In the program, 10000 seven-character-long unique words are generated and inserted into the Hash Table.

The following two **hash functions** were used:

```
int hashFunc(string key) {
        int p = 31;
        long long pow = 1;
        long long hashValue = 0;

        for (int i = 0; i < key.length(); i++) {
            hashValue = (hashValue + (key[i] - 'a' + 1) * pow) % tableSize;
            pow = (pow * p) % tableSize;
        }
        return (hashValue % tableSize + tableSize) % tableSize;
    }
```

```
int hashFunc2(string key) {
        int p = 44;
        long long pow = 1;
        long long hashValue = 0;

        for (int i = 0; i < key.length(); i++) {
            hashValue = (hashValue + (key[i] - 'a' + 1) * pow) % tableSize;
            pow = (pow * p) % tableSize;
        }
        return (hashValue % tableSize + tableSize) % tableSize;
    }
```

and **Auxiliary hash function**

```
int auxHashFunc(string key){
        int hashVal = 0;
        for (int i = 0; i<key.size(); i++){
            hashVal += (key[i] * 3) % tableSize;
        }
        return (13 - (hashVal % 13))%tableSize;
    }
```

For custom probing, **constants** C1 = 1003 and C2 = 57 were used.

The number of collisions while inserting the data is listed in a tabular format below. Among these 10000 generated words, randomly selected 1000 words were searched from the words already present in the hash table. The average number of probes are listed as well.

Table 1: Performance of various techniques for collision resolution with two different hash functions.

For N = 10007

	Hash 1		Hash 2	
	Number of collisions	Average probes	Number of collisions	Average probes
Chaining Method	3702	1.431	3660	1.474
Double Hashing	145397	11.541	107693	10.798
Custom Probing	67560	6.293	67671	7.709

For N = 20011

	Hash 1		Hash 2	
	Number of collisions	Average probes	Number of collisions	Average probes
Chaining Method	2127	1.199	2119	1.25
Double Hashing	4002	1.383	3933	1.358
Custom Probing	3923	1.322	3875	1.355

For N = 100003

	Hash 1		Hash 2	
	Number of collisions	Average probes	Number of collisions	Average probes
Chaining Method	459	1.028	473	1.063
Double Hashing	501	1.033	509	1.062
Custom Probing	516	1.032	534	1.066