

```
1. root@granite2:~# mount | grep "/dev "
2. devtmpfs on /dev type devtmpfs (rw,relatime,size=514168k,nr_inodes=128542,mounted=755)
```

/dev目录下device node都是由"devtmpfs"负责创建的。

drivers/base/devtmpfs.c export the following 2 functions

```
int devtmpfs_create_node(struct device dev)
int devtmpfs_delete_node(struct device dev)
```

in drivers/base/core.c

device\_add() invoke

```
devtmpfs_create_node(dev);
```

device\_del() invoke

```
devtmpfs_delete_node(dev);
```

即kernel在create device node时就会申请在 /dev 目录下生成设备节点。

那么devtmpfs必须先于driver framework初始化。

in drivers/base/init.c

```
1. /**
2.  * driver_init - initialize driver model.
3.  *
4.  * Call the driver model init functions to initialize their
5.  * subsystems. Called early from init/main.c.
6.  */
7. void __init driver_init(void)
8. {
9.     /* These are the core pieces */
10.    devtmpfs_init();
11.    devices_init();
12.    buses_init();
13.    classes_init();
14.    firmware_init();
15.    hypervisor_init();
16.
17.    /* These are also core pieces, but must come after the
18.     * core core pieces.
19.     */
20.    platform_bus_init();
21.    cpu_dev_init();
22.    memory_dev_init();
23.    container_dev_init();
24.    of_core_init();
25. }
```

devtmpfs创建 `kdevtmpfs` thread来负责response在/dev目录下创建设备节点的request.

```
1. root@granite2:~# ps | grep "[kdevtmpfs]" "[kdevtmpfs]"\  
2.    16 root          0 SW      [kdevtmpfs]
```

```
1. static int devtmpfsd(void *p)  
2. {  
3.     char options[] = "mode=0755";  
4.     int *err = p;  
5.     *err = sys_unshare(CLONE_NEWNS);  
6.     if (*err)  
7.         goto out;  
8.     *err = sys_mount("devtmpfs", "/", "devtmpfs", MS_SILENT, options); ①  
9.     if (*err)  
10.        goto out;  
11.     sys_chdir("/.."); /* will traverse into overmounted root */  
12.     sys_chroot(".");  
13.     complete(&setup_done);  
14.     while (1) { ②  
15.         spin_lock(&req_lock);  
16.         while (requests) {  
17.             struct req *req = requests;  
18.             requests = NULL;  
19.             spin_unlock(&req_lock);  
20.             while (req) {  
21.                 struct req *next = req->next;  
22.                 req->err = handle(req->name, req->mode,  
23.                                     req->uid, req->gid, req->dev);  
24.                 complete(&req->done);  
25.                 req = next;  
26.             }  
27.             spin_lock(&req_lock);  
28.         }  
29.         __set_current_state(TASK_INTERRUPTIBLE);  
30.         spin_unlock(&req_lock);  
31.         schedule();  
32.     }  
33.     return 0;  
34. out:  
35.     complete(&setup_done);  
36.     return *err;  
37. }
```

①  
devtmpfs先把自己mount在/dev目录

②  
然后就是等待在 `/dev` 目录下create / remove device node的request.  
比如下面的create device node request

```

1.  int devtmpfs_create_node(struct device *dev)
2.  {
3.      const char *tmp = NULL;
4.      struct req req;
5.
6.      if (!thread)
7.          return 0;
8.
9.      req.mode = 0; ⑤
10.     req.uid = GLOBAL_ROOT_UID;
11.     req.gid = GLOBAL_ROOT_GID;
12.     req.name = device_get_devnode(dev, &req.mode, &req.uid, &req.gid, &tmp);
13.     if (!req.name)
14.         return -ENOMEM;
15.
16.     if (req.mode == 0)
17.         req.mode = 0600;
18.     if (is_blockdev(dev))
19.         req.mode |= S_IFBLK;
20.     else
21.         req.mode |= S_IFCHR;
22.
23.     req.dev = dev;
24.
25.     init_completion(&req.done); ⑥
26.
27.     spin_lock(&req_lock);
28.     req.next = requests; ⑦
29.     requests = &req;
30.     spin_unlock(&req_lock);
31.
32.     wake_up_process(thread); ⑧
33.     wait_for_completion(&req.done); ⑨
34.
35.     kfree(tmp);
36.
37.     return req.err;
38. }

```

⑤

把具体创建device node信息填写在struct req中。

⑥

在 `/dev` 目录下create / remove device node是同步的，通过这里的 `req.done` 来实现同步。

在这里初始化completion. 然后在⑨等待creation / removal的完成。

⑦

把request挂到链表上

⑧

唤醒devtmpfs thread.因为如果没有request处理，devtmpfs thread会进入sleep。

③

在 `/dev` 目录下取操作文件系统结构

④

该request处理完，释放在⑨处pending着的申请线程。

在handle\_create()中加入调试语句，查看在kernel启动阶段在 `/dev` 目录下创建device node 的状况。

```
1. static int handle_create(const char *nodename, umode_t mode, kuid_t uid,
2.                          kgid_t gid, struct device *dev)
3. {
4.     struct dentry *dentry;
5.     struct path path;
6.     int err;
7.
8.     printk("%s-%d: %s\n", __func__, __LINE__, nodename);
9.
10.    dentry = kern_path_create(AT_FDCWD, nodename, &path, 0);
11.    if (dentry == ERR_PTR(-ENOENT)) {
12.        create_path(nodename);
13.        dentry = kern_path_create(AT_FDCWD, nodename, &path, 0);
14.    }
15.    if (IS_ERR(dentry))
16.        return PTR_ERR(dentry);
17.
18.    err = vfs_mknod(path.dentry->d_inode, dentry, mode, dev->devt);
19.    if (!err) {
20.        struct iattr newattrs;
21.
22.        newattrs.ia_mode = mode;
23.        newattrs.ia_uid = uid;
24.        newattrs.ia_gid = gid;
25.        newattrs.ia_valid = ATTR_MODE|ATTR_UID|ATTR_GID;
26.        mutex_lock(&dentry->d_inode->i_mutex);
27.        notify_change(dentry, &newattrs, NULL);
28.        mutex_unlock(&dentry->d_inode->i_mutex);
29.
30.        /* mark as kernel-created inode */
31.        dentry->d_inode->i_private = &thread;
32.    }
33.    done_path_create(&path, dentry);
34.    return err;
35. }
```

(禁止udev启动)

```
1.
2. handle_create-202: ptyp0
3.
4. handle_create-202: ptyp1
5.
6. handle_create-202: ptyp2
7.
8. handle_create-202: ptyp3
9.
10. handle_create-202: ptyp4
11.
12. handle_create-202: ptyp5
13.
14. handle_create-202: ptyp6
15.
16. handle_create-202: ptyp7
17.
18. handle_create-202: ptyp8
19.
20. handle_create-202: ptyp9
21.
22. handle_create-202: ptypa
23.
24. handle_create-202: ptypb
25.
26. handle_create-202: ptypc
27.
28. handle_create-202: ptypd
29.
30. handle_create-202: ptype
31.
32. handle_create-202: ptypf
33.
34. handle_create-202: ptyq0
35.
36. handle_create-202: ptyq1
37.
38. handle_create-202: ptyq2
39.
40. handle_create-202: ptyq3
41.
42. handle_create-202: ptyq4
43.
44. handle_create-202: ptyq5
45.
46. handle_create-202: ptyq6
47.
48. handle_create-202: ptyq7
49.
50. handle_create-202: ptyq8
51.
52. handle_create-202: ptyq9
53.
```

54. handle\_create-202: ptyqa  
55.  
56. handle\_create-202: ptyqb  
57.  
58. handle\_create-202: ptyqc  
59.  
60. handle\_create-202: ptyqd  
61.  
62. handle\_create-202: ptyqe  
63.  
64. handle\_create-202: ptyqf  
65.  
66. handle\_create-202: ptyr0  
67.  
68. handle\_create-202: ptyr1  
69.  
70. handle\_create-202: ptyr2  
71.  
72. handle\_create-202: ptyr3  
73.  
74. handle\_create-202: ptyr4  
75.  
76. handle\_create-202: ptyr5  
77.  
78. handle\_create-202: ptyr6  
79.  
80. handle\_create-202: ptyr7  
81.  
82. handle\_create-202: ptyr8  
83.  
84. handle\_create-202: ptyr9  
85.  
86. handle\_create-202: ptyra  
87.  
88. handle\_create-202: ptyrb  
89.  
90. handle\_create-202: ptyrc  
91.  
92. handle\_create-202: ptyrd  
93.  
94. handle\_create-202: ptyre  
95.  
96. handle\_create-202: ptyrf  
97.  
98. handle\_create-202: ptys0  
99.  
100. handle\_create-202: ptys1  
101.  
102. handle\_create-202: ptys2  
103.  
104. handle\_create-202: ptys3  
105.  
106. handle\_create-202: ptys4  
107.

108. handle\_create-202: ptys5  
109.  
110. handle\_create-202: ptys6  
111.  
112. handle\_create-202: ptys7  
113.  
114. handle\_create-202: ptys8  
115.  
116. handle\_create-202: ptys9  
117.  
118. handle\_create-202: ptysa  
119.  
120. handle\_create-202: ptysb  
121.  
122. handle\_create-202: ptysc  
123.  
124. handle\_create-202: ptysd  
125.  
126. handle\_create-202: ptyse  
127.  
128. handle\_create-202: ptysf  
129.  
130. handle\_create-202: ptyt0  
131.  
132. handle\_create-202: ptyt1  
133.  
134. handle\_create-202: ptyt2  
135.  
136. handle\_create-202: ptyt3  
137.  
138. handle\_create-202: ptyt4  
139.  
140. handle\_create-202: ptyt5  
141.  
142. handle\_create-202: ptyt6  
143.  
144. handle\_create-202: ptyt7  
145.  
146. handle\_create-202: ptyt8  
147.  
148. handle\_create-202: ptyt9  
149.  
150. handle\_create-202: ptyta  
151.  
152. handle\_create-202: ptytb  
153.  
154. handle\_create-202: ptytc  
155.  
156. handle\_create-202: ptytd  
157.  
158. handle\_create-202: ptyte  
159.  
160. handle\_create-202: ptytf  
161.

162. handle\_create-202: ptyu0  
163.  
164. handle\_create-202: ptyu1  
165.  
166. handle\_create-202: ptyu2  
167.  
168. handle\_create-202: ptyu3  
169.  
170. handle\_create-202: ptyu4  
171.  
172. handle\_create-202: ptyu5  
173.  
174. handle\_create-202: ptyu6  
175.  
176. handle\_create-202: ptyu7  
177.  
178. handle\_create-202: ptyu8  
179.  
180. handle\_create-202: ptyu9  
181.  
182. handle\_create-202: ptyua  
183.  
184. handle\_create-202: ptyub  
185.  
186. handle\_create-202: ptyuc  
187.  
188. handle\_create-202: ptyud  
189.  
190. handle\_create-202: ptyue  
191.  
192. handle\_create-202: ptyuf  
193.  
194. handle\_create-202: ptyv0  
195.  
196. handle\_create-202: ptyv1  
197.  
198. handle\_create-202: ptyv2  
199.  
200. handle\_create-202: ptyv3  
201.  
202. handle\_create-202: ptyv4  
203.  
204. handle\_create-202: ptyv5  
205.  
206. handle\_create-202: ptyv6  
207.  
208. handle\_create-202: ptyv7  
209.  
210. handle\_create-202: ptyv8  
211.  
212. handle\_create-202: ptyv9  
213.  
214. handle\_create-202: ptyva  
215.



216. handle\_create-202: ptyvb  
217.  
218. handle\_create-202: ptyvc  
219.  
220. handle\_create-202: ptyvd  
221.  
222. handle\_create-202: ptyve  
223.  
224. handle\_create-202: ptyvf  
225.  
226. handle\_create-202: ptyw0  
227.  
228. handle\_create-202: ptyw1  
229.  
230. handle\_create-202: ptyw2  
231.  
232. handle\_create-202: ptyw3  
233.  
234. handle\_create-202: ptyw4  
235.  
236. handle\_create-202: ptyw5  
237.  
238. handle\_create-202: ptyw6  
239.  
240. handle\_create-202: ptyw7  
241.  
242. handle\_create-202: ptyw8  
243.  
244. handle\_create-202: ptyw9  
245.  
246. handle\_create-202: ptywa  
247.  
248. handle\_create-202: ptywb  
249.  
250. handle\_create-202: ptywc  
251.  
252. handle\_create-202: ptywd  
253.  
254. handle\_create-202: ptywe  
255.  
256. handle\_create-202: ptywf  
257.  
258. handle\_create-202: ptyx0  
259.  
260. handle\_create-202: ptyx1  
261.  
262. handle\_create-202: ptyx2  
263.  
264. handle\_create-202: ptyx3  
265.  
266. handle\_create-202: ptyx4  
267.  
268. handle\_create-202: ptyx5  
269.

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270. handle_create-202: ptyx6
271.
272. handle_create-202: ptyx7
273.
274. handle_create-202: ptyx8
275.
276. handle_create-202: ptyx9
277.
278. handle_create-202: ptyxa
279.
280. handle_create-202: ptyxb
281.
282. handle_create-202: ptyxc
283.
284. handle_create-202: ptyxd
285.
286. handle_create-202: ptyxe
287.
288. handle_create-202: ptyxf
289.
290. handle_create-202: ptyy0
291.
292. handle_create-202: ptyy1
293.
294. handle_create-202: ptyy2
295.
296. handle_create-202: ptyy3
297.
298. handle_create-202: ptyy4
299.
300. handle_create-202: ptyy5
301.
302. handle_create-202: ptyy6
303.
304. handle_create-202: ptyy7
305.
306. handle_create-202: p
307. handle_create-202: watchdog
308. handle_create-202: watchdog0
309. handle_create-202: sccp0
310. handle_create-202: sccp1
311. handle_create-202: sccp2
312. handle_create-202: stepper0
313. handle_create-202: stepper1
314. handle_create-202: stepper3
315. handle_create-202: stepper4
316. handle_create-202: stepper5
317. handle_create-202: stepper6
318. handle_create-202: stepper7
319. handle_create-202: stepper8
320. handle_create-202: stepper9
321. handle_create-202: stepper_status
322. handle_create-202: hips0
323. handle_create-202: hips1
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324. handle_create-202: hips2
325. handle_create-202: hips3
326. handle_create-202: dma_alloc
327. handle_create-202: bus/usb/001/001
328. handle_create-202: upc0
329. handle_create-202: upc1
330. handle_create-202: lvc0
331. handle_create-202: bus/usb/002/001
332. handle_create-202: efuse
333. handle_create-202: imagepower
334. handle_create-202: low_power_idle
335. handle_create-202: sp_virtual_uart
336. handle_create-202: galcore
337.
338. handle_create-202: vga_arbiter
339.
340. handle_create-202: mem
341.
342. handle_create-202: kmem
343.
344. handle_create-202: null
345.
346. handle_create-202: port
347.
348. handle_create-202: zero
349.
350. handle_create-202: full
351.
352. handle_create-202: random
353.
354. handle_create-202: urandom
355.
356. handle_create-202: kmsg
357.
358. handle_create-202: tty
359.
360. handle_create-202: console
361.
362. handle_create-202: tty0
363.
364. handle_create-202: vcs
365.
366. handle_create-202: vcsa
367.
368. handle_create-202: vcs1
369.
370. handle_create-202: vcsa1
371.
372. handle_create-202: tty1
373.
374. handle_create-202: tty2
375.
376. handle_create-202: tty3
377.
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378. handle\_create-202: tty4  
379.  
380. handle\_create-202: tty5  
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382. handle\_create-202: tty6  
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384. handle\_create-202: tty7  
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386. handle\_create-202: tty8  
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388. handle\_create-202: tty9  
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390. handle\_create-202: tty10  
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392. handle\_create-202: tty11  
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394. handle\_create-202: tty12  
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396. handle\_create-202: tty13  
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400. handle\_create-202: tty15  
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414. handle\_create-202: tty22  
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424. handle\_create-202: tty27  
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426. handle\_create-202: tty28  
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428. handle\_create-202: tty29  
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430. handle\_create-202: tty30  
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432. handle\_create-202: tty31  
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434. handle\_create-202: tty32  
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436. handle\_create-202: tty33  
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438. handle\_create-202: tty34  
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440. handle\_create-202: tty35  
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452. handle\_create-202: tty41  
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454. handle\_create-202: tty42  
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456. handle\_create-202: tty43  
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460. handle\_create-202: tty45  
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462. handle\_create-202: tty46  
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464. handle\_create-202: tty47  
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466. handle\_create-202: tty48  
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468. handle\_create-202: tty49  
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470. handle\_create-202: tty50  
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472. handle\_create-202: tty51  
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474. handle\_create-202: tty52  
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476. handle\_create-202: tty53  
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478. handle\_create-202: tty54  
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480. handle\_create-202: tty55  
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482. handle\_create-202: tty56  
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484. handle\_create-202: tty57  
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486. handle\_create-202: tty58  
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488. handle\_create-202: tty59  
489.  
490. handle\_create-202: tty60  
491.  
492. handle\_create-202: tty61  
493.  
494. handle\_create-202: tty62  
495.  
496. handle\_create-202: tty63  
497.  
498. handle\_create-202: fb0  
499.  
500. handle\_create-202: ptyp0  
501.  
502. handle\_create-202: ptyp1  
503.  
504. handle\_create-202: ptyp2  
505.  
506. handle\_create-202: ptyp3  
507.  
508. handle\_create-202: ptyp4  
509.  
510. handle\_create-202: ptyp5  
511.  
512. handle\_create-202: ptyp6  
513.  
514. handle\_create-202: ptyp7  
515.  
516. handle\_create-202: ptyp8  
517.  
518. handle\_create-202: ptyp9  
519.  
520. handle\_create-202: ptypa  
521.  
522. handle\_create-202: ptypb  
523.  
524. handle\_create-202: ptypc  
525.  
526. handle\_create-202: ptypd  
527.  
528. handle\_create-202: ptype  
529.  
530. handle\_create-202: ptypf  
531.  
532. handle\_create-202: ptyq0  
533.  
534. handle\_create-202: ptyq1  
535.  
536. handle\_create-202: ptyq2  
537.  
538. handle\_create-202: ptyq3  
539.

540. handle\_create-202: ptyq4  
541.  
542. handle\_create-202: ptyq5  
543.  
544. handle\_create-202: ptyq6  
545.  
546. handle\_create-202: ptyq7  
547.  
548. handle\_create-202: ptyq8  
549.  
550. handle\_create-202: ptyq9  
551.  
552. handle\_create-202: ptyqa  
553.  
554. handle\_create-202: ptyqb  
555.  
556. handle\_create-202: ptyqc  
557.  
558. handle\_create-202: ptyqd  
559.  
560. handle\_create-202: ptyqe  
561.  
562. handle\_create-202: ptyqf  
563.  
564. handle\_create-202: ptyr0  
565.  
566. handle\_create-202: ptyr1  
567.  
568. handle\_create-202: ptyr2  
569.  
570. handle\_create-202: ptyr3  
571.  
572. handle\_create-202: ptyr4  
573.  
574. handle\_create-202: ptyr5  
575.  
576. handle\_create-202: ptyr6  
577.  
578. handle\_create-202: ptyr7  
579.  
580. handle\_create-202: ptyr8  
581.  
582. handle\_create-202: ptyr9  
583.  
584. handle\_create-202: ptyra  
585.  
586. handle\_create-202: ptyrb  
587.  
588. handle\_create-202: ptyrc  
589.  
590. handle\_create-202: ptyrd  
591.  
592. handle\_create-202: ptyre  
593.

594. handle\_create-202: ptyrf  
595.  
596. handle\_create-202: ptys0  
597.  
598. handle\_create-202: ptys1  
599.  
600. handle\_create-202: ptys2  
601.  
602. handle\_create-202: ptys3  
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424. handle\_create-202: ttybe  
425.  
426. handle\_create-202: ttybf  
427.  
428. handle\_create-202: ttyc0  
429.  
430. handle\_create-202: ttyc1  
431.  
432. handle\_create-202: ttyc2  
433.  
434. handle\_create-202: ttyc3  
435.  
436. handle\_create-202: ttyc4  
437.  
438. handle\_create-202: ttyc5  
439.  
440. handle\_create-202: ttyc6  
441.  
442. handle\_create-202: ttyc7  
443.  
444. handle\_create-202: ttyc8  
445.  
446. handle\_create-202: ttyc9  
447.  
448. handle\_create-202: ttyca  
449.  
450. handle\_create-202: ttycb  
451.  
452. handle\_create-202: ttycc  
453.  
454. handle\_create-202: ttycd  
455.  
456. handle\_create-202: ttyce  
457.

458. handle\_create-202: ttycf  
459.  
460. handle\_create-202: ttyd0  
461.  
462. handle\_create-202: ttyd1  
463.  
464. handle\_create-202: ttyd2  
465.  
466. handle\_create-202: ttyd3  
467.  
468. handle\_create-202: ttyd4  
469.  
470. handle\_create-202: ttyd5  
471.  
472. handle\_create-202: ttyd6  
473.  
474. handle\_create-202: ttyd7  
475.  
476. handle\_create-202: ttyd8  
477.  
478. handle\_create-202: ttyd9  
479.  
480. handle\_create-202: ttyda  
481.  
482. handle\_create-202: ttydb  
483.  
484. handle\_create-202: ttydc  
485.  
486. handle\_create-202: ttydd  
487.  
488. handle\_create-202: ttyde  
489.  
490. handle\_create-202: ttydf  
491.  
492. handle\_create-202: ttye0  
493.  
494. handle\_create-202: ttye1  
495.  
496. handle\_create-202: ttye2  
497.  
498. handle\_create-202: ttye3  
499.  
500. handle\_create-202: ttye4  
501.  
502. handle\_create-202: ttye5  
503.  
504. handle\_create-202: ttye6  
505.  
506. handle\_create-202: ttye7  
507.  
508. handle\_create-202: ttye8  
509.  
510. handle\_create-202: ttye9  
511.



512. handle\_create-202: ttyea  
513.  
514. handle\_create-202: ttyeb  
515.  
516. handle\_create-202: ttyec  
517.  
518. handle\_create-202: ttyed  
519.  
520. handle\_create-202: ttyee  
521.  
522. handle\_create-202: ttyef  
523.  
524. handle\_create-202: ptmx  
525.  
526. handle\_create-202: ttyS0  
527. handle\_create-202: uio0  
528. handle\_create-202: uio1  
529. handle\_create-202: uio2  
530. handle\_create-202: uio3  
531. handle\_create-202: uio4  
532. handle\_create-202: uio5  
533. handle\_create-202: uio6  
534. handle\_create-202: uio7  
535. handle\_create-202: uio8  
536. handle\_create-202: uio9  
537. handle\_create-202: uio10  
538. handle\_create-202: uio11  
539. handle\_create-202: uio12  
540. handle\_create-202: uio13  
541. handle\_create-202: uio14  
542. handle\_create-202: uio15  
543. handle\_create-202: uio16  
544. handle\_create-202: uio17  
545. handle\_create-202: uio18  
546. handle\_create-202: uio19  
547. handle\_create-202: uio20  
548. handle\_create-202: input/mice  
549. handle\_create-202: psaux  
550. handle\_create-202: uinput  
551. handle\_create-202: rtc0  
552. handle\_create-202: mmcb1k0  
553. handle\_create-202: mmcb1k0rpmb  
554. handle\_create-202: mmcb1k0boot1  
555. handle\_create-202: mmcb1k0boot0  
556. handle\_create-202: cpu\_dma\_latency  
557. handle\_create-202: network\_latency  
558. handle\_create-202: network\_throughput  
559. handle\_create-202: memory\_bandwidth  
560. handle\_create-202: mmcb1k1  
561. handle\_create-202: mmcb1k1p1  
562. handle\_create-202: mmcb1k1p2  
563. handle\_create-202: dma\_alloc  
564. handle\_create-202: efuse  
565. handle\_create-202: hips0

```
566. handle_create-202: hips1
567. handle_create-202: hips2
568. handle_create-202: hips3
569. handle_create-202: imagepower
570. handle_create-202: lvc0
571. handle_create-202: low_power_idle
572. handle_create-202: sp_virtual_uart
573. handle_create-202: galcore
574. handle_create-202: watchdog
575. handle_create-202: watchdog0
576. handle_create-202: sccp0
577. handle_create-202: sccp1
578. handle_create-202: sccp2
579. handle_create-202: stepper0
580. handle_create-202: stepper1
581. handle_create-202: stepper3
582. handle_create-202: stepper4
583. handle_create-202: stepper5
584. handle_create-202: stepper6
585. handle_create-202: stepper7
586. handle_create-202: stepper8
587. handle_create-202: stepper9
588. handle_create-202: stepper_status
589. (kernel启动完毕, 手工run udev)
590. handle_create-202: upc0
591. handle_create-202: upc1
592. handle_create-202: bus/usb/001/001
593. handle_create-202: bus/usb/002/001
```