

## Ass 4

Name: Ahmed Khaled Saad Ali

ID: 1809799

Name: Khalid Mohamed Mahmoud Salman

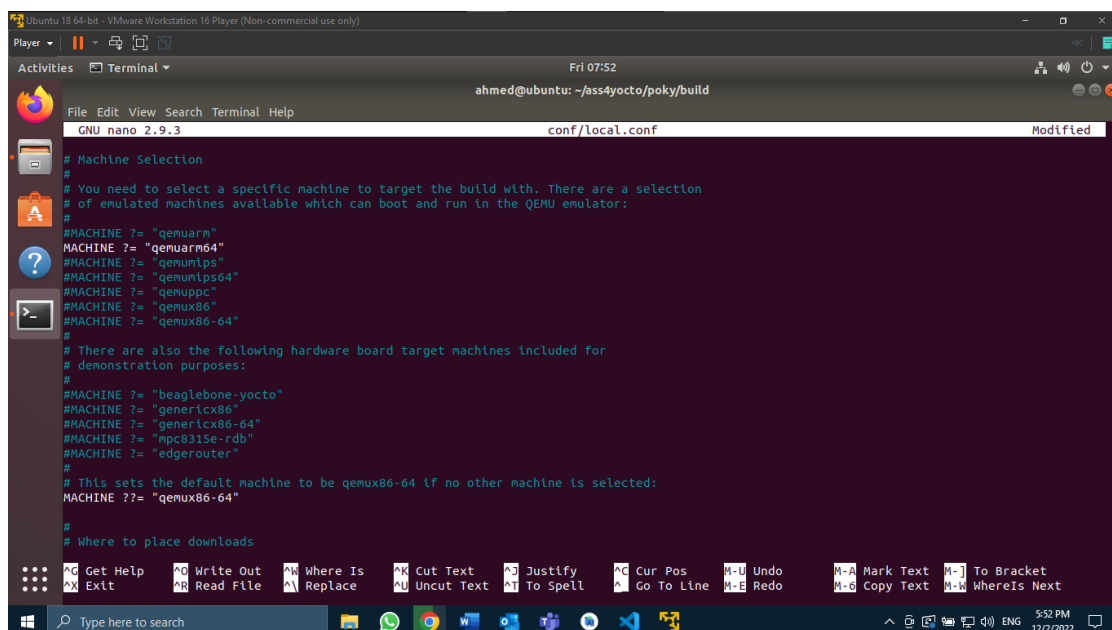
ID: 19P5482

### 1. Download Yocto Project

```
2. Unable to locate package build-essential
ahmed@ubuntu:~/ass4yocto$ git clone git://git.yoctoproject.org/poky
Cloning into 'poky'...
remote: Enumerating objects: 583486, done.
remote: Counting objects: 100% (2685/2685), done.
remote: Compressing objects: 100% (1169/1169), done.
remote: Total 583486 (delta 1783), reused 2024 (delta 1497), pack-reused 580801
Receiving objects: 100% (583486/583486), 189.02 MiB | 2.42 MiB/s, done.
Resolving deltas: 100% (424243/424243), done.
Checking out files: 100% (5323/5323), done.
ahmed@ubuntu:~/ass4yocto$ cd poky
ahmed@ubuntu:~/ass4yocto/poky$ git branch
* master
ahmed@ubuntu:~/ass4yocto/poky$ git checkout zeus
Branch 'zeus' set up to track remote branch 'zeus' from 'origin'.
Switched to a new branch 'zeus'
ahmed@ubuntu:~/ass4yocto/poky$ git branch
  master
* zeus
ahmed@ubuntu:~/ass4yocto/poky$
```

### 2. Change the machine to qemu-arm-64

```
- 'oe-pkgdata-util' handles common target package tasks
ahmed@ubuntu:~/ass4yocto/poky/build$ nano conf/local.conf
ahmed@ubuntu:~/ass4yocto/poky/build$
```



### 3. Bitbake the minimal-core-image

```
ahmed@ubuntu:~/ass4yocto/poky$ source oe-init-build-env

Command 'python2' not found, but can be installed with:

sudo apt install python-minimal

OpenEmbedded requires 'python' to be python v2 (>= 2.7.3), not python v3.
Please upgrade your python v2.
You had no conf/local.conf file. This configuration file has therefore been
created for you with some default values. You may wish to edit it to, for
example, select a different MACHINE (target hardware). See conf/local.conf
for more information as common configuration options are commented.

You had no conf/bblayers.conf file. This configuration file has therefore been
created for you with some default values. To add additional metadata layers
into your configuration please add entries to conf/bblayers.conf.

The Yocto Project has extensive documentation about OE including a reference
manual which can be found at:
    http://yoctoproject.org/documentation

For more information about OpenEmbedded see their website:
    http://www.openembedded.org/

### Shell environment set up for builds. ###

You can now run 'bitbake <target>'
```

```
You can now run 'bitbake <target>'

Common targets are:
    core-image-minimal
    core-image-sato
    meta-toolchain
    meta-ide-support

You can also run generated qemu images with a command like 'runqemu qemux86'

Other commonly useful commands are:
- 'devtool' and 'recipetool' handle common recipe tasks
- 'bitbake-layers' handles common layer tasks
- 'oe-pkgdata-util' handles common target package tasks
ahmed@ubuntu:~/ass4yocto/poky/build$
```

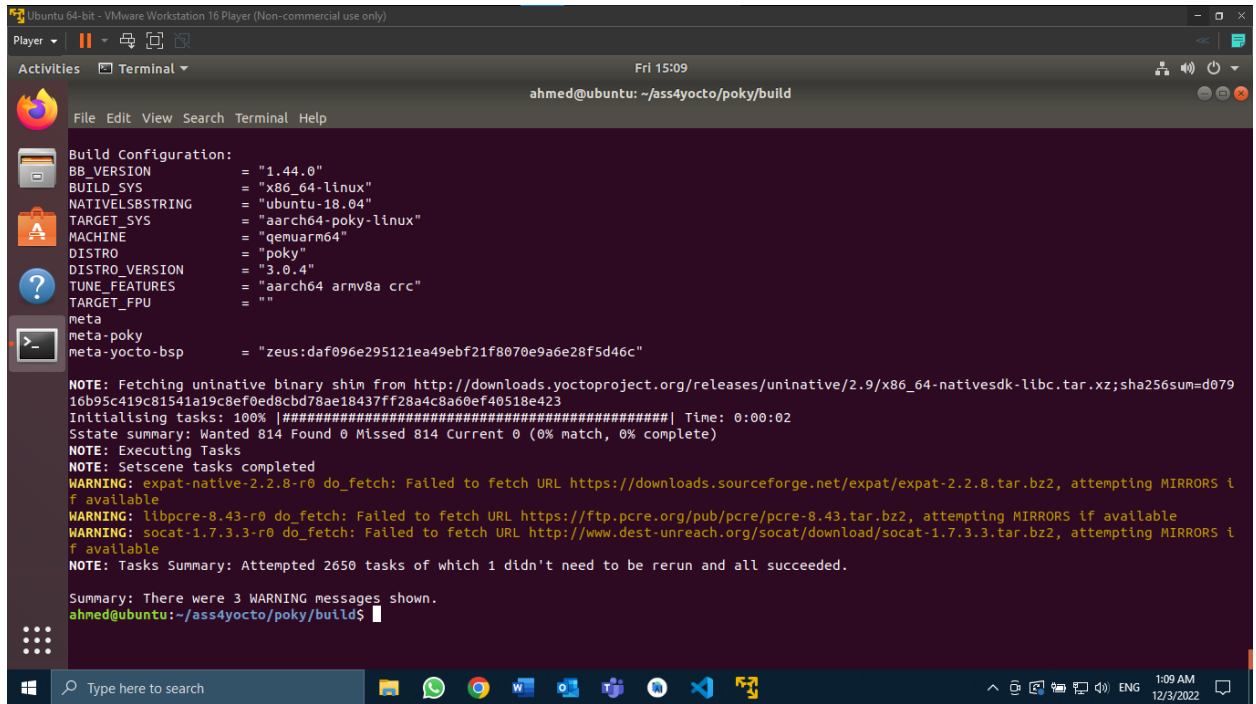
```
ahmed@ubuntu: ~/ass4yocto/poky/build
File Edit View Search Terminal Help
The following NEW packages will be installed:
python3-distutils python3-lib2to3
0 upgraded, 2 newly installed, 0 to remove and 227 not upgraded.
Need to get 222 kB of archives.
After this operation, 3,143 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python3-lib2to3 all
3.6.9-1-18.04 [77.4 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python3-distutils al
l 3.6.9-1-18.04 [144 kB]
Fetched 222 kB in 1s (194 kB/s)
Selecting previously unselected package python3-lib2to3.
(Reading database ... 157647 files and directories currently installed.)
Preparing to unpack .../python3-lib2to3_3.6.9-1-18.04_all.deb ...
Unpacking python3-lib2to3 (3.6.9-1-18.04) ...
Selecting previously unselected package python3-distutils.
Preparing to unpack .../python3-distutils_3.6.9-1-18.04_all.deb ...
Unpacking python3-distutils (3.6.9-1-18.04) ...
Setting up python3-lib2to3 (3.6.9-1-18.04) ...
Setting up python3-distutils (3.6.9-1-18.04) ...
ahmed@ubuntu:~$ cd ass4yocto
ahmed@ubuntu:~/ass4yocto$ cd poky
ahmed@ubuntu:~/ass4yocto/poky$ cd build
ahmed@ubuntu:~/ass4yocto/poky/build$ bitbake core-image-minimal
Parsing recipes: 2%|#
```

```
ahmed@ubuntu:~/ass4yocto/poky/build$ bitbake core-image-minimal
Parsing recipes: 100%|#####| Time: 0:01:04
Parsing of 773 .bb files complete (0 cached, 773 parsed). 1301 targets, 58 skipped, 0 masked, 0 errors.
NOTE: Resolving any missing task queue dependencies

Build Configuration:
BB_VERSION           = "1.44.0"
BUILD_SYS            = "x86_64-linux"
NATIVELSBSTRING      = "ubuntu-18.04"
TARGET_SYS           = "aarch64-poky-linux"
MACHINE              = "qemuarm64"
DISTRO               = "poky"
DISTRO_VERSION        = "3.0.4"
TUNE_FEATURES        = "aarch64 armv8a crc"
TARGET_FPU           = ""
meta
meta-poky
meta-yocto-bsp       = "zeus:daf096e295121ea49ebf21f8070e9a6e28f5d46c"

NOTE: Fetching univariate binary shim from http://downloads.yoctoproject.org/releases/univariate/2.9/x86_64-nativesdk-libc.tar.xz;sha256sum=d079
16b95c419c81541a19c8ef0ed8cbd78ae18437ff28a4c8a60ef40518e423
Initialising tasks: 100%|#####| Time: 0:00:02
Sstate summary: Wanted 814 Found 0 Missed 814 Current 0 (0% match, 0% complete)
NOTE: Executing Tasks
NOTE: Setscene tasks completed
WARNING: expat-native-2.2.8-r0 do_fetch: Failed to fetch URL https://downloads.sourceforge.net/expat/expat-2.2.8.tar.bz2, attempting MIRRORS i
f available
Currently 4 running tasks (372 of 2650) 14%|#####|
0: binutils-cross-aarch64-2.32.0-r0 do_fetch (pid 19055) 87%|#####| 308K/s
1: gettext-native-0.19.8.1-r0 do_compile - 2ms (pid 38118)
2: e2fsprogs-native-1.45.3-r0 do_configure - 40s (pid 82100)
3: perl-native-5.30.1-r0 do_compile - 25s (pid 90918)
```

# Bitbake Succeeded



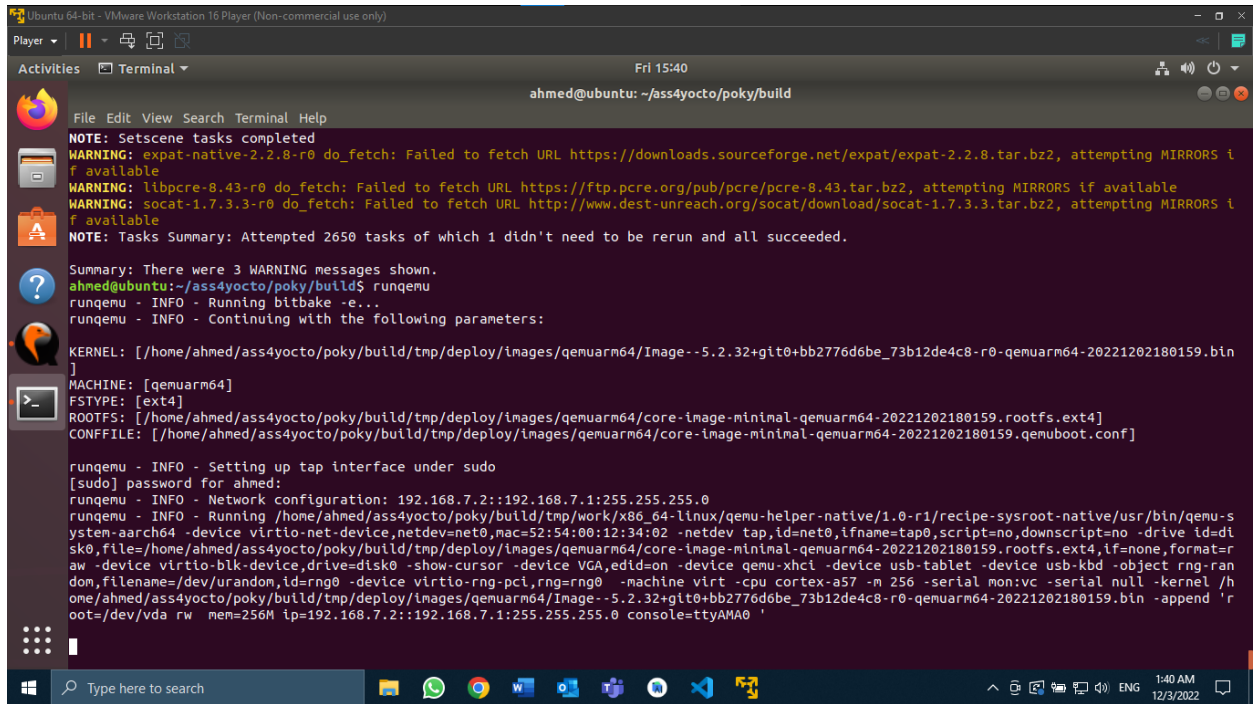
The screenshot shows a VMware Workstation 16 Player window titled "Ubuntu 64-bit - VMware Workstation 16 Player (Non-commercial use only)". Inside the player, a terminal window is open with the prompt "ahmed@ubuntu: ~/ass4yocto/poky/build". The terminal displays the output of a Bitbake build process. It starts with a "Build Configuration:" section listing various variables and their values. This is followed by a "NOTE" about fetching a binary shim, a progress bar for "Initialising tasks", and a "Sstate summary". Then, it shows "NOTE: Executing Tasks" and "NOTE: Setscene tasks completed". There are three "WARNING" messages regarding failed fetches for expat, libpcrc, and socat. A final "NOTE" states that 2650 tasks were attempted and all succeeded. The terminal ends with a "Summary" line and the prompt "ahmed@ubuntu:~/ass4yocto/poky/build\$".

```
Build Configuration:
BB_VERSION           = "1.44.0"
BUILD_SYS            = "x86_64-linux"
NATIVESBSTRING       = "ubuntu-18.04"
TARGET_SYS           = "aarch64-poky-linux"
MACHINE              = "qemuarm64"
DISTRO               = "poky"
DISTRO_VERSION       = "3.0.4"
TUNE_FEATURES        = "aarch64 armv8a crc"
TARGET_FPU           = ""
meta
meta-poky
meta-yocto-bsp       = "zeus:daf096e295121ea49ebf21f8070e9a6e28f5d46c"

NOTE: Fetching uninative binary shim from http://downloads.yoctoproject.org/releases/uninative/2.9/x86_64-nativesdk-libc.tar.xz;sha256sum=d079
16b95c419c81541a19c8ef0ed8cbd78ae18437ff28a4c8a60ef40518e423
Initialising tasks: 100% |#####| Time: 0:00:02
Sstate summary: Wanted 814 Found 0 Missed 814 Current 0 (0% match, 0% complete)
NOTE: Executing Tasks
NOTE: Setscene tasks completed
WARNING: expat-native-2.2.8-r0 do_fetch: Failed to fetch URL https://downloads.sourceforge.net/expat/expat-2.2.8.tar.bz2, attempting MIRRORS i
f available
WARNING: libpcrc-8.43-r0 do_fetch: Failed to fetch URL https://ftp.pcre.org/pub/pcre/pcre-8.43.tar.bz2, attempting MIRRORS if available
WARNING: socat-1.7.3.3-r0 do_fetch: Failed to fetch URL http://www.dest-unreach.org/socat/download/socat-1.7.3.3.tar.bz2, attempting MIRRORS i
f available
NOTE: Tasks Summary: Attempted 2650 tasks of which 1 didn't need to be rerun and all succeeded.

Summary: There were 3 WARNING messages shown.
ahmed@ubuntu:~/ass4yocto/poky/build$
```

#### 4. Run the generated image in the QEMU



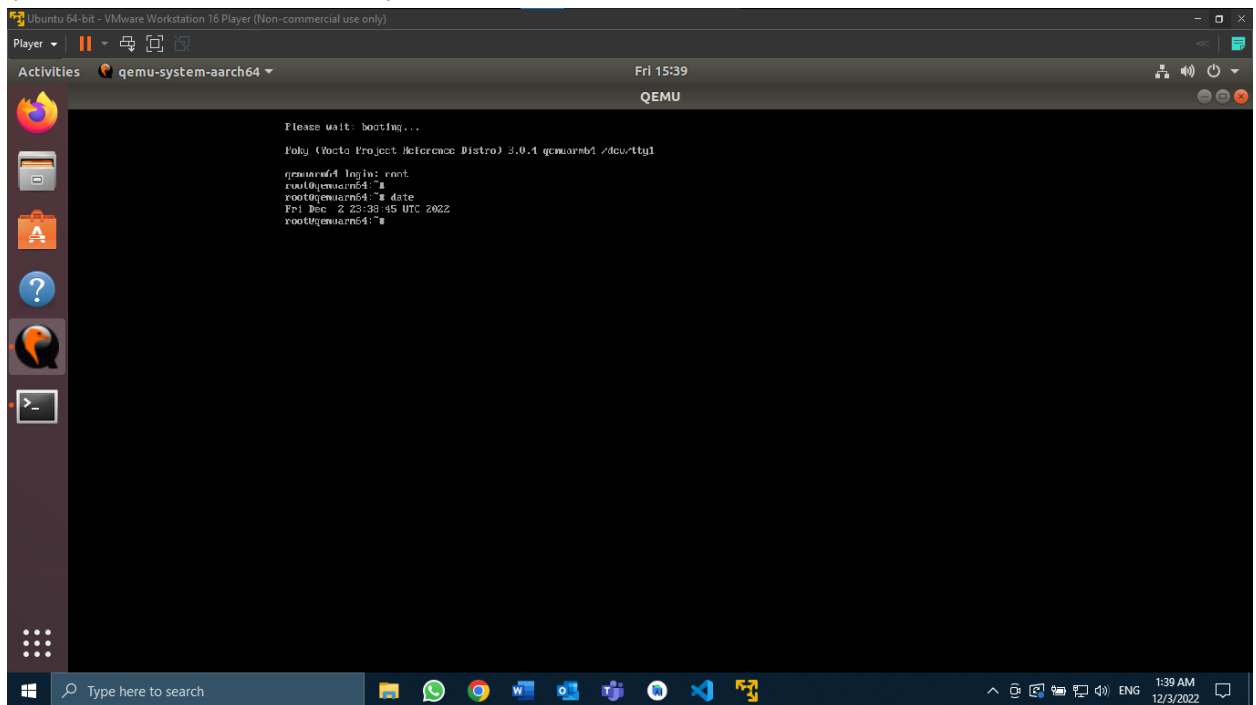
```
ahmed@ubuntu: ~/ass4yocto/poky/build
NOTE: Setscene tasks completed
WARNING: expat-native-2.2.8-r0 do_fetch: Failed to fetch URL https://downloads.sourceforge.net/expat/expat-2.2.8.tar.bz2, attempting MIRRORS if available
WARNING: libpcrc-8.43-r0 do_fetch: Failed to fetch URL https://ftp.pcre.org/pub/pcre/pcrc-8.43.tar.bz2, attempting MIRRORS if available
WARNING: socat-1.7.3.3-r0 do_fetch: Failed to fetch URL http://www.dest-unreach.org/socat/download/socat-1.7.3.3.tar.bz2, attempting MIRRORS if available
NOTE: Tasks Summary: Attempted 2650 tasks of which 1 didn't need to be rerun and all succeeded.

Summary: There were 3 WARNING messages shown.
ahmed@ubuntu:~/ass4yocto/poky/build$ runqemu
runqemu - INFO - Running bitbake -e...
runqemu - INFO - Continuing with the following parameters:

KERNEL: [/home/ahmed/ass4yocto/poky/build/tmp/deploy/images/qemuarm64/Image--5.2.32+git0+bb2776d6be_73b12de4c8-r0-qemuarm64-20221202180159.bin]
MACHINE: [qemuarm64]
FSTYPE: [ext4]
ROOTFS: [/home/ahmed/ass4yocto/poky/build/tmp/deploy/images/qemuarm64/core-image-minimal-qemuarm64-20221202180159.rootfs.ext4]
CONFFILE: [/home/ahmed/ass4yocto/poky/build/tmp/deploy/images/qemuarm64/core-image-minimal-qemuarm64-20221202180159.qemuboot.conf]

runqemu - INFO - Setting up tap interface under sudo
[sudo] password for ahmed:
runqemu - INFO - Network configuration: 192.168.7.2::192.168.7.1:255.255.255.0
runqemu - INFO - Running /home/ahmed/ass4yocto/poky/build/tmp/work/x86_64-linux/qemu-helper-native/1.0-r1/recipe-sysroot-native/usr/bin/qemu-system-aarch64 -device virtio-net-device,netdev=net0,mac=52:54:00:12:34:02 -netdev tap,id=net0,ifname=tap0,script=no,downscript=no -drive id=sk0,file=/home/ahmed/ass4yocto/poky/build/tmp/deploy/images/qemuarm64/core-image-minimal-qemuarm64-20221202180159.rootfs.ext4,if=none,format=rw -device virtio-blk-device,drive=disk0 -show-cursor -device VGA,edid=on -device qemu-xhci -device usb-tablet -device usb-kbd -object rng-random,filename=/dev/urandom,id=rng0 -device virtio-rng-pci,rng=rng0 -machine virt -cpu cortex-a57 -m 256 -serial mon:vc -serial null -kernel /home/ahmed/ass4yocto/poky/build/tmp/deploy/images/qemuarm64/Image--5.2.32+git0+bb2776d6be_73b12de4c8-r0-qemuarm64-20221202180159.bin -append 'root=/dev/vda rw mem=256M ip=192.168.7.2::192.168.7.1:255.255.255.0 console=ttyAMA0'
```

(Tried Date command)



```
qemu-system-aarch64
QEMU

Please wait: booting...

Poky (Yocto Project Reference Distro) 3.0.4 qemuarm64 /dev/tty1

qemuarm64 login: root
root@qemuarm64:~# date
Fri Dec 2 23:38:45 UTC 2022
root@qemuarm64:~#
```