Instructions:

- This is an open-book and open-Internet quiz
- You are free to look up any information from the lecture notes or labs, as well as the Internet
- Request permission in Zoom to record the meeting while in the main meeting room
- Join your individually-assigned breakout room
- Turn on audio, video, and screen sharing (share your entire desktop and not just one window)
- Make sure your video is visible on-screen at all times
- Start the recording (select local recording instead of cloud recording)
- Please have your NUS ID available for the TA to check via the camera
- During the quiz, we may pop in to check on your setup and recordings
- When you are done, submit your report before 4 pm to the appropriate LumiNUS folder: Quiz Group X Student Submissions
- Stop the recording
- You can now leave the Zoom meeting, but do not quit Zoom until the next step is completed
- Wait for Zoom to save the recording to a file
- Compress the video to reduce its size
- Rename the recorded file to: QuizB_YourName.mp4
- Submit the recording by 11:59 pm today (Nov 11) to the appropriate LumiNUS folder: Quiz Group X Videos

1. Copy the following text to your report, and insert your name, signature, and the date:

Academic Integrity Declaration

a. **I am aware of, and will abide by the NUS Code of Student Conduct (in particular the part on Academic, Professional and Personal Integrity as shown below) when attempting this assessment.**

Academic, Professional and Personal Integrity

i. *The University is committed to nurturing an environment conducive for the exchange of ideas, advancement of knowledge and intellectual development. Academic honesty and integrity are essential conditions for the pursuit and acquisition of knowledge, and the University expects each student to maintain and uphold the highest standards of integrity and academic honesty at all times.*

ii. *The University takes a strict view of cheating in any form, deceptive fabrication, plagiarism and violation of intellectual property and copyright laws. Any student who is found to have engaged in such misconduct will be subject to disciplinary action by the University.*

iii. *It is important to note that all students share the responsibility of protecting the academic standards and reputation of the University. This responsibility can extend beyond each student's own conduct, and can include reporting incidents of suspected academic dishonesty through the appropriate channels. Students who have reasonable grounds to suspect academic dishonesty should raise their concerns directly to the relevant Head of Department, Dean of Faculty, Registrar, Vice Provost or Provost.*

b. **I have read and understood the rules of the assessments as stated below.**

i. *Students should attempt the assessments on their own. There should be no discussions or communications, via face to face or communication devices, with any other person during the assessment.*

ii. *Students should not reproduce any assessment materials, e.g. by photography, videography, screenshots, or copying down of questions, etc.*

c. **I understand that by breaching any of the rules above, I would have committed offences under clause 3(l) of the NUS Statute 6, Discipline with Respect to Students which is punishable with disciplinary action under clause 10 or clause 11 of the said statute.**

i. Any student who is alleged to have committed or attempted to commit, or caused or attempted to cause any other person to commit any of the following offences, may be subject to disciplinary proceedings:

1. plagiarism, giving or receiving unauthorised assistance in academic work, or other forms of academic dishonesty.

Name: _____ Signature: _____ Date: _____

2. Take a screenshot listing the information on your cluster from your EC2 instance:

```
[ec2-user@ip-54.169.221.196 ~]$ pcluster describe-cluster-instances
--region ap-southeast-1 --cluster-name MyCluster01
```

Include the screenshot in your report.

Do the following from your cluster to show that your queue is empty:

```
(env1) [ec2-user@ip-10-0-0-26 ~]$ date
(env1) [ec2-user@ip-10-0-0-26 ~]$ squeue
(env1) [ec2-user@ip-10-0-0-26 ~]$ date
```

Take a screenshot showing the output of the commands above, and include it in your report.

3. Double check that your /data/picasso directory looks like this:

```
(env1) [ec2-user@ip-10-0-0-26 ~]$ ls /data/picasso
20181016  20181017
```

4. For the 20181016 directory, we want to use the RPLSplit function to create only the rplraw, rpllfp, and rplhighpass files for channels in “array01”.

    a. We will want to run the following Python command in slurm from the 20181016 directory to use the RPLSplit function to create only the rplraw, rpllfp, and rplhighpass files for channels in “array01”:

```
python -u -c "import PyHipp as pyh; \
import DataProcessingTools as DPT; \
DPT.objects.processDirs(dirs=None, objtype=pyh.RPLSplit,
channel=[*range(1,33)], SkipHPC=False,
HPCScriptsDir='/data/src/PyHipp/', SkipLFP=False,
SkipHighPass=False);"
```

    Create a slurm script to perform this task and include a screenshot of the script in your report. Remember to add in a SNS notification so you will receive an email when your job is done.

    b. Similar to what you have seen in Step 3 of Lab 8, when the RPLSplit function is called with SkipHPC=False and SkipHighPass=False, it will look in the HPCScriptsDir directory for a script named rplhighpass-slurm.sh, and submit it from the channel directory once the rplraw file is created.

    Create the rplhighpass-slurm.sh script from the rplhighpass-sort-slurm.sh script. Since spike sorting is not required, you can remove the conda commands and the mountains commands so the Python command looks like this:

```
python -u -c "import PyHipp as pyh; \
```

```
import time; \
pyh.RPLHighPass(saveLevel=1); \
print(time.localtime());"
```

Include a screenshot of this script in your report.

c. Submit your slurm script to slurm to generate the required files. Include a screenshot showing your job submission.

d. You can move on to the next question while waiting for the job to finish. Once the job is finished, check that the appropriate number of files have been created. Include screenshots of the commands you used and the output in your report. In addition, include a screenshot of the email you received when the job completed.

5. For the 20181017 directory, the files rplraw, rpllfp and rplhighpass files have been generated for all the arrays, but some of the channels in array01 are missing rpllfp files, while other channels in array01 are missing rplhighpass files.

   a. Move the processed files back to the appropriate directory:

   ```
   (env1) [ec2-user@ip-10-0-0-26 20181017]$ mv
   /data/RCP/VirtualMaze_Data/Plugins/x86_64/array*
   /data/picasso/20181017/session01
   ```

   b. Find the channels that are missing files, and use slurm to regenerate them (you do not need to regenerate the spike sorting files). Include in your report screenshots of the steps you used to find the missing files, and the commands you used to regenerate them.

   c. Check that the correct number of rpllfp and rplhighpass files now exist. Include screenshots in your report showing how you checked and what results you obtained.

6. Use slurm to generate cumulative low-frequency and high-frequency FreqSpectrum objects **for only the channels in array01** for both 20181016 and 20181017. Include screenshots of any new scripts you created, as well as the commands you executed, to perform this task. In addition, include a screenshot showing the size of the two cumulative FreqSpectrum objects.

7. Create interactive plots of the cumulative objects.

   a. After the cumulative objects have been successfully generated, copy them to your computer. Include screenshots of the commands you used to copy the files, and to check the size of the files after the transfer.

   b. Use Spyder to plot the two cumulative objects, and include the two low-frequency and the two high-frequency array plots in your report.

8. Submit Quiz Report to LumiNUS Quiz Group X (in PDF format only, and name the file QuizB_YourName.pdf):
   a) Screenshots from Step 2

b) Screenshots from Step 4
c) Screenshots from Step 5
d) Screenshots from Step 6
e) Screenshots from Step 7

9. Compress your Zoom recording and submit it to LumiNUS Quiz X Videos by 11:59 pm, Nov 11.

10. Wrap Up
    a. Create a snapshot of the cluster used in the quiz
    b. Delete all other snapshots
    c. Delete all clusters (make sure “pcluster list-clusters …” returns empty list)
    d. Terminate all EC2 instances using AWS Dashboard
    e. Delete CloudWatch Rules
    f. Delete Lambda function