



TOSHKENT SHAHRIDAGI INHA UNIVERSITETI
INHA UNIVERSITY IN TASHKENT

INHA University in Tashkent

Data Structures, Fall 2017

Assignment #3

Submission deadline: 23:59, October 10, 2017

Submission method: Submit a single CPP file via e-class.

IMPORTANT NOTE:

1. Name your Assignment solution file as YOURID.CPP (e.g. U160000.CPP), in case of inappropriate name 1 point will be deducted.
2. In case of **copying**, both the students (copied and copied from) will get **ZERO points**, copying for the second time means **ZERO** for all Assignments and Quizzes.
3. Late submissions will **NOT** be accepted, in case of any issue **with e-class** send your assignment solution via e-mail **before the deadline**.

The *String_collection.txt* file contains 4000 random English names (keys), write a C++ program that generates hash codes for each key using polynomial accumulation. In addition your program should perform the following tasks. consider $a=37$ [constant]

Write separate function for each task and call it in proper order

1. Create a hash table to store the keys based on the hash values generated
 - Hash value: $h(\text{key}) = |\text{hash code}| \bmod N$, use appropriate value for N
 - For collision handling use separate chaining
- 1.1. Write a function `insert(key)`, and `find(key)` to insert and find the key in the hash table.
- 1.2. Write a display function that display all the keys in ascending order of hash values (line-wise) such that each line display the keys (names) having the same hash value.
- 1.3 Find the hash value with maximum number of collisions and display all the string associated with this hash value
2. Compare the total number of collisions for $a=33, 37, 39, 41$
 - 2.1. Display the total number of collisions occurred for each case