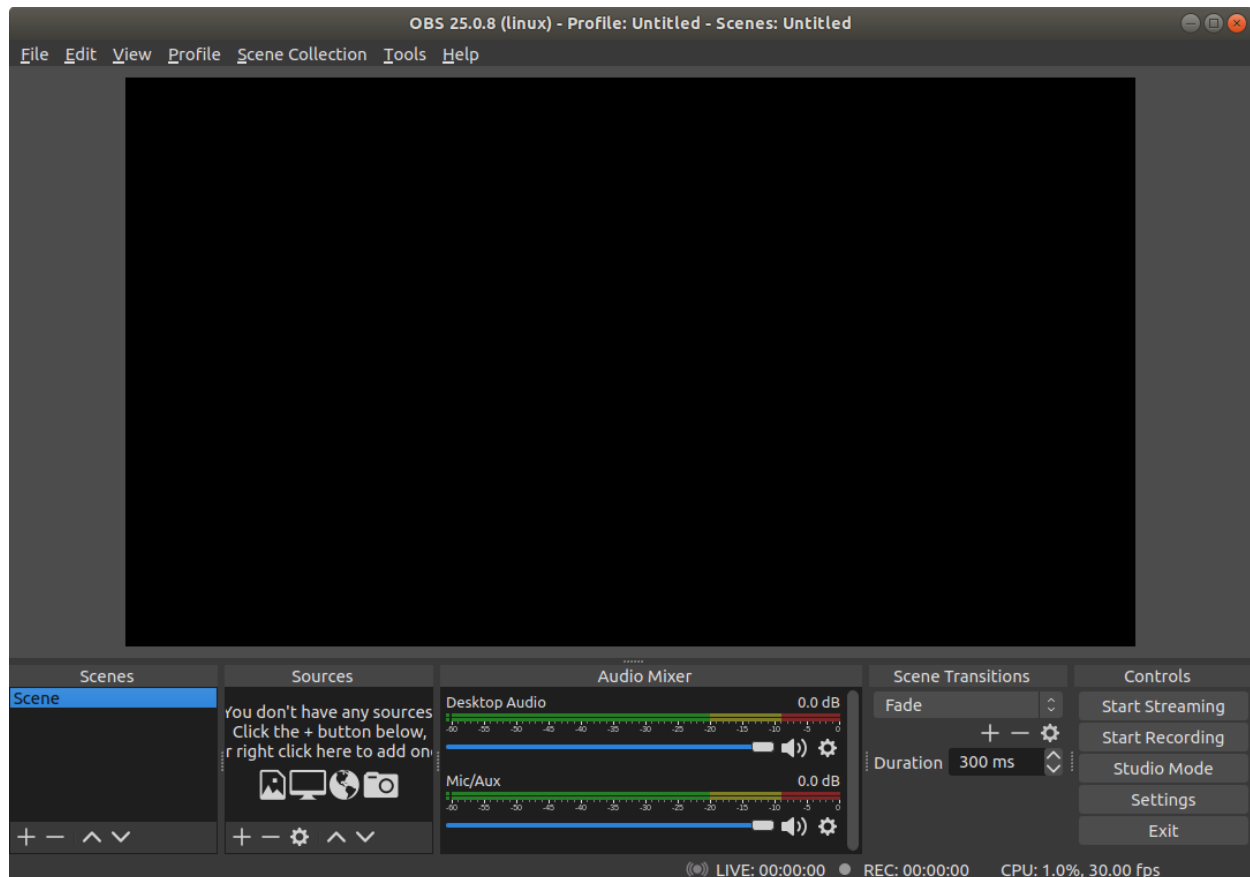


# OBS Studio

OBS Studio has a main window that looks like the following



The main application window has several separate sub-windows:

1. The main sub-window that is at the top center of the main window
2. The **Scenes** sub-window on the bottom left.
3. The **Sources** sub-window on the right of the Scenes window
4. **Audio Mixer** sub-window
5. **Scene Transitions** sub-window
6. **Controls** sub-window on the bottom right that contains buttons like “Start Recording”, etc.

We will concern ourselves only with the main window (1), the scenes window (2), the sources window (3), and the controls window (6).

## Download and Installation

You can download OBS Studio from <http://obsproject.com> for your OS.

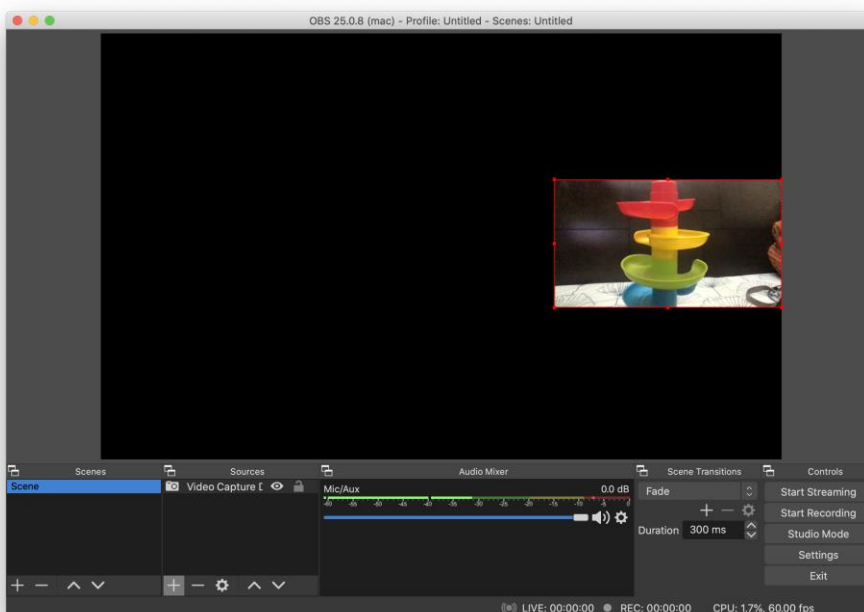
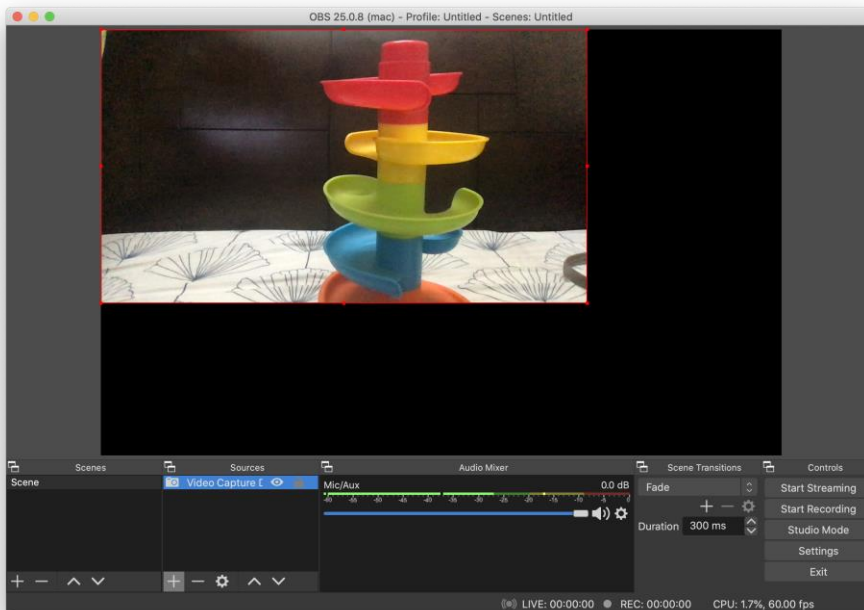
- During installation and during use, the software tool may request permission for accessing your microphone, camera, and recording your desktop screen – please grant these permissions whenever prompted.
- Then it would ask whether you would like to manually configure OBS or if you would like to run the auto-configuration wizard. Unless you know what you are doing, it is best to run the auto-configuration wizard.
- The auto-configuration wizard will ask you to “Specify what you want to use the program for”. Choose the option “Optimize just for **recording**, I will not be streaming”.
- You will be prompted with a form called “Video Settings”. Usually, selecting the default options (which are already chosen by the software) works fine.
- It would then take some time to perform “Testing” at different resolution levels. At the end you will be presented with some “settings that are the most ideal for you”. Choose “Apply Settings” to put them into effect.

You are now all set to start using the software.

## Recording your presentation

1. Open OBS Studio, and you will be greeted with the main window shown on the first page.
2. Click “+” at the bottom of the **Sources** sub-window
3. **Setting up video recording through camera.** When you click “+”, you will see a menu of options like “Audio Input Capture”, “Audio Output Capture”, ....  
One of the options would be “**Video Capture Device**”. Select this option to record a video of yourself speaking as you present your work.
  - a. You will be presented with a dialog box with options “Create new” and “Add existing”. Choose “Create new”. Also, there will be a checkbox called “Make source visible” which would be checked by default. Please leave it as it is (checked).
  - b. Then you will be presented with a window called “Properties for Video Capture Device”, where you are supposed to select the “Device” and the resolution. Choose your camera from the drop-down list of devices available. Leave the resolution and buffering settings to their default values. Press OK.
4. You should now return to the main window where you should be able to see the camera feed in the main sub-window. The camera feed would be outlined to indicate a **camera region**. The main subwindow indicates the contents of the final video that would be recorded. So you can position and resize the camera region inside the main subwindow as you would like it to appear in the final video. You can use your mouse to resize the camera feed (by click/drag/drop on the

outline). For example, the following two images show two different sizes and positions of the same camera feed.



5. **Setting up screen recording for your on-screen presentation.** Open your presentation developed in your favourite presentation software, such as Microsoft Powerpoint. Now go back to "OBS Studio" and add another "Source" by clicking the "+" symbol in the "Source" sub-window. Choose "**Display capture**" this time.

- a. In the dialog box that appears, choose “Create new” (and leave the “Make source visible” checkbox checked, as it is by default).
  - b. You may be greeted with a dialog box titled “Properties for Display Capture”. Simply retain the default options and press OK.
6. **Arranging your video sources.** At this point, you have set up **two** video sources: one is your video camera, and the other is your screen display. They both should now appear on your main sub-window. However, it is possible that you see only one of them. This is because one of them may be getting precluded by another. It is now time to arrange the two video sources so that they both appear at the proper positions in the final video screen. Here are a few tools that allow you to create an arrangement.
  - a. You can mouse-click on any of the video region (camera or display) and drag it around. You can click on the bottom-right corner of a video region to resize it. A video region may overflow the main sub-window, and so the bottom-right corner may not be always visible. But you can drag the video region up and left to reach the bottom right corner eventually.
  - b. You can vary the front-to-back orders of the different video sources by clicking the “^” and “v” buttons at the bottom of the “Sources” sub-window. These buttons control what happens if two video sources overlap at some regions of the screen. In these cases, the video source that appears earlier in the “Sources” list is displayed and the others are hidden behind it.

**Important:** Please ensure that the entire main sub-window is covered (I.e., there is a video source at each pixel of the displayed sub-window. Otherwise, your final video would have a “dark region” (the region which is not covered by any video source present) for the entire duration of the video.

At the end of this document, we show some example arrangements for your video.

7. **Starting the recording.** After you are satisfied with the arrangement, press the “Start Recording” button in the “Controls” sub-window. Switch to your presentation software and start presenting in full-screen mode.
8. **Stopping the recording.** After you are done presenting, switch back to the OBS window, and press “Stop Recording” in the “Controls” sub-window. Review your recorded video, and re-record if you are not satisfied. You can go to “File-->Show Recordings” to find the file that contains the recording of your talk and open it in your favourite media player.
9. If you are satisfied, you can proceed to the next step, i.e., either sharing the video with the video-editing team or editing the video yourself using the video-editing software.

## Optional

Some of you may prefer to have parts of your video in “full screen” mode, i.e., in a mode where the video captured by the camera (e.g., of you speaking) is shown in full screen (i.e., without the slideshow). For example, it may be a good idea to start the video in full screen mode at the time of introducing yourself and your research team. Also, it may be a good idea to end the video, while thanking the audience, in full screen mode.

To achieve this, you can create separate recordings of these portions of your talk. You will need to change the “scene layout” so that the “Video Capture Device” is the only source and it is sized and positioned appropriately (e.g., full screen in the middle of the screen).

The different recordings can be joined during the video-editing phase. You can either perform editing yourself, or clearly specify instructions for the video-editing team, so they can do the editing on your behalf.


## Example video arrangements

Here are some example arrangements of the video sources. You can create such arrangements by manipulating the video regions in the main sub-window of OBS.

# Expressions in C

- Expressions may have side effects

$(i = --j) + k$




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## Using the language and its semantics

Semantics

$\frac{}{E \vdash e : T} \quad \frac{}{E \vdash e_1 ; e_2 : T} \quad \frac{}{E \vdash if(e, e_1, e_2) : T}$

$\frac{}{E \vdash while(e, b) : T} \quad \frac{}{E \vdash do\>\>(e, b) : T}$

Now that you have  
a sense of how the  
semantics and the  
compiler work,  
I'd like to talk



\*We have a typechecker that reports error locations, fancy custom syntax, and syntax highlighting!

## Example talk videos and how to create them

We list some research videos that are interesting in the way they were done:

1. [https://www.youtube.com/watch?v=5W9v-n-EZuo&list=PLyrlk8Xaylp5mvxARtX5ncjy9p4X\\_Ajwd&index=155&t=0s](https://www.youtube.com/watch?v=5W9v-n-EZuo&list=PLyrlk8Xaylp5mvxARtX5ncjy9p4X_Ajwd&index=155&t=0s)

In this video, the transcript of the speech appears below the video of the speaker throughout the entire presentation. To achieve this, the presenters perhaps created a scene layout where the slide appears on the whole screen and the video appears as an inset on the top right corner. Further, they structured their slides so that the slide have a black vertical band on the right hand side (of the same width as the inset video). Further, they put the transcript of their speech (which they have obviously rehearsed multiple times) in the black band of the slide at the appropriate place. During recording, they simply keep advancing the slides while making the speech. You need to be careful about your timing of slide advancement to synchronize it with your speech.

2. [https://www.youtube.com/watch?v=xfOTTwlKhg4&list=PLyrlk8Xaylp5mvxARtX5ncjy9p4X\\_Ajwd&index=164&t=0s](https://www.youtube.com/watch?v=xfOTTwlKhg4&list=PLyrlk8Xaylp5mvxARtX5ncjy9p4X_Ajwd&index=164&t=0s)

This is an interesting and funny video where the speaker uses his pictures in different poses, sometimes holding placards, as a part of his slides. For CSE research talks, something like this would work only for some parts of your talk --- we would like the video to have significant portions where you can be seen speaking yourself. However, you may choose to record some parts of your presentation where your scene layout consists only of the slide show (and no video) and the slides contain pictures of you. Recall that you will have to create separate recordings (with different scene layouts in OBS), and they can be joined during video-editing.

In general, please feel free to be creative and original.