The UNIX operating system supports the following features and capabilities:

- **Multi-user & Multi-tasking** – A multiuser system means multiple users can access system resources like memory/ ram/ application programs at same time. Most versions of UNIX are capable of allowing multiple users to log onto the system, and have each run multiple tasks. This is standard for most modern OSs.
- **Multitasking and Portability**
  The main features of UNIX include multiuser, multitasking and portability capabilities. Multiple users access the system by connecting to points known as terminals. Several users can run multiple programs or processes simultaneously on one system. UNIX uses a high-level language that is easy to comprehend, modify and transfer to other machines, which means you can change language codes according to the requirements of new hardware on your computer. You, therefore, have the flexibility to choose any hardware, modify the UNIX codes accordingly and use UNIX across multiple architectures.
- **The Kernel and the Shell**
  The hub of a UNIX operating system, the kernel manages the applications and peripherals on a system. Together, the kernel and the shell carry out your requests and commands. You communicate with your system through the UNIX shell, which translates to the kernel. When you turn on your terminal, a system process starts that overlooks your inputs. When you enter your password, the system associates the shell program with your terminal. The shell allows you to customize options even if you are not technically savvy. For example, if you partially type a command, the shell anticipates the command for which you are aiming and displays the command for you. The UNIX shell is a program that gives and displays your prompts and, in conjunction with the kernel, executes your commands. The shell even maintains a history of the commands you enter, allowing you to reuse a command by scrolling through your history of commands.

- **Shell** – UNIX provides a special interpreter program which can be used to execute commands of the operating system. It can be used to do various types of operations, call application programs etc.
- **Files and Processes**
  All the functions in UNIX involve either a file or a process. Processes are executions of programs, while files are collections of data created by you. Files may include a document, programming instructions for the system or a directory. UNIX uses a hierarchical file structure in its design that starts with a root directory--signified by the forward slash (/). The root is followed by its subdirectories, as in an inverted tree, and ends with the file. In the example "/Demand/Articles/UNIX.doc," the main directory "Demand" has a subdirectory "Articles," which has a file "UNIX.doc.".
  "EVERYTHING IS A FILE"

- **Hierarchical File System** – UNIX provides a standard file structure in which system files/ user files are arranged.
- **Over 40 Years Old** - UNIX is over 40 years old and it's popularity and use is still high. Over these years, many variations have spawned off and many have died off, but most modern UNIX systems can be traced back to the original versions. It has endured the test

of time. For reference, Windows at best is half as old (Windows 1.0 was released in the mid 80s, but it was not stable or very complete until the 3.x family, which was released in the early 90s).

- **Large Number of Applications** – there are an enormous amount of applications available for UNIX operating systems. They range from commercial applications such as CAD, Maya, WordPerfect, to many free applications.
- **Free Applications and Even a Free Operating System** - of all of the applications available under UNIX, many of them are free. The compilers and interpreters that we use in most of the programming courses here at UMBC can be downloaded free of charge. Most of the development that we do in programming courses is done under the Linux OS.
- **Less Resource Intensive** - in general, most UNIX installations tend to be much less demanding on system resources. In many cases, the old family computer that can barely run Windows is more than sufficient to run the latest version of Linux.
- **Internet Development** - Much of the backbone of the Internet is run by UNIX servers. Many of the more general web servers run UNIX with the Apache web server - another free application.
- **Portable** – Portability means softwares can works on different types of hardwares in same way.Linux kernel and application programs supports their installation on any kind of hardware platform.
- ~~**Open Source** – Linux source code is freely available and it is community based development project. Multiple teams works in collaboration to enhance the capability of Linux operating system and it is continuously evolvin~~g.
- **Security** – UNIX provides user security using authentication features like password protection/ controlled access to specific files/ encryption of data.
- Provides Programming interface.
- Space sensitive
- Case Sensitive
- Use of files as abstractions of devices and other objects.
- Built-in networking (TCP/IP is standard)
- It uses a hierarchical file system that allows easy maintenance and efficient implementation.
- It uses a consistent format for files, the byte stream, making application programs easier to write.
- It hides the machine architecture from the user, making it easier to write programs that run on different hardware implementation**.**