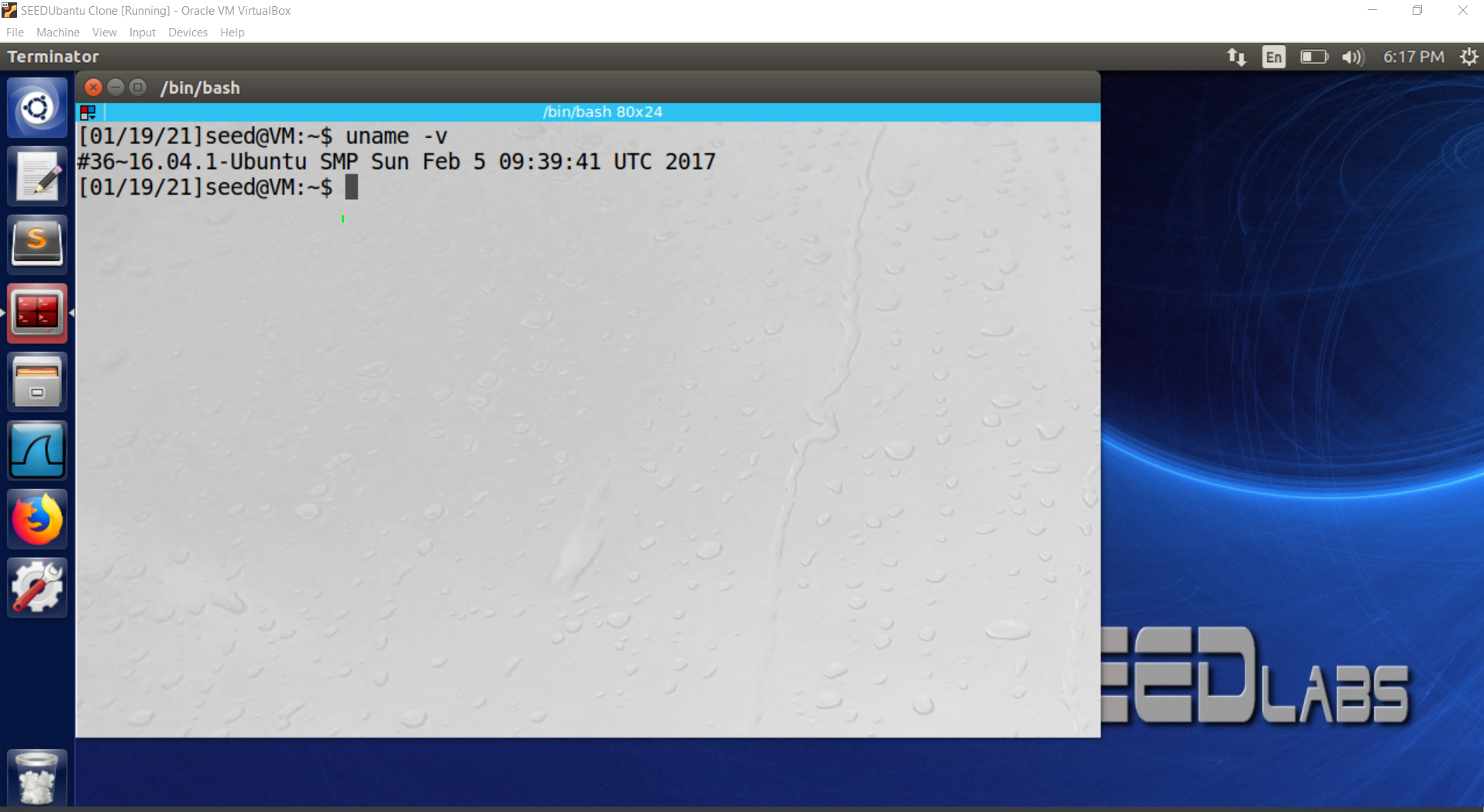
Connor Bradt

1) **VirtualBox and SEED Ubuntu 16.04 VM**



2) **C Program Output**

[01/20/21]seed@VM:~$ gcc -o lab1 lab1.c

[01/20/21]seed@VM:~$ ./lab1

argc = 1

argv[0] = ./lab1

envp[0] = XDG\_VTNR=7

memory address of envp[0]: bfbb7f74

envp[1] = ORBIT\_SOCKETDIR=/tmp/orbit-seed

memory address of envp[1]: bfbb7f7f

envp[2] = XDG\_SESSION\_ID=c1

memory address of envp[2]: bfbb7f9f

envp[3] = XDG\_GREETER\_DATA\_DIR=/var/lib/lightdm-data/seed

memory address of envp[3]: bfbb7fb1

envp[4] = IBUS\_DISABLE\_SNOOPER=1

memory address of envp[4]: bfbb7fe1

envp[5] = TERMINATOR\_UUID=urn:uuid:c8c0c3d1-ac6c-4aec-8fcc-e9db11e1de11

memory address of envp[5]: bfbb7ff8

envp[6] = CLUTTER\_IM\_MODULE=xim

memory address of envp[6]: bfbb8036

envp[7] = SESSION=ubuntu

memory address of envp[7]: bfbb804c

envp[8] = GIO\_LAUNCHED\_DESKTOP\_FILE\_PID=3961

memory address of envp[8]: bfbb805b

envp[9] = ANDROID\_HOME=/home/seed/android/android-sdk-linux

memory address of envp[9]: bfbb807e

envp[10] = GPG\_AGENT\_INFO=/home/seed/.gnupg/S.gpg-agent:0:1

memory address of envp[10]: bfbb80b0

envp[11] = TERM=xterm

memory address of envp[11]: bfbb80e1

envp[12] = SHELL=/bin/bash

memory address of envp[12]: bfbb80ec

envp[13] = DERBY\_HOME=/usr/lib/jvm/java-8-oracle/db

memory address of envp[13]: bfbb80fc

envp[14] = QT\_LINUX\_ACCESSIBILITY\_ALWAYS\_ON=1

memory address of envp[14]: bfbb8125

envp[15] = LD\_PRELOAD=/home/seed/lib/boost/libboost\_program\_options.so.1.64.0:/home/seed/lib/boost/libboost\_filesystem.so.1.64.0:/home/seed/lib/boost/libboost\_system.so.1.64.0

memory address of envp[15]: bfbb8148

envp[16] = WINDOWID=65011716

memory address of envp[16]: bfbb81ed

envp[17] = UPSTART\_SESSION=unix:abstract=/com/ubuntu/upstart-session/1000/1495

memory address of envp[17]: bfbb81ff

envp[18] = GNOME\_KEYRING\_CONTROL=

memory address of envp[18]: bfbb8243

envp[19] = GTK\_MODULES=gail:atk-bridge:unity-gtk-module

memory address of envp[19]: bfbb825a

envp[20] = USER=seed

memory address of envp[20]: bfbb8287

envp[21] = LS\_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=00:su=37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:\*.tar=01;31:\*.tgz=01;31:\*.arc=01;31:\*.arj=01;31:\*.taz=01;31:\*.lha=01;31:\*.lz4=01;31:\*.lzh=01;31:\*.lzma=01;31:\*.tlz=01;31:\*.txz=01;31:\*.tzo=01;31:\*.t7z=01;31:\*.zip=01;31:\*.z=01;31:\*.Z=01;31:\*.dz=01;31:\*.gz=01;31:\*.lrz=01;31:\*.lz=01;31:\*.lzo=01;31:\*.xz=01;31:\*.bz2=01;31:\*.bz=01;31:\*.tbz=01;31:\*.tbz2=01;31:\*.tz=01;31:\*.deb=01;31:\*.rpm=01;31:\*.jar=01;31:\*.war=01;31:\*.ear=01;31:\*.sar=01;31:\*.rar=01;31:\*.alz=01;31:\*.ace=01;31:\*.zoo=01;31:\*.cpio=01;31:\*.7z=01;31:\*.rz=01;31:\*.cab=01;31:\*.jpg=01;35:\*.jpeg=01;35:\*.gif=01;35:\*.bmp=01;35:\*.pbm=01;35:\*.pgm=01;35:\*.ppm=01;35:\*.tga=01;35:\*.xbm=01;35:\*.xpm=01;35:\*.tif=01;35:\*.tiff=01;35:\*.png=01;35:\*.svg=01;35:\*.svgz=01;35:\*.mng=01;35:\*.pcx=01;35:\*.mov=01;35:\*.mpg=01;35:\*.mpeg=01;35:\*.m2v=01;35:\*.mkv=01;35:\*.webm=01;35:\*.ogm=01;35:\*.mp4=01;35:\*.m4v=01;35:\*.mp4v=01;35:\*.vob=01;35:\*.qt=01;35:\*.nuv=01;35:\*.wmv=01;35:\*.asf=01;35:\*.rm=01;35:\*.rmvb=01;35:\*.flc=01;35:\*.avi=01;35:\*.fli=01;35:\*.flv=01;35:\*.gl=01;35:\*.dl=01;35:\*.xcf=01;35:\*.xwd=01;35:\*.yuv=01;35:\*.cgm=01;35:\*.emf=01;35:\*.ogv=01;35:\*.ogx=01;35:\*.aac=00;36:\*.au=00;36:\*.flac=00;36:\*.m4a=00;36:\*.mid=00;36:\*.midi=00;36:\*.mka=00;36:\*.mp3=00;36:\*.mpc=00;36:\*.ogg=00;36:\*.ra=00;36:\*.wav=00;36:\*.oga=00;36:\*.opus=00;36:\*.spx=00;36:\*.xspf=00;36:

memory address of envp[21]: bfbb8291

envp[22] = QT\_ACCESSIBILITY=1

memory address of envp[22]: bfbb8819

envp[23] = LD\_LIBRARY\_PATH=/home/seed/source/boost\_1\_64\_0/stage/lib:/home/seed/source/boost\_1\_64\_0/stage/lib:

memory address of envp[23]: bfbb882c

envp[24] = XDG\_SESSION\_PATH=/org/freedesktop/DisplayManager/Session0

memory address of envp[24]: bfbb888f

envp[25] = XDG\_SEAT\_PATH=/org/freedesktop/DisplayManager/Seat0

memory address of envp[25]: bfbb88c9

envp[26] = SSH\_AUTH\_SOCK=/run/user/1000/keyring/ssh

memory address of envp[26]: bfbb88fd

envp[27] = DEFAULTS\_PATH=/usr/share/gconf/ubuntu.default.path

memory address of envp[27]: bfbb8926

envp[28] = GIO\_LAUNCHED\_DESKTOP\_FILE=/usr/share/applications/terminator.desktop

memory address of envp[28]: bfbb8959

envp[29] = XDG\_CONFIG\_DIRS=/etc/xdg/xdg-ubuntu:/usr/share/upstart/xdg:/etc/xdg

memory address of envp[29]: bfbb899e

envp[30] = DESKTOP\_SESSION=ubuntu

memory address of envp[30]: bfbb89e2

envp[31] = PATH=/home/seed/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:.:/snap/bin:/usr/lib/jvm/java-8-oracle/bin:/usr/lib/jvm/java-8-oracle/db/bin:/usr/lib/jvm/java-8-oracle/jre/bin:/home/seed/android/android-sdk-linux/tools:/home/seed/android/android-sdk-linux/platform-tools:/home/seed/android/android-ndk/android-ndk-r8d:/home/seed/.local/bin

memory address of envp[31]: bfbb89f9

envp[32] = QT\_IM\_MODULE=ibus

memory address of envp[32]: bfbb8b7a

envp[33] = QT\_QPA\_PLATFORMTHEME=appmenu-qt5

memory address of envp[33]: bfbb8b8c

envp[34] = XDG\_SESSION\_TYPE=x11

memory address of envp[34]: bfbb8bad

envp[35] = PWD=/home/seed

memory address of envp[35]: bfbb8bc2

envp[36] = JOB=unity-settings-daemon

memory address of envp[36]: bfbb8bd1

envp[37] = XMODIFIERS=@im=ibus

memory address of envp[37]: bfbb8beb

envp[38] = JAVA\_HOME=/usr/lib/jvm/java-8-oracle

memory address of envp[38]: bfbb8bff

envp[39] = GNOME\_KEYRING\_PID=

memory address of envp[39]: bfbb8c24

envp[40] = LANG=en\_US.UTF-8

memory address of envp[40]: bfbb8c37

envp[41] = GDM\_LANG=en\_US

memory address of envp[41]: bfbb8c48

envp[42] = MANDATORY\_PATH=/usr/share/gconf/ubuntu.mandatory.path

memory address of envp[42]: bfbb8c57

envp[43] = COMPIZ\_CONFIG\_PROFILE=ubuntu-lowgfx

memory address of envp[43]: bfbb8c8d

envp[44] = IM\_CONFIG\_PHASE=1

memory address of envp[44]: bfbb8cb1

envp[45] = GDMSESSION=ubuntu

memory address of envp[45]: bfbb8cc3

envp[46] = SESSIONTYPE=gnome-session

memory address of envp[46]: bfbb8cd5

envp[47] = GTK2\_MODULES=overlay-scrollbar

memory address of envp[47]: bfbb8cef

envp[48] = SHLVL=1

memory address of envp[48]: bfbb8d0e

envp[49] = HOME=/home/seed

memory address of envp[49]: bfbb8d16

envp[50] = XDG\_SEAT=seat0

memory address of envp[50]: bfbb8d26

envp[51] = LANGUAGE=en\_US

memory address of envp[51]: bfbb8d35

envp[52] = LIBGL\_ALWAYS\_SOFTWARE=1

memory address of envp[52]: bfbb8d44

envp[53] = GNOME\_DESKTOP\_SESSION\_ID=this-is-deprecated

memory address of envp[53]: bfbb8d5c

envp[54] = UPSTART\_INSTANCE=

memory address of envp[54]: bfbb8d88

envp[55] = XDG\_SESSION\_DESKTOP=ubuntu

memory address of envp[55]: bfbb8d9a

envp[56] = UPSTART\_EVENTS=xsession started

memory address of envp[56]: bfbb8db5

envp[57] = LOGNAME=seed

memory address of envp[57]: bfbb8dd5

envp[58] = COMPIZ\_BIN\_PATH=/usr/bin/

memory address of envp[58]: bfbb8de2

envp[59] = DBUS\_SESSION\_BUS\_ADDRESS=unix:abstract=/tmp/dbus-Shjx96pNFI

memory address of envp[59]: bfbb8dfc

envp[60] = J2SDKDIR=/usr/lib/jvm/java-8-oracle

memory address of envp[60]: bfbb8e38

envp[61] = XDG\_DATA\_DIRS=/usr/share/ubuntu:/usr/share/gnome:/usr/local/share/:/usr/share/:/var/lib/snapd/desktop

memory address of envp[61]: bfbb8e5c

envp[62] = QT4\_IM\_MODULE=xim

memory address of envp[62]: bfbb8ec2

envp[63] = LESSOPEN=| /usr/bin/lesspipe %s

memory address of envp[63]: bfbb8ed4

envp[64] = INSTANCE=

memory address of envp[64]: bfbb8ef4

envp[65] = UPSTART\_JOB=unity7

memory address of envp[65]: bfbb8efe

envp[66] = XDG\_RUNTIME\_DIR=/run/user/1000

memory address of envp[66]: bfbb8f11

envp[67] = DISPLAY=:0

memory address of envp[67]: bfbb8f30

envp[68] = XDG\_CURRENT\_DESKTOP=Unity

memory address of envp[68]: bfbb8f3b

envp[69] = GTK\_IM\_MODULE=ibus

memory address of envp[69]: bfbb8f55

envp[70] = J2REDIR=/usr/lib/jvm/java-8-oracle/jre

memory address of envp[70]: bfbb8f68

envp[71] = LESSCLOSE=/usr/bin/lesspipe %s %s

memory address of envp[71]: bfbb8f8f

envp[72] = XAUTHORITY=/home/seed/.Xauthority

memory address of envp[72]: bfbb8fb1

envp[73] = COLORTERM=gnome-terminal

memory address of envp[73]: bfbb8fd3

envp[74] = \_=./lab1

memory address of envp[74]: bfbb8fec

SHELL's value: /bin/bash

SHELL's address: bfbb80f2

3) **Multiple VMs**

