CMPE283 Assignment 1 Discovering VMX Features

Members: Karan Didwani (ID - 011439376)
Pooja Patel (ID – 011818872)

Questions:

Responsibilities for Karan Didwani:

- Setting up the environment for Ubuntu dual boot using Windows 10.
- Writing functions in C program to determine if true controls are available, if yes then reading their values for pin based and primary proc based MSRs.

Responsibilities for Pooja Patel:

- Setting up the environment for Mac VMware Fusion.
- Writing functions in C program to read the values for exit and entry controls along with secondary proc based MSRs.

Steps followed for the assignment:

Note: For this assignment, we both tried setting up the environment on different machines
Karan Didwani - Ubuntu 16.04 LTS with Windows 10 dual boot
Pooja Patel - VMware Fusion on Mac OSX

Due to many issues with the VMware we continued with Karan's Machine.

1) Open terminal in Ubuntu pointing to the home directory.
2) install git -
Command: Sudo apt-get install git
3)Git clone latest kernel repository from Github(https://github.com/torvalds/linux.git) -
Command - git clone "https://github.com/torvalds/linux.git"
4)Point to linux folder in terminal
Command - cd linux/
5)Checkout version 4.10 of linux kernel
Command - git checkout v4.10
6)Open git log and note down the Commit ID for submission reference
(Commit ID: c470abd4fde40ea6a0846a2beab642a578c0b8cd)
Command - git log
7)Run make menuconfig command (It might require installing 2 libraries)
Commands - Sudo apt- get install libncurses5-dev
Sudo apt- get install libssl-dev
make menuconfig
8)Run make commands
Commands - Sudo make -j4
Sudo make modules -j4
Sudo make modules_install
Sudo make install
9)Now reboot your system and during boot up go to advanced options for Ubuntu and boot up with Linux version 4.10

Steps to run C program to get details about virtualization abilities of the system:

1) Create directory cmpe283
Command - mkdir cmpe283
2) Copy your C program in this folder
3) Run makefile command in this folder
Command - makefile
4) Run command make all
Command - make all
5) Login to terminal as root
Command - su
Enter password after this step
6) Insert the module using insmod command
Command - insmod cmpe283-1.ko
7) to view the output run dmesg command
8) run following commands to generate diff
Command - sudo git add cmpe283-1.c Makefile
sudo git commit
sudo diff HEAD~1>cmpe283.diff