

Report and Video Guidelines

Program Listings

You will need to include your Verilog code in each lab report. Do *not* use a screen capture. Instead, you *must* include your code as text using a monospaced font with no extra space between lines.

Using Styles

The simplest way to do this is to apply a style to your text. Paste your code into your report and select it. In Microsoft Word select **Apply styles...** from the **Styles** gallery, enter `HTML Preformatted` in the text box and click on **Apply**. In LibreOffice enter `Preformatted Text` in the style text box. Note that you can enter these style names even if they are not one of the choices in the drop-down box.

Using Notepad++

An alternative is to use the Notepad++ editor. This method also adds syntax highlighting to your code.

Install **Notepad++** using the *Custom* install so you can include the **NppExport** plugin during the installation.

Open your `.sv` file with Notepad++. Select **Edit > Select All** and then **Plugins > NppExport > Copy RTF to clipboard**. Finally, paste your code into your report using the “Keep source formatting” option.

Auto-Indenting Code

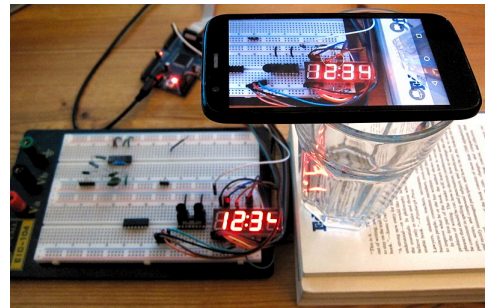
A fast way to fix the indentation of your code is to paste it into the text box at <https://codemirror.net/mode/verilog/index.html>, then press Control-A to “select all” then press Shift-Tab to auto-indent your code.

With the text still selected, press Control-C to copy the text to the clipboard and paste it back into your editor.

Videos

Videos of your lab demonstrations must be `.mp4` files encoded using H.264/MP3 video/audio codecs at a resolution and frame rate not exceeding 720p30. Text or digits in the video must be upright. Landscape format is best.

You can put a cell phone on top of books or a glass to hold it steady while you do the demonstration:



Checking your Videos

To check the resolution, right-click the video file, select **Properties** and check in the **Details** tab that the **Frame height** is 720 or less:

Video	
Length	00:00:11
Frame width	640
Frame height	480
Data rate	404kbps
Total bitrate	502kbps
Frame rate	30.05 frames/second
Audio	
Bit rate	97kbps
Channels	2 (stereo)
Audio sample rate	48.000 kHz

To check the encoding, drag the file onto an open Chrome or Firefox browser window and check that the file plays in the browser rather than in another application such as Windows Media Player.

Correcting Videos

You can use Microsoft Photos, included in Windows 10, to scale, rotate and re-encode your videos if necessary.

Open your video file with Microsoft Photos. Under **Edit & Create** select **Create a video with text**. Select a name for the video (e.g. **lab1demo**). If necessary, trim parts of the video that you don't need and rotate the video so any numbers are upright. Select **Finish video**, Low (540p) video quality and Export your converted video to a new **.mp4** file.

Before Submitting

Before submitting your video, drag the converted video file into a blank browser window to make sure it plays properly.

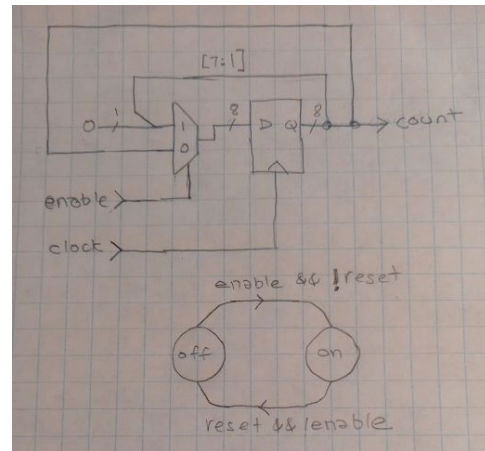
Diagrams

Diagrams must be legible. They may be drawn by hand or created with a drawing or CAD program.

Unless otherwise specified, diagrams must be drawn by the student rather than generated from the HDL by the RTL Netlist Viewer. Use symbols similar to those in the lecture notes. Label ports and signals with their names. Label buses with the bus width if the indices are $[n-1:0]$ or the actual bit indices otherwise. Label multiplexer inputs with the corresponding value of the select input.

State transition diagrams should show the state names and logical expressions for state transition conditions.

The example below minimally meets these requirements. It's a photo of a hand-drawn schematic cropped and scaled using Microsoft Photo¹.



There are also free diagram-drawing programs such as [LibreOffice Draw](#), and [draw.io](#) as well as on-line schematic editors provided by vendors such as [Scheme-it](#) or [EasyEDA](#). However, if you're not already familiar with using a drawing or schematic capture program it will be faster to draw the diagrams by hand.

¹Open with Microsoft Photos, use the Crop and Rotate and Adjustments tabs to fix any issues, "Save a Copy" to a new file, select Resize from the menu (...), and save as a "Small" image before embedding in your report. If you have one, a scanner will do a better job.