

1. 2016-1

Circle or cross: "T" if True – "F" if False.

- T** / **F** A bus is a CPU system that transfers data between components inside a computer, or between computers (WIKI).
- T** / **F** Port-mapped I/O uses the ~~same~~ address bus to address both memory and I/O devices (WIKI).
- T** / **F** The kernel I/O subsystem is the largest part of a kernel system (Silber9).
- T** / **F** Performance can be improved by utilizing dedicated hardware and hard-coded algorithms (Silber9).
- T** / **F** Embedded algorithms in a device controller could **conflict** with the applications, **causing decreased performance** (Silber 9).
- T** / **F** Polling for an I/O completion can waste a large number of CPU cycles if the processor iterates a busy-waiting loop many times before the I/O completes (Silber9).
- T** / **F** DMA (Direct Memory Access) increases system concurrency (Silber9).
- T** / **F** The STREAMS driver modifies the flow of data between the user interface and the driver (Silber9).
- T** / **F** Device driver encapsulate device details to ~~avoid~~ uniform device-access interface to I/O subsystem (Silber9).
- T** / **F** An asynchronous process suspended until I/O completed (Silber9).

2. 2016-2

This following is a part of script /etc/init.d/sudo:

```
### part of /etc/init.d/sudo
N=/etc/init.d/sudo
case "$1" in
    start)
        # make sure privileges don't persist across reboots
        if [ -d /var/lib/sudo ]
        then
            find /var/lib/sudo -exec touch -d @0 '{}' \;
        fi
        ;;
    stop|reload|restart|force-reload|status)
        ;;
    *)
        echo "Usage: $N {start|stop|restart|force-reload|status}" >&2
        exit 1
        ;;
esac
exit 0
```

Print the output when the system runs:

- (a) `/etc/init.d/sudo stop`
- (b) `/etc/init.d/sudo dodol`

3. 2017-1

Circle or cross: "T" if True – "F" if False.

- T** / **F** Unified Extensible Firmware Interface (UEFI) is the successor to BIOS (Basic Input/Output System).
- T** / **F** UEFI can prevent boot-time viruses from loading (secure boot).
- T** / **F** Both BIOS and UEFI support Master Boot Record (MBR) partitioning scheme.
- T** / **F** UEFI supports partitioning scheme that changes border of a homeland territory.
- T** / **F** UEFI is a specification. Therefore each implementation may be different.
- T** / **F** The POST (Power On Self Test) checks if the Operating System is ready to run.
- T** / **F** **GRUB** (GRand Unified Bootloader) is an operating system independent boot loader.
- T** / **F** There are 3 **GRUB versions**: GRUB 1, GRUB 1.5, and GRUB 2.
- T** / **F** Major Linux distributions are adopting "systemd".
- T** / **F** The task of "systemd" is much more than "init system" because it also handles device management, power management, mount points, cron, encryption, syslog, network config, etc.

4. 2017-2

In the past, the (01) initializes and tests the PC hardware components, and loads a boot loader or an operating system from a mass memory device. (02) is the initial set of diagnostic tests performed by the computer right after it's powered on. (03) is a specification for a software program that connects a computer's firmware to its operating system. (04) is a special boot sector of a disk and located at cylinder 0, head 0, and sector 1. (05) allows for a nearly unlimited amount of partitions where each partition will have its own (06). (07) is a program which enables the user to select which installed operating system or kernel to load at system boot time. (08) is an init system used in Linux distributions to bootstrap the user space. (09) is a computer program which is held in non-volatile memory devices such as ROM, EPROM, or flash memory. (10) can be used for "memory to memory" copying or moving of data within memory.

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|-------------------------------------------------|---------------------------------------------------------|
| [] BIOS = Basic Input Output System | [] DMA = Direct Memory Access |
| [] FIRMWARE | [] GPT = GUID Partition Table |
| [] GRUB = GNU GRand Unified Boot loader | [] GUID = Globally Unique Identifier |
| [] MBR = Master Boot Record | [] POST = Power On Self Test |
| [] SYSTEMD | [] UEFI = Unified Extensible Firmware Interface |