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Lab 5 Part B

Step 57: Include a screenshot with the above output in your lab report.

```
ALSA lib pcm.c:2581:(snd_pcm_open_noupdate) Unknown PCM default
In [21]:
Do you really want to exit ([y]/n)? y
(env1) [ec2-user@queue1-dy-n5a-4xlarge-1 data]$ exit
exit
(base) [ec2-user@ip-10-0-0-72 data]$ ls
aws      manual_entry2.txt  miniconda3  RCP      slurm.queue1-dy-t2-nano-1.1.out  submit.sh
lost+found manual_entry.txt  picasso     slurm.queue1-dy-t2-nano-1.1.err  src
(base) [ec2-user@ip-10-0-0-72 data]$ cd ..
(base) [ec2-user@ip-10-0-0-72 data]$ ls
bin  boot  data  dev  etc  home  intel  lib  lib64  local  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
(base) [ec2-user@ip-10-0-0-72 data]$ cd src
-bash: cd: src: No such file or directory
(base) [ec2-user@ip-10-0-0-72 data]$ cd data
(base) [ec2-user@ip-10-0-0-72 data]$ ls
aws      manual_entry2.txt  miniconda3  RCP      slurm.queue1-dy-t2-nano-1.1.out  submit.sh
lost+found manual_entry.txt  picasso     slurm.queue1-dy-t2-nano-1.1.err  src
(base) [ec2-user@ip-10-0-0-72 data]$ cd src
(base) [ec2-user@ip-10-0-0-72 src]$ ls
DataProcessingTools  pyedfread  PyHipp
(base) [ec2-user@ip-10-0-0-72 src]$ cd ..
(base) [ec2-user@ip-10-0-0-72 data]$ ls
aws      manual_entry2.txt  miniconda3  RCP      slurm.queue1-dy-t2-nano-1.1.out  submit.sh
lost+found manual_entry.txt  picasso     slurm.queue1-dy-t2-nano-1.1.err  src
(base) [ec2-user@ip-10-0-0-72 data]$ cd picasso/
(base) [ec2-user@ip-10-0-0-72 picasso]$ ls
20180702  20180710  20180718  20180725  20180731  20180810  20180823  20180829  20180919  20181004  20181016  20181105
20180704  20180713  20180719  20180726  20180801  20180813  20180824  20180907  20180921  20181008  20181017  geom.csv
20180705  20180716  20180723  20180727  20180802  20180814  20180827  20180912  20180924  20181010  20181101  sort.sh.txt
20180706  20180717  20180724  20180730  20180803  20180817  20180828  20180914  20180925  20181011  20181102
(base) [ec2-user@ip-10-0-0-72 picasso]$ cd 20181105
(base) [ec2-user@ip-10-0-0-72 20181105]$ ls
181105.edf  P11_5.edf  session01  sessioneye
(base) [ec2-user@ip-10-0-0-72 20181105]$ cd session01
(base) [ec2-user@ip-10-0-0-72 session01]$ ls
181105_Block1.nev  array01  eyelink_24d5.hkl  missingData.csv  rplparallel_d41d.hkl  unity_71bf.hkl  VirtualMazeBatchLog.txt
181105_Block1.ns5  binData.hdf  logs.txt  rplparallel_d41d.hkl  slist.txt  unityfile_eyelink.csv
(base) [ec2-user@ip-10-0-0-72 session01]$
```

Step 70.1: Include a screenshot of your Terminal window with the file sizes above in your lab report. Make sure you increase the size of your Terminal window so that the size of all 53 files can be captured in the screenshot.

```
./session01/array01/channel009/rplhighpass_b59f.hkl
(env1) [ec2-user@ip-10-0-0-72 20181105]$ find . -name "*.hkl" | grep -v -e spiketrain -e mountains | wc -l
53
(env1) [ec2-user@ip-10-0-0-72 20181105]$ find . -name "*.hkl" | grep -v -e spiketrain -e mountains | xargs ls -hl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 09:02 ./session01/array01/channel009/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 22M Oct 15 09:02 ./session01/array01/channel009/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 08:58 ./session01/array01/channel009/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:32 ./session01/array01/channel031/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 22M Oct 15 10:31 ./session01/array01/channel031/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:29 ./session01/array01/channel031/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:32 ./session01/array02/channel034/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 22M Oct 15 10:31 ./session01/array02/channel034/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:29 ./session01/array02/channel034/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:33 ./session01/array02/channel056/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 22M Oct 15 10:31 ./session01/array02/channel056/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:29 ./session01/array02/channel056/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:33 ./session01/array03/channel072/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 22M Oct 15 10:31 ./session01/array03/channel072/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:29 ./session01/array03/channel072/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:33 ./session01/array03/channel093/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 22M Oct 15 10:31 ./session01/array03/channel093/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:30 ./session01/array03/channel093/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:34 ./session01/array04/channel119/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 22M Oct 15 10:31 ./session01/array04/channel119/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:30 ./session01/array04/channel119/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:34 ./session01/array04/channel120/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 22M Oct 15 10:32 ./session01/array04/channel120/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 630M Oct 15 10:30 ./session01/array04/channel120/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 129M Oct 15 10:37 ./session01/eyelink_24d5.hkl
-rw-rw-r-- 1 ec2-user ec2-user 61K Oct 15 10:23 ./session01/rplparallel_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 12M Oct 15 10:37 ./session01/unity_71bf.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:34 ./sessioneye/array01/channel009/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 1022K Oct 15 10:32 ./sessioneye/array01/channel009/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:31 ./sessioneye/array01/channel009/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:34 ./sessioneye/array01/channel031/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 1022K Oct 15 10:32 ./sessioneye/array01/channel031/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:31 ./sessioneye/array01/channel031/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:34 ./sessioneye/array02/channel034/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 1022K Oct 15 10:32 ./sessioneye/array02/channel034/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:31 ./sessioneye/array02/channel034/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:34 ./sessioneye/array02/channel056/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 1022K Oct 15 10:32 ./sessioneye/array02/channel056/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:31 ./sessioneye/array02/channel056/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:34 ./sessioneye/array03/channel072/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 1022K Oct 15 10:32 ./sessioneye/array03/channel072/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:31 ./sessioneye/array03/channel072/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:34 ./sessioneye/array03/channel093/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 1022K Oct 15 10:32 ./sessioneye/array03/channel093/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:31 ./sessioneye/array03/channel093/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:34 ./sessioneye/array04/channel119/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 1022K Oct 15 10:32 ./sessioneye/array04/channel119/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:31 ./sessioneye/array04/channel119/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:34 ./sessioneye/array04/channel120/rplhighpass_b59f.hkl
-rw-rw-r-- 1 ec2-user ec2-user 1022K Oct 15 10:32 ./sessioneye/array04/channel120/rpllf_6eca.hkl
-rw-rw-r-- 1 ec2-user ec2-user 29M Oct 15 10:31 ./sessioneye/array04/channel120/rplraw_d41d.hkl
-rw-rw-r-- 1 ec2-user ec2-user 5.3M Oct 15 10:34 ./sessioneye/eyelink_24d5.hkl
-rw-rw-r-- 1 ec2-user ec2-user 27K Oct 15 08:47 ./sessioneye/rplparallel_d41d.hkl
(env1) [ec2-user@ip-10-0-0-72 20181105]$
```

Step 70.2: Include a screenshot of your terminal window with the output above in your lab report.

```
(env1) [ec2-user@ip-10-0-0-72 20181105]$ find mountains -name "firings.mda" | wc -l
8
(env1) [ec2-user@ip-10-0-0-72 20181105]$
```

Step 71: Include the output of the command above in your lab report, and convert the time taken for the job to hours, minutes, and seconds so it is easy to understand. Extrapolate from the time taken for 8 channels to estimate how long it will take to process all 110 channels.

```
(env1) [ec2-user@ip-10-0-0-72 20181105]$ tail pipe-slurm*.out
4130
Object created
Object saved to file spiketrain_d41d.hkl
/data/picasso/20181105/session01/array04/channel120/cell102
spikecount
4012
Object created
Object saved to file spiketrain_d41d.hkl
time.struct_time(tm_year=2023, tm_mon=10, tm_mday=15, tm_hour=11, tm_min=20, tm_sec=55, tm_wday=6, tm_yday=288, tm_isdst=0)
3437.8452904224396
(env1) [ec2-user@ip-10-0-0-72 20181105]$
```

(8 channels) the job took roughly 0 hours, 57 minutes, and 37.85 seconds.

Time per channel = $3437.85 / 8 = 429.73$ seconds/channel

Estimated time for 110 channels = $429.73 \times 110 = 47270.3$ seconds

(110 channels) it's estimated to take roughly 13 hours, 7 minutes, and 10.3 seconds, assuming the processing time scales linearly with the number of channels.

Step 75:: Include a screenshot of your budget page in your lab report.

The screenshot displays the AWS Billing console interface. At the top, a green notification bar indicates that the budget 'EE3801 Budget' has been created successfully. The main content area is titled 'Overview' and shows a table of budgets. The table has columns for Name, Thresholds, Budget, Amount used, Forecast, and Current vs. budgeted. The single entry in the table is 'EE3801 Budget', which has a threshold of 'OK', a budget of '\$200.00', and an amount used of '\$0.00' (0.00%). The left sidebar contains navigation links for Billing, Cost Management, and Preferences.