Homework #0

due Sept 9, 2012 @ 5pm

Build a Bear population over 150 years, starting from bear cubs named Adam, Eve, and Mary.

Rules:

- Bears live for an average of 35 years (1 sigma = 5 years)
- Bears procreate starting at 5 years old until death (assume no gestation period). They produce no more than 1 cub every five years.

- No Bear can procreate with another Bear that has the same mother and father and must procreate with other Bears that are within 10 years of their own age and of the opposite sex.
- Male and Female cubs are equality likely: $P(male) = 1 - P(female) = 0.5$

- No new cubs can be named the same as Bears that are currently alive in the population

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Questions:

a. On average, how many Bears are born in the first 100 years? How many Bears are alive at the end of 150 years?
b. What must be the minimum value of *P(male)* such that the population does not die out in 150 years?
c. Build and use a plotting routine to show the genealogy tree of a given Bear. Show all Bears at the same generation and earlier who are directly related.

Hints:

- use numpy.random to satisfy your random needs
- use a webservice to build a name generating function
- play around with *networkx* to help you build a genealogy tree

Enjoy!

Help online:
ucbpythonclass+seminar@gmail.com
or in person:
Friday 3-5pm Evans 4th floor (481)

See you in *two* Mondays from now!

remember to email us if you are auditing...