

Задание 1

Листинг кода init.c:

```
#include <stdio.h>

int main()
{
    printf("        My init: HELLO!\n");
    while(1)
        sleep(10);
}
```

Вывод qemu:

```
[ 20.711433] In-situ OAM (IOAM) with IPv6
[ 20.715293] sit: IPv6, IPv4 and MPLS over IPv4 tunneling driver
[ 20.749640] NET: Registered PF_PACKET protocol family
[ 20.750097] can: controller area network core
[ 20.753335] NET: Registered PF_CAN protocol family
[ 20.753891] can: raw protocol
[ 20.755030] can: broadcast manager protocol
[ 20.757857] can: netlink gateway - max_hops=1
[ 20.771244] Key type dns_resolver registered
[ 20.777754] ThumbEE CPU extension supported.
[ 20.778520] Registering SWP/SWPB emulation handler
[ 21.403783] Loading compiled-in X.509 certificates
[ 21.738968] 10009000.serial: ttyAMA0 at MMIO 0x10009000 (irq = 37, base_baud = 0) is a PL011 rev1
[ 21.754423] printk: console [ttyAMA0] enabled
[ 22.268962] 1000a000.serial: ttyAMA1 at MMIO 0x1000a000 (irq = 38, base_baud = 0) is a PL011 rev1
[ 22.307843] 1000b000.serial: ttyAMA2 at MMIO 0x1000b000 (irq = 39, base_baud = 0) is a PL011 rev1
[ 22.332070] 1000c000.serial: ttyAMA3 at MMIO 0x1000c000 (irq = 40, base_baud = 0) is a PL011 rev1
[ 22.503375] clk: Disabling unused clocks
[ 22.508260] PM: genpd: Disabling unused power domains
[ 23.149582] Freeing unused kernel image (initmem) memory: 2048K
[ 23.221002] Run /init as init process
        My init: HELLO!
QEMU: Terminated
```

Последовательность запускаемых команд:

```
137 vim init.c
138 arm-linux-gnueabi-gcc init.c -o init -static
139 echo init
140 echo ./init
141 echo init | cpio -o -H newc | gzip > initramfs.cpio.gz
142 ls
143 QEMU_AUDIO_DRV=none qemu-system-arm -M vexpress-a9 -kernel zImage initrd initramfs.cpio.gz -dtb vexpress-
v2p-ca9.dtb -nographic -append "console=ttyAMA0"
144 QEMU_AUDIO_DRV=none qemu-system-arm -M vexpress-a9 -kernel zImage -initrd initramfs.cpio.gz -dtb vexpress-
-v2p-ca9.dtb -nographic -append "console=ttyAMA0"
145 vim init.c
146 history
```

Задание 2

Вывод qemu:

```
[ 25.974762] 1000b000.serial: ttyAMA2 at MMIO 0x1000b000 (irq = 39, base_baud = 0) is a PL011 rev1
[ 26.004810] 1000c000.serial: ttyAMA3 at MMIO 0x1000c000 (irq = 40, base_baud = 0) is a PL011 rev1
[ 26.295464] clk: Disabling unused clocks
[ 26.299072] PM: genpd: Disabling unused power domains
[ 26.942752] Freeing unused kernel image (initmem) memory: 2048K
[ 27.017414] Run /bin/ash as init process
/bin/ash: can't access tty; job control turned off
~ # [ 36.476672] amba 1000f000.wdt: deferred probe pending: (reason unknown)
[ 36.478241] amba 100e0000.memory-controller: deferred probe pending: (reason unknown)
[ 36.478981] amba 100e1000.memory-controller: deferred probe pending: (reason unknown)
[ 36.482226] amba 100e5000.watchdog: deferred probe pending: (reason unknown)
^C

~ # ls
bin          initramfs.cpio.gz  root          usr
dev          linuxrc           sbin
~ # cd root/
/root # ls
/root # cd /dev/
/dev # ls
console
/dev #
```

Последовательность запускаемых команд:

```
228 ARCH=arm CROSS_COMPILE=arm-linux-gnueabihf- make defconfig
229 ARCH=arm CROSS_COMPILE=arm-linux-gnueabihf- make menuconfig
230 ARCH=arm CROSS_COMPILE=arm-linux-gnueabihf- make -j 2
231 file busybox
232 ARCH=arm CROSS_COMPILE=arm-linux-gnueabihf- make install -j 2
233 cd _install/
234 find . | cpio -o -H newc | gzip > initramfs.cpio.gz
235 cp initramfs.cpio.gz ../../arm-linux/
236 cd ../../arm-linux/
237 ls -l
238 QEMU_AUDIO_DRV=none qemu-system-arm -M vexpress-a9 -kernel zImage -initrd initramfs.cpio.gz -dtb vexpress
-v2p-ca9.dtb -append "console=ttyAMA0 rdinit=/bin/ash" -nographic
239 QEMU_AUDIO_DRV=none qemu-system-arm -M vexpress-a9 -kernel zImage -initrd initramfs.cpio.gz -dtb vexpress
-v2p-ca9.dtb -append "rdinit=/bin/ash" -nographic
240 history
```