In this question, you will insert following set of keys: 12, 56, 22, 106, 36, 72, 902, 86, 96, 62 and 42, to three different hash tables.

a. Draw the table resulted after inserting the keys to a table of size *N=10* (a non- prime table size), where we use the division method as a compression function. That is, the compression function is: $h_2(k) = k \bmod 10$.

0	1	2	3	4	5	6	7	8	9
		12, 22, 72, 902, 62, 42,				56, 106, 36, 86, 96,			

b. Draw the table resulted after inserting the keys to a table of size *N=13* (a prime table size), where we use the division method as a compression function. That is, the compression function is: $h_2(k) = k \bmod 13$.

0	1	2	3	4	5	6	7	8	9	10	11	12
		106	42	56	902, 96		72	86	22	36, 62		12

c. Draw the table resulted after inserting the keys to a table of size *N=10* (a non- prime table size), where we use the MAD method as a compression function. For the MAD constants, we picked are: *p=1009*, *a=125* and *b=342*. Therefore, the compression function is: $h_2(k) = ((125*k+342) \bmod 1009) \bmod 10$.

0	1	2	3	4	5	6	7	8	9
62	72	86	12	902, 96	22, 102	36	42		56

In this question, you will insert and delete items to/from a *N=11* length open- addressing hash table, where we use the division method for compression (the compression function is: $h_2(k) = k \bmod 11$), and linear probing for resolving collisions.

- We start with the following insertions: 59, 39, 135, 91, 46, 132, 169 and 277

0	1	2	3	4	5	6	7	8	9	10
132		46	135	59	91	39	169	277		

- We then delete: 39 and 46

0	1	2	3	4	5	6	7	8	9	10
132		dummy	135	59	91	dummy	169	277		

- Finally, we insert: 157

0	1	2	3	4	5	6	7	8	9	10
132		dummy	135	59	91	157	169	277		