CSE 1010 Ideas and Impact of Computing
Homework 6
Due 11am, Mon, Dec 1, 2014
Submit Server: Class = cse1010 ; Assignment = hw6

Template java file: `cs.fit.edu/~pkc/classes/cse1010/HW6.java`
Data file 1: `cs.fit.edu/~pkc/classes/cse1010/dnaLoci.txt`
Data file 2: `cs.fit.edu/~pkc/classes/cse1010/samples.txt`

To perform DNA analysis for forensics, we would like to check if the profiles of collected DNA samples (in `samples.txt`) match entries in the database of known DNA profiles (in `dnaLoci.txt`, which is from `http://www.fbi.gov/about-us/lab/forensic-science-communications/fsc/july1999/dnaloci.txt`)

In HW6.java implement the following three methods:

- `matchDNA`, which checks if two DNA profiles match

- `getProbabilityOfProfile`, which calculates the probability of having a particular DNA profile

- `checkDB`, which checks if a sample matches an entry in the database

Detailed description of the methods and their parameters are in HW6.java. A sample dialog with the data files:

```
Building the DNA database...
---------------
Sample S1 matches B0726.
Estimated probability of the DNA profile is 2.40e-27
or approximately one in 4.16e+26 people has the same DNA profile.
---------------
Sample S2 matches H484.
Estimated probability of the DNA profile is 4.64e-21
or approximately one in 2.16e+20 people has the same DNA profile.
---------------
Sample S3 does not match any entry.
---------------
Sample S4 matches C149.
Estimated probability of the DNA profile is 5.19e-28
or approximately one in 1.93e+27 people has the same DNA profile.
---------------
Sample S5 does not match any entry.
---------------
Sample S6 does not match any entry.
```