

Discipline Specific Elective-1 :Semester –V

DSE-1 Operating Systems

BLOCK – I

Unit-1: Operating System - definition, history, concepts, structure, system calls, the world according to C, research on operating systems

Unit-2: Processes and threads - Processes, threads, Inter Process Communication (IPC). Scheduling, classical IPC problems, research on processes and threads

Unit-3: Memory management – no memory abstraction, address spaces, virtual memory, page replacement algorithms, design and implementation issues in paging, page segmentation, research on memory management.

BLOCK-II

Unit-4: File Systems – Files, directories, file system implementation, management, and optimization, and example file system, research on file system.

Unit-5: Input / Output – Principles of I/O hardware and software, software layers, disks, user interfaces, keyboard, mouse, monitor, thin clients, power management, research on input/output

Unit-6: Dead-locks- resources, deadlocks, the ostrich algorithm, deadlocks detection and recovery, deadlocks avoidance and prevention, other issues, research on dead-locks

BLOCK-III

Unit-7: Virtualization and the cloud – History, requirements, type-1 and type-2 hypervisors, techniques, memory virtualization, i/o virtualization, virtual machines on multi-core CPUs, licensing issues, clouds,

Unit-8: Virtualization and the cloud - case study VMWARE, research on virtual management. Multiple processor systems – multiple processors, multi-computers

Unit-9 : Multiple processor systems – Distributed Systems, research on multiple processor systems

BLOCK-IV

Unit-10 : Security – security environment, operating system security, controlling access to resources, formal models of security, basics of cryptography, authentication

Unit-11: Security – exploiting software, inside attacks, malware, defenses, research on security

Unit-12 Android Case Study - Android and google, History, design goals, architecture, Linux extension, Dalvik, binder IPC, Android applications, intents, application sand boxes, security, process model

PRACTICALS:

Unix / Linux/ Ubuntu

1. Execute the Unix commands ls,cd,pwd,mkdir,mv,cp,rm,rmdir,clear,less,head, tail with various options
2. Execute the Unix commands cat,grep,wc with various options
3. Execute the Unix commands who,sort, wc with <, >, >>, <<, !
4. Execute the Unix commands man, whatis, approve, wildcard characters
5. Execute the Unix commands Chmod, ps, sleep, jobs, fg, kill with various options
6. Execute the Unix commands quota,df,du,gzip,zcat, file, diff, find, set, history
7. Write a Java program. to Set date and time in Linux Operating System
8. Write a Java program Reading date and time from Linux operating system.
9. Write a Java program to set network settings for IPv6 Network in Linux Devices.

10. Write a Java program to set MAC address in Linux Devices.
11. Write a Java program to get MAC address of Linux based network device.
 - a. Write a Java program to set IP address, subnet mask, network gateway in Linux System.