

E-exam SOP (For Quizzes, PE and Final)

Before the Exam, Setup and Preparation

What you need

- An isolated, private physical environment by yourself. (We kicked out a student who took an exam in the airport before.)
- One A4 size cheat sheet, double sized, printed or written
- One A4 blank paper for your draft
- PC (desktop computer / laptop) with at least 5GB free space on hard disk
- Either an external webcam or mobile phone WITH camera for proctoring by Zoom.
 - If you use a mobile phone as the camera,
 - Install Zoom
 - Recommend you to turn off your cellular data and use Wi-Fi instead.
 - Your webcam or phone can be able to position in a way to monitor yourself as the right.
- Software on PC:
 - Zoom (with audio enabled and video disabled)*
 - PDF reader
 - Computer screen recording software (either one of the followings):
 - Panopto (recommended) (instructions for use are below, detailed instructions [here](#))
 - or ffmpeg
 - Or VLC media player, QuickTime player, OBS Studio

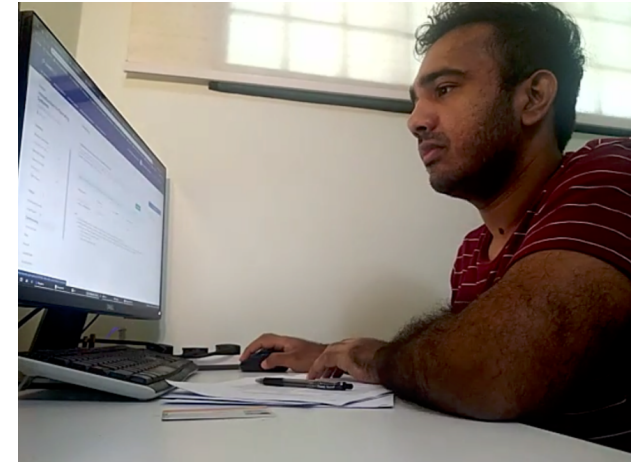


Figure 1: Your Zoom session on your webcam/phone should be able to show yourself, your monitor, keyboard, and your physical desktop at all time during the assessment.

However, if you are using an external webcam WITHOUT an additional phone, you only need ONE Zoom session on your PC, but with audio and video both ENABLED.

What you cannot have during the exam:

- Headphone or any earpieces
- Wireless accessories, e.g. wireless mouse and keyboard
- Additional I/O devices, e.g. more than one keyboard or monitor
- Communicate with people other than your invigilator
- Search for information online, including your own materials in your computer.
 - For PE, your browser can only open Coursemology and the authorized Google Presentations for instant announcements such as typos and amendments. And you can use the help (F1) in IDLE
 - However, you cannot even use IDLE in your quizzes.

On the Day of the Exam

- You have to join the Zoom session 30 min before the exam (except the mock ones)
- You cannot join the exam 15 min after the exam has started
- Login to Zoom at <https://nus-sg.zoom.us/> using “Sign in with SSO” with company domain as “nus-sg” and your NUSNET ID. Do not use the default login displayed on the left of the login screen.

Throughout the Assessment

You need to maintain two setups during the assessment, namely, the **Zoom camera** and your **PC screen recording**. If any one of these is broken, you will just get a zero for your assessment.

Zoom camera

The assessment will be proctored using Zoom on either PC with external webcam (with both audio & video enabled) or phone (with only video enabled). The video feed from your Zoom camera will be recorded by the invigilator. The Zoom camera must be positioned to capture one side of your face, both hands with table & the entire PC screen as Figure 1 above.

If you're using your phone for the Zoom camera, your phone should be oriented in **landscape** mode and be connected to the charger. To prevent your Zoom video feed from being disconnected, you should disable the sleep/screen off mode on your phone. You should not use privacy screen protector on your phone. And it's recommended to switch of your cellular data and use wifi instead if it's a phone.

Your Zoom camera must show your full name that is the same as your name registered in NUS/Luminus.

PC Screen recording

You are to record your PC screen using a computer screen recording software as follows:

- We recommend that you use Panopto, and you can follow the instructions at the end of this document (and a detail one [here](#).) Name your video recording as NUSNET_ID.mp4, e.g. E0123456.mp4. Recordings are to be uploaded to the respective assignment folder, something like Quiz 0 Recordings [assignment].
- Otherwise, configure the software to use **H264 encoding with 1 frame/sec & 128 kbps constant bitrate**.
 - Refer to the section of [Screen Recording Software](#) below for how to install and use FFmpeg.
 - You are to upload this video file to LumiNUS -> Files -> <exam> Screen Recordings within 3 hours after the completion of the exam.
- A 2-hour exam will generate a video file of about 100 MB in size.

You should test recording your screen **BEFORE** the assessments.

Communication with Invigilator during the Assessment

There are two ways of communications: Announcements from the examiners and questions from you.

Announcements from the examiners

There will be a Google presentation link sent to you in the Zoom session. You can let the page to be visible all the time during the assessment (And you should). Any **announcements, changes, typos amendments or further clarifications** will be announced through this channel. You are responsible to check this announcement from time to time, especially before the end of the assessment. If you missed the announcements and are not aware of any changes during the exam, you will take full responsibilities for yourself.

Asking a question

If you have any question during the assessment, you can ask the invigilator through the Zoom chat on your PC (Not the one on the phone). Please type the question into the chat. The invigilator may answer you instantly or redirect your questions to the lecturers.

PE Procedure

The PE is hosted on Coursemology :: Practical Exam. Once you are given the exam password, please click Attempt in Coursemology. Skeleton files and question pdf are in Coursemology as well. Please paste your solutions to each part in Coursemology before the end of the exam. You can only run and test your code up to five times for each part. You are allowed to use IDLE in the PE, but no other IDEs are allowed.

Zoom

You must rename your Zoom display name to be the same as the name on your student card. This renaming must be completed **before** you join your assigned Zoom meeting on the exam day.

- To change your display name, go to your Zoom profile and click “Edit”. If the name on your student card is “Mike Smith”, enter “[PC] Mike Smith” entirely into FIRST NAME and leave the LAST NAME blank (for your PC’s Zoom display name). For your phone, you just need to enter “Mike Smith” into the FIRST NAME and leave the LAST NAME blank.
- Note that you will not be allowed to enter the exam’s Zoom meeting if your display name is not appropriately renamed.

Windows

- Disable Windows Update before your exam and enable it back after the exam.
- Disable Anti-virus software before your exam and enable it back after the exam.

General Exam Rules

- You have to join the exam Zoom session at least 30 min before the exam (15 min for mock PE)
- You are NOT allowed to join the exam after the exam has started for 15 min.
- You are not allowed to communicate with anyone (whether in person or online) except with the invigilator, examiner, or CIT personnel for assistance.
- You are not allowed to have any other electronic devices (including mobile phone, tablet, notebook, **smart watch**, electronic dictionary, secondary computer monitor, etc.) **within reach or sight** or hearing from where you are sitting for the exam with the exceptions of the exam device, the phone used for remote proctoring, and any approved calculator.
- Your Zoom video feed & PC’s screen recording must be turned on throughout the exam. **Failing this will result in disqualifying your exam.**
- You are not allowed to move away from your Zoom camera (except during authorized breaks) or blocking it throughout the entire exam.
- You must remain seated until the end of the exam even you finished it early.
- You are not allowed to leave the Zoom meeting until you are told to do so by the invigilator.
- Any student who is found to have contravened any of the above rules will be liable for disciplinary action that may result in his/her expulsion from the University.

In Case of Something Goes Wrong

In general, try to contact your invigilator by existing Zoom link. You should report to the invigilator if

- Your computer crashed
- Your webcam/phone stops working
- Your recording of screen stop working

Failing of any of the above, may result in failing of your exam.

Appendices: Screen Recording Software

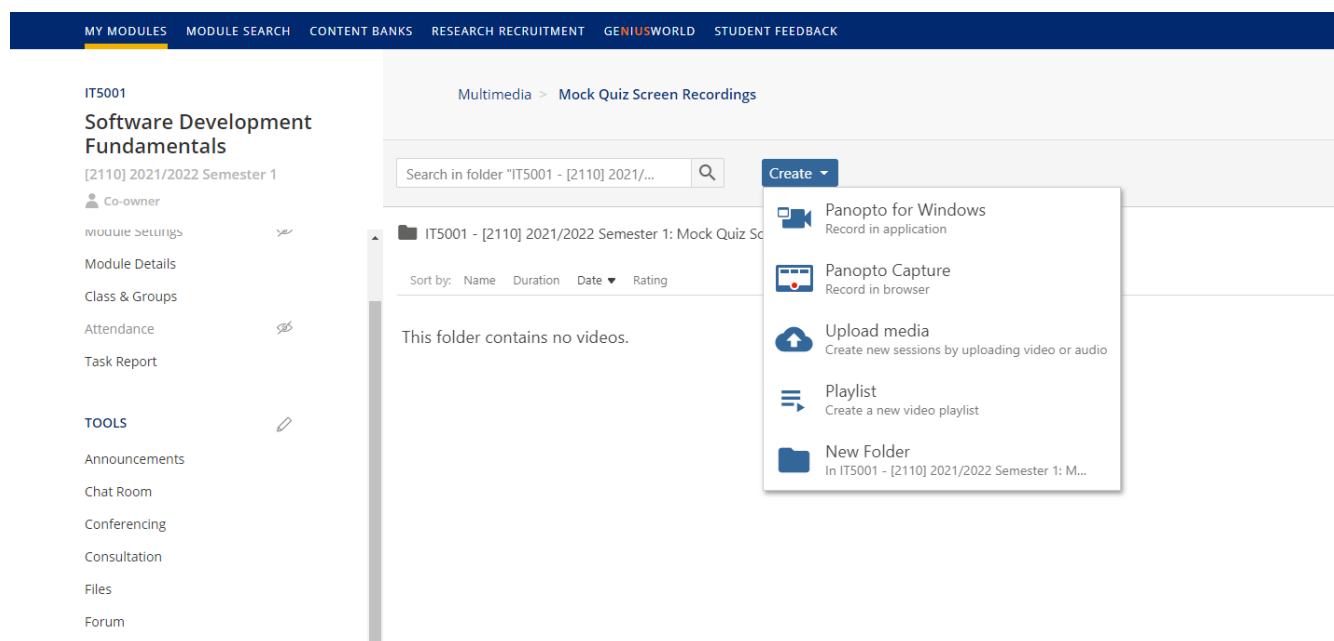
[Panopto](#) is the recommended screen recording software. This section describes briefly how to use panopto, but if that option is not available to you, you may look below on how to install and use **FFmpeg** for recording your computer screen. This command-line tool can be easily configured to produce a video recording file that is sufficiently compressed for the purpose of the exam proctoring. You are highly recommended to try and test your recording a few days before the real exam. And the best is to test recording for a period of longer than 2 hours.

After recording, you should name the output file for storing the video recording using your NUSNET ID (e.g., e1234567.mp4).

Panopto

Go to LumiNUS -> Multimedia and click on the appropriate channel. For example, if you are taking the Mock Quiz, click on the Mock Quiz Screen Recordings channel.

In this channel, there should be a <name of exam> [assignments] folder. Click on the folder to enter it.



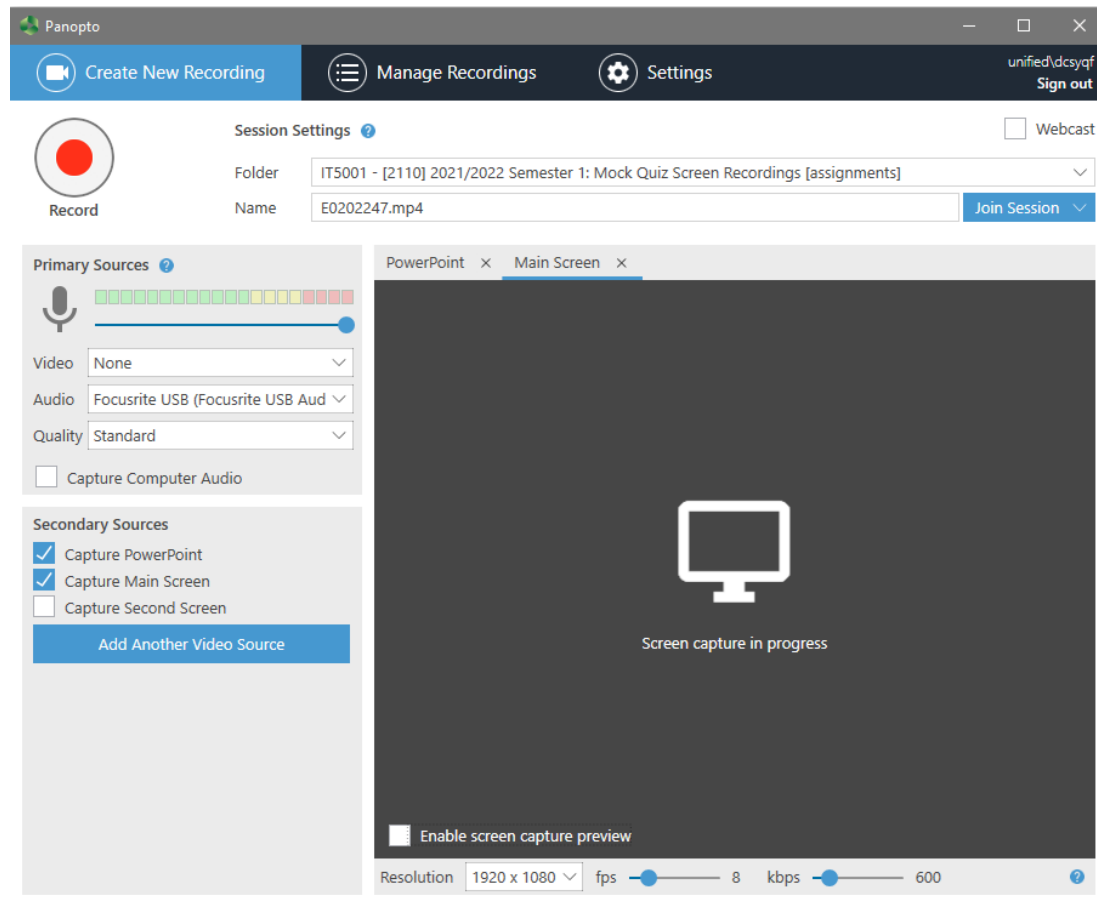
In the folder, click on Create, and select Panopto for Windows / Mac (do not use Panopto Capture)

If you have not done so already, download and install the Panopto application, then close the application. Then, back in LumiNUS Multimedia, the respective channel, inside the [assignments] folder, again, click on Create -> Panopto for Windows, and click on Open Panopto. This should take you to the installed panopto application.

For Windows Users, go to Settings. Under Basic Settings, make sure “Progressively upload while recording” is unchecked, and under Advanced Settings, make sure that “Capture video in MP4” is checked, and “Enable no audio detected alerts” is unchecked. Remember to save these settings.

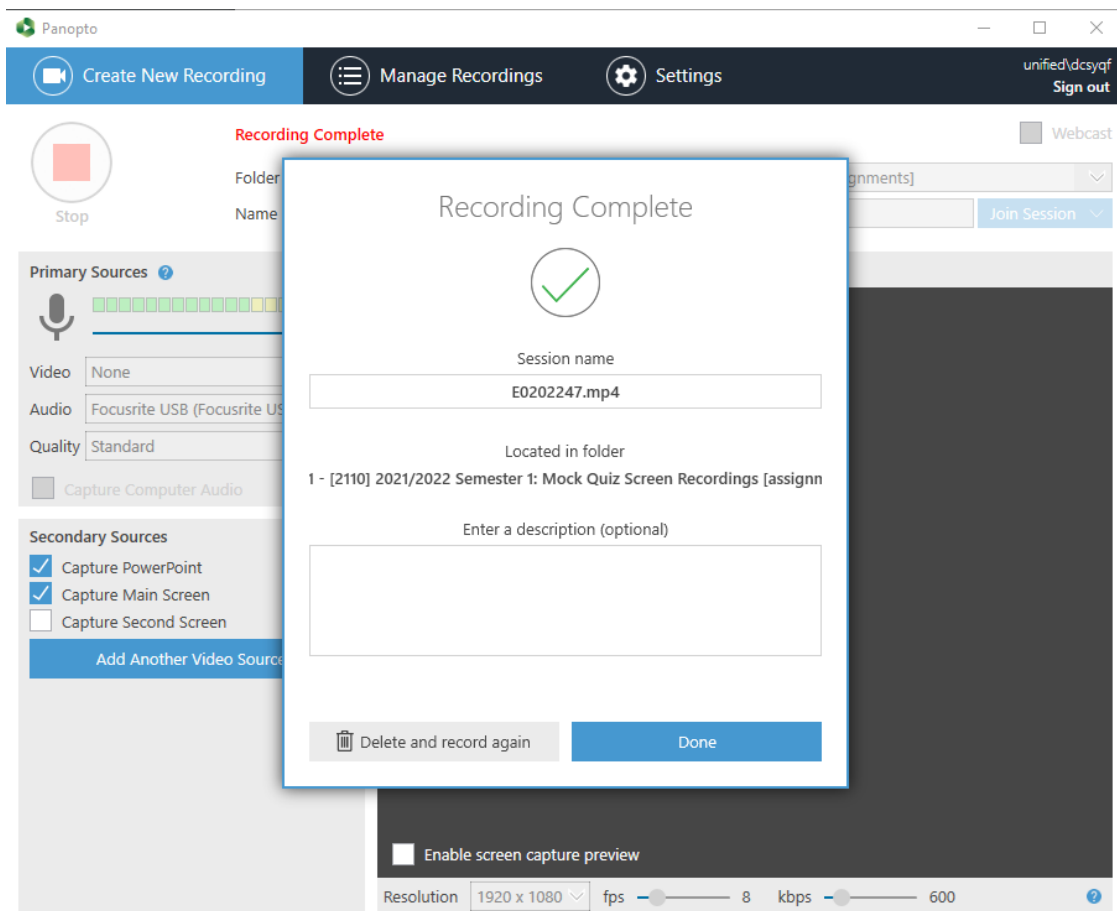
Ensure that the following is correct:

- 1) You are connected to your own account
- 2) The folder shown is the correct assignment folder
- 3) Rename your video to E0123456.mp4 (use your own NUSNET ID)
- 4) Ensure that audio is on (at least one audio source needs to be selected for proper recording)
- 5) Capture Main Screen is on

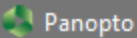



When prompted by your invigilator, begin recording by pressing on the Record button.


Once you're done you can press stop or F10 to stop the recording. You will be presented with a notification. Ensure once again that the details are correct, and press "Done" for uploading to commence.




Panopto will attempt to upload your recording, please wait patiently. Please do not close your Panopto during this process. Wait for the status to change from "Currently Uploading Recordings" to "Uploaded Recordings".

Panopto

Create New Recording

Manage Recordings

Settings

unified\dcyqf
Sign out

Only recordings stored on this computer are shown below. [Manage My Recordings](#)

Uploaded Recordings

Start Time	Duration	Folder	Session	Actions		Status / Link
18/8/2021 3:17 pm	00:00:21	IT5001 - [2110] 2021/2022 Semester 1: M...	E0202247....	Delete Local	Set Offline	Resume Share Edit View

FFmpeg

Windows

Installation

To install FFmpeg, download the installation zip file on your PC from <https://ffmpeg.zeranoe.com/builds/> with the configuration (Version: 4.3, Architecture: Windows 64-bit, Linking: Static, License: GPL 3.0) shown below. Click Download Build to download the zip file. Click on the downloaded zip file to extract its contents to a directory of your choice. If you have extracted it to the root of the C drive directory, the extracted directory will be named "C:\ffmpeg-4.3-win64-static". For convenience, you may want to rename the installation directory to simply "C:\ffmpeg".

FFmpeg Builds

FFmpeg is the leading multimedia framework to decode, encode, transcode, mux, demux, stream, filter and play. All builds require a least Windows 7 or Mac OS X 10.10.

20200826-8f2c1f2 ▼

Windows 64-bit ▼

Static ▼

GPL 3.0 ▼

Version

Release builds are published approximately every six months, while Git builds are compiled multiple times a week. Git builds should be preferred unless a specific release version needs to be targeted.

Architecture

Builds are provided for Windows and macOS, with very few configuration differences between the two. 32-bit Windows builds are provided for historical purposes, but will be removed in the future.

Linking

Static builds include all components linked into the executable, while shared builds rely on libraries (.dll or .dylib) to operate. Dev builds provide header files, and will be used in development with a shared build. Most users should use the static build, while developers need to use both the shared and dev builds.

License

All nightly builds are licensed as GPL 3.0, while GPL 3.0 and LGPL 3.0 builds are provided for releases. GPL 3.0 builds are more complete than LGPL 3.0 builds as they can include x264 and x265.

Download Build ▼

Name	Size	Modified
ffmpeg-20200826-8f2c1f2-win64-static.zip	81.30 MB	Aug 26, 2020 5:17 PM

Screen Recording during Exam

To use FFmpeg, you will first need to start the **command prompt** by pressing the Windows Menu and R keys together to open the Run dialog, followed by typing **cmd** and pressing Enter key.

To start the recording of your computer screen, type the following single-line command on the command prompt and press Enter. (The command assumes that your FFmpeg installation directory is "C:\ffmpeg". The video recording will be stored in the file "C:\e1234567.mp4".) Please type the following command in one line:

```
C:/ffmpeg/bin/ffmpeg -f gdigrab -r 1 -probesize 20M -threads 1 -i desktop -vcodec libx264 -b:v 128k -s hd720 C:/e1234567.mp4
```

You can simply copy and paste from above.

To stop the recording, switch to the command prompt application and press the key **q**.

If you want to play the recording, you can use the **ffplay** player by entering the following command on the command prompt:

```
C:/ffmpeg/bin/ffplay C:/e1234567.mp4
```

MacOS

Installation

To install FFmpeg, download the installation zip file on your PC from <https://ffmpeg.zeranoe.com/builds/> with the configuration (Version: 4.3, Architecture: macOS 64-bit, Linking: Static, License: GPL 3.0) shown below. Click **Download Build** to download the zip file. Click on the downloaded zip file to extract its contents to a directory of your

choice. In the following, your FFmpeg installation directory is assumed to be “/Users/alice/ffmpeg”. Another way to install FFmpeg is using a package manager (e.g., Homebrew).

If your macOS is 10.15 (Catalina) or newer, you will need to perform an additional step before using FFmpeg for the first time. In Finder, navigate to the installation bin directory (e.g., /Users/alice/ffmpeg/bin), right-click on ffmpeg and select “Open With → Terminal”.

Screen Recording During Exam

To use FFmpeg to record your computer screen, you will first need to find out the value of the video device index. To do this, open the Terminal application to type the following single-line command and press the Enter key.

```
/Users/alice/ffmpeg/bin/ffmpeg -f avfoundation -list_devices true -i ""
```

This command will display all the available input video/audio devices that are ready to be captured. An example output is shown below:

```
[AVFoundation input device @ 0x7fcfcbc08d40] AVFoundation video devices:  
[AVFoundation input device @ 0x7fcfcbc08d40] [0] FaceTime HD Camera (Built-in)  
[AVFoundation input device @ 0x7fcfcbc08d40] [1] Capture screen 0  
[AVFoundation input device @ 0x7fcfcbc08d40] AVFoundation audio devices:  
[AVFoundation input device @ 0x7fcfcbc08d40] [0] iShowU Audio Capture  
[AVFoundation input device @ 0x7fcfcbc08d40] [1] Built-in Microphone
```

You will use the video device index 1 for “Capture screen 0”.

To start the recording of your computer screen, type the following single-line command on the Terminal application and press Enter. (Again, the following is one single line of command. You can just copy and paste from this pdf.)

```
/Users/alice/ffmpeg/bin/ffmpeg -f avfoundation -r 1 -probesize 20M -threads 1 -i "1:" -vcodec libx264 -b:v 128k -s hd720 /Users/alice/e1234567.mp4
```

In the above command, “1:” represents the “<video device index>:” value, and the video recording will be stored in the file “/Users/alice/e1234567.mp4”.

If you receive a request to allow the Terminal application to perform screen recording, tick the checkbox next to “Terminal” under “System Preferences → Security & Privacy”.

To stop the recording of your computer screen, switch to the Terminal application and press the key q.

To play the recording, you can use the ffplay player by entering the following command on the command prompt:

```
/Users/alice/ffmpeg/bin/ffplay /Users/alice/e1234567.mp4
```

