Task 2.1P - Virtual Memory and File Systems

Section 1: Summary

Virtual Memory:

An approach to memory management that provides the illusion of an unending block of memory, even when there is inadequate real memory available. Converting virtual addresses to physical addresses occurs by means of a combination of hardware and software.

- ✓ Page replacement Algorithms
- ✓ Paging
- ✓ Page Tables
- ✓ Demand Paging

File Systems:

An operating system organizes, manages, and stores files and directories on a storage medium by means of a file system. A few regular file system types including;

- ✓ NTFS (New Technology file System)
- ✓ APFS (Apple file System)
- ✓ FAT (File Allocation Table)
- ✓ EXT (Extended file System)
- ✓ HFS (Hierarchical File System)

Section 2: Reflection

1. How do you know you have achieved the learning goals?
    - ✓ Successfully communicating and exploiting file systems and virtual memory concepts have helped me meet my learning targets. I can explore both file systems and their data management, alongside the way virtual memory improves system functionality. Being able to answer inquiries, sort through challenges, and bring these ideas into real practice validate my grasp and achieve the intended learning goals.

2. What is the most important thing you learned from this and why?
    - ✓ The foremost thing to notice is that virtual memory enhances system velocity and multitasking by making it possible to run multiple apps at once, without exhausting all the physical memory. This data is important for system administration as well as software development, because it supports both stability and efficiency in current operating systems.

3. How does the content or skills learned here relate to things you already know?
    - ✓ My grasp of computer architecture and operating systems improved thanks to this learning, which covered thorough information on paging, swapping, and inodes. Through its emphasis on how critical file systems are for data protection and forensic investigation, it improved my knowledge of memory management and data storage, enhanced my skill in software development, and enflamed my passion for cybersecurity.

4. Where or when do you think it will be useful?
    - ✓ The abilities I've gained will be helpful in a number of contexts: The purpose is to develop software more effectively by increasing program efficiency and troubleshooting capability; to back cybersecurity efforts by providing data protection services and conducting system vulnerability analysis; and to support system administration and IT support through the optimization of performance and assurance of data integrity. In common cases, such expertise is essential for charting the efficient administration and optimization of computer systems.

Quiz 4

i. 3
ii. 6
iii. 2
iv. 2 , 4 , 5
v. 3 , 5
vi. 1 , 2 , 5
vii. 2
viii. 3 , 4
ix. 3 , 4
x. 2 , 3
xi. 2
xii. 2
xiii. 2
xiv. 2 , 4 , 5
xv. All