Первое задание

```
vitalii@vitalii-GF72-8RD:/media/vitalii/media/study/TEST$ arm-linux-gnueabihf-gcc -static init.c -o init
vitalii@vitalii-GF72-8RD:/media/vitalii/media/study/TEST$ echo ./init | cpio -o -H newc | gzip >  initramfs.cpio.gz
828 блоков
vitalii@vitalii-GF72-8RD:/media/vitalii/media/study/TEST$ ls
init  init.c  initramfs.cpio.gz  vexpress-v2p-ca9.dtb  zImage
```

```
vitalii@vitalii-GF72-8RD:/media/vitalii/media/study/TEST$ QEMU_AUDIO_DRW=none qemu-system-arm -M vexpress-a9 -kernel zImage -initrd initramfs.cpio.gz -dtb vexpress-v2p-ca9.dtb -append
"console=ttyAMA0" -nographic
[    0.000000] Booting Linux on physical CPU 0x0
[    0.000000] Linux version 6.16.0-rc2 (vitalii@vitalii-GF72-8RD) (arm-linux-gnueabihf-gcc (Ubuntu 13.3.0-6ubuntu2~24.04) 13.3.0, GNU ld (GNU Binutils for Ubuntu) 2.42) #1 SMP Mon Jun
16 15:57:01 +07 2025
[    0.000000] CPU: ARMv7 Processor [410fc090] revision 0 (ARMv7), cr=10c5387d
[    0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT nonaliasing instruction cache
[    0.000000] OF: fdt: Machine model: V2P-CA9
[    0.000000] Memory policy: Data cache writeback
[    0.000000] efi: UEFI not found.
[    0.000000] cma: Failed to reserve 64 MiB
[    0.000000] Zone ranges:
```

```
[    2.362041] input: ImExPS/2 Generic Explorer Mouse as /devices/platform/bus@4
0000000/bus@40000000:motherboard-bus@40000000/bus@40000000:motherboard-bus@40000
000:iofpga@7,00000000/10007000.kmi/serio1/input/input2
[    4.386724] clk: Disabling unused clocks
[    4.387106] PM: genpd: Disabling unused power domains
[    4.447632] Freeing unused kernel image (initmem) memory: 2048K
[    4.454591] Run /init as init process
----------> Hello Kernel! <-----------
[   14.570554] amba 1000f000.wdt: deferred probe pending: (reason unknown)
[   14.570630] amba 100e0000.memory-controller: deferred probe pending: (reason
unknown)
```

Второе задание

```
vitalii@vitalii-GF72-8RD:/media/vitalii/media/study/FS/busybox-1.36.1$ ARCH=arm make defconfig
  HOSTCC  scripts/basic/fixdep
  HOSTCC  scripts/basic/split-include
  HOSTCC  scripts/basic/docproc
  GEN     include/applets.h
  GEN     include/usage.h
  GEN     console-tools/Kbuild
  GEN     console-tools/Config.in
  GEN     init/Kbuild
```

```
    --- Build Options
    [*] Build static binary (no shared libs)
    [ ] Force NOMMU build
    (arm-linux-gnueabihf-) Cross compiler prefix
    ()   Path to sysroot
    ()   Additional CFLAGS
```

```
vitalii@vitalii-GF72-8RD:/media/vitalii/media/study/FS/busybox-1.36.1$ make -j 8
  SPLIT   include/autoconf.h -> include/config/*
  GEN     include/bbconfigopts.h
  GEN     include/common_bufsiz.h
  GEN     include/embedded_scripts.h
  HOSTCC  applets/usage
```

```
  CC        libbb/xregcomp.o
  AR        libbb/lib.a
  LINK      busybox_unstripped
Static linking against glibc, can't use --gc-sections
Trying libraries: m resolv rt
 Library m is needed, can't exclude it (yet)
 Library resolv is needed, can't exclude it (yet)
 Library rt is not needed, excluding it
 Library m is needed, can't exclude it (yet)
 Library resolv is needed, can't exclude it (yet)
Final link with: m resolv
```

```
vitalii@vitalii-GF72-8RD:/media/vitalii/media/study/FS/busybox-1.36.1/_ins
tall$ find . | cpio  -o -H newc | gzip > initramfs.cpio.gz

3109 блоков
```

```
vitalii@vitalii-GF72-8RD:/media/vitalii/media/study/TEST$ QEMU_AUDIO_DRW=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
[    0.000000] Booting Linux on physical CPU 0x0
[    0.000000] Linux version 6.16.0-rc2 (vitalii@vitalii-GF72-8RD) (arm-linux-gnueabihf-gcc (Ubuntu 13.3.0-6ubuntu2~24.04) 13.3.0, GNU ld (GNU Binutils for Ubuntu) 2.42) #1 SMP Mon Jun
 16 15:57:01 +07 2025
[    0.000000] CPU: ARMv7 Processor [410fc090] revision 0 (ARMv7), cr=10c5387d
[    0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT nonaliasing instruction cache
```

```
~ # ls
bin                 initramfs.cpio.gz   root                    usr
dev                 linuxrc             sbin
~ # cd bin/
/bin # ls
arch            dumpkmap        kill            netstat         setpriv
ash             echo            link            nice            setserial
base32          ed              linux32         pidof           sh
base64          egrep           linux64         ping            sleep
busybox         false           ln              ping6           stat
cat             fatattr         login           pipe_progress   stty
chattr          fdflush         ls              printenv        su
chgrp           fgrep           lsattr          ps              sync
chmod           fsync           lzop            pwd             tar
chown           getopt          makemime        reformime       touch
conspy          grep            mkdir           resume          true
cp              gunzip          mknod           rev             umount
cpio            gzip            mktemp          rm              uname
cttyhack        hostname        more            rmdir           usleep
date            hush            mount           rpm             vi
dd              ionice          mountpoint      run-parts       watch
df              iostat          mpstat          scriptreplay    zcat
dmesg           ipcalc          mt              sed
dnsdomainname   kbd_mode        mv              setarch
/bin #
```