* All files are in the Pakistan\_5\_AWG\_MUX
* There are further three folders: Xschem, Magic and Netgen
* In Xschem folder all the schematic are placed.

Mux file name: mux\_1.sch

Diff\_opamp : folded\_Cascode\_Diff\_sch

Single ended opamp: folded\_opamp\_single

Filter : filter\_final.sch

Programmable gain amp: PGA\_FINAL.sch

PGA Decoder: PGA\_DECODER\_4.sch

Full Schematic: AWG\_MUX\_FINAL.sch

Test Bench: AWG\_MUX\_TB.sch

* Some resistors and capacitor are also in this folder which are further used in I-V block, filter and PGA.
* To run the test bench

1. Open Xschem folder
2. In the xschem folder open the terminal
3. Write Xschem in terminal
4. When Xchem open, click on Open File, a small window will pop up
5. Now click on the **AWG\_MUX\_TB.sch**
6. To run the simulation click on netlist and then on simulate.

Here all the small block of the design are present and by moving down in hierarchy one can check each block

All the layout files are placed in the magic folder.

Name are same with and additional word **\_magic.mag**

To open layout

1. Open magic folder
2. In the magic folder open the terminal
3. Write magic –d OGL in terminal
4. When magic window open, click on Open File, a small window will pop up
5. Now click on the **AWG\_MUX\_MAGIC.mag**

Here all the small block of the design are present and by moving down in hierarchy one can check each block