

# Gnuplot

Atelier d'aide à la programmation

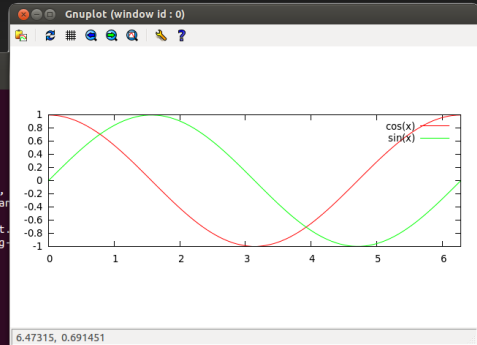
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# Exemple d'utilisation

```
lbaudouin@lbaudouin: ~  
Fichier Édition Affichage Recherche Terminal Aide  
lbaudouin@lbaudouin:~$ gnuplot  
  
G N U P L O T  
Version 4.4 patchlevel 3  
last modified March 2011  
System: Linux 3.5.0-18-generic  
  
Copyright (C) 1986-1993, 1998, 2004,  
Thomas Williams, Colin Kelley and mar  
  
gnuplot home:      http://www.gnuplot.  
faq, bugs, etc:   type "help seeking-  
immediate help:   type "help"  
plot window:      hit 'h'  
  
Terminal type set to 'wxt'  
gnuplot> plot [x=0:2*pi] cos(x)  
gnuplot> plot [x=0:2*pi] cos(x), sin(x)  
gnuplot> █
```



```
plot [x=0:2*pi] cos(x), sin(x)
```

|        |   |
|--------|---|
| Space  | raise gnuplot console window  |
| q      | quit X11 terminal   |
| a      | 'builtin-autoscale' (set autoscale keepfix; replot)                     |
| b      | 'builtin-toggle-border'   |
| e      | 'builtin-replot'  |
| g      | 'builtin-toggle-grid'   |
| h      | 'builtin-help'  |
| l      | 'builtin-toggle-log' y logscale for plots, z and cb logscale for splots |
| L      | 'builtin-nearest-log' toggle logscale of axis nearest cursor            |
| m      | 'builtin-toggle-mouse'  |
| r      | 'builtin-toggle-ruler'  |
| 1      | 'builtin-decrement-mousemode'   |
| 2      | 'builtin-increment-mousemode'   |
| 3      | 'builtin-decrement-clipboardmode'                                       |
| 4      | 'builtin-increment-clipboardmode'                                       |
| 5      | 'builtin-toggle-polardistance'  |
| 6      | 'builtin-toggle-verbose'  |
| 7      | 'builtin-toggle-ratio'  |
| n      | 'builtin-zoom-next' go to next zoom in the zoom stack                   |
| p      | 'builtin-zoom-previous' go to previous zoom in the zoom stack           |
| u      | 'builtin-unzoom'  |
| Right  | 'builtin-rotate-right' only for splots; <shift> increases amount        |
| Up     | 'builtin-rotate-up' only for splots; <shift> increases amount           |
| Left   | 'builtin-rotate-left' only for splots; <shift> increases amount         |
| Down   | 'builtin-rotate-down' only for splots; <shift> increases amount         |
| Escape | 'builtin-cancel-zoom' cancel zoom region                                |

# Plot

Cloner le dépôt suivant

```
https://github.com/lbaudouin/module-gnuplot.git
```

Tracer des données

```
pop(x)=103*exp((1965-x)/10)  
plot [1960:1990] 'population.dat', pop(x)
```

Définir les commentaires dans un fichier

```
set datafile commentschars "%"  
Pour l'ajouter de façon permanente, le mettre dans le fichier :  
~/.gnuplot
```

# Titres

## Modifier les titres

- Modifier le titre de la courbe :  
`plot pop(x) title "Nouveau titre"`  
`plot pop(x) t "Nouveau titre"`
- Ajouter un titre au graphique :  
`set title "Titre du graphique"`

# Styles

## Plot

```
plot sin(x) with <style>  
plot sin(x) w <style>
```

## Styles de courbe

| nom         | raccourci | description                        |
|-------------|-----------|------------------------------------|
| boxes       |           | rectangles verticaux               |
| dots        | d         | petits points                      |
| errorbars   | e         | points et barre verticale d'erreur |
| impulses    | i         | lignes verticales                  |
| lines       | l         | lignes                             |
| linespoints | lp        | lignes et points                   |
| points      | p         | points                             |
| steps       | st        | marche d'escalier                  |

# Couleurs

## Ajouter des couleurs

```
plot sin(x) linecolor 1  
plot sin(x) lc 3
```

## Correspondance des couleurs

|   |           |   |        |
|---|-----------|---|--------|
| 1 | red       | 6 | yellow |
| 2 | green     | 7 | black  |
| 3 | blue      | 8 | orange |
| 4 | magenta   | 9 | grey   |
| 5 | lightblue |   |        |

# Colonnes d'un fichier

## Utilisation des colonnes

```
splot "pts3D.txt" using 1:3:2  
splot "pts3D.txt" u 1:3:(-$2)
```

## Combiner couleurs et colonnes

```
plot "path.txt" u 1:2:0 w lp lc palette
```



# Utiliser Gnuplot dans vos programmes

## Commande

```
system("gnuplot file.gnup")
```

## file.gnup

```
1 set term png size 1024,768
2 set out "output.png"
3 set xr [-10:2]
4 set yr [-2:10]
5 unset label
6 set view equal xyz
7 splot 'x.txt' w l, 'y.txt' w l, 'z.txt' w l
```

# Utiliser Gnuplot dans vos programmes

## Installer une API

```
sudo apt install libgnuplot-iostream-dev
```

<http://stahlke.org/dan/gnuplot-iostream/>

```
1 #include <map>
2 #include <vector>
3 #include <cmath>
4 #include "gnuplot-iostream.h"
5 int main() {
6     Gnuplot gp;
7     std::vector<std::pair<double, double>> xy_pts_A;
8     for(double x=-2; x<2; x+=0.01) {
9         xy_pts_A.push_back(std::make_pair(x, x*x*x));
10    }
11    std::vector<std::pair<double, double>> xy_pts_B;
12    for(double alpha=0; alpha<1; alpha+=1.0/24.0) {
13        double theta = alpha*2.0*3.14159;
14        xy_pts_B.push_back(std::make_pair(cos(theta), sin(theta)));
15    }
16    gp << "set xrange [-2:2]\nset yrange [-2:2]\n";
17    gp << "plot" << gp.fileId(xy_pts_A) << "with lines title 'cubic',"
18    << gp.fileId(xy_pts_B) << "with points title 'circle'" << std::endl;
19 }
```