SENG 440 - Instructions for Virtual Machine Setup on Windows using QEMU

1. Download QEMU for Windows from the following links below, depending on your architecture. Click on the .exe file (second last item) to download the installer;
    a. For Windows 32 bit, click here.
    b. For Windows 64 bit, click here.

2. Open the installer and follow the instructions. Ensure that the “qemu” folder is located in the “C:\Program Files” directory to ensure functionality in the command prompt;

3. Create a folder that you will want to store the files from the SENG repository in. It doesn’t matter where you put it, but it would be advisable to put it somewhere easy to get to from Command Prompt. Name it something like “VM-files”, etc;

4. **Turn on your UVic VPN** and go to https://sw.seng.uvic.ca/repo/seng440/ to download the three files. To download, right-click and select “Save link as…” and save each to the folder you created in step 3. Wait for all of them to complete downloading;

5. Open command prompt and go to the folder/directory storing the files. Once you’re there, paste in the following command and hit Enter:

    ```
    qemu-system-arm -m 1G -smp 1 -hda
    Fedora-Minimal-armhfp-29-1.2-sda.qcow2 -machine virt-2.11
    -kernel vmlinuz-4.18.16-300.fc29.armv7hl -initrd
    initramfs-4.18.16-300.fc29.armv7hl.img  -append
    "console=ttyAMA0 rw root=LABEL=_/ rootwait ipv6.disable=1"
    -nographic -netdev user,id=seng440,hostfwd=tcp::2222-:22
    -device virtio-net-pci,netdev=seng440
    ```

    The Virtual Machine will now take about 5-10 minutes to boot up the first time. Subsequent boots should take about 3-5 minutes.

qemu-system-arm -m 1G -smp 1 -hda Fedora-Minimal-armhfp-29-1.2-sda.qcow2 -machine virt-2.11 -kernel vmlinuz-4.18.16-300.fc29.armv7hl -initrd initramfs-4.18.16-300.fc29.armv7hl.img -append "console=ttyAMA0 rw root=LABEL=_/ rootwait ipv6.disable=1" -nographic -netdev user,id=seng440,hostfwd=tcp::2222-:22 -device virtio-net-pci,netdev=seng440

6. For username, enter “**root**”. For password, enter “**seng440**”. Once login is finished, you should now be in the VM with prompt text “`[root@localhost ~]#`”.
7. If you use the “ls” command, you will see a directory labelled “TEST”. In there will be sample code files labelled “test.c” and “test.s” that provide code examples in both C and Assembly, respectively;
8. To shutdown the VM, type in command “`shutdown -P now`”. The time it takes to shutdown may vary each time, from a 1-2 minute shutdown to a 3-5 minute shutdown. **DO NOT close the window** until you’ve returned to Windows command prompt, or else you risk corrupting the image.

To copy file from local to Qumu: scp -P 2222 ./example.c root@localhost:~/RSA
pw: seng440

compile with neon: gcc -mfpu=neon -march=armv7-a -mtune=cortex-a9 main.c -lgmp -o main
run: ./main

Install gmp for prime number:
1. sudo dnf -y install gmp-devel
2. cd to usr/include and check if gmp.h is existing