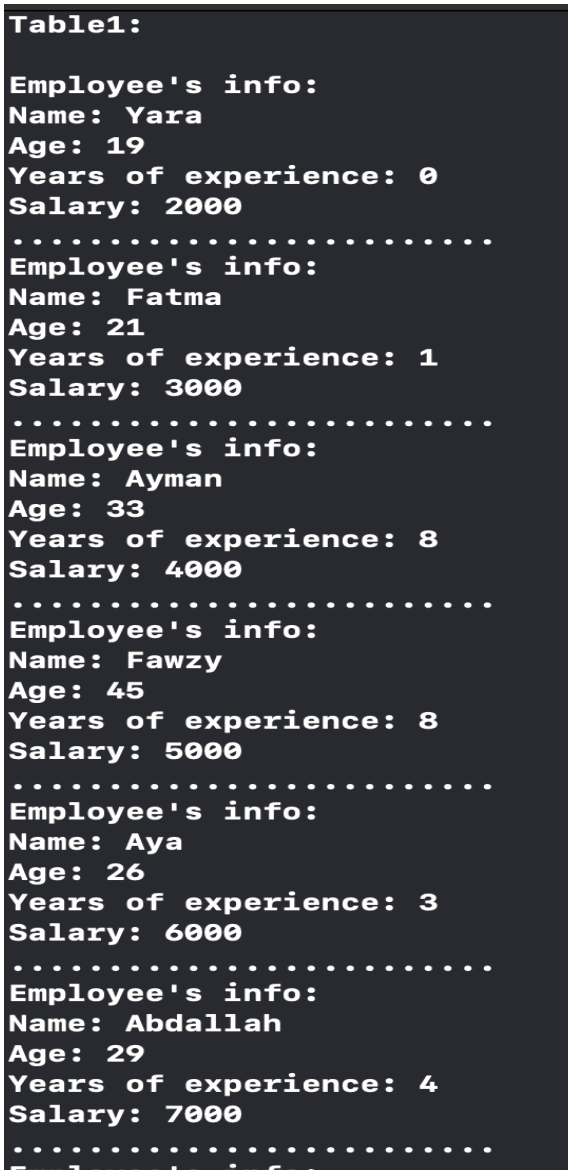
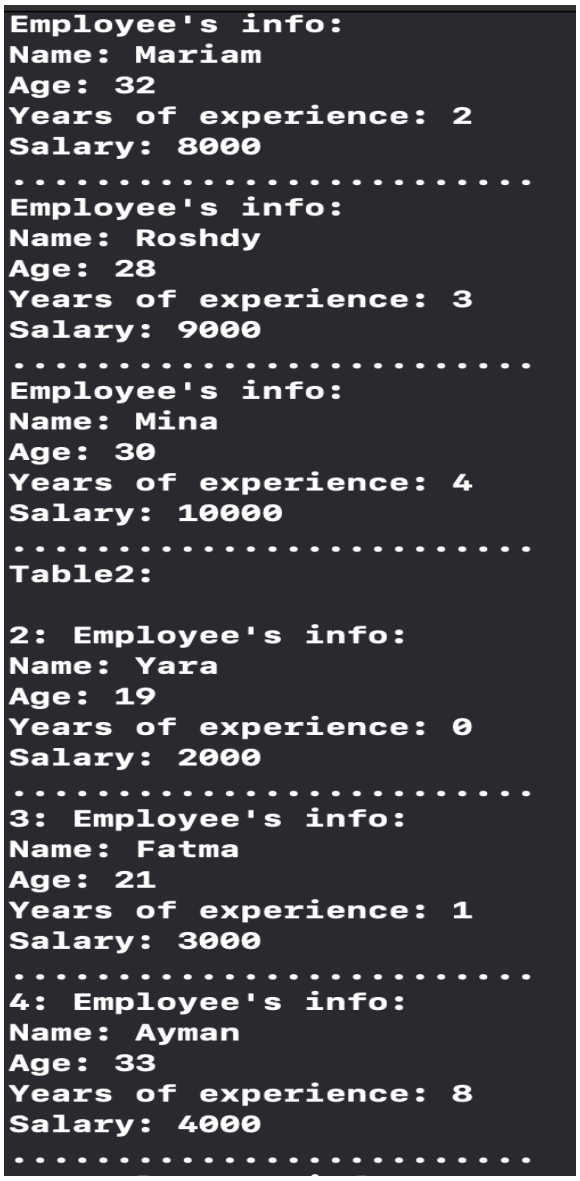
Report

In both of the hash functions, I used (key/1000) where the key was the employees' salary, I found this to be the best hash function for these tables as it resulted in no collision and it did not take a huge place in the memory. This is because the salaries of the employees range from 2000-10000. I made a static member in both hash tables to be able to calculate the collision rate, as whenever a collision happened during the insertion, the count would increase. For the linear probing, I increased the index by 1 percent divided by the size. I did this to return to the beginning of the list after going through the whole array. In the second table, I did an array of nodes, and to handle the collisions, I made the next of the node point to another node, “chaining.” In both table’s remove function, I sent the name as a parameter, in the linked list table, I checked the index using the hash function and then traversed the linked list if there was any, and if the object did not exist, I returned from the function if it did exist I replaced the node with NULL. For the array table, I checked the index using the hash function and if it was not there, I used the linear probing function to search for the element. If it was not found, I returned if it was found, I replaced the object with NULL. In the print, I printed the whole table using a print function I did for the employee class. In the LL table, I made sure to traverse the list if there were more than one node at the same index. I think the linked list hash table is better as with more data, the linked list will take less time in the search, so the searches and deletion time complexity will be less; however, with this amount of data, I believe that both tables are similar.

Screenshot of the output:





```
5: Employee's info:
Name: Fawzy
Age: 45
Years of experience: 8
Salary: 5000
.........................
6: Employee's info:
Name: Aya
Age: 26
Years of experience: 3
Salary: 6000
.........................
7: Employee's info:
Name: Abdallah
Age: 29
Years of experience: 4
Salary: 7000
.........................
8: Employee's info:
Name: Mariam
Age: 32
Years of experience: 2
Salary: 8000
.........................
9: Employee's info:
Name: Roshdy
Age: 28
Years of experience: 3
Salary: 9000
.........................
10: Employee's info:
Name: Mina
Age: 30
Years of experience: 4
Salary: 10000
.........................
Table1 collisions: 0
Table2 collisions: 0
Program ended with exit code: 0
```