CSE 208:
Data Structures & Algorithms
Sessional II

Offline 7: Hash Table

Report By,
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Hash Table Size	Collision Resolution Method	Hash1		Hash2	
		# Of Collisions	Average Probes	# Of Collisions	Average Probes
5003	Chaining	5688	2.529	5636	2.492
	Double Hashing	2464	14.357	2513	12.293
	Custom Probing	2466	8.775	2513	8.773

Hash Table Size	Collision Resolution Method	Hash1		Hash2	
		# Of Collisions	Average Probes	# Of Collisions	Average Probes
10007	Chaining	3749	1.554	3656	1.512
	Double Hashing	5106	9.836	5011	8.917
	Custom Probing	5054	7.998	4969	5.855

Hash Table Size	Collision Resolution Method	Hash1		Hash2	
		# Of Collisions	Average Probes	# Of Collisions	Average Probes
20011	Chaining	2084	1.223	2079	1.262
	Double Hashing	2464	1.432	2454	1.399
	Custom Probing	2467	1.464	2449	1.404

Both of the Hash functions are my own, mainly polynomial, though both implement some of their own methods to hash, auxHash is a general & simple function.

```java
public static int Hash1(String str) {
    int sum = 0;
    for (int i = 0; i < str.length(); i++) {
        char c = str.charAt(i);
        sum += 37 * sum + c;
        sum += c << 3;
        sum++;
        sum %= N;
    }
    return sum;
}
public static int Hash2(String str)
{
    int sum = 0;
    int marker = 1;
    for (int i = 0; i < str.length(); i++) {
        char c = str.charAt(i);
        int k = (int) c;
        if (marker == 1) {
            sum += (67 * sum) + k;
            marker = 2;
        } else {
            sum += (411 * sum) + k;
            marker = 1;
        }
        sum %= N;
    }
    if (sum < 0) sum += N;
    return sum;
}
public static int auxHash(String str) {
    return findNextPrime(str.length());
}
```