REVA UNIVERSITY

UNIX OPERATING SYSTEM

ASSIGNMENT

EXAMPLE OF OPEN SOURCE OPRTAING SYSTEMS

ANTERGOS

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- **Class : 4th sem D sec**

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INTRODUCTION:

- Antergos was a Linux distribution based on Arch Linux that aimed to make the Arch Linux experience more accessible to the general public. It was launched in 2012 as Cinnarch, a community-driven project that combined the Cinnamon desktop environment with the simplicity and power of Arch Linux.
- Antergos was an open source operating system and was a user friendly Linux distribution .It was designed to provide users with a powerful and customizable operating system that was easy to install and use. Antergos offered a choice of popular desktop environments, including GNOME, KDE, and Xfce, as well as a large selection of software from the Arch User Repository (AUR). It was known for its simplicity, reliability, and flexibility.
- The Advantage of Antergos was its access to the Arch User Repository (AUR), which contained a vast number of community-maintained packages that were not available in the official Arch repositories.
- In May 2019, the Antergos project was discontinued, and the developers recommended users switch to Arch Liux or other Arch based distributions .However, the projects's legacy and its focus on user-friendly access to Arch Linux's Powerful package management and customizability continue to inspire and influence the development of other linux distributions.
- Antergos was designed to provide a balance between the flexibility and customizability of Arch Linux and the ease-of-use and accessibility of other popular Linux distributions.
- While Antergos was based on Arch Linux, it was not an exact clone. The Antergos team worked to provide additional features and functionality that made it distinct from Arch Linux.

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BENEFITS:

Antergos offered many benefits and advantages while it was in use . Here are some of Benefits and Advantages of Antergos Operating System.

- **User-Friendly Installation Process:** Antergos had a user-friendly installer that made it easy for users to set up their system without needing extensive knowledge of Linux. The installer provided a guided process that allowed users to customize their system to their liking, including choosing their preferred desktop environment, language, and software packages.
- **Access to the Arch User Repository (AUR)**: Antergos provided access to the vast Arch User Repository (AUR), which contained a large number of community-maintained packages that were not available in the official Arch repositories. This allowed users to easily install a wide range of software that might not have been available in other Linux distributions.
- **Customizability and Flexibility**: Antergos was based on Arch Linux, which is known for its customizability and flexibility. Users could modify and customize their system to their liking, including choosing their preferred desktop environment, themes, and software packages.
- **Open Source**: Antergos was an open source operating system, which meant that users had access to the source code for all the software running on their system, allowing them to modify and customize it as needed. This also contributed to the transparency and security of the operating system.
- **Stable and Reliable:** Antergos was known for its stability and reliability. It used the rolling-release model, which meant that users received frequent updates and bug fixes, ensuring that their system was always up-to-date and running smoothly. Additionally, because it was based on Arch Linux, it benefited from the extensive testing and development resources of the Arch community.

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PROCESS AND MEMORY MANAGEMENT

Antergos uses the same process management system as Arch Linux. Process management in Linux is handled by the kernel, which manages all the processes running on the system.

The **Process Management** is carried out in several steps:

- **Process Descriptors:** The Kernel Maintains information about each process in a process descriptor of type task_struct

- **Process States**:

  consists of an array of mutually exclusive flags

  - TASK_RUNNING(executing on CPU or runnable)
  - TASK_INTERRUPTIBLE(waiting on a condition interrupts.)
  - TASK_UNINTERRUPTIBLE(sleeping process cannot be woken by a signal).
  - TASK_STOPPED(stopped process)
  - TASK_ZOMBIE(terminated before waiting for parent)

- **Process Identification**:
  - Each process has its own process descriptor.
  - process descriptor addresses are used to ientify processes.
    - process id's(pid's) are 32 bit numbers,also used to identify processes.
    - For Compatibility with traditional Unix Systems, Linux uses PID's in range 0....32767.
  - Kernel maintains a task array od size NR_TASKS, with pointers to process descriptors.

- **Process Creation**:
  - Traditionally, resources owned are owned by parent process are duplicated when a child process is created.
    - fork() is implemented as a clone system call with SIGCHILD sighandler set.

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        - vfork() is like fork() with CLONE_VM & CLONE_VFORK flags set. with vfork() child and parent share address space.

- **Process Termination:**
    - Usually occurs when a process calls exit().
        - do_exit() called on termination, which in turn calls __exit_mm/files/fs/sighand() to free appropriate resources.

          schedule() is invoked to execute a new process

MEMORY MANAGEMENT:

- Antergos OS is a discontinued Linux distribution, based on Arch Linux, that aimed to provide a user-friendly and customizable desktop environment. As with any Linux distribution, Antergos OS manages memory using the Linux kernel's memory management system.

- Virtual Memory: The Linux kernel uses virtual memory to provide each process with its own virtual address space, which is larger than the available physical memory. This allows multiple processes to run concurrently without interfering with each other's memory.

- Memory Allocation: The Linux kernel manages memory allocation using the buddy allocator algorithm. The allocator divides memory into blocks of fixed sizes and keeps track of which blocks are free and which are in use.

- Memory Paging: The Linux kernel uses memory paging to manage memory efficiently. When a process needs more memory than is currently available, the kernel can temporarily

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move some of the process's memory to disk, freeing up physical memory for other processes.

- Swapping: If the system runs out of physical memory, the kernel can swap some of the less frequently used memory pages to disk, freeing up physical memory for more important tasks.

FILE MANAGEMENT

- Antergos OS, being based on Arch Linux, had several file management tools available for users to manage their files and folders. Here are some of the file management tools available on Antergos OS:

- File managers: Antergos OS came with several file managers, including Nautilus, Thunar, and PCManFM. These file managers provided a graphical interface for users to browse, copy, move, and delete files and folders.

- Command-line interface: Antergos OS provided a terminal emulator that allowed users to manage files and folders using command-line tools like ls, cd, mv, and rm.

- Archive managers: Antergos OS came with archive managers like File Roller and Xarchiver, which allowed users to create, extract, and manage archive files like ZIP and TAR.

- Cloud storage clients: Antergos OS supported cloud storage clients like Dropbox and Google Drive, which allowed users to sync their files and folders to the cloud.

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- Disk usage analyzers: Antergos OS came with disk usage analyzers like Baobab and KDirStat, which allowed users to visualize the disk usage of their files and folders and identify large files and folders that could be deleted or moved to free up disk space.

- File synchronization tools: Antergos OS supported file synchronization tools like Rsync and Unison, which allowed users to synchronize their files and folders across multiple computers or devices.

APPLICATIONS

- Virtualization software: Antergos OS supported virtualization software like VirtualBox and KVM, which allowed users to run multiple operating systems on the same machine.
- Containerization tools: Antergos OS supported containerization tools like Docker and Podman, which allowed users to package applications and their dependencies in containers that can run on any Linux distribution.
- High-performance computing tools: Antergos OS supported high-performance computing (HPC) tools like OpenMPI and CUDA, which allowed users to develop and run parallel computing applications on multi-core CPUs and GPUs.
- Multimedia production tools: Antergos OS supported multimedia production tools like Ardour and Blender, which allowed users to create and edit audio and video content.
- Scientific computing tools: Antergos OS supported scientific computing tools like R and Python with scientific computing libraries, which allowed users to analyze data and develop scientific applications.

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- Gaming software: Antergos OS supported gaming software like Steam and Wine, which allowed users to run Windows games on Linux or play Linux games natively.
- Network monitoring tools: Antergos OS supported network monitoring tools like Wireshark and ntop, which allowed users to analyze network traffic and diagnose network issues.

LIMITATIONS:

- Antergos OS, as an Arch-based Linux distribution, had some limitations that users should have been aware of before choosing it as their operating system. Some of these limitations include:

- Limited support: Antergos OS had a small development team and community, which means that users might have experienced limited support compared to more popular distributions.

- High learning curve: While Antergos OS aimed to provide an easy installation process for Arch Linux, it still required some technical knowledge and skills to set up and configure the system correctly.

- Rolling release model: Antergos OS used a rolling release model, which means that updates were continuously released, often without being thoroughly tested. This could lead to stability issues or conflicts with other software installed on the system.

- Limited software availability: Antergos OS had a smaller repository of software compared to more established distributions like Ubuntu or Debian. This could limit the

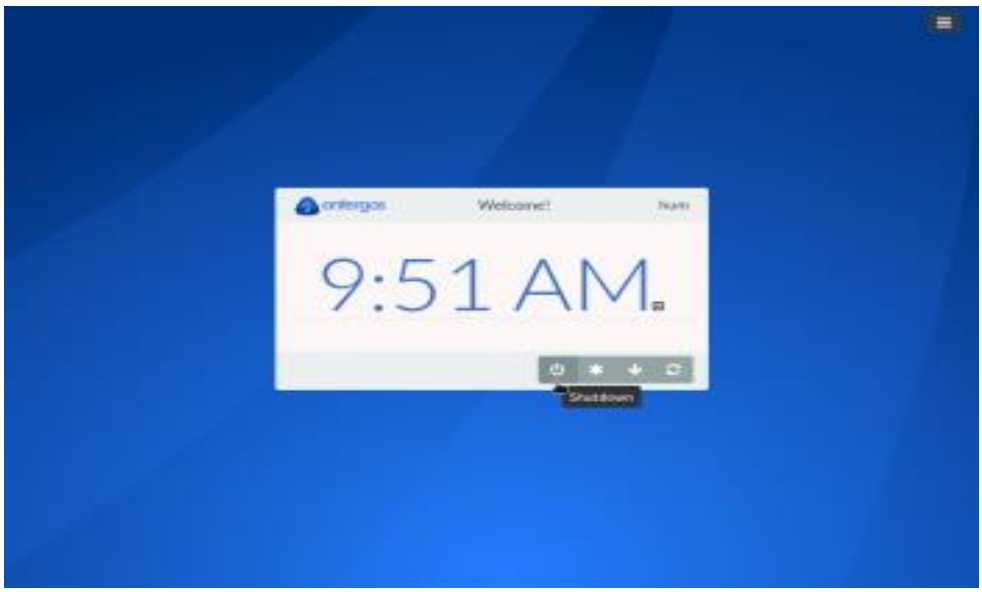
availability of some applications or require users to manually install software from other sources.

- Discontinued: As of May 2019, Antergos OS has been discontinued, which means that users cannot receive any new updates or support for the operating system.

SCREENSHOTS

ANTERGOS LOGO

ANTERGOS USER LOGIN PAGE



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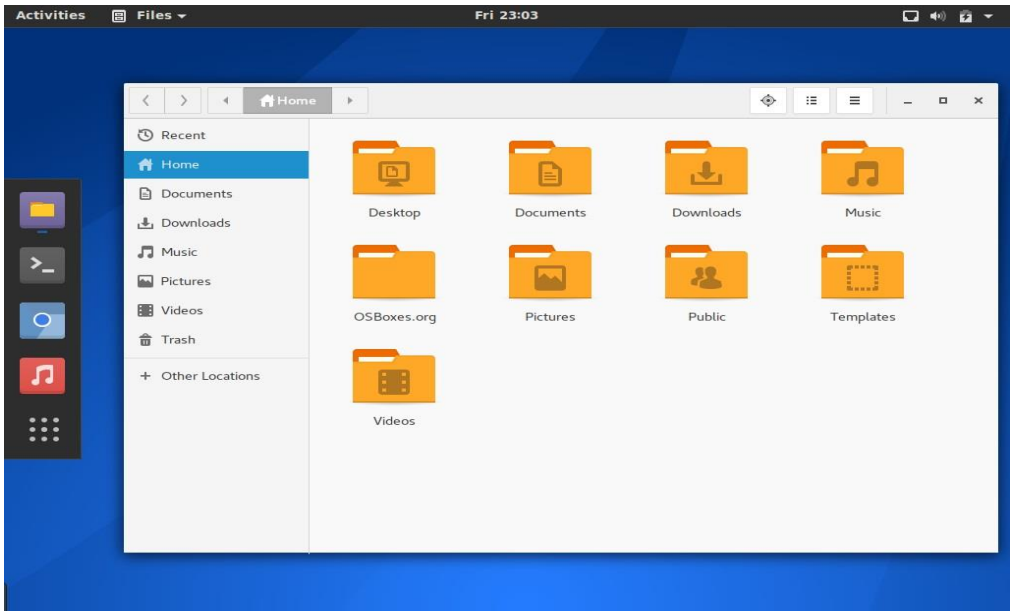
ANTERGOS OS DESKTOP

ANTERGOS OS FILE MANAGEMENT



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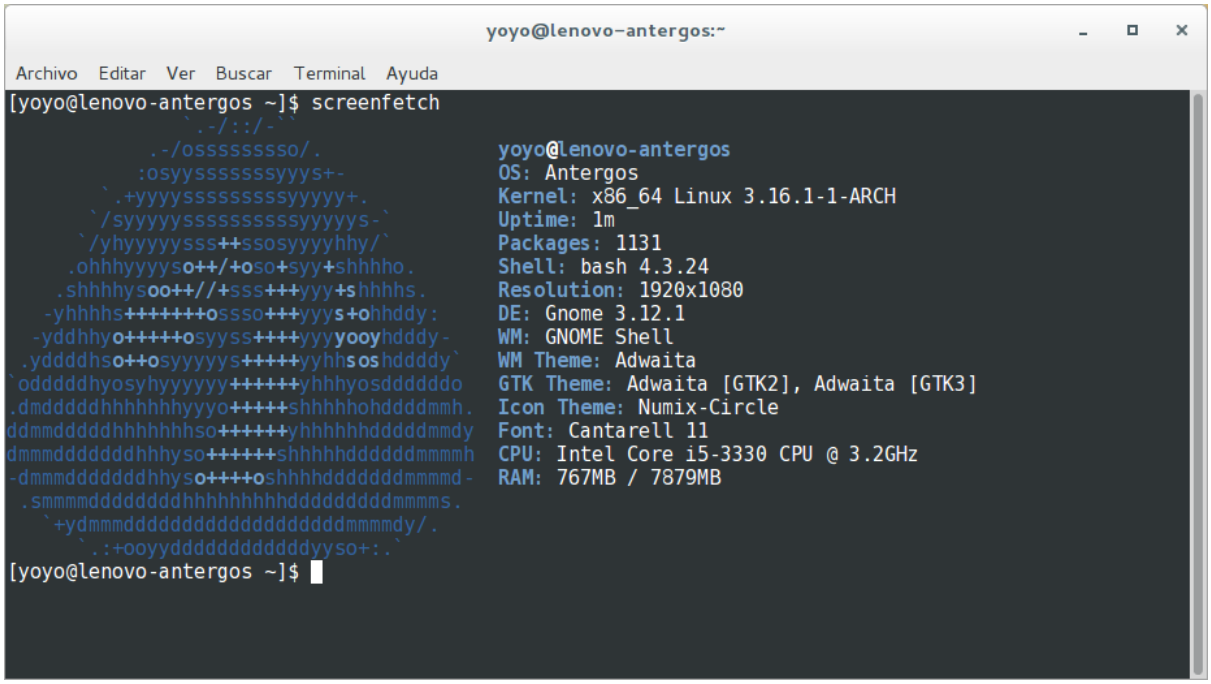
ANTERGOS OS TERMINAL



LINKS AND REFERENCES:

1. Arch linux

   Link : https://archlinux.org/

2. Antergos process management

   Link: https://prezi.com/ahk3ndqcnifh/arch-linux-process-management/

REFERNCE SITES:

https://en.wikipedia.org/wiki/Antergos