IOI 2021 Screen Recording Procedures

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Overview

This write-up provides instructions for recording the Contestant PC's full desktop screen, and uploading of the recording to the HTC. The command line tool FFmpeg is used for recording, producing a video file in MP4 or MKV format.

Installing FFmpeg

This section describes 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 in MP4 or MKV formats, both of which are sufficiently compressed for the purpose of proctoring. In this document, we shall use MP4 as the chosen format for subsequent examples mentioned here.

You should name the output file for storing the video recording using your IOI contestant code and day of competition, in the format "`<contestant code>-<day of competition>.<mp4 or mkv>`" (e.g., `SGP1-1.mp4` or `SGP1-1.mkv` for Singapore Contestant 1, on Day 1 of competition, saved to either MP4 or MKV format). For recordings on Practice Day, it will be known as Day 0 (e.g., `SGP1-0.mp4`)

To install FFmpeg, download the installation zip file on your PC from https://www.gyan.dev/ffmpeg/builds/ffmpeg-release-essentials.zip. Click on the downloaded zip file to extract its contents to a directory of your choice. If you have extracted it to the home directory of your PC under your username, the extracted directory will be named "`C:\Users\<your username>\ffmpeg-4.4-essentials_build`". In this example, if your computer's username is "`garytang`", the extracted directory will be "`C:\Users\garytang\ffmpeg-4.4-essentials_build`". For convenience, you may want to rename the installation directory to simply "`C:\Users\garytang\ffmpeg`".

Using FFmpeg

1. To use FFmpeg, you will first need to start the command prompt by pressing the Windows Menu (`Win`) and `R` keys together to open the Run dialog, followed by typing "`cmd`" and pressing Enter key. The command prompt will look something like this:
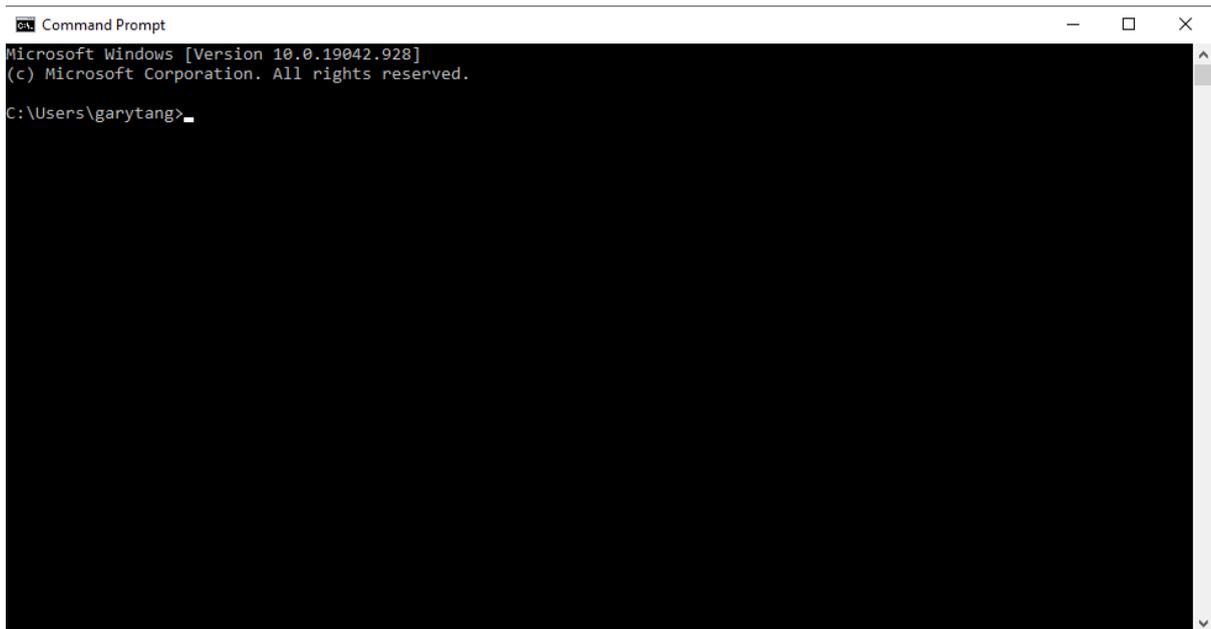
```
Command Prompt                                              —   □   ×

Microsoft Windows [Version 10.0.19042.928]
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C:\Users\garytang>_
```

a. The default directory for storing video recordings is the Videos file directory of your PC (`C:\Users\<your username>\Videos`). To store videos in that folder, type the output of your video's directory as "`C:/Users/<username>/Videos/<video name>.mp4`".

2. To start the recording of your computer screen, type the following single-line command on the command prompt and press Enter, taking note of the contestant ID and day of recording which varies. The command assumes that your FFmpeg installation directory is "`C:\Users\<username>\ffmpeg`".

   ```
   C:/Users/<username>/ffmpeg/bin/ffmpeg -f gdigrab -r 2
   -probesize 40M -threads 1 -i desktop -vcodec libx264 -b:v 256k
   -pix_fmt yuv420p C:/Users/<username>/Videos/SGP1-1.mp4
   ```

3. To stop the recording of your computer screen, switch to the command prompt application and press the `Q` key.

   a. (Optional) To play the recording, simply double-click the video that you have recorded to begin. Otherwise, on the command prompt window, you can use the ffplay player by entering "`C:/Users/<username>/ffmpeg/bin/ffplay C:/Users/<username>/Videos/SGP1-1.mp4`" on it. To stop the ffplay player, press the `Q` key.

Uploading video files for contestants

1. On the practice day, Day 1 and 2 of IOI 2021 competition, a Dropbox link to an upload folder will be sent to each Team 24 hours in advance, in the form of "`https://www.dropbox.com/request/<folder string>`". Each Team will receive a unique link that will be sent via Matrix chat, for each day of competition.
   a. As such, each link sent works for only one Team, and for the day itself only (see point 4).
2. You will then be greeted by a Dropbox folder request that looks like this when you click the link that opens up your Internet browser:
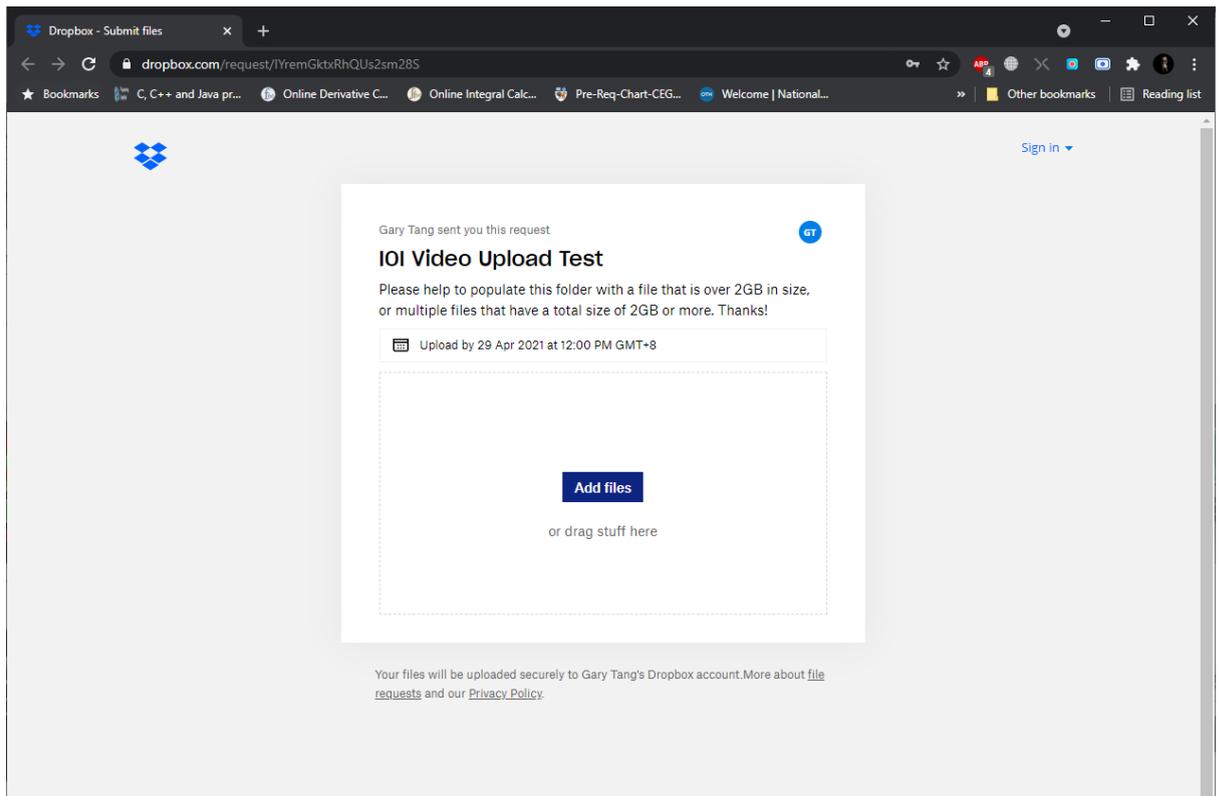
3. Teams' representatives can then proceed to upload their contestant's screen recording video files, via drag-and-drop or clicking to add files to be uploaded.
   a. We recommend selecting multiple files to upload at the same time for your convenience.
   b. During the upload, please DO NOT close your browser's window!
4. Folders will remain active for 24 hours after the end of the practice day, Day 1 and 2 of IOI 2021 respectively. Following which, the folder will close and the Dropbox link will become nullified. Therefore, Teams MUST upload the videos into the folders before the deadline. Late submissions will not be accepted.
5. Please adhere to the naming format for each video as well (`<contestant code><dash><day of competition>.mp4` (e.g., `SGP1-1.mp4` for Singapore Contestant 1, on Day 1 of competition).