INT301: Open-Source Technologies

Project Report

(Project Semester January-May 2023)

To generate a report of the new software installed, deleted, and updates made onyour system.

Submitted By :

Name: Neelam Akhil

Reg.No:12001936

Programme and Section: Bachelor of Technology(C.S.E) & KE015

Course Code: INT301

Under the Guidance of

Dr.Manjot Kaur U.id:28925

Discipline of CSE/IT

Lovely School of Engineering

Lovely Professional University,Phagwara

CERTIFICATE

This is to certify that Mr. Neelam Akhil bearing Registration no 12001936 has completed the INT301: Open Source Technologies project "To generate a report of the new software installed, deleted, and updates made on your system" under my guidance and supervision. To the best of my knowledge, the present work is the result of his/herinitial development, effort, and study.

Signature and Name of the Supervisor
Designation of the Supervisor
School of Computer Science and Engineering

Lovely Professional University

Date: 08/04/2023

DECLARATION

I, **Mr. Neelam Akhil**, student of **Open Source Technologies (INT301)** under CSE/IT Discipline at, Lovely Professional University, Punjab, at this moment declare that all the information furnished in this project report is based on my own intensive work and is genuine.

Date: 08/04/2023 Signature: Akhil (12001936)

Registration No. 12001936

Name of the student: Mr. Neelam Akhil.

ACKNOWLEDGMENT

I would like to express my gratitude and appreciation to all those who gave me moral support and help to complete this report. Special thanks to my supervisor Mrs. Manjot Kaur whose help, stimulating suggestions, and encouragement always helped me during the Completion process and in writing this report. I also sincerely thank you for the time spent proofreading and correcting my many mistakes.

I would also like to acknowledge with much appreciation the crucial role of the students from my class, who gave me motivation and Guidance while completing my project. Many thanks go to all lecturers and supervisors who have given their full effort in guiding me in achieving the goal as well as their encouragement to maintain our progress track. My profound thanks go to all my classmates, especially to my friends for spending their time helping and giving support whenever I need it in my project.

Introduction

1.1 Objective of the project

The objective of using open-source software to generate a report of your system is to check how many new software packages have been installed, how many have been deleted, and how many updates have been performed in the last 3 months. This information can be useful for system administrators to monitor the health of their systems, track software usage, and ensure that their systems are up to date with the latest security patches and software updates. By analyzing this information, administrators can identify any potential issues or areas for improvement in their systems and take appropriate action to optimize their performance and security.

1.2 Description of the project

To generate a report of the new software installed, deleted, and updates made on your system in the last 3 months.

I used package managers like **apt** depending on your system's operating system. These package managers track software installation, removal, and update history, which can be analyzed to generate reports.

Once you have the history of software installations, deletions, and updates, you can use command-line tools like **grep**, **awk**, and **sort** to filter and extract the relevant information.

1.3 Scope of the project

In addition to system administrators and IT professionals, this process can also be useful for developers who want to track the software usage and updates of their applications. It can help them to identify any potential compatibility issues and ensure that their applications are up to date with the latest software updates.

Overall, the scope of using open-source software to generate a report of the software installation, removal, and update history on a system is to ensure the optimal performance, security, and reliability of the system.

System Description

2.1 Target System Description

It includes any computer system that uses a package manager to install, remove, and update software packages. This can include desktop and server operating systems like Linux.

Target audience for generating these reports is system administrators, IT professionals, and developers who want to monitor the health and performance of their systems.

2.2 Functional/Non-Functional Dependencies

Functional:

The package manager must maintain a log of all software installations, removals, and updates.

Non-Functional:

Access to the system's package manager log file.

Sufficient system resources (such as CPU, memory, and storage) to execute the software tool and generate the report.

Analysis Report

3.1 System Snapshots and full analysis report

Here I am using APT

APT (Advanced Package Tool) is a command-line tool used in Debian-based Linux distributions like Ubuntu, Debian, and Linux Mint to manage software packages.

To install APT:

sudo apt-get install apt

```
akhil@akhil-VirtualBox:~$ sudo apt-get install apt
[sudo] password for akhil:
Reading package lists... Done
Building dependency tree
Reading state information... Done
apt is already the newest version (2.0.9).
apt set to manually installed.
The following packages were automatically installed and are no longer required:
  libfwupdplugin1 libxmlb1 linux-headers-5.15.0-53-generic
  linux-hwe-5.15-headers-5.15.0-53 linux-image-5.15.0-53-generic
  linux-modules-5.15.0-53-generic linux-modules-extra-5.15.0-53-generic
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 64 not upgraded.
```

To View the Installed Packages:

sudo grep "status installed" /var/log/dpkg.log* | awk '{print $5}' | sort > dpkg_history.txt

```
akhil@akhil-VirtualBox:~$ sudo grep "status installed" /var/log/dpkg.log* | awk
'{print $5}' | sort > dpkg_history.txt
[sudo] password for akhil:
```

Here dpkg_history.txt is stored in working directory and it has list of Installed Packages

To count the No of Installed:

wc -l < dpkg_history.txt

```
akhil@akhil-VirtualBox:~$ wc -l < dpkg_history.txt
309
```

To View the Installed Packages in 3 Months:

sudo grep "status installed" /var/log/dpkg.log* | awk '$1 >= "'$(date -d "3 months ago" +%Y-%m-%d)'"{print $5}' | sort > dpkg_history_3months.txt

```
akhil@akhil-VirtualBox:~$ sudo grep "status installed" /var/log/dpkg.log* | awk
'$1 >= "'$(date -d "3 months ago" +%Y-%m-%d)'"{print $5}' | sort > dpkg_history_
3months.txt
[sudo] password for akhil:
```

To count the No of Installed:

wc -l < dpkg_history_3months.txt

```
akhil@akhil-VirtualBox:~$ wc -l < dpkg_history_3months.txt
0
```

To view Deleted Packages:

sudo apt list --installed | grep '^rc' | sort > deleted.txt

grep '^rc': Filters the output to only include lines that start with the string "rc", which indicates that the package has been removed but configuration files still exist.

Deleted.txt is available in the current directory

```
akhil@akhil-VirtualBox:~$ sudo apt list --installed | grep '^rc' | sort > delete
d.txt

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.
```

To view Deleted Packages for last 3 Months:

dpkg-query -W -f='${Package} ${Status} ${Removal_Date}\n' | awk '$2 ~ /rc/ && $3 >= "'$(date -d "3 months ago" +%s)'"' | wc -l

Here first filtering the with status removal with date as last 3 months

```
akhil@akhil-VirtualBox:~$ dpkg-query -W -f='${Package} ${Status} ${Removal_Date}
\n' | awk '$2 ~ /rc/ && $3 >= "'$(date -d "3 months ago" +%s)'"' | wc -l
0
```

Here the Output is 0

To View the Updates Done:

grep "Upgrade " /var/log/apt/history.log | grep -E 'Start-Date: (.*201[8-9]|202[0-2]-[01][0-9]-[0-3][0-9])' | wc -l

Here it filter the data lines which contains Upgrade using grep

```
akhil@akhil-VirtualBox:~$ grep "Upgrade " /var/log/apt/history.log | grep -E 'St
art-Date: (.*201[8-9]|202[0-2]-[01][0-9]-[0-3][0-9])' | wc -l
0
```

Here the Output is 0

Another Option to View in Graphical User Interface

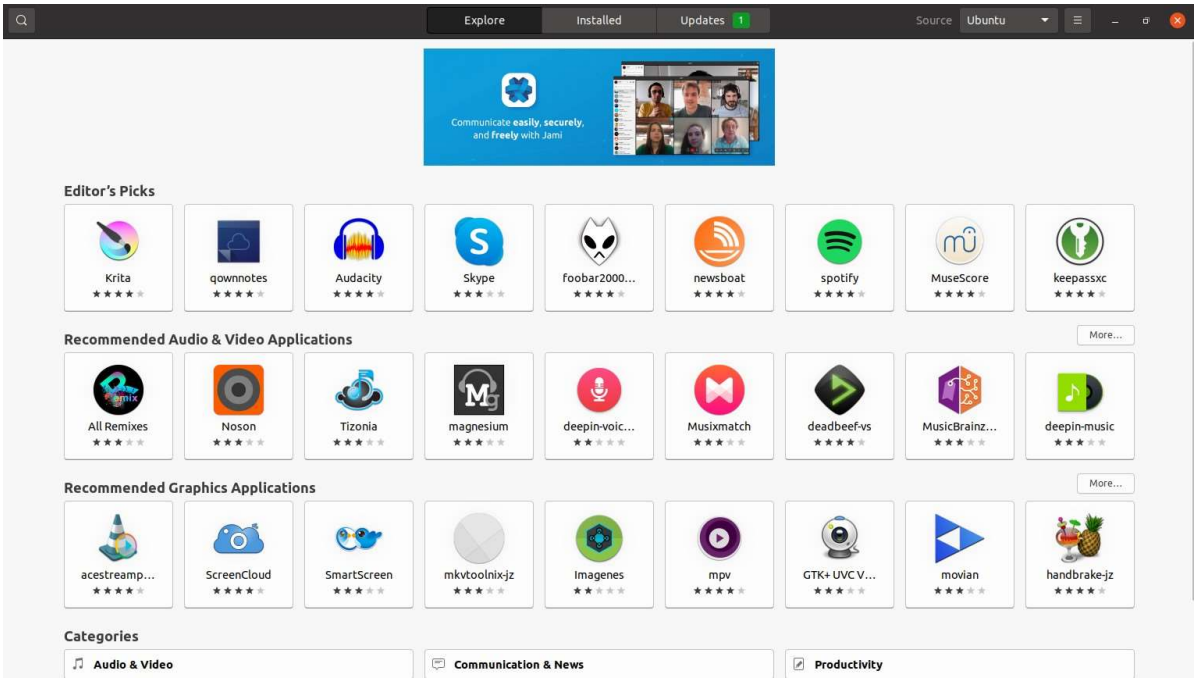
Installation of GNOME Software:

- Update the Package Repository by:
  sudo apt-get update
- Install the Gnome software by :
  sudo apt-get install gnome-software

```
akhil@akhil-VirtualBox:~$ sudo apt-get install gnome-software
[sudo] password for akhil:
Reading package lists... Done
Building dependency tree
Reading state information... Done
gnome-software is already the newest version (3.36.1-0ubuntu0.20.04.1).
The following packages were automatically installed and are no longer required:
  libfwupdplugin1 libxmlb1 linux-headers-5.15.0-53-generic
  linux-hwe-5.15-headers-5.15.0-53 linux-image-5.15.0-53-generic
  linux-modules-5.15.0-53-generic linux-modules-extra-5.15.0-53-generic
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 64 not upgraded.
```

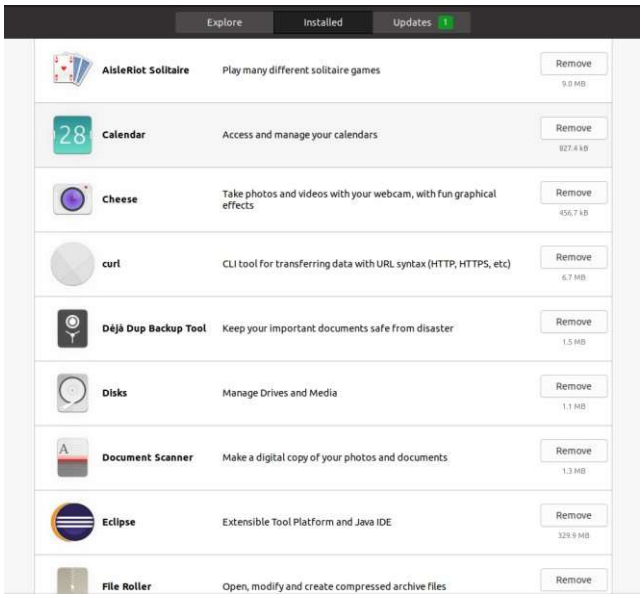
Launch the Gnome Software from Application Menu

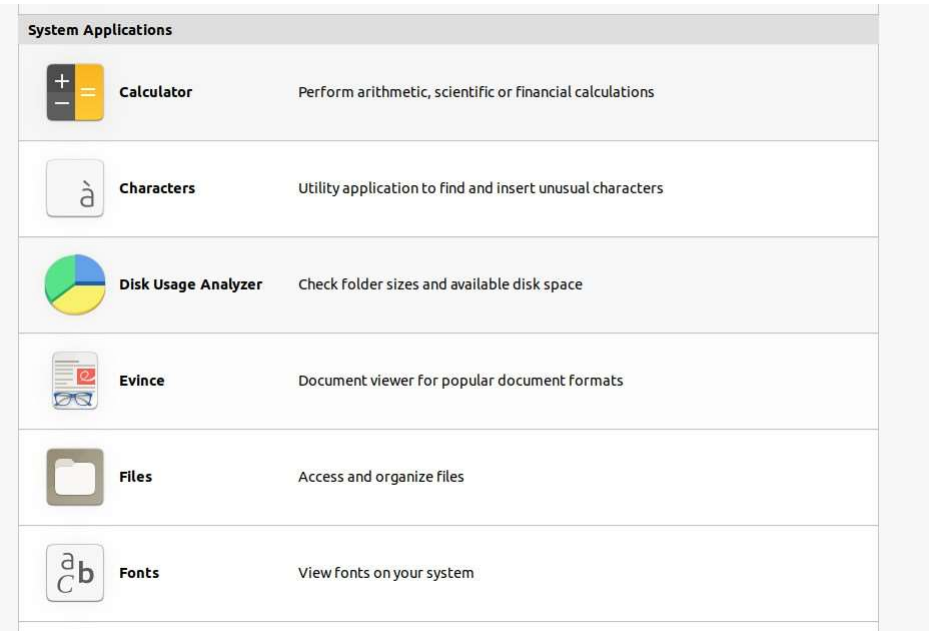
Interface:

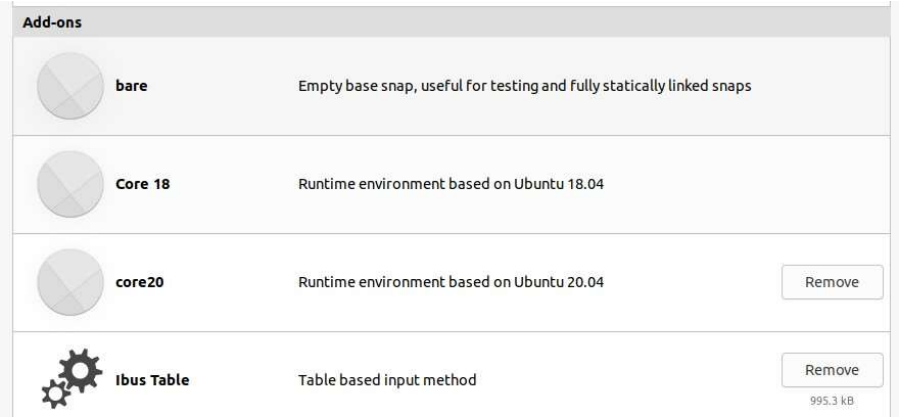


It contains Explore,Installed,Updates

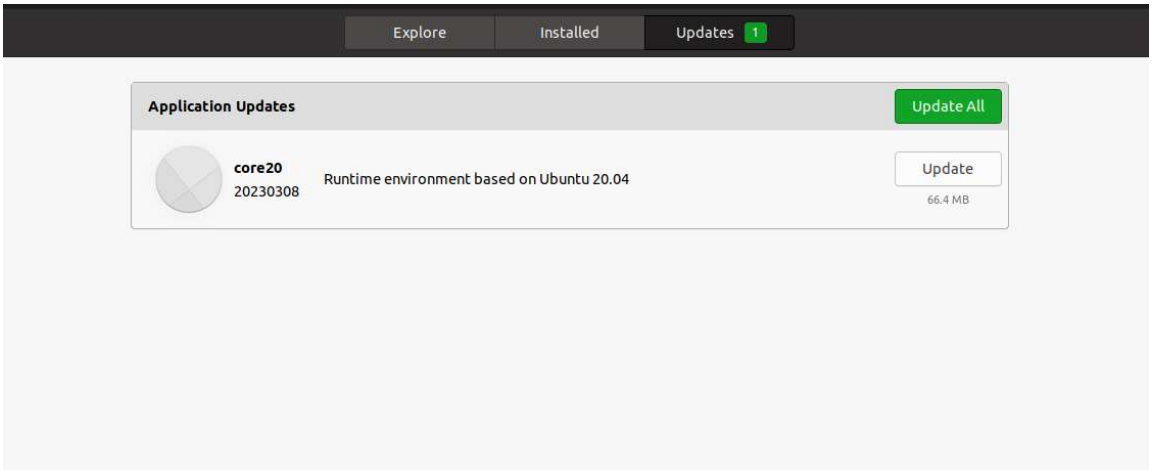
- In Installed we can see the System applications & add-ons







Updates in system:



Reference/Bibliography

- Gladwell, M. (2000). Microsoft. (n.d.). View your update history..
- Debian Wiki. (2021). Advanced Package Tool
- Pink, D. H. (2011). Drive: Red Hat. (n.d.). How to check installed packages in CentOS.
- Kuhn, T. S. (1962). Ubuntu. (n.d.). How to list all installed packages in Ubuntu.
- Johnson. Apple. (n.d.). See your update history. Retrieved.
- Cialdini, R. B. (1984).). File System Analysis.
- GNOME. (n.d.). About GNOME

These references cover a range of topics related to generating a system report, including how to check for installed packages and updates, using open source inventory management systems, and using command line tools such as PowerShell and Linux commands to generate reports.

END