

1. I/O Mapped Memory means

- A. the I/O devices are mapped in the same Address Space thereby preventing memory access to those regions
- B. the same address may be used for both I/O as well as Memory
- C. only one instruction is required to talk to the hardware
- D. none of these

2. Barriers in device drivers are used to

- A. tell the compiler to maintain order before and after the barrier
- B. tell the compiler to maintain order only after the barrier
- C. tell the compiler to ignore code around the barrier
- D. tell the compiler to compile with greatest optimization

3. Which of the following functions is used for I/O port allocation?

- A. request_region();
- B. check_region();
- C. register_io_region();
- D. alloc_io_region();

4. Find the odd option out with reference to f_flags in the file structure

- A. O_RDONLY
- B. O_NONBLOCK
- C. O_SYNC
- D. FMODE_READ

5. There is a driver which executes in the kernel. The driver implements the open, read, write and close functions apart from module initialization and cleanup. In the user space, there are number of read and write applications working on the driver. Every write should be signaled by the read. In such scenarios, where should the function 'init_completion' be called?

- A. in the init_module of the driver
- B. in the open function implemented by the driver
- C. does not have to be called. The kernel takes care of it
- D. in the read function of the driver

6. In which method of a character driver should the functions 'cdev_init' and 'cdev_add' be called? Choose the most appropriate answer?

- A. module init function and module open function respectively
- B. both in module init function
- C. both in open function
- D. none of the above

7. The loglevel strings in printk are defined in the header file

- A. <linux/module.h>
- B. <linux/init.h>
- C. <linux/kernel.h>
- D. <linux/fs.h>

8. Block size in block devices is of

- A. 1MB
- B. 512 bytes
- C. 256 bytes
- D. 8 bits

9. PCI peripheral are defined by

- A. bus number
- B. device number
- C. function number
- D. all

10. For a device driver to access the I/O memory address it must be mapped to virtual address.

This can be done by using the function

- A. `ioremap()`;
- B. `io_map()`;
- C. `request_mem_region()`;
- D. both (A) and (B)

11. The major number

- A. used by kernel to determine which device is being referred to
- B. can be used as an index into a local array of devices
- C. identifies the driver associated with the device
- D. all of the above

12. Device that can be accessed as a stream of bytes

- A. character devices
- B. block devices
- C. network devices
- D. none of these

13. `mknod` is used for creating

- A. character device file
- B. block device file
- C. FIFO
- D. all of the above

14. Which mechanism is not used for delayed code execution?

- A. timers
- B. `ioctl`
- C. workqueues
- D. tasklets

15. In a kernel Makefile, the tag '`obj-m`' compiles the source code as

- A. a dynamically loaded module
- B. a system call
- C. a statically built in module
- D. the kernel core component

16. To which directory `printk` message goes?

- A. `/proc/messages`
- B. `/var/log/messages`
- C. `/proc/kall`
- D. `/var/log/message`

17. Using which utility in Linux, will load the kernel module

- A. insmod
- B. rmmmod
- C. dmesg
- D. load

18. Which of the following macros is used to pass an array as a parameter to the kernel module?

- A. module_param_array (name, type, num, perm);
- B. module_param(name, type, num, perm);
- C. module_param_char[size](name, type, perm);
- D. module_param[size](name, type, num, perm);

19. Which of the following is true for the 'dev_t' data type?

- A. it is used to hold the driver name
- B. it is used to hold the major-minor number
- C. it holds the major-minor numbers and the driver name
- D. none of the above

20. All I/O memory allocations are listed in

- A. /proc/iomem
- B. /proc/ioports
- C. /proc/meminfo
- D. /proc/mem

21. Debugging kernel code can be done by

- A. monitoring
- B. printk message
- C. gdb
- D. all of the above

22. Module stacking means

- A. a module will be using symbols exported by other module
- B. a module loaded at run time
- C. modules to which parameters are passed at insertion time
- D. none of the above

23. The field in the file operation structure which is not an operation at all

- A. ssize_t read();
- B. loff_t *llseek();
- C. struct module *owner;
- D. int *ioctl()

24. The function which is used to allocate and initialize a character device

- A. int register_chrdev_region();
- B. void chdev_init();
- C. int register_chrdev_region();
- D. int register_chrdev();

25. What is the preferred mechanism to dynamically find out the IRQ number of a device?

- A. probing
- B. seeking
- C. polling
- D. masking

26. Which of the following should be avoided in the interrupt handlers?

- A. calling wait_event/allocating memory
- B. calling schedule
- C. locking a semaphore
- D. all of the above

27. Find the odd function out with reference to short delays inside the kernel

- A. ndelay();
- B. udelay();
- C. mdelay();
- D. pdelay();

28. A character device driver is written to access the serial port of the PC. The driver requests a device number from the kernel by calling the function 'alloc_chrdev_region'. The kernel allocates the Major-Minor number combination of 253,0.

Using which utility can a user space application create a device node to access the driver?

Can two device nodes be created bearing the same major-minor number combination?

- A. mknod, TRUE
- B. mknod, FALSE
- C. mkdev, TRUE
- D. mkdev, FALSE

29. What will happen if the return a negative value from the module initialization function (init_module)?

- A. kernel crashes
- B. error during compilation of the module
- C. error while inserting the module
- D. no problems will arise

30. If a function or variable defined in one driver is to be shared with other drivers, which of the following functions should be called?

- A. module_param
- B. EXPORT_SYMBOL()
- C. module_param_novers
- D. module_param_novers

31. If you export any symbol from your driver, if you want to see the exported symbols, which file you need to refer

- A. /proc/symbols
- B. /proc/ksyms
- C. /proc/kallsyms
- D. none of the above

32. In a module if its license is not explicitly specified its default license would be

- A. GPL
- B. GPLv2
- C. Dual BSD/GPL
- D. Proprietary

33. The devices that can host a filesystem

- A. character device
- B. block devices
- C. network interfaces
- D. none of the above

34. The function which is used to access the i/o memory

- A. outb
- B. insb
- C. insb
- D. ioread8

35. For allocating big chunk of memory we use

- A. malloc
- B. lmalloc
- C. get_free_page
- D. none of these

36. Modules run in

- A. user space
- B. kernel space
- C. anywhere
- D. all of the above

37. SMP stands for

- A. simple machine process
- B. symmetric multiprocessor system
- C. symmetric module system
- D. none of the above

38.structure used by the kernel internally to represent files

- A. mknod
- B. inode
- C. structdev
- D. all of these

39. The functionis used to copy a kernel data segment to user data segment

- A. get_user
- B. put_user
- C. write_to_user
- D. copy

40. What is kernel module?

- A. each piece of code that can be added to the kernel at run time
- B. file used to talk to hardware
- C. main kernel image that is built as a static image
- D. none of these