CS608 Programming Assignment 7

Hashing

This assignment has two parts: Part 7A and Part 7B. If you successfully complete both, you will receive 15 points. If you successfully complete only one (either one), you will receive 10 points.

Programming Assignment 7A: HashMap

Write a Java program to read a file, **inputData7A.txt**, and create a hash map.
The file inputData7A.txt contains several lines of data. Each line consists a (1) key: number (social security number), followed by (2) value: name and address.
17265353: John Smith 31 Main Street White Plains, NY 10603.

Ask the user to input a key and print if the key exists
Ask the user to input a key and print its value. "Not found" if the key is not found
Ask the user to input a key and remove the key
Print the data in the key-value format (use println(HashMap))
Print the data in the key-value format. (Use **entrySet**())

Programming Assignment 7B: Hashing - strings

This assignment is to create hash table using the manual method discussed in class.

Write a Java program to read a file, **inputData7B.txt**, and create a hash table. The **inputData7B.txt** contains several city names – one name on one line.
Select a proper array size (size of hash table). You can use any method to resolve collision.

Output:

- What is the table size you used?
- What is the hash code for these: Boston, Brussels, and Pleasantville?
- Is Boston found?
- Is Brussels found?
- Is Shanghai found?

Note (this is a hint):
Designing a hash function/hash code for strings is a bit tricky. In my notes, we used a simple hash function. I like to suggest the following for 7B assignment. This uses Java built-in **hashCode()** method.

```
int M = ???;//size of hash table
long mask = 0x7fffffffL;//mask value
long hashcode;
For each entry (element – String), use the following to compute hashcode
hashcode = (element.hashCode() & mask) % M;
```

Search the Web for more info on the **hashCode()** method.

General instructions:

- If your program has several classes, include all of them in the same file and name your Java file CS6087Axxxxx.java (Assignment 7A) and CS6087Bxxxxx.java (assignment 7B), where xxxxx is your last name. **DO NOT SEND ZIP files.**

- Output must include: **Your name, course number and date (use Date class).** If any of the above items are missing, you will not receive full credit.

- Send your Java file as email attachment to CS608Assignment@gmail.com. Include your name and assignment number in the email subject.

Note: I will run your programs and grade them. If your programs do not compile (that is, show syntax errors, you will receive 0 for the programming assignment).