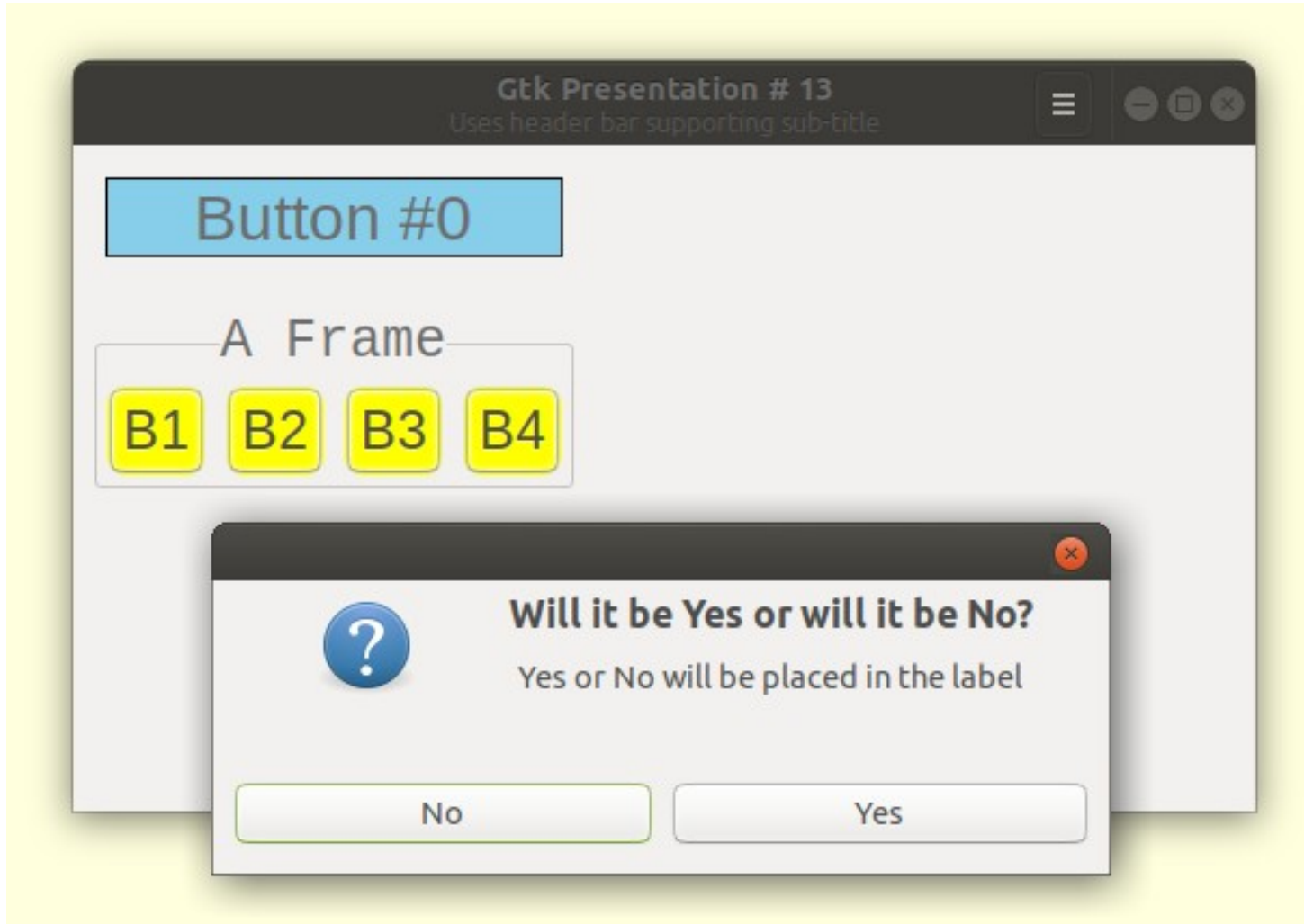


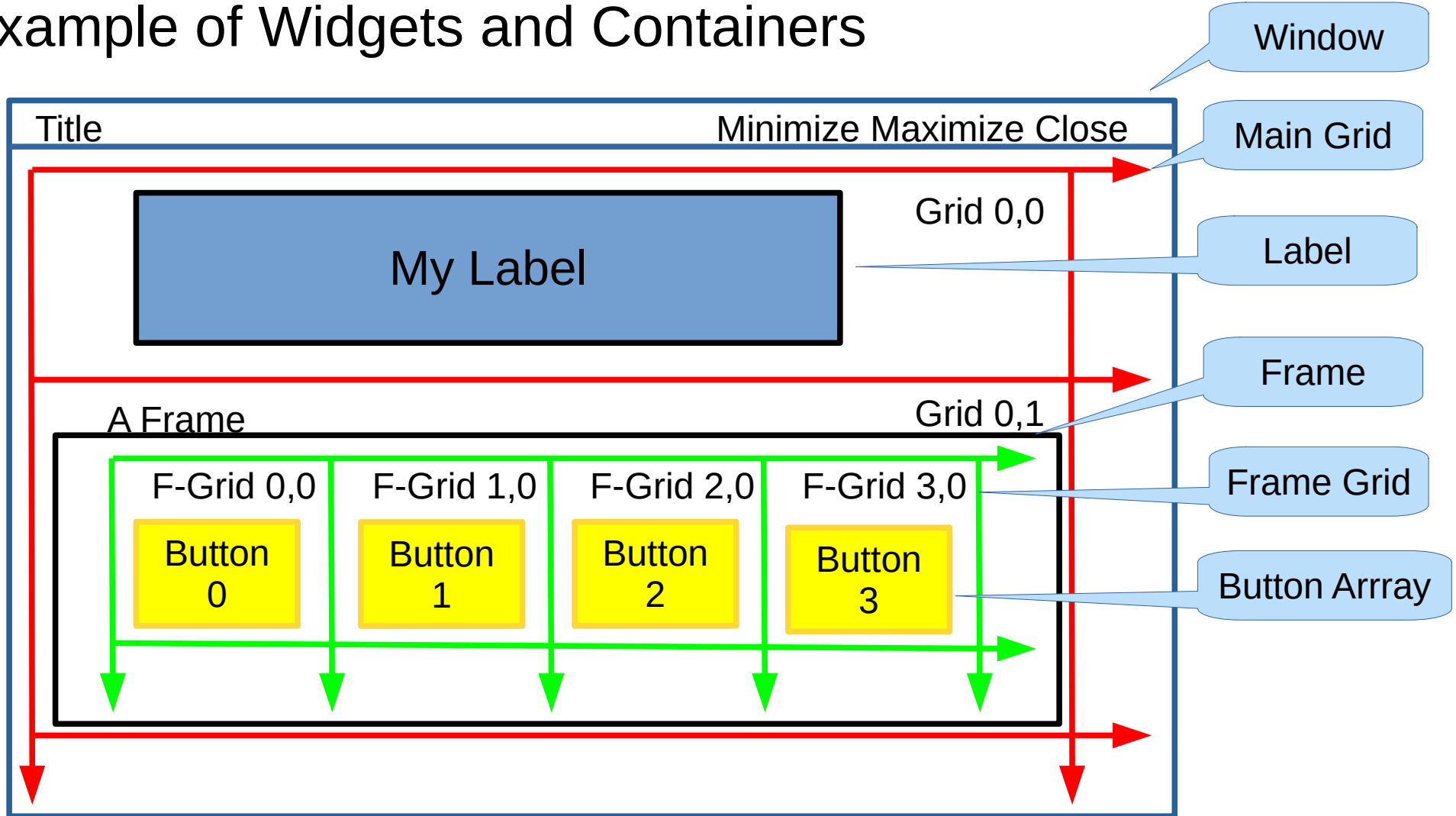
# Python Gtk Introduction and simh for Alpha.

Hamilton Python Users Group  
Ian Stewart  
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# Construct a Gtk GUI Window



# Example of Widgets and Containers



# Simh – Installing/Using V4.0 for Alpha

```
$ pdp11
```

```
PDP-11 simulator V3.8-1
```

```
sim> exit
```

```
Goodbye
```

```
ian@ian:~$ alpha
```

```
alpha: command not found
```

```
ian@ian:~$ sudo apt remove simh
```

Install guide:

```
https://github.com/simh/simh#building-and-running-a-simulator
```

```
https://github.com/simh/simh/archive/master.zip
```

```
sudo apt install libpcap-dev libpcre3-dev vde2 libsdl2-2.0-0 libsdl2-ttf-2.0-0
```

```
$ make {simulator-name (i.e. vax)}
```

**\$ sudo apt install libpcap-dev libpcr3-dev vde2 libsdl2-2.0-0 libsdl2-ttf-2.0-0**

Reading package lists... Done

Building dependency tree

Reading state information... Done

libsdl2-2.0-0 is already the newest version (2.0.10+dfsg1-3).

libsdl2-2.0-0 set to manually installed.

The following package was automatically installed and is no longer required:

libllvm10

Use 'sudo apt autoremove' to remove it.

The following additional packages will be installed:

libpcap0.8-dev libpcr16-3 libpcr32-3 libpcrrecpp0v5 libvde0 libvdeplug2

Suggested packages:

vde2-cryptcab qemu-kvm qemu

The following NEW packages will be installed:

libpcap-dev libpcap0.8-dev libpcr16-3 libpcr3-dev libpcr32-3

libpcrrecpp0v5 libsdl2-ttf-2.0-0 libvde0 libvdeplug2 vde2

0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.

Need to get 1,339 kB of archives.

After this operation, 5,463 kB of additional disk space will be used.

Do you want to continue? [Y/n] **y**

**\$ gcc --version**

gcc (Ubuntu 9.3.0-17ubuntu1~20.04) 9.3.0

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warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

ian@ian:~/Desktop/simh/simh-master\$ **pwd**

/home/ian/Desktop/simh/simh-master

ian@ian:~/Desktop/simh/simh-master\$ **make alpha**

lib paths are: /lib/ /lib/x86\_64-linux-gnu/ /usr/lib/x86\_64-linux-gnu/libfakeroot/ /usr/lib/

include paths are: /usr/lib/gcc/x86\_64-linux-gnu/9/include /usr/local/include /usr/include/x86\_64-linux-gnu /usr/include

using libm: /lib/x86\_64-linux-gnu/libm.so

using librt: /lib/x86\_64-linux-gnu/librt.so

using libpthread: /lib/x86\_64-linux-gnu/libpthread.so /usr/include/pthread.h

using libpcre: /lib/x86\_64-linux-gnu/libpcre.so /usr/include/pcre.h

using semaphore: /usr/include/semaphore.h

using libdl: /lib/x86\_64-linux-gnu/libdl.so /usr/include/dlfcn.h

using mman: /usr/include/x86\_64-linux-gnu/sys/mman.h

\*\*\*

\*\*\* alpha Simulator being built with:

\*\*\* - compiler optimizations and no debugging support. GCC Version: 9.3.0.

\*\*\* - Per simulator tests will be run.

\*\*\*

\*\*\* git commit id is b90b1eaf6f3692f25f22b39ae4bc83b6ca18f19f.

\*\*\* git commit time is 2021-04-09T07:31:36-07:00.

\*\*\*

\*\*\*

```
gcc -std=gnu99 -U__STRICT_ANSI__ -O2 -finline-functions -fgcse-after-reload -fpredictive-  
commoning -fipa-cp-clone -fno-unsafe-loop-optimizations -fno-strict-overflow -  
DSIM_GIT_COMMIT_ID=b90b1eaf6f3692f25f22b39ae4bc83b6ca18f19f -  
DSIM_GIT_COMMIT_TIME=2021-04-09T07:31:36-07:00 -DSIM_COMPILER="GCC Version:  
9.3.0" -DSIM_BUILD_TOOL=simh-makefile -I . -D_GNU_SOURCE -DUSE_READER_THREAD -  
DSIM_ASYNC_IO -DHAVE_PCRE_H -DHAVE_SEMAPHORE -DHAVE_SYS_IOCTL -  
DHAVE_LINUX_CDROM -DHAVE_DLOPEN=so -DHAVE_UTIME -DHAVE_GLOB -  
DHAVE_SHM_OPEN ./alpha/alpha_500au_syslist.c ./alpha/alpha_cpu.c  
./alpha/alpha_ev5_cons.c ./alpha/alpha_ev5_pal.c ./alpha/alpha_ev5_tlb.c ./alpha/alpha_fpi.c  
./alpha/alpha_fpv.c ./alpha/alpha_io.c ./alpha/alpha_mmu.c ./alpha/alpha_sys.c ./scp.c  
./sim_console.c ./sim_fio.c ./sim_timer.c ./sim_sock.c ./sim_tmxr.c ./sim_ether.c ./sim_tape.c  
./sim_disk.c ./sim_serial.c ./sim_video.c ./sim_imd.c ./sim_card.c -I ./alpha -DUSE_ADDR64 -  
DUSE_INT64 -o BIN/alpha -lm -lrt -lpthread -lpcre -ldl  
BIN/alpha RegisterSanityCheck </dev/null
```

Running internal register sanity checks on Alpha simulator.

\*\*\* Good Registers in Alpha simulator.

ian@ian:~/Desktop/simh/simh-master\$



```
$ cd BIN
```

```
ian@ian:~/Desktop/simh/simh-master/BIN$ ./alpha
```

```
Alpha simulator V4.0-0 Current      git commit id: b90b1eaf  
sim>
```

```
sim> ev LDQ R0,8(R1)  
0:  00000000A4010008
```

```
sim> d 1000 A4010008  
sim> e 1000  
1000:  00000000A4010008
```

```
sim> e -m 1000  
1000:  LDQ R0,8(R1)
```

```
$ cat jump_1
```

```
; Jump instruction
```

```
; sim> ev JMP R0,(R1),0
```

```
; 0: 0000000068010000
```

```
d 1000 68010000
```

```
go 1000 until 0
```

```
;$ ./alpha jump_1
```

```
;
```

```
;Alpha simulator V4.0-0 Current      git commit id: 3c1c92dc
```

```
;
```

```
;Breakpoint, PC: 0 (0000000000000000)
```

```
;sim> e r0
```

```
;R0:0000000000001004 <--- Updated PC before the jump
```

```
;sim>
```

```
ian@ian:~/Desktop/simh/simh-master/BIN$ rlwrap ./alpha jump_1
```

```
Alpha simulator V4.0-0 Current      git commit id: b90b1eaf
```

```
Breakpoint, PC: 0 (0000000000000000)
```

```
sim> exit
```

```
Goodbye
```

## Things to know:

Use rlwrap (especially for simh Version 3.8)

Control E to halt when hung

ev LDQ R0,8(R1)

...to **evaluate** macro to machine code

e -m 1000:1010

...to **examine** instructions and provide macro

go 1000 until 1100

... Start running code and provide the halt

; Semicolon is a comment delimiter