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Report
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# Assignment 1

## Minix Installation and Kernel customising

### Installing Minix:

Version:3.3.0
Virtual Machine : VirtualBox
RAM allocated :256 MB
Memory allocated :10GB (VHD-Dynamic)

The ISO file is initially mounted and the VM is turned on .To Install Minix, login as root and type the setup command and follow the installation procedure.

The VM is turned off and the ISO is removed. Now the system is restarted and needs to be updated.

```
pkgin update
```

Its a better practise to install all the available packages using

```
pkgin_all
```

Now the system is ready. To upload the kernel code it can be downloaded in host OS and mounted using a shared folder.

Note:Turn off the machine while adding the shared folder and then mount using

```
mount -t vbfs -o share=NAME none /mnt
```

The folder is now moved to /usr/src for further customising.

### Installing X11:

The x11 database is not available in minix 3.3 so, the packages are downloaded and copies to `/usr/pkgs` .

Now change the repositories.conf file in `/usr/pkg/etc/pgkgin` by adding the path to X11 files. and run

pkgin install x11

X11 will be installed and can be used after reboot.

The yellow world program written can be run using

```
cc hello.c
./a.out
```

## Customising the kernel(minix) and recompiling:

The task in the assignment is to print the commands executing on the terminal. For that we need to modify the `/usr/src/minix/servers/fs/exec.c` file.

We need to add printf("……") in the function do_newexec() for the required functionality.

Now for the changes to be implemented by OS we need to build it using

```
make build
```

in /usr/src

It takes some time and the system needs to be rebooted to see the changes.

## Customising the Linux kernel :

The source code which generated a specific binary package may be obtained using the apt-get source <package> command. For example to obtain the source for the currently running kernel you can use the command:

- `apt-get source linux-image-$(uname -r)`

If kernel is not built on your system before, there are some packages needed before successful build. We can get these installed with:

- `sudo apt-get build-dep linux-image-$(uname -r)`

Now the packages are moved to usr/source
And changes are made to exec.c in fs subfolder.
Before building the following packages are to be installed

```
sudo apt-get install gcc
sudo apt-get install libncurses5-dev
sudo apt-get update && sudo apt-get upgrade.
```

The changes are made in do_execv() function by adding printk("..") line.
After making the changes, we need to save the configuration.

```
sudo make menuconfig
```

and save the kernel.
To compile the new kernel:

```
sudo make build
```

To compile the modules,

```
sudo make modules
```

To install the modules,

```
sudo make modules_install
```

Finally to install the new kernel,

```
sudo make install.
```

Reboot the system .
To see the changed kernel, we need to type
`dmesg`
to see the lines printed to kernel.