

考 試 科 目	作業系統	系 所 別	資訊科學系/資訊科學與 工程組、智慧計算組	考 試 時 間	2 月 5 日(五) 第 3 節
<p>1. Single choice (75%) 選擇題請在答案卡上作答，否則不予計分。</p> <p>(1) Which of the following is not a technology related to containers (e.g., Docker)? (A) cgroups (B) namespace (C) hypervisor (D) volume</p> <p>(2) When a process is being switched out of the CPU, which of the following situations does not cause the process is being added to the wait queue? (A) I/O request (B) create child process (C) time slice expired (D) wait for an interrupt</p> <p>(3) Which of the following is not a general function of a distributed operating system? (A) kernel migration (B) data migration (C) process migration (D) computation migration</p> <p>(4) In August 2018, a variant of WannaCry(WannaCrypt) forced TSMC to shut down several factories temporarily, this kind of virus is categorized as (A) spyware (B) ransomware (C) logic bomb (D) trap door</p> <p>(5) About NVM scheduling, which of the following is wrong? (A) in NVM, write time is usually not uniform whereas read is usually uniform (B) most NVM disks serve all read requests using C-SCAN (C) I/O performance of NVM is generally measured in IOPS (D) write performance in NVM depends on how full the device is.</p> <p>(6) Which of the following regarding the memory layout of a process is wrong? (A) the parameter values and the return address store in the stack area (B) the un-initialized global variables are stored in the bss area (C) the local variables are stored in the stack area (D) the heap area is also known as activation records</p> <p>(7) Given the following code segment, which of the following technologies is most possibly used by this program? (A) shared memory (B) pipe (C) RPC (D) MOM</p> <pre>int main() { ... close(fd[0]); write(fd[1], "test", 5); close(fd[1]); ... }</pre> <p>(8) Which of the following is false? (A) In asynchronous cancellation mode, a thread is terminated immediately after it receives a cancellation request (B) Most of the blocking system calls in POSIX are defined as cancellation</p>					

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<p>points (C) Asynchronous cancellation mode is not recommended in PThread (D) In Java, the deferred cancellation is implemented as the defer() method</p> <p>(9) Which of the following is true about the strategy that uses page fault frequency (PFF) to prevent thrashing? (A) A new page is allocated to a process if PFF is too high. (B) A page is deallocated from a process if the PFF is too low. (C) Easier to be implemented than Working Set (D) All of the above.</p> <p>(10) The cache that holds TLB in a CPU is called (A) TTE (B) TTB (C) TEB (D) TSB</p> <p>(11) Which of the following schemes is most suitable for a 64-bit computer system? (A) clustered page tables (B) inverted page table (C) hierarchical page tables (D) two-level paging</p> <p>(12) Which of the following statements is false (A) Banker's algorithm is applicable in a single-instance system (B) the drawback of using RAG algorithm is low resource utilization (C) most operation systems implements some form of deadlock prevention algorithms (D) livelock occurs when a thread continuously attempts an action that fails</p> <p>(13) Which of the following statements is wrong about semaphore implementation? (A) The acquireUninterruptibly() method in the Java semaphore is a non-busy waiting implementation (B) Use spinlock in multi-core system (C) Non-busy waiting implementation can only be used in a single-core system (D) disable interrupt in a single-core system.</p> <p>(14) Which of the following is not a technology for a Cloud Native system? (A) Kubernetes (B) Software Telemetry (C) MQTT (D) CQRS</p> <p>(15) Which of the following is not part of the middleware provided by the OS? (A) Threading service (B) Database service (C) Graphics service (D) Multimedia service</p> <p>(16) The reason that the interrupt vector is indexed by numbers is to increase _____ (A) Speed (B) Stability (C) Security (D) Extensibility</p> <p>(17) In Chrome, there are different types of process, which of the following renders web pages, deals with HTML, JavaScript? (A) browser process (B) renderer process (C) plug-in process (D) page process</p> <p>(18) Android has a system of importance hierarchy of process; the processes are classified as: 1. Background; 2. Service; 3. Foreground; 4. Visible. Please order the above categories from "the most important" to "the least important". (A) 3412 (B) 3421 (C) 4312 (D) 4123</p> <p>(19) Given a reference string: 4,3,2,1,4,3,5,4,2,1. How many page faults will occur using LRU? Assuming a 4-page frame. (A) 5 (B) 6 (C) 7 (D) 8</p>					

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<p>(20) About SSD (Solid-state disk), which of the following is correct? (A) SSD is a kind of nonvolatile memory device (B) FTL (Flash translation layer) is used to track logical blocks that contain valid data (C) SSD usually uses over-provisioning to improve read performance (D) Wear leveling is used to prevent certain blocks from being erased repeatedly.</p> <p>(21) Parent terminated without calling wait(), leaving the child alone is called (A) orphan (B) daemon (C) zombie (D) none of the above</p> <p>(22) Which of the following is false: (A) One-to-One threading is rarely used in current systems (B) Implicit threading usually use Many-to-Many threading model (C) One-to-One model is slow as creating a user-level thread also creates a kernel thread (D) JVM on Windows uses One-to-One threading model</p> <p>(23) Which of the following is true? (A) When the CPU receives a maskable interrupt, it stops what it is doing and immediately transfers execution to the interrupt handler (B) I/O controllers emit interrupts via interrupt-request lines (C) In critical sections, the CPU may disables the non-maskable interrupts (D) In an Intel processor, the interrupt No. 1 is a maskable interrupt</p> <p>(24) Which of the following page replacement algorithms is most similar to the one implemented in Linux. (A) FIFO (B) Least frequently used (C) LRU (D) LFU</p> <p>(25) In the Second readers-writers' problem, which of the following is false? (A) Only one writer can enter the critical section (B) many readers can access the critical section at the same time (C) When a reader acquires the mutex lock, the lock will not be released except all readers exits (D) Once a writer is ready, no new reader may start reading</p> <p>2. (5%) Please explain the motivation/purpose of using Condition Variables in a monitor?</p> <p>3. (5%) Given a paging memory system with 7-level page tables, assuming that the TLB hit rate is 90%, it takes 50 ns to access TLB and 600 ns to access memory. What is the EMAT of memory system?</p> <p>4. (15%) Terms</p> <p>(1) What is a “stack algorithm” for page replacement? What is the benefit of a stack algorithm?</p> <p>(2) What is a “dark web”?</p> <p>(3) What is Infrastructure as Code (IaC)? What are the benefits of IaC?</p>					
備 註	<p>一、作答於試題上者，不予計分。</p> <p>二、試題請隨卷繳交。</p>				