GNUPLOT for beginners

1 author:

Balaji Nagarajan

Virginia Commonwealth University

17 PUBLICATIONS   **26** CITATIONS

Some of the authors of this publication are also working on these related projects:

Project   Plotting tool View project

PLOT I : Dot plot (Scatter) and Line plot

Open GNU plot

> ➢ **pl 'Test1.data' u 1:2 title "Case1"**

 # Plotting the data from the file Test1.data using column 1 as X and 2 as Y
(Note: The first column is always X and the second is Y)
This gives you a scatter plot with legend named Case1 (as title)
> ➢ **pl 'Test1.data' u 1:2 title "Case1" pt 4**
>
> WOW ! Good job , you got your first plot

Plotting with changing the point type (pt 4)
> ➢ **test** # Excited to see types and colors !

To see more point types in the gnu plot (try to change the pt as 6 , 7, .. as seen in test)
> ➢ **pl 'Test1.data' u 1:2 title "Case1" pt 12**
>
> Excellent ! we have changed our point type!
>
> Try this is as line and point type
> ➢ **pl 'Test1.data' u 1:2 title "Case1" w lp pt 4 ps 0.8 lc 8 lw 4**

meaning: w = with , lp = line and point , pt = point type 4 , ps = point size 0.8 , lc line color 8 (refer test plot), lw = line width (thickness)
This is our first line plot

Now, time to make a good figure
How to label x and y axis and title for a plot
> ➢ **set xlabel "Number" font ",18"**
> ➢ **set ylabel "Count" font ",18"**
> ➢ **set title "PLOT1"**
> ➢ **set grid # makes the major lines on as grid #**
> ➢ **replot**

Changing x and y range
> ➢**set xrange [0:55]**
> ➢**set yrange [10:25]**
> ➢**set ytics 2**
> ➢**replot**

Changing font of X and Y and legend
> ➢ **set ytics font ",16"**
> ➢ **set xtics font ",16"**
> ➢ **set key font ",16"**
> ➢ **replot**

To save the plot (you can also save as png, for different file formats check GNU plot saving options)
- ➢ **set terminal postscript (Set terminal png   #for png)**
- ➢ **set output "test1.ps"   (set output "test1.png" #for png)**
- ➢ **replot**

Finally done with proper plotting

PLOT II : Doing multiple data on the same plot

Try this
- ➢ pl 'Test1.data' u 1:2 title "Case1" w lp pt 4 ps 1.5 lc 8 lw 5 , 'Test1.data' u 1:3 title "Case1" w lp pt 12 ps 1.5 lc 5 lw 5

{This gives two data plots one as column 2 and other as column 3, while x being the same column 1, note: if you have two different column make them differentiated with different file names like below
- ➢ pl 'Test1.data' u 1:2 title "Case1" w lp pt 4 ps 1.5 lc 8 lw 5 , 'Test2.data' u 1:2 title "Case1" w lp pt 12 ps 1.5 lc 5 lw 5

}

```
Copy and paste this in a note file and save it with extension gnu
Eg. Line1.gnu

set terminal postscript enhanced color
set output "line1.ps"
set xlabel "Number" font ",18"
set ylabel "Count" font ",18"
set title "PLOT1"
set grid
set xrange [0:55]
set yrange [10:25]
set ytics 2
set ytics font ",16"
set xtics font ",16"
set key font ",16"
pl 'Test1.data' u 1:2 title "Case1" w lp pt 4 ps 0.8 lc 8 lw 4
```

****

open Gnu plot
- ➢ load line1.gnu
- ➢ quit

aah ! my first script for GNU plot.
     ### Now check the output files you will see plot **line1.ps**
(Just change the input and out put file name and do as many plots you want)

PLOT III – MULTIPLOT

Enter a command to initiate multiplot
- ➤ **set multiplot**

All the below are standard command used in the previous one
- ➤ **set grid**
- ➤ **set xrange [-2:12]**
- ➤ **set yrange [-5:40]**
- ➤ **set key font ",14"**
- ➤ **set ytics font ",16"**
- ➤ **set xtics font ",16"**
- ➤ **set xlabel "Number" font ",18"**
- ➤ **set ylabel "Values" font ",18"**

Select the origin for the figure where figure 1 should be placed
- ➤ **set origin 0,0**

Select the size for the figure
- ➤ **set size 0.5 ,0.5**

Plot the figure using the data from the file at this place
- ➤ **pl 'scp.data' using 1:2 w points title "Data1" pt 4 ps 1.5 lc rgb "blue"**

lc rgb "blue" says line color in red, green, blue and here we make it as blue

Select the origin for the figure where figure 2 should be placed
- ➤ **replot** (see the plot and learn how to adjust size and place)
- ➤ **set origin 0,0.5**
- ➤ **pl 'scp.data' using 1:2 w points title "Data2" pt 4 ps 1.5 lc rgb "red"**

Select the origin for the figure where figure 3 should be placed
- ➤ **replot**
- ➤ **set origin 0.5 ,0.5**
- ➤ **pl 'scp.data' using 1:2 w points title "Data3" pt 4 ps 1.5 lc rgb "red"**

Select the origin for the figure where figure 4 should be placed
- ➤ **replot**
- ➤ **set origin 0.5,0**
- ➤ **pl 'scp.data' using 1:2 w points title "Data4" pt 4 ps 1.5 lc rgb "blue"**

save the figure
- ➤ **set terminal postscript # need to define terminal type first**
- ➤ **set output "Pannel.ps"**

  Explanation: set a paper to a panel
  The margin says where you want to keep the figure on the paper
  Size defines how much you want it in length and width
  This will make 4 figures on a page

Multiplot script save it as multiplot.gnu

```
set terminal pngcairo enhanced font 'Verdana,10'
set output "Pannel51235.png"
set multiplot
set grid
set xrange [-5:12]
set yrange [-5:40]
set key font ",14"
set ytics font ",14"
set xtics font ",14"
set xlabel "Number" font ",16" offset 0,0.2,0
set ylabel "Values" font ",16" offset 0,-1,0
set origin 0,0
set size 0.5 ,0.5
pl 'scp.data' using 1:2 w points title "Data1" pt 4 ps 1.5 lc rgb
"blue"

set origin 0,0.5
pl 'scp.data' using 1:2 w points title "Data1" pt 4 ps 1.5 lc rgb
"red"

set origin 0.5 ,0.5
pl 'scp.data' using 1:2 w points title "Data1" pt 4 ps 1.5 lc rgb
"red"

set origin 0.5,0
   pl 'scp.data' using 1:2 w points title "Data1" pt 4 ps 1.5 lc
   rgb "blue"
```