This is a quick introduction to MAGIC. You watch the video tutorials for application examples. You may refer to the MAGIC tutorial below for further information.

https://bwrcs.eecs.berkeley.edu/Classes/IcBook/magic/

Running Magic

1) Start Ubuntu On your windows.
2) Go to Magic location on the Ubuntu terminal by typing:

cd /usr/lib/x86_64-linux-gnu/magic/sys

3) Download technology files (you will probably need root privalllages in this folder so type commands with sudo, type your password when requested)
   The location of the technology files might change, just check the open circuitdesign.com to find the link to the tech files if the address below does not work

   sudo wget ftp://ftp.mosis.edu/pub/sondeen/magic/new/beta/current.tar.gz

4) Unzip the files

   sudo gunzip current.tar.gz
   sudo tar xf current.tar

5) Rename the new library top-level directory to "current":

   sudo mv 2001a current

6) Run magic with the command including the technology name

   magic -T SCN3ME_SUBM.30

Using Magic

2 windows will pop up.

1) Set the internal units to half lambda:
   On the command window type:

   scalegrid 1 2

2) Set the mouse snap to half lambda
   On the command window type:

   snap internal

3) Turn the grid ON:
   On the layout Window Simply Press "g"

4) Show the layer map:

Go to OPTIONS -> Toolbar
On the layout Window

5) When you want to draw a rectangle simply click on the end points of its diagonal. First left click on first end of its diagonal and then right click on the second end.
6) Once the area is selected you should paint it.You can do it 3 ways:
   a) While you are on the layout window type:

      : paint xxxxx
      xxxx is the layer you want to draw. If you will draw a poly silicon, type p or poly
   b) While you are on the command window type:

      paint xxxxx
   c) Point the mouse cursor to the layer you want to use for painting and middle click

7) If you want to delete a region, select the reigon as a rectangle and middle click to the empty space.

Select:

Move mouse on to what you will select,

press "s"

or type

   :select

If you press "s" again, all the area painted with same layer will be selected.

If you want to select more, move the mouse over all area to be selected and press "S" or type

   :select more

You can select all drawn layers in an area:
type:

   :select area

You can select all xxx layer in an area:
type:

   :select area xxxx

Alternatively, you may place your cursor on a layer and type

   :select xxxx

It will select all poly connected to the point under the cursor.

If you want to select all poly in the selected area (it will not select transistor gate poly, you should type "nfet or pfet to select diff+poly (gate) regions), you type

> *:select area poly*

If you want to select all n type diffusion in the selected area

> *:select area ndiff*

If you want to select more than 1 layers, but not all layers in an area, type:

> *:select area xxxx*
>
> *:select more area yyyy*
>
> *:select more area zzzz*

Deselect:

To deselect everything Type:

> *select clear*

If you want to deselect only some items, select the area you want to deselect and type:

> *:select less*

This will deselect the paint just like :select selects the paint. Type it again and it will deselect the same layer connected to this area.

You may deselect all layers in a selected area.

> *:select less area*

You may deselect a certain layer (xxxx) in a selected area.

> *:select less area xxxx*

Move:

Once you selected the layers, move the mouse cursor to the area you want to move the layers and then press "m" or type ":move"

The selected layers will be moved to the location of the mouse cursor.

Copy:

Once you selected the layers, move the mouse cursor to the area you want to copy the layers and then press "c" or type ":copy"

The selected layers will be copied to the location of the mouse cursor.

Rotate:

Once you selected the layers, press "r" or type ":rotate"

This will rotate clockwise 90 degrees. If you want to rotate a different angle type:

":rotate 180" or ":rotate 270"

Alternatively:

Type ":clockwise" instead of rotate

Horizontal Flip:

Once you selected the layers, press "f"

or type

:sideways

Vertical Flip:

Once you selected the layers, type

:upsidedown

Delete:

Once you selected the layers, press "d" or type ":delete"

LAYERS:

Layer names are:
    nw or nwell
    pw or pwell
    n_field_implant or nfi
    p_field_implant or pfi
    ns or nselect
    ps or pselect
    el or electrode or p2 or poly2
    elc or electrodecontact or p2c or poly2c or poly2contact
    ecap or electrodecap or p2cap or pcap or poly2cap
    gc2 or genericpoly2contact
    nfet or ntransistor
    pfet or ptransistor
    diff or diffusion
    fet or transistor
    green or ndif or ndiffusion
    brown or pdif or pdiffusion
    ndc or ndcontact
    pdc or pdcontact
    pod or pohmicdiff or ppd or ppdiff or psd or psubstratepdiff
    nnd or nndiff or nod or nohmicdiff or nsd or nsubstratendiff
    poc or pohmiccontact or psc or psubstratepcontact or pwc or pwcontact
    noc or nohmiccontact or nsc or nsubstratencontact or nwc or nwcontact
    p or poly or polysilicon or red
    pc or pcontact or polycontact or polycut
    gc or gcontact or genericcontact
    blue or m1 or metal1
    prm1 or pseudo_rmetal1
    rm1 or rmetal1
    fillm1 or fm1
    m2c or m2contact or m2cut or v1 or via1
    m2 or metal2 or purple
    prm2 or pseudo_rmetal2
    rm2 or rmetal2
    fillm2 or fm2
    gv1
    m3c or m3contact or m3cut or v2 or via2
    cyan or m3 or metal3
    prm3 or pseudo_rmetal3
    rm3 or rmetal3
    fillm3 or fm3
    gv2

pad
glass
high_resist or hr
phr or poly2_high_resist
prp or pseudo_rpoly
rp or rpoly
prp2 or pseudo_rpoly2
rp2 or rpoly2
prnd or pseudo_rndiffusion
rnd or rndiff or rndiffusion
prpd or pseudo_rpdiffusion
rpd or rpdiff or rpdiffusion
prnw or prnwell or pseudo_rnwell
rnw or rnwell
filln or fn
fa or filla
fb or fillb
fillp or fp
fapm or fillapm
xp
m1p
m2p
m3p
comment
bb
mag or magnet
f or fence
r or rotate