The American University in Cairo
Computer Science and Engineering Department

Fundamentals of Computing II

Assignment 4
Hash Tables

Requirements

- Write 2 Hash tables classes. The first one uses a dynamic array, and the second hash table class uses a linked list.
- Each one should be implemented in a header file.
- The one that uses a dynamic array should use linear probing to solve collisions.
- The one that uses a linked list should use separate chaining to solve collisions.
- Both classes should have:
  o Insert function
  o Choose an efficient hash function (Do your own research)
  o Remove function
  o Print function
  o A function that calculates the collision rate of every table.
- Implement a third-class Employee. This class defines employees' age, name, salary, and experience.

In the main create the following employees:

Name	Age	Salary	Experience in years
Mina	30	10000	4
Fawzy	45	5000	8
Yara	19	2000	0
Mariam	32	8000	2
Ayman	33	4000	8
Roshdy	28	9000	3
Aya	26	6000	3
Abdallah	29	7000	4
Fatma	21	3000	1

- Insert all these employees in both hash functions in the main.

Report:
- Print both hash functions and provide screenshots in the report.
- Print both collision rates.
- Write which one do you think is better?
- Explain the hash function you chose and why you chose it.

- If you used an online implementation for hash table as a reference, you must include the link in the report. Otherwise, it will be considered plagiarism. **This does NOT mean you can copy code.**

Grade Distribution:

- 70% code correctness.
- 30% Report.

By submitting this assignment, I affirm that I have followed AUC's Code of Academic Ethics and the work submitted is my own. I have not consulted unauthorized resources or materials nor collaborated with other individuals unless allowed.

Good Luck!