CMPE 283

Virtualization

Assignment 3: Instrumenting KVM

Question 2: Steps to follow

1. Install git using following commands
   1. sudo apt-get update
   2. sudo apt-get upgrade
   3. sudo apt --fix-broken install ( I had to run this command to fix problem which was occurring during installation of git)
   4. sudo apt-get install git
2. Clone linux kernel tree from github using following command
   1. git clone <https://github.com/torvalds/linux.git>
3. Change directory to linux
   1. cd linux
4. Reset linux source code repo to stable Version 4.10
   1. git checkout 569dbb88e80deb68974ef6fdd6a13edb9d686261
   2. git reset --hard
5. Enter following command to see git all commit and save latest git commit id
   1. git log
   2. commit id: 569dbb88e80deb68974ef6fdd6a13edb9d686261
6. Go to folder and edit file arch/x86/kvm/vmx.c
   1. Declare global variables for storing exit statistics and edit vmx\_handle\_exit function for calculating statistics and storing exit statistics in global variables.
7. Run make menuconfig command
8. After updating code run following commands
   1. Sudo make -j4
   2. Sudo make modules -j4
   3. Sudo make modules\_install -j4
   4. Sudo make install -j4
9. Reboot into newly built kernel
10. Start a new virtual machine
    1. Test functionality using same VM
11. Check the dmesg output using following command
    1. dmesg -wH
12. Commit linux source tree modification and take a diff using following command.
    1. Git diff HEAD~1 > cmpe283-3.diff
13. Test diff after resetting linux source tree

Question 3: Note whether or not you used a larger count of exits between outputs (1000 or 2000 exits vs the suggested 500).

I have used interval of 500 counts for printing the statistics.

Question 4: What did you observe?

* After checking the output of dmesg it appears only around 16 different types of exits occurs during boot process of VM.
* The highest number of exits were for IO\_INSTRUCTION followed by CR\_ACCESS, MSR\_WRITE and EXCEPTION\_NMI.
* Total cycles for all exit reasons were around 3.8\*10^9 and total exits were around 1.5 million.

