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Національний технічний університет України «КПІ» імені Ігоря
Сікорського
Кафедра обчислювальної техніки ФІОТ

ЗВІТ
з лабораторної роботи №4
з навчальної дисципліни «Архітектура комп'ютерів-2. Процесори»

Тема:

Підготовка та налаштування плати BBB

Виконав:

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Навчальної групи ІВ-93

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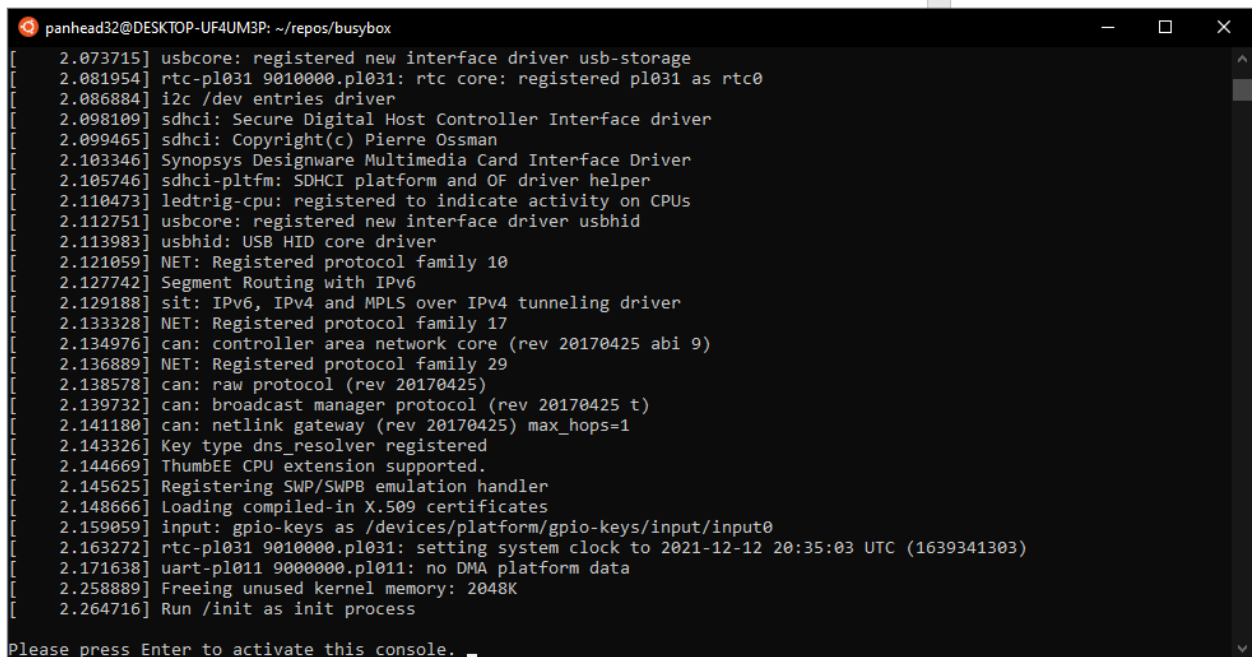
Київ 2021

Мета: Підготовка інструментів,Отримання та створення програмного забезпечення, Перепрошивка та завантаження для плати BBB

Завдання:

З файлу BBB_-_Platform_Bring_Up вам потрібно виконати пункти з першого і до 3.1 (QEMU Boot) включно, Підготовка інструментів,Отримання та створення програмного забезпечення, Перепрошивка та завантаження для плати BBB

Результат роботи



```
panhead32@DESKTOP-UF4UM3P: ~/repos/busybox
[ 2.073715] usbcore: registered new interface driver usb-storage
[ 2.081954] rtc-pl031 9010000.pl031: rtc core: registered pl031 as rtc0
[ 2.086884] i2c /dev entries driver
[ 2.098109] sdhci: Secure Digital Host Controller Interface driver
[ 2.099465] sdhci: Copyright(c) Pierre Ossman
[ 2.103346] Synopsys Designware Multimedia Card Interface Driver
[ 2.105746] sdhci-pltfm: SDHCI platform and OF driver helper
[ 2.110473] ledtrig-cpu: registered to indicate activity on CPUs
[ 2.112751] usbcore: registered new interface driver usbhid
[ 2.113983] usbhid: USB HID core driver
[ 2.121059] NET: Registered protocol family 10
[ 2.127742] Segment Routing with IPv6
[ 2.129188] sit: IPv6, IPv4 and MPLS over IPv4 tunneling driver
[ 2.133328] NET: Registered protocol family 17
[ 2.134976] can: controller area network core (rev 20170425 abi 9)
[ 2.136889] NET: Registered protocol family 29
[ 2.138578] can: raw protocol (rev 20170425)
[ 2.139732] can: broadcast manager protocol (rev 20170425 t)
[ 2.141180] can: netlink gateway (rev 20170425) max_hops=1
[ 2.143326] Key type dns_resolver registered
[ 2.144669] ThumbEE CPU extension supported.
[ 2.145625] Registering SWP/SWPB emulation handler
[ 2.148666] Loading compiled-in X.509 certificates
[ 2.159059] input: gpio-keys as /devices/platform/gpio-keys/input/input0
[ 2.163272] rtc-pl031 9010000.pl031: setting system clock to 2021-12-12 20:35:03 UTC (1639341303)
[ 2.171638] uart-pl011 9000000.pl011: no DMA platform data
[ 2.258889] Freeing unused kernel memory: 2048K
[ 2.264716] Run /init as init process

Please press Enter to activate this console.
```

```
panhead32@DESKTOP-UF4UM3P: ~/repos/busybox
[ 2.159059] input: gpio-keys as /devices/platform/gpio-keys/input/input0
[ 2.163272] rtc-pl031 9010000.pl031: setting system clock to 2021-12-12 20:35:03 UTC (1639341303)
[ 2.171638] uart-pl011 9000000.pl011: no DMA platform data
[ 2.258889] Freeing unused kernel memory: 2048K
[ 2.264716] Run /init as init process

Please press Enter to activate this console.
/ # uname -a
Linux (none) 4.19.220 #1 SMP Thu Dec 9 21:09:30 EET 2021 armv7l GNU/Linux
/ # ls -l
total 8
-rw-r--r-- 1 1000 1000 0 Dec 9 21:46 --append
-rw-r--r-- 1 1000 1000 0 Dec 9 21:46 -machine
drwxr-xr-x 2 1000 1000 0 Dec 9 20:15 bin
drwxr-xr-x 2 1000 1000 0 Dec 9 19:54 boot
drwxr-xr-x 3 1000 1000 0 Dec 12 20:35 dev
drwxr-xr-x 3 1000 1000 0 Dec 9 19:57 etc
-rw-r--r-- 1 1000 1000 4604 Dec 12 20:26 hello.ko
lrwxrwxrwx 1 1000 1000 11 Dec 9 19:53 init -> bin/busybox
drwxr-xr-x 3 1000 1000 0 Dec 9 20:22 lib
lrwxrwxrwx 1 1000 1000 11 Dec 9 20:15 linuxrc -> bin/busybox
dr-xr-xr-x 90 root root 0 Jan 1 1970 proc
drwxr-xr-x 2 1000 1000 0 Dec 9 19:51 root
drwxr-xr-x 2 1000 1000 0 Dec 9 20:15 sbin
dr-xr-xr-x 12 root root 0 Dec 12 20:35 sys
drwxr-xr-x 2 1000 1000 0 Dec 9 19:51 tmp
drwxr-xr-x 4 1000 1000 0 Dec 9 19:51 usr
/ # dmesg | grep init
[ 0.000000] random: get_random_bytes called from start_kernel+0x9c/0x47c with crng_init=0
[ 0.000000] Memory: 406720K/524288K available (12288K kernel code, 1599K rwdma, 4696K rodata, 2048K init, 393K bss, 52032K reserved, 65536K cma-reserved, 0K highmem)
[ 0.000000] .init : 0x(ptrval) - 0x(ptrval) (2048 kB)
[ 0.071782] devtmpfs: initialized
[ 0.096364] pinctrl core: initialized pinctrl subsystem
[ 0.316012] SCSI subsystem initialized
[ 0.469628] Trying to unpack rootfs image as initramfs...
[ 1.804246] Freeing initrd memory: 24820K
[ 1.954205] SuperH (H)SCI(F) driver initialized
[ 1.956710] msm_serial: driver initialized
[ 1.957912] STMicroelectronics ASC driver initialized
[ 1.959880] STM32 USART driver initialized
[ 2.264716] Run /init as init process
```

```
panhead32@DESKTOP-UF4UM3P: ~/repos/busybox/_install/etc
Sent SIGTERM to all processes
Sent SIGKILL to all processes
Requesting system poweroff
[ 172.091183] reboot: Power down
panhead32@DESKTOP-UF4UM3P: ~/repos/busybox$ cd
panhead32@DESKTOP-UF4UM3P: ~$ cd repos/busybox/_install/etc/
panhead32@DESKTOP-UF4UM3P: ~/repos/busybox/_install/etc$ ls -ls
total 0
0 -rw-r--r-- 1 panhead32 panhead32 10 Dec 9 22:22 group
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 22:18 init.d
0 -rw-r--r-- 1 panhead32 panhead32 49 Dec 9 22:22 mdev.conf
0 -rw-r--r-- 1 panhead32 panhead32 30 Dec 9 22:22 passwd
0 -rw-r--r-- 1 panhead32 panhead32 19 Dec 9 22:23 resolv.conf
0 -rw-r--r-- 1 panhead32 panhead32 25 Dec 9 22:22 shadow
panhead32@DESKTOP-UF4UM3P: ~/repos/busybox/_install/etc$
```

```

panhead32@DESKTOP-UF4UM3P: ~/repos/u-boot
panhead32@DESKTOP-UF4UM3P:~/repos/busybox/_install/etc$ cd ../
bin/ boot/ dev/ etc/ lib/ proc/ root/ sbin/ sys/ tmp/ usr/
panhead32@DESKTOP-UF4UM3P:~/repos/busybox/_install/etc$ cd ../
bin/ boot/ dev/ etc/ lib/ proc/ root/ sbin/ sys/ tmp/ usr/
panhead32@DESKTOP-UF4UM3P:~/repos/busybox/_install/etc$ cd ../../../../u-boot/; ls -ls;
total 10984
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 Documentation
 4 -rw-r--r-- 1 panhead32 panhead32 1863 Dec 9 20:05 Kbuild
20 -rw-r--r-- 1 panhead32 panhead32 20148 Dec 9 20:05 Kconfig
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 Licenses
24 -rw-r--r-- 1 panhead32 panhead32 22077 Dec 9 20:05 MAINTAINERS
108 -rw-r--r-- 1 panhead32 panhead32 109644 Dec 9 20:09 MLO
108 -rw-r--r-- 1 panhead32 panhead32 109644 Dec 9 20:09 MLO.byteswap
 68 -rw-r--r-- 1 panhead32 panhead32 69344 Dec 9 20:05 Makefile
176 -rw-r--r-- 1 panhead32 panhead32 178488 Dec 9 20:05 README
 88 -rw-r--r-- 1 panhead32 panhead32 89984 Dec 9 20:08 System.map
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 api
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 arch
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 board
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:07 cmd
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:07 common
 4 -rw-r--r-- 1 panhead32 panhead32 2196 Dec 9 20:05 config.mk
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:06 configs
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:07 disk
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 doc
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:07 drivers
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:08 dts
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:08 env
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 examples
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:08 fs
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:06 include
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:08 lib
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:08 net
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 post
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 scripts
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:09 spl
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 test
 0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:07 tools
5640 -rwxr-xr-x 1 panhead32 panhead32 5773020 Dec 9 20:08 u-boot
480 -rw-r--r-- 1 panhead32 panhead32 490553 Dec 9 20:08 u-boot-dtb.bin
516 -rw-r--r-- 1 panhead32 panhead32 524700 Dec 9 20:08 u-boot-dtb.img
448 -rwxr-xr-x 1 panhead32 panhead32 457232 Dec 9 20:08 u-boot-nodtb.bin
480 -rw-r--r-- 1 panhead32 panhead32 490553 Dec 9 20:08 u-boot.bin
 20 -rw-r--r-- 1 panhead32 panhead32 18269 Dec 9 20:06 u-boot.cfg
 12 -rw-r--r-- 1 panhead32 panhead32 10010 Dec 9 20:09 u-boot.cfg.configs
 36 -rw-r--r-- 1 panhead32 panhead32 33321 Dec 9 20:08 u-boot.dtb
516 -rw-r--r-- 1 panhead32 panhead32 524700 Dec 9 20:08 u-boot.img
  4 -rw-r--r-- 1 panhead32 panhead32 1722 Dec 9 20:07 u-boot.lds
708 -rw-r--r-- 1 panhead32 panhead32 724416 Dec 9 20:08 u-boot.map
1340 -rwxr-xr-x 1 panhead32 panhead32 1371826 Dec 9 20:08 u-boot.srec
184 -rw-r--r-- 1 panhead32 panhead32 185509 Dec 9 20:08 u-boot.sym
panhead32@DESKTOP-UF4UM3P:~/repos/u-boot$

```

```

panhead32@DESKTOP-UF4UM3P: ~/repos/busybox/_install/etc/init.d
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 post
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 scripts
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:09 spl
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:05 test
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:07 tools
5640 -rwxr-xr-x 1 panhead32 panhead32 5773020 Dec 9 20:08 u-boot
480 -rw-r--r-- 1 panhead32 panhead32 490553 Dec 9 20:08 u-boot-dtb.bin
516 -rw-r--r-- 1 panhead32 panhead32 524700 Dec 9 20:08 u-boot-dtb.img
448 -rwxr-xr-x 1 panhead32 panhead32 457232 Dec 9 20:08 u-boot-nodtb.bin
480 -rw-r--r-- 1 panhead32 panhead32 490553 Dec 9 20:08 u-boot.bin
20 -rw-r--r-- 1 panhead32 panhead32 18269 Dec 9 20:06 u-boot.cfg
12 -rw-r--r-- 1 panhead32 panhead32 10010 Dec 9 20:09 u-boot.cfg.configs
36 -rw-r--r-- 1 panhead32 panhead32 33321 Dec 9 20:08 u-boot.dtb
516 -rw-r--r-- 1 panhead32 panhead32 524700 Dec 9 20:08 u-boot.img
4 -rw-r--r-- 1 panhead32 panhead32 1722 Dec 9 20:07 u-boot.lds
708 -rw-r--r-- 1 panhead32 panhead32 724416 Dec 9 20:08 u-boot.map
1340 -rwxr-xr-x 1 panhead32 panhead32 1371826 Dec 9 20:08 u-boot.srec
184 -rw-r--r-- 1 panhead32 panhead32 185509 Dec 9 20:08 u-boot.sym
panhead32@DESKTOP-UF4UM3P:~/repos/u-boot$ cd ../busybox/_install/etc/init.d; cat
.MLO.byteswap.cmd .u-boot-nodtb.bin.cmd MLO.byteswap drivers/ u-boot
.MLO.cmd .u-boot.bin.cmd Makefile dts/ u-boot-dtb.bin
.binman_stamp .u-boot.cmd README env/ u-boot-dtb.img
.checkpatch.conf .u-boot.img.cmd System.map examples/ u-boot-nodtb.bin
.config .u-boot.lds.cmd api/ fs/ u-boot.bin
.config.old .u-boot.srec.cmd arch/ include/ u-boot.cfg
.git/ .u-boot.sym.cmd board/ lib/ u-boot.cfg.configs
.github/ Documentation/ cmd/ net/ u-boot.dtb
.gitignore Kbuild common/ post/ u-boot.img
.mailmap Kconfig config.mk scripts/ u-boot.lds
.travis.yml Licenses/ configs/ spl/ u-boot.map
u-boot-dtb.bin.cmd MAINTAINERS disk/ test/ u-boot.srec
u-boot-dtb.img.cmd MLO doc/ tools/ u-boot.sym
panhead32@DESKTOP-UF4UM3P:~/repos/u-boot$ cd ../busybox/_install/etc/init.d; cat rcS;
#!/bin/sh
mount -t sysfs none /sys
mount -t proc none /proc
mount -t debugfs none /sys/kernel/debug
echo /sbin/mdev > /proc/sys/kernel/hotplug
mdev -s
panhead32@DESKTOP-UF4UM3P:~/repos/busybox/_install/etc/init.d$ _

```

```
panhead32@DESKTOP-UF4UM3P: ~/.ccache
516 -rw-r--r-- 1 panhead32 panhead32 524700 Dec 9 20:08 u-boot-dtb.img
448 -rwxr-xr-x 1 panhead32 panhead32 457232 Dec 9 20:08 u-boot-nodtb.bin
480 -rw-r--r-- 1 panhead32 panhead32 490553 Dec 9 20:08 u-boot.bin
20 -rw-r--r-- 1 panhead32 panhead32 18269 Dec 9 20:06 u-boot.cfg
12 -rw-r--r-- 1 panhead32 panhead32 10010 Dec 9 20:09 u-boot.cfg.configs
36 -rw-r--r-- 1 panhead32 panhead32 33321 Dec 9 20:08 u-boot.dtb
516 -rw-r--r-- 1 panhead32 panhead32 524700 Dec 9 20:08 u-boot.img
4 -rw-r--r-- 1 panhead32 panhead32 1722 Dec 9 20:07 u-boot.lds
708 -rw-r--r-- 1 panhead32 panhead32 724416 Dec 9 20:08 u-boot.map
340 -rwxr-xr-x 1 panhead32 panhead32 1371826 Dec 9 20:08 u-boot.srec
184 -rw-r--r-- 1 panhead32 panhead32 185509 Dec 9 20:08 u-boot.sym
panhead32@DESKTOP-UF4UM3P:~/repos/u-boot$ cd ../busybox/_install/etc/init.d/; cat
MLO.byteswap.cmd .u-boot-nodtb.bin.cmd MLO.byteswap drivers/ u-boot
MLO.cmd .u-boot.bin.cmd Makefile dts/ u-boot-dtb.bin
binman_stamp .u-boot.cmd README env/ u-boot-dtb.img
checkpatch.conf .u-boot.img.cmd System.map examples/ u-boot-nodtb.bin
config .u-boot.lds.cmd api/ fs/ u-boot.bin
config.old .u-boot.srec.cmd arch/ include/ u-boot.cfg
git/ .u-boot.sym.cmd board/ lib/ u-boot.cfg.configs
github/ Documentation/ cmd/ net/ u-boot.dtb
gitignore Kbuild common/ post/ u-boot.img
mailmap Kconfig config.mk scripts/ u-boot.lds
travis.yml Licenses/ configs/ spl/ u-boot.map
u-boot-dtb.bin.cmd MAINTAINERS disk/ test/ u-boot.srec
u-boot-dtb.img.cmd MLO doc/ tools/ u-boot.sym
panhead32@DESKTOP-UF4UM3P:~/repos/u-boot$ cd ../busybox/_install/etc/init.d/; cat rcS;
#!/bin/sh
mount -t sysfs none /sys
mount -t proc none /proc
mount -t debugfs none /sys/kernel/debug
echo /sbin/mdev > /proc/sys/kernel/hotplug
mdev -s
panhead32@DESKTOP-UF4UM3P:~/repos/busybox/_install/etc/init.d$ cd
panhead32@DESKTOP-UF4UM3P:~$ cd .ccache/
panhead32@DESKTOP-UF4UM3P:~/.ccache$ ls -ls
total 0
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 0
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 1
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 2
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 3
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 4
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 5
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 6
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 7
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 8
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 9
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 a
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 b
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 c
0 -rw-r--r-- 1 panhead32 panhead32 14 Dec 9 19:04 ccache.conf
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 d
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 e
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 f
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 tmp
panhead32@DESKTOP-UF4UM3P:~/.ccache$
```

```
panhead32@DESKTOP-UF4UM3P: ~/repos/linux-stable
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 6
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 7
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 8
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 9
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 a
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 b
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 c
-rw-r--r-- 1 panhead32 panhead32 14 Dec 9 19:04 ccache.conf
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 d
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 e
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 f
drwxr-xr-x 1 panhead32 panhead32 4096 Dec 12 22:25 tmp
panhead32@DESKTOP-UF4UM3P: ~/.ccache$ cd ../repos/linux-stable/; ls -ls;
total 64936
0 -rw-r--r-- 1 panhead32 panhead32 0 Dec 9 23:46 --append
0 -rw-r--r-- 1 panhead32 panhead32 0 Dec 9 23:46 -machine
0 -rw-r--r-- 1 panhead32 panhead32 423 Dec 9 20:59 COPYING
100 -rw-r--r-- 1 panhead32 panhead32 98741 Dec 9 20:59 CREDITS
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:59 Documentation
4 -rw-r--r-- 1 panhead32 panhead32 2245 Dec 9 20:59 Kbuild
0 -rw-r--r-- 1 panhead32 panhead32 563 Dec 9 20:59 Kconfig
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:59 LICENSES
464 -rw-r--r-- 1 panhead32 panhead32 471159 Dec 9 20:59 MAINTAINERS
60 -rw-r--r-- 1 panhead32 panhead32 60600 Dec 9 20:59 Makefile
700 -rw-r--r-- 1 panhead32 panhead32 716127 Dec 9 21:39 Module.symvers
4 -rw-r--r-- 1 panhead32 panhead32 800 Dec 9 20:59 README
4420 -rw-r--r-- 1 panhead32 panhead32 4522297 Dec 9 21:39 System.map
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 20:59 arch
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:16 block
840 -rw-r--r-- 1 panhead32 panhead32 859482 Dec 9 21:39 built-in.a
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:11 certs
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:41 crypto
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:39 drivers
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:15 firmware
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:07 fragments
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:15 fs
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:07 include
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:09 init
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:13 ipc
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:15 kernel
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:41 lib
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:12 mm
32 -rw-r--r-- 1 panhead32 panhead32 29315 Dec 9 21:09 modules.builtin
16 -rw-r--r-- 1 panhead32 panhead32 16006 Dec 9 21:39 modules.order
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:22 net
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:00 samples
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:09 scripts
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:13 security
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:41 sound
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:00 tools
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:09 usr
0 drwxr-xr-x 1 panhead32 panhead32 4096 Dec 9 21:18 virt
5376 -rw-r-xr-x 1 panhead32 panhead32 25984932 Dec 9 21:39 vmlinux
2920 -rw-r--r-- 1 panhead32 panhead32 33708572 Dec 9 21:39 vmlinux.o
panhead32@DESKTOP-UF4UM3P: ~/repos/linux-stable$
```

```
panhead32@DESKTOP-UF4UM3P: ~/repos/linux-stable
# CONFIG_USB_ANNOUNCE_NEW_DEVICES=y
# CONFIG_USB_EHCI_ROOT_HUB_TT=y
# CONFIG_AM335X_PHY_USB=y
# CONFIG_USB_MUSB_TUSB6010=y
# CONFIG_USB_MUSB_OMAP2PLUS=y
# CONFIG_USB_MUSB_HDRC=y
# CONFIG_USB_MUSB_DSPS=y
# CONFIG_USB_MUSB_AM35X=y
# CONFIG_USB_CONFIGFS=y
# CONFIG_NOP_USB_XCEIV=y
# # For USB keyboard and mouse
# CONFIG_USB_HID=y
# CONFIG_USB_HIDDEV=y
# # For PL2303, FTDI, etc
# CONFIG_USB_SERIAL=y
# CONFIG_USB_SERIAL_PL2303=y
# CONFIG_USB_SERIAL_GENERIC=y
# CONFIG_USB_SERIAL_SIMPLE=y
# CONFIG_USB_SERIAL_FTDI_SIO=y
# # For USB mass storage devices (like flash USB stick)
# CONFIG_USB_ULPI=y
# CONFIG_USB_ULPI_BUS=y
# # --- Networking ---
# CONFIG_BRIDGE=y
# # --- Device Tree Overlays (.dtbo support) ---
# CONFIG_OF_OVERLAY=y# Use multi_v7_defconfig as a base for merge_config.sh
# # --- USB ---
# # Enable USB on BBB (AM335X)
# CONFIG_USB_ANNOUNCE_NEW_DEVICES=y
# CONFIG_USB_EHCI_ROOT_HUB_TT=y
# CONFIG_AM335X_PHY_USB=y
# CONFIG_USB_MUSB_TUSB6010=y
# CONFIG_USB_MUSB_OMAP2PLUS=y
# CONFIG_USB_MUSB_HDRC=y
# CONFIG_USB_MUSB_DSPS=y
# CONFIG_USB_MUSB_AM35X=y
# CONFIG_USB_CONFIGFS=y
# CONFIG_NOP_USB_XCEIV=y
# # For USB keyboard and mouse
# CONFIG_USB_HID=y
# CONFIG_USB_HIDDEV=y
# # For PL2303, FTDI, etc
# CONFIG_USB_SERIAL=y
# CONFIG_USB_SERIAL_PL2303=y
# CONFIG_USB_SERIAL_GENERIC=y
# CONFIG_USB_SERIAL_SIMPLE=y
# CONFIG_USB_SERIAL_FTDI_SIO=y
# # For USB mass storage devices (like flash USB stick)
# CONFIG_USB_ULPI=y
# CONFIG_USB_ULPI_BUS=y
# # --- Networking ---
# CONFIG_BRIDGE=y
# # --- Device Tree Overlays (.dtbo support) ---
# CONFIG_OF_OVERLAY=y
"bbb.cfg" 84L, 2424C
```

Висновки Підготували середовище для плати ВВВ. Виконали завдання з файлу **ВВВ_ - _Platform_Bring_Up** з першого і до 3.1