

Matlab Manual

Numbers and Strings

```
% prescribe the format of the strings of the numbers
fnumber = sprintf('%0Nd',number);
```

```
% remove the blanks in a string
strtrim(string);
```

Input

```
% read from text or dat file
fid = fopen(fname);
data = textscan(fid,'%f','HeaderLines',a,'delimiter','\t'
); % skip a lines of headline; '\t' separates each data entry
fclose(fid);
data = data{1};
```

```
% read input from the screen
prompt = 'text on screen';
n = input(prompt);
```

Output - plot specialties

```
% histograms
histogram(y,N,'Normalization','cdf'); % N - no. of bins; 'cdf' - cumulative distribution
from 0 to 1
```

% change spacing between subplots

```
h = subplot(a,b,i);
p = get(h,'pos'); % [left, bottom, width, height] in percentage of window size
change p value
set(h, 'pos', p);
```

% text outside the range of the figure

```
axes('Position',[left, bottom, width, height],'Visible','off'); % this is to start a new axis
outside the current range
text(x,y,'text'); % then this text appear in the axis
```

% use LaTeX formatting

```
fttl = ['$',fttl,'$']; % fttl is the string containing Latex
h = title(fttl,'FontSize',14); % title / xlabel / ylabel
set(h,'interpreter','latex')
```

% save figures

```
handle = figure;
'format': '-depsc' (eps color)
          '-djpeg' (jpeg file)
print(handle,'format',filename)
or
saveas(gcf,name,'eps'); % no need to put file extension
```

% save txt

```
fileID = fopen(name,'a'); % 'a' to appendix to existing files
fprintf(fileID,'%0.8e\n',x); % write x to the file
fclose(fileID);
```

Color My Output

% color indices; reference: http://www.avatar.se/molscript/doc/colour_names.html

```
[0.1 .9 0.6]; % green
          [.2 .6 .3]
[0.6, 0.15, 0.95]; % purple
[0.1 0.6 1]; % blue
[1 0.55 0]; % orange
```

% plot lines with colors

```
clr1 = [.....]; clr2 = [.....];
dclr = clr2-clr1;
.....
cnt = 0;
for loop % nn points in total
    clr = clr1+cnt/(nn-1)*dclr;
    cnt = cnt+1;
    plot(.....,'Color',clr);
end
```

% 2D contour

```
contourf(x, y, z, [-aa, linspace(-a,b,N), bb]);  
caxis([-a b]);
```

% one colorbar for all subplots

```
hp3 = get(subplot(3,1,3),'Position');  
colorbar('Position',...  
[hp3(1)+hp3(3)+0.01 hp3(2) 0.03 hp3(2)+hp3(4)*3]);
```

Make it Move

% method 1

```
for imov = 1:n;  
    mov(imov) = getframe(gcf);  
end  
movie2avi(mov,'fname.avi','fps',m,'compression','None');
```

% method 2

```
writerObj = VideoWriter(fname,'MPEG-4'); % fname is the name of the video  
writerObj.FrameRate = 2;  
open(writerObj);  
for i = 1:n;  
    h = figure;  
    % configure your plot  
    frame = getframe(h);  
    writeVideo(writerObj,frame);  
    pause(1); % this line is only necessary when you want to view the movie as it  
    produces  
    close(h);  
end  
close(writerObj);
```