**Question#1**

Use the hash function **H**(key) = key mod 11 to store the sequence of integers: 82, 31, 28, 4, 45, 27, 59, 79, 35 in the hash table of Table Size = 11.

(a) Use linear rehashing.

 (b) Use external chaining.

**Question#2**

Assuming the keys are integers, denoted by  where is the *i*-th decimal digit in the key, being the leftmost decimal digit. The hash function *H(key)* is given by:



where  is a two digit number (composed by swapping the rightmost two digits),  is also a two digit number (composed by swapping the leftmost two digits), and . For example:

.

Assume the keys are: 1234, 519, 911, 7346, 0, 999, 99834, 54 and 40015.

1. Compute *H(key)* for each of the above keys.
2. Insert the above keys (in exactly the same order) in a hash table with open addressing (linear rehashing).
3. Repeat part (b) using an external chaining hash table.

**Question#3**

Using the **modulo-division** method for hash keys determination and **linear probing** for collisions resolutions, store the keys shown below in a hash table of size 19.

 224562, 137456, 214562

 140145, 214576, 162145

 144467, 199645, 234534

1. How many collisions occurred?

**Question#4**

Repeat question 3 using external chaining method for collisions resolution.