RSET
RAJAGIRI SCHOOL OF
ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

RAJAGIRI SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Semester VI

102902/CO422S Operating Systems Lab

Vision of RSET

To evolve into a premier technological and research institution, moulding eminent professionals with creative minds, innovative ideas and sound practical skill, and to shape a future where technology works for the enrichment of mankind.

Mission of RSET

To impart state-of-the-art knowledge to individuals in various technological disciplines and to inculcate in them a high degree of social consciousness and human values, thereby enabling them to face the challenges of life with courage and conviction.

The Vision of the Department of Computer Science & Engineering

To become a Centre of Excellence in Computer Science and Engineering, moulding professionals catering to the research and professional needs of national and international organizations.

The Mission of the Department of Computer Science & Engineering

To inspire and nurture students, with up-to-date knowledge in Computer Science and Engineering, ethics, team spirit, leadership abilities, innovation and creativity to come out with solutions meeting societal needs.

Program Educational Objectives (PEOs) of Department of Computer Science & Engineering

- **PEO 1**: Graduates shall have up-to-date knowledge in Computer Science & Engineering along with interdisciplinary and broad knowledge on mathematics, science, management and allied engineering to become computer professionals, scientists and researchers.
- **PEO 2**: Graduates shall excel in analysing, designing and solving engineering problems and have life-long learning skills, to develop computer applications and systems, resulting in the betterment of the society.
- **PEO 3**: Graduates shall nurture team spirit, ethics, social values, skills on communication and leadership, enabling them to become leaders, entrepreneurs and social reformers.

Programme Specific Outcomes (PSOs)

A graduate of the Computer Science and Engineering Program will demonstrate:

- **PSO1: Computer Science Specific Skills:** The ability to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas by understanding the core principles and concepts of computer science and thereby engage in national grand challenges.
- **PSO2: Programming and Software Development Skills:** The ability to acquire programming efficiency by designing algorithms and applying standard practices in software project development to deliver quality software products meeting the demands of the industry.
- **PSO3: Professional Skills:** The ability to apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur.

LAB CYCLE

JAN 2025- April 2025

Course Outcomes (COs):

CO1: Illustrate the use of systems calls in Operating Systems.

CO2: Implement Process Creation and Inter Process Communication in Operating Systems.

CO3: Implement Fist Come First Served, Shortest Job First, Round Robin and Priority based CPU Scheduling Algorithms.

CO4: Illustrate the performance of First In First Out, Least Recently Used and Least Frequently Used Page Replacement Algorithms.

CO5: Implement modules for Deadlock Detection and Deadlock Avoidance in Operating Systems.

CO6: Implement modules for Storage Management and Disk Scheduling in Operating Systems.

Experiments

Day 1: Familiarize with basic Linux commands for directory and file operations-[pwd, ls, cd, mkdir, rmdir, man, rm, touch, cp, mv, cat, echo, grep, find, sort, wc]

Day 2: Familiarization of Shell Programming.

Day 3: Implement the system calls:- fork, exec, getpid, exit, wait, close, stat, opendir and readdir.

Day 4: Implement interprocess communication (IPC) using Shared Memory.

Day 5: Simulate the following CPU scheduling algorithms to find turnaround time and waiting time.

a. FCFS
b. SJF (non pre-emptive)
c. Round Robin(Pre-emptive)
d. Priority (Non-preemptive)

Day 6: Implement the Producer-Consumer problem using semaphores.

Day 7: Implement Bankers algorithm for deadlock avoidance.

Day 8: Implement Memory Allocation Methods for fixed partition using linked list

a. First-fit
b. Worst Fit
c. Best Fit

Day 9: Simulate the following page replacement algorithms:

a. FIFO
b. LRU

Day 10: Simulate the following Disk Scheduling algorithms:

a. FCFS
b. SCAN
c. C-SCAN

Day 11: Implement File Allocation Strategies

a. Sequential
b. Indexed
c. Linked

Advanced Questions

1. Write a program to simulate the working of Dining Philosophers problem.
2. Simulate SSTF disk scheduling algorithm.Write a C program to simulate multi-level queue scheduling algorithm considering the following scenario. All the processes in the system are divided into two categories – system processes and user processes. System processes are to be given higher priority than user processes. Use FCFS scheduling for the processes in each queue.
3. Write programs using the I/O system calls of Linux operating system (open, read, write)
4. Write a program for file manipulation for display a file and directory in memory.

Lab-in charges

S4 CS Alpha: Ms. Tripti C
S4 CS Beta: Mr. Sandy Joseph
S4 CS Gamma: Ms. Ann Grace Attokaren

Dr. Preetha K. G.
HOD, CSE