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user@debian:~/Embedded_linux/kernel/ARM$ arm-linux-gnueabi-gcc -static init.c -o init
user@debian:~/Embedded_linux/kernel/ARM$ ls
init init.c vexpress-v2p-ca9.dtb zImage
user@debian:~/Embedded_linux/kernel/ARM$ file init
init: ELF 32-bit LSB executable, ARM, EABI5 version 1 (GNU/Linux), statically linked, BuildID[sha1]=12
d23a4061d8e571be70fe278d007c13e96f4302, for GNU/Linux 3.2.0, not stripped
user@debian:~/Embedded_linux/kernel/ARM$ echo init | cpio -o -H newc | gzip > initramfs.cpio.gz
890 blocks
user@debian:~/Embedded_linux/kernel/ARM$ ls
init init.c initramfs.cpio.gz vexpress-v2p-ca9.dtb zImage
user@debian:~/Embedded_linux/kernel/ARM$ QEMU_AUDIO_DRV=none qemu-system-arm -M vexpress-a9 -kernel zI
mage -initrd initramfs.cpio.gz -dtb vexpress-v2p-ca9.dtb -append "console=ttyAMA0" -nographic
qemu-system-arm: append: Could not open 'append': No such file or directory
user@debian:~/Embedded_linux/kernel/ARM$ QEMU_AUDIO_DRV=none qemu-system-arm -M vexpress-a9 -kernel zI
mage -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 6.1.0-TEST.0.5 (user@debian) (arm-linux-gnueabi-gcc (Debian 12.2.0-14) 1
2.2.0, GNU ld (GNU Binutils for Debian) 2.40) #1 SMP Wed Jul 2 22:13:11 +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

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[ 5.249838] usbcore: registered new interface driver usbhid
[ 5.249939] usbhid: USB HID core driver
[ 5.279638] NET: Registered PF_INET6 protocol family
[ 5.298368] Segment Routing with IPv6
[ 5.298952] In-situ OAM (IOAM) with IPv6
[ 5.300056] sit: IPv6, IPv4 and MPLS over IPv4 tunneling driver
[ 5.307840] NET: Registered PF_PACKET protocol family
[ 5.308395] can: controller area network core
[ 5.309436] NET: Registered PF_CAN protocol family
[ 5.309589] can: raw protocol
[ 5.309918] can: broadcast manager protocol
[ 5.310246] can: netlink gateway - max_hops=1
[ 5.312754] Key type dns_resolver registered
[ 5.313485] ThumbEE CPU extension supported.
[ 5.313695] Registering SWP/SWPB emulation handler
[ 5.319599] Loading compiled-in X.509 certificates
[ 5.361041] 10009000.uart: ttyAMA0 at MMIO 0x10009000 (irq = 37, base_baud = 0) is a PL011 rev1
[ 5.541439] printk: console [ttyAMA0] enabled
[ 5.546682] 1000a000.uart: ttyAMA1 at MMIO 0x1000a000 (irq = 38, base_baud = 0) is a PL011 rev1
[ 5.552377] 1000b000.uart: ttyAMA2 at MMIO 0x1000b000 (irq = 39, base_baud = 0) is a PL011 rev1
[ 5.557680] 1000c000.uart: ttyAMA3 at MMIO 0x1000c000 (irq = 40, base_baud = 0) is a PL011 rev1
[ 5.582720] uart-pl011 10009000.uart: no DMA platform data
[ 5.695706] Freeing unused kernel image (initmem) memory: 2048K
[ 5.718177] Run /init as init process

===== Hello kernel! =====
[ 5.913944] input: ImExPS/2 Generic Explorer Mouse as /devices/platform/bus@40000000/bus@40000000:m
otherboard-bus@40000000/bus@40000000:motherboard-bus@40000000:ioppga@7,00000000/10007000.kmi/serio1/in
put/input2
[ 15.899642] amba 1000f000.wdt: deferred probe pending
[ 15.900186] amba 100e0000.memory-controller: deferred probe pending
[ 15.900655] amba 100e1000.memory-controller: deferred probe pending
[ 15.901135] amba 100e5000.watchdog: deferred probe pending

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## (BusyBox 1.36.1)

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                                Settings
selects submenus --->. Highlighted letters are hotkeys. Pressing <Y> in
?> for Help, </> for Search. Legend: [*] built-in [ ] excluded <M> modu

↑(-)
[ ] Support NSA Security Enhanced Linux
[ ] Clean up all memory before exiting (usually not needed)
[*] Support LOG_INFO level syslog messages
--- Build Options
[ ] Build static binary (no shared libs)
[ ] Build position independent executable
[ ] Force NOMMU build
[ ] Build shared libbusybox
(arm-linux-gnueabihf-) Cross compiler prefix
() Path to sysroot
() Additional CFLAGS
() Additional LDFLAGS
() Additional LDLIBS
[ ] Avoid using GCC-specific code constructs
[*] Use -mpreferred-stack-boundary=2 on i386 arch
[*] Use -static-libgcc
--- Installation Options ("make install" behavior)
What kind of applet links to install (as soft-links) --->
(./_install) Destination path for 'make install'
--- Debugging Options
[ ] Build with debug information
[ ] Enable runtime sanitizers (ASAN/LSAN/USAN/etc...)
↓(+)

<Select> < Exit > < Help >

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	Name/Value
(NEEDED)	Shared library: [libm.so.6]
(NEEDED)	Shared library: [libresolv.so.2]
(NEEDED)	Shared library: [libc.so.6]

.n	Name
/...	
*ld-linux-armhf.so.3	
*libc.so.6	
@libm.so	
libm.so.6	
@libresolv.so	
libresolv.so.2	

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[ 5.950207] can: controller area network core
[ 5.951139] NET: Registered PF_CAN protocol family
[ 5.951258] can: raw protocol
[ 5.951580] can: broadcast manager protocol
[ 5.952404] can: netlink gateway - max_hops=1
[ 5.955092] Key type dns_resolver registered
[ 5.955848] ThumbEE CPU extension supported.
[ 5.956045] Registering SWP/SWPB emulation handler
[ 5.961311] Loading compiled-in X.509 certificates
[ 6.005687] 10009000.uart: ttyAMA0 at MMIO 0x10009000 (irq = 37, base_baud = 0) is a PL011 rev1
[ 6.130138] printk: console [ttyAMA0] enabled
[ 6.136059] 1000a000.uart: ttyAMA1 at MMIO 0x1000a000 (irq = 38, base_baud = 0) is a PL011 rev1
[ 6.140633] 1000b000.uart: ttyAMA2 at MMIO 0x1000b000 (irq = 39, base_baud = 0) is a PL011 rev1
[ 6.146734] 1000c000.uart: ttyAMA3 at MMIO 0x1000c000 (irq = 40, base_baud = 0) is a PL011 rev1
[ 6.169486] uart-pl011 10009000.uart: no DMA platform data
[ 6.281608] Freeing unused kernel image (initmem) memory: 2048K
[ 6.295735] Run /bin/ash as init process
/bin/ash: can't access tty; job control turned off
~ # [ 6.507843] input: ImEXPS/2 Generic Explorer Mouse as /devices/platform/bus@40000000/bus@40000000:motherboard-bus@40000000/bus@40000000:motherboard-bus@40000000:iofpga@7,00000000/10007000.kmi/serio1/input/input2
ls
bin          initramfs.cpio.gz  linuxrc      sbin
dev          lib               root         usr
~ # [ 16.496591] amba 1000f000.wdt: deferred probe pending
[ 16.498339] amba 100e0000.memory-controller: deferred probe pending
[ 16.499374] amba 100e1000.memory-controller: deferred probe pending
[ 16.500372] amba 100e5000.watchdog: deferred probe pending
mkdir home
~ # ls
bin          initramfs.cpio.gz  root
dev          lib               sbin
home         linuxrc           usr
~ # rm -f initramfs.cpio.gz
~ # ls
bin    dev    home  lib    linuxrc  root  sbin  usr
~ #
```