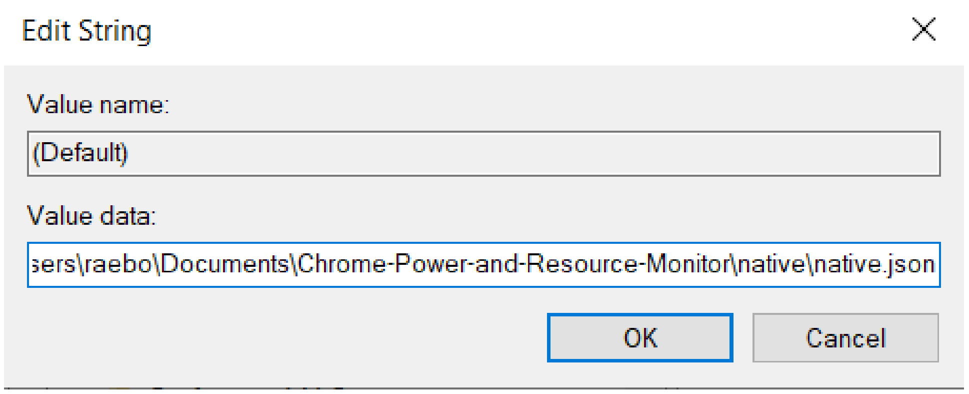
c. Verify that the registry key was added by
   i. opening the Registry Editor (it will ask if you want to allow the app to make changes to your device, select "Yes"),
   ii. navigating to "Computer\HKEY_CURRENT_USER\SOFTWARE\Google\Chrome\NativeMessagingHosts\com.chrome.monitor",
   iii. double-clicking on the "Name field", and verifying that the "Value data" field contains the correct path to your native.json file.





Computer\HKEY_CURRENT_USER\SOFTWARE\Google\Chrome\NativeMessagingHosts\com.chrome.monitor

Name	Type	Data
(Default)	REG_SZ	C:\Users\raebo\Documents\Chrome-Power-and-Re...

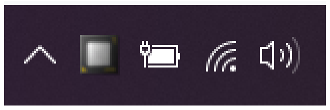


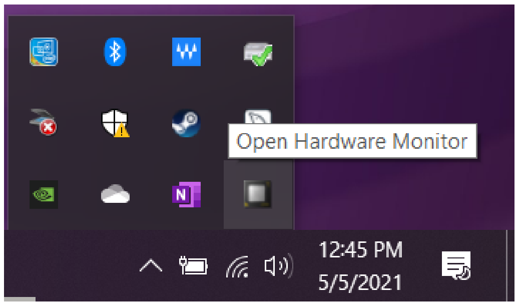
Value name: (Default)

Value data: sers\raebo\Documents\Chrome-Power-and-Resource-Monitor\native\native.json

It is extremely important that “Value data” contains the correct path to native.json, or <u>native messaging will not work</u> and the extension will not be able to fetch monitoring data.

d. From the “native_app” directory, navigate to “./OpenHardwareMonitor” and launch OpenHardwareMonitor.exe. You need to launch Open Hardware Monitor manually at least once before using the extension so that your machine recognizes it as a program that has permission to run. Open Hardware Monitor is configured to run without a GUI, but you should be able to verify that it launched from the Windows toolbar.





4. **Start the server.**

   a. Use the following command to connect to the AWS EC-2 instance.

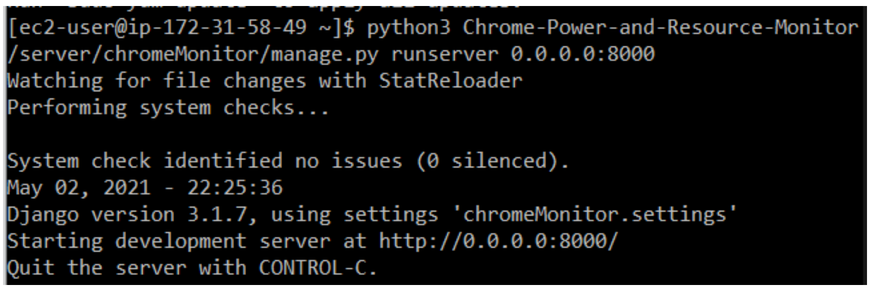
   ```
    > ssh -i "capstone.pem"
   ec2-user@ec2-52-91-154-176.compute-1.amazonaws.com
   ```

   Note: `capstone.pem` is included in the Canvas submission, but not the GitHub repository. You'll need to navigate to the folder where `capstone.pem` is contained to execute the command above.

   b. Then use the following command to start our server from the EC-2 instance.

   ```
    $ python3
   Chrome-Power-and-Resource-Monitor/server/chromeMonitor/manage.py
   runserver 0.0.0.0:8000
   ```

   c. If your terminal looks like the following, the server is up and running and will be able to send and receive messages now.

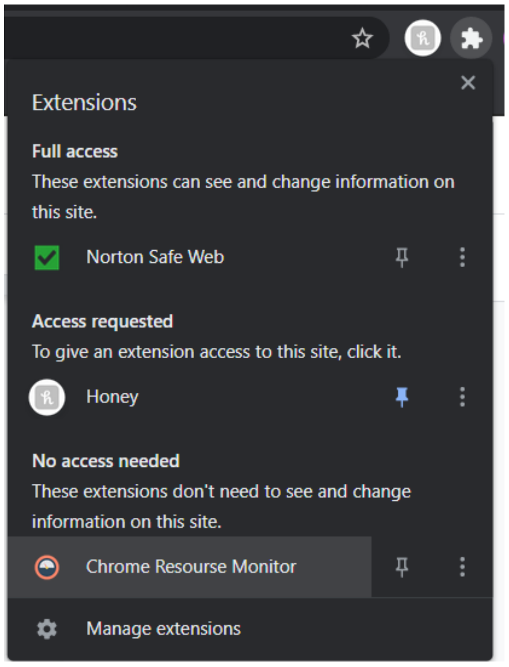


```
[ec2-user@ip-172-31-58-49 ~]$ python3 Chrome-Power-and-Resource-Monitor
/server/chromeMonitor/manage.py runserver 0.0.0.0:8000
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).
May 02, 2021 - 22:25:36
Django version 3.1.7, using settings 'chromeMonitor.settings'
Starting development server at http://0.0.0.0:8000/
Quit the server with CONTROL-C.
```

How to Navigate the Extension

1. Open the extension by clicking on the puzzle-piece icon in the top right corner of your Chrome browser and selecting it from the menu. Feel free to pin it for easier toolbar access.



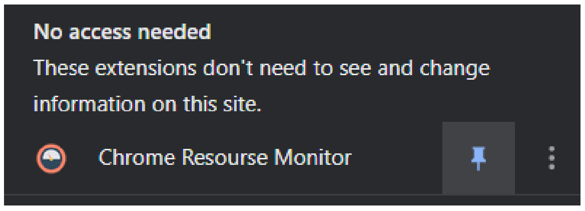
Extensions

Full access
These extensions can see and change information on this site.
Norton Safe Web

Access requested
To give an extension access to this site, click it.
Honey

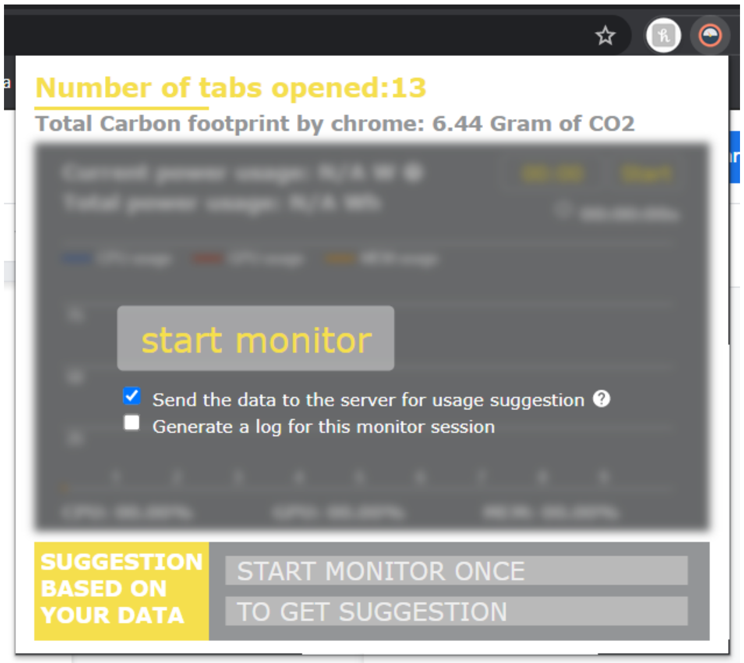
No access needed
These extensions don't need to see and change information on this site.
Chrome Resourse Monitor

Manage extensions



No access needed
These extensions don't need to see and change information on this site.
Chrome Resourse Monitor

The extension when you open it:

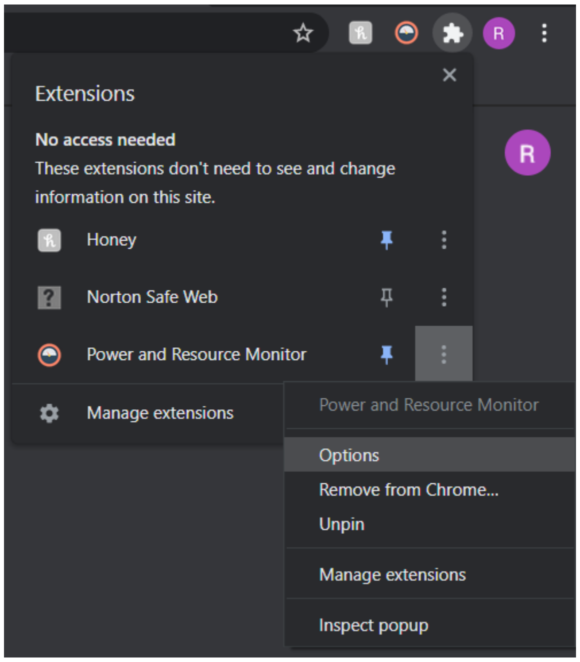


Number of tabs opened:13
Total Carbon footprint by chrome: 6.44 Gram of CO2

Send the data to the server for usage suggestion
Generate a log for this monitor session

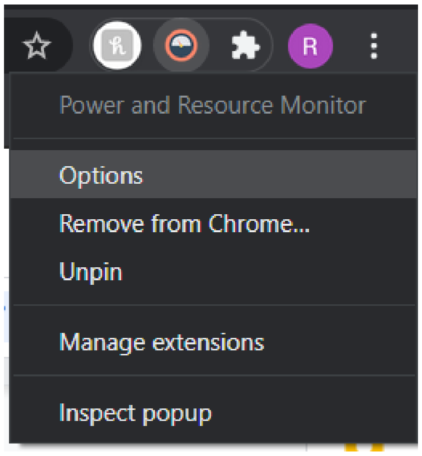
SUGGESTION BASED ON YOUR DATA
START MONITOR ONCE TO GET SUGGESTION

2. Access the options page by clicking the button with the three vertical dots from the Extensions popup menu, or by right clicking on the pinned Monitor extension icon, and selecting "options."

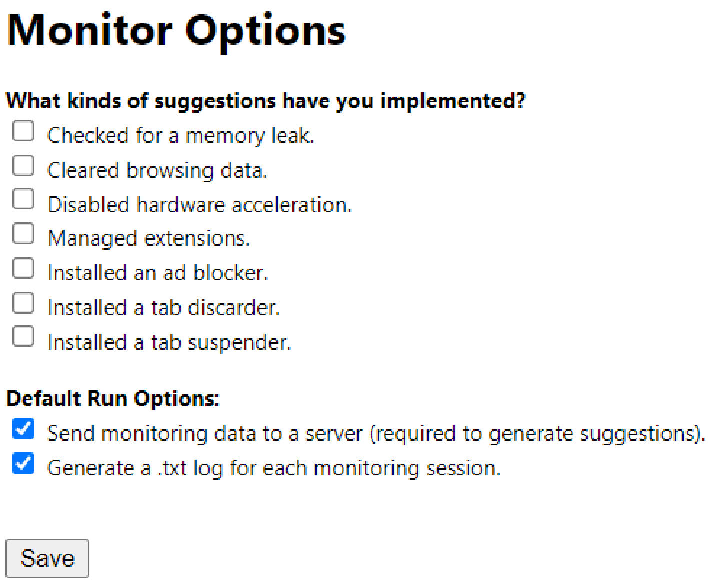

Extensions

No access needed

These extensions don't need to see and change information on this site.



The Options page:


Monitor Options

What kinds of suggestions have you implemented?

- [ ] Checked for a memory leak.
- [ ] Cleared browsing data.
- [ ] Disabled hardware acceleration.
- [ ] Managed extensions.
- [ ] Installed an ad blocker.
- [ ] Installed a tab discarder.
- [ ] Installed a tab suspender.

Default Run Options:

- [x] Send monitoring data to a server (required to generate suggestions).
- [x] Generate a .txt log for each monitoring session.

Save

Select the checkboxes for the options you want to enable then click "save." The extension will use these options during the next monitoring session.

Third-Party Software

Licenses for the third-party source code and compiled software we used are available in the LICENSE file on GitHub.

bttn.css
https://github.com/ganapativs/bttn.css

Django
https://www.djangoproject.com/

Google Charts
https://developers.google.com/chart/

Google Icons
https://google.github.io/material-design-icons/

Java Native Access (JNA)
https://github.com/java-native-access/jna

Open Hardware Monitor
https://openhardwaremonitor.org/
https://github.com/openhardwaremonitor/openhardwaremonitor

Open System and Hardware Information (OSHI)
https://github.com/oshi/oshi

Simple Logging Facade for Java (SLF4J)
http://www.slf4j.org/

SQLLite
https://www.sqlite.org/