

System Design - Operating System (TEST-1)

1. What is the main purpose of a semaphore in operating systems? (2 points)
 - ☒ To provide a mechanism for synchronization
 - ☐ To schedule processes
 - ☐ To allocate memory
 - ☐ To manage file systems
 - ☐ All of the Above
2. Which of the following is NOT a function of an operating system? (2 points)
 - ☐ Memory management
 - ☐ Process management
 - ☒ Database management
 - ☐ Device management
3. What is the role of a shell in an operating system? (2 points)
 - ☐ To manage hardware resources
 - ☒ To provide a user interface for command execution
 - ☐ To optimize system performance
 - ☐ To monitor system security
4. Which of the following is a characteristic of a distributed operating system? (2 points)
 - ☐ Single-point control
 - ☐ Lack of concurrency
 - ☐ Centralized resource management
 - ☒ Resource sharing across multiple systems
 - ☐ All of the Above
5. What is the role of the scheduler in an operating system? (2 points)
 - ☐ To manage user interfaces
 - ☐ To manage memory allocation
 - ☒ To allocate CPU time to processes
 - ☐ To manage file systems
 - ☐ All of the Above

6. Which of the following is an operating system? (1 point)
- ☐ Microsoft Word
 - ☒ Linux
 - ☐ Adobe Photoshop
 - ☐ Google Chrome
7. Which scheduling algorithm selects the process that has been waiting the longest? (2 points)
- ☐ Round Robin
 - ☒ First-Come, First-Served (FCFS)
 - ☐ Shortest Job Next
 - ☐ Priority Scheduling
 - ☐ All of the Above
8. What is the primary goal of resource allocation in an operating system? (2 points)
- ☐ To ensure fairness among users
 - ☒ To maximize throughput and minimize response time
 - ☐ To prevent deadlock
 - ☐ To maintain system security
 - ☐ All of the Above
9. What does the term "fork" refer to in UNIX? (2 points)
- ☒ Creating a new process
 - ☐ Splitting a file
 - ☐ Merging two files
 - ☐ Closing an application
 - ☐ All of the Above
10. What is a deadlock in operating systems? (2 points)
- ☐ When a process completes execution
 - ☐ When a system crashes
 - ☐ When a process is terminated
 - ☒ When multiple processes are waiting for a resource that is held by another process
 - ☐ All of the Above
11. What is a process in an operating system? (2 points)
- ☒ A program in execution

- ☐ A memory location
- ☐ A type of hardware
- ☐ A list of files
- ☐ All of the Above

12. Which of the following is a command to change the permissions of a file in Linux? (2 points)

- ☒ chmod
- ☐ chperm
- ☐ changeperm
- ☐ setperm
- ☐ All of the Above

13. Which of the following is a key feature of a microkernel? (2 points)

- ☒ Minimal services in the kernel
- ☐ High performance
- ☐ Single user mode
- ☐ All services are in the kernel
- ☐ All of the Above

14. Which of the following is NOT a characteristic of a real-time operating system? (2 points)

- ☐ Predictability
- ☐ Deterministic response
- ☒ High throughput
- ☐ Low latency
- ☐ All of Above

15. Which of the following algorithms is used for deadlock avoidance? (2 points)

- ☐ Round Robin
- ☒ Banker's Algorithm
- ☐ Shortest Job First
- ☐ FCFS

16. What is the primary purpose of an operating system? (2 points)

- ☒ To manage hardware and software resources
- ☐ To run applications
- ☐ To provide security

- ☐ To connect to the internet
- ☐ All of the Above

17. Which of the following is an example of a real-time operating system? (2 points)

- ☐ Windows
- ☐ Linux
- ☒ VxWorks
- ☐ macOS
- ☐ All of the Above

18. What is the purpose of context switching in an operating system? (2 points)

- ☐ To save power
- ☐ To switch between different applications
- ☒ To switch between processes
- ☐ To switch between different user interfaces

19. What does the term "zombie process" refer to? (2 points)

- ☒ A process that has finished execution but still has an entry in the process table
- ☐ A process that is consuming all system resources
- ☐ A process that is waiting for a resource
- ☐ A process that is blocked indefinitely
- ☐ All of the Above

20. Which of the following is a method for achieving mutual exclusion? (2 points)

- ☐ Spinlock
- ☐ Semaphore
- ☐ Mutex
- ☒ All of the above

21. In a Linux system, which command is used to terminate a running process? (2 points)

- ☒ kill
- ☐ stop
- ☐ end
- ☐ terminate
- ☐ All of the Above

22. What type of memory is typically used for cache in a CPU? (2 points)

- ☐ ROM
- ☐ Flash
- ☒ SRAM
- ☐ DRAM
- ☐ All of the Above

23. What is the function of a device driver? (2 points)

- ☒ To allow the operating system to communicate with hardware devices
- ☐ To manage memory
- ☐ To optimize disk performance
- ☐ All of the Above

24. Which of the following is a process state? (2 points)

- ☐ Ready
- ☐ Complete
- ☐ Running
- ☒ All of the Above

25. What does the term 'thrashing' refer to? (2 points)

- ☒ Excessive disk usage
- ☐ High CPU utilization
- ☐ Low memory usage
- ☐ Network congestion
- ☐ All of the Above

26. What is the main difference between TCP and UDP? (2 points)

- ☒ TCP is connection-oriented, while UDP is connectionless
- ☐ TCP is faster than UDP
- ☐ UDP guarantees delivery, while TCP does not
- ☐ TCP is used for streaming, while UDP is for file transfer

27. Which of the following is a type of software? (2 points)

- ☒ Operating System
- ☐ Printer
- ☐ Keyboard
- ☐ Monitor

☐ All of the Above

28. What is the main advantage of using virtual memory? (2 points)

- ☐ Increases the speed of CPU
- ☒ Allows more processes to run than can fit in physical memory
- ☐ Reduces system costs
- ☐ Decreases disk access time

29. What is a kernel in an operating system? (2 points)

- ☐ The outer layer of the OS
- ☒ The core component that manages system resources
- ☐ A type of application
- ☐ A file system
- ☐ All of the Above

30. In which type of memory is the operating system typically loaded? (2 points)

- ☐ ROM
- ☐ Cache
- ☐ Flash
- ☒ RAM
- ☐ All of the Above

31. Which of the following is a mobile operating system? (2 points)

- ☐ Windows
- ☒ Android
- ☐ macOS
- ☐ Linux
- ☐ All of the Above

32. In which scheduling algorithm does the CPU execute the process that has the least estimated remaining time? (2 points)

- ☒ Shortest Job First (SJF)
- ☐ Round Robin
- ☐ Priority Scheduling
- ☐ First-Come, First-Served (FCFS)
- ☐ All of the Above

33. Which of the following is true about the UNIX operating system? (2 points)
- ☐ It is a closed-source operating system
 - ☒ It supports multiple users and multitasking
 - ☐ It cannot be used for networking
 - ☐ It is primarily a desktop operating system
34. In a multi-threaded environment, what is the benefit of using threads? (2 points)
- ☐ Increased memory consumption
 - ☐ Increased complexity of programming
 - ☒ Better performance and resource sharing
 - ☐ Slower execution time
 - ☐ All of the Above
35. Which type of file system uses inodes? (2 points)
- ☐ FAT
 - ☒ ext3/ext4
 - ☐ NTFS
 - ☐ APFS
 - ☐ All of the Above
36. What type of attack exploits a buffer overflow vulnerability? (2 points)
- ☐ Denial of Service
 - ☐ Malware
 - ☒ Code Injection
 - ☐ Phishing
37. Which of the following methods is NOT used for inter-process communication? (2 points)
- ☐ Shared memory
 - ☐ Message passing
 - ☒ File handling
 - ☐ Semaphore
38. Which command is used to create a new directory in Linux? (2 points)
- ☐ mkfile
 - ☐ newdir
 - ☐ createdir

☒ mkdir

39. Which of the following is a multi-user operating system? (2 points)
- ☐ MS-DOS
 - ☐ Windows 10
 - ☒ Linux
 - ☐ MacOS
 - ☐ All of the Above
40. Which of the following is a type of file system? (2 points)
- ☐ FAT32
 - ☐ NTFS
 - ☐ ext4
 - ☒ All of the Above
41. What does RAM stand for? (2 points)
- ☐ Read Access Memory
 - ☐ Readable Access Memory
 - ☐ Randomized Access Memory
 - ☒ Random Access Memory
42. In operating systems, what is a 'context switch'? (2 points)
- ☐ Switching between different user interfaces
 - ☒ The process of storing the state of a CPU so that it can be resumed later
 - ☐ The process of changing a process's priority
 - ☐ Switching between different applications
 - ☐ All of the above
43. Which of the following is NOT a component of a process control block (PCB)? (2 points)
- ☐ Process state
 - ☐ Program counter
 - ☐ CPU registers
 - ☒ Disk space allocation
44. What does GUI stand for? (2 points)
- ☐ General User Interface
 - ☐ Global User Interface

- ☐ Graphical Unified Interface
- ☒ Graphical User Interface

45. What does RAID stand for in storage systems? (2 points)

- ☐ Random Array of Independent Disks
- ☒ Redundant Array of Independent Disks
- ☐ Random Access of Independent Disks
- ☐ Redundant Access of Independent Disks

46. What type of attack involves gaining unauthorized access to a system through privilege escalation? (2 points)

- ☐ Phishing
- ☐ SQL Injection
- ☐ Social Engineering
- ☒ Malware
- ☐ All of Above

47. Which of the following represents a critical section problem? (2 points)

- ☐ Deadlock
- ☐ Starvation
- ☐ Race Condition
- ☒ All of the above

48. Which of the following protocols is used for process synchronization? (2 points)

- ☐ TCP
- ☐ UDP
- ☐ PTP
- ☐ FTP
- ☒ None of Above

49. What is the purpose of system calls in an operating system? (2 points)

- ☐ To interact with the user
- ☐ To perform tasks in user mode
- ☒ To provide an interface between user programs and the operating system
- ☐ To manage hardware resources
- ☐ All of the Above

50. In a paging system, what does the term "page fault" refer to?

(2 points)

- ☐ A process that has finished execution
- ☒ A request to access a page not currently in memory
- ☐ A memory leak
- ☐ A successful memory access
- ☐ All of Above