



Thousands of people skate on the Rideau Canal and take part in Winterlude festivities in Ottawa on February 4, 2012. (Fred Chartrand/The Canadian Press/Associated Press) #

Advanced Plotting

COMP 364 - Lecture 17
March 5th, 2012
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Review: List comprehension

- Create a list in one line based on another iteration
 - <http://docs.python.org/tutorial/datastructures.html>

```
values = [1,2,3,4,5,6]
roots = []
for el in values:
    roots.append(math.sqrt(el))
```

With list comprehensions everything is easy!

```
roots = [math.sqrt(x) for x in values]
# roots is now [1.0, 1.414, 1.732, 2.0, 2.236,
2.449]
```

range(...)

- returns a list with a range of numbers, as specified by the arguments.
 - range(100): from 0 to 99 -> [0, 1, 2, 3, 4, 5, ..., 99]
 - range(3, 20): from 3 to 19
 - range(1, 20, 3): from 1 to 19 by steps of 3 -> [1, 4, 7, 10, 13, 16, 19]

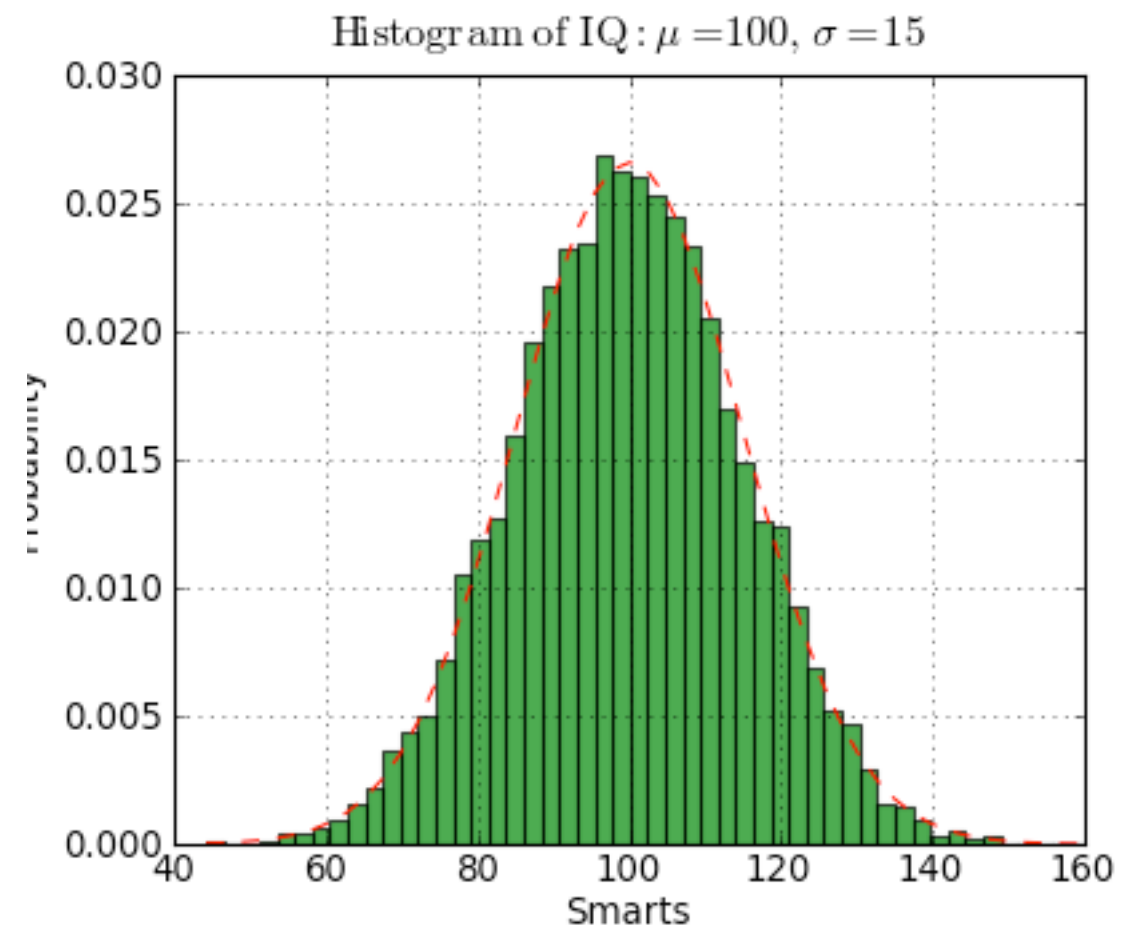
```
x = range(1,20) # From 1 to 19  
y = [math.log(e1) for e1 in x]
```

hist(...)

hist(x,bins=10)

All available options:

http://matplotlib.sourceforge.net/api/pyplot_api.html#matplotlib.pyplot.hist



Exercise: use subplot to plot (1) the distribution of gene lengths in a genome file and (2) the length of genes along the genome (in order)

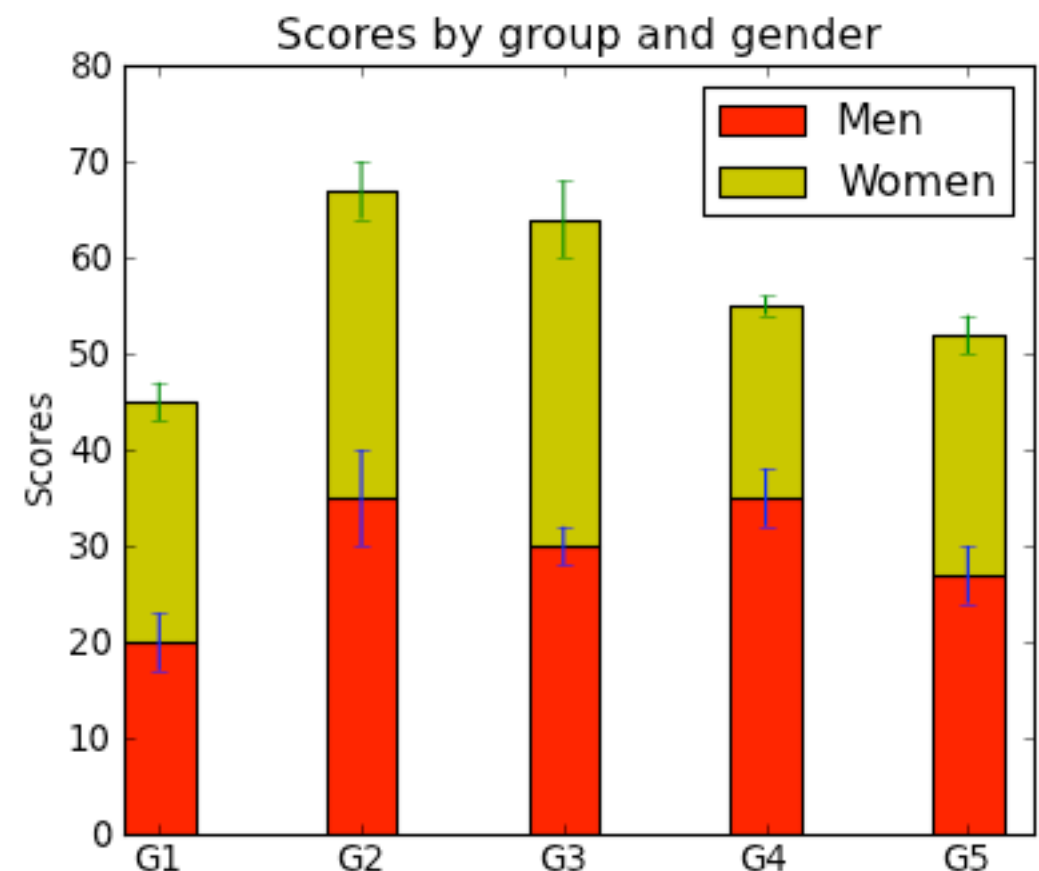
bar(...)

bar(left,height)

Argument	Description
left	the x coordinates of the left sides of the bars
height	the heights of the bars

All available options:

http://matplotlib.sourceforge.net/api/pyplot_api.html#matplotlib.pyplot.bar



Bar charts are useful to print frequencies or scores. More generally, data that is categorized.

e.g. Print the frequency of each nucleotide in a file.