# Bahgat Reda

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## Summary

A Software Engineer(Backend) with over 2 years of experience building and maintaining fintech products that process millions of transactions daily. Our products help and impact millions of people across Egypt, Africa and the MiddleEast.
If you often use ATMs, It is highly likely that your transactions have already been parsed in our system.
Also, I have strong CS fundamentals from my formal education and additional online courses from top-tier universities in the world such as MIT, and University of Berkeley.

## Skills

**Programming languages:** Java, SQL, Python, C, Assembly, Scheme.
**Technologies and Tools:** Spring, Spring MVC, Spring Boot, Spring Data, Spring Security, RESTFul API, Microsoft Sql Server, MySQL, Oracle, Kafka, Junit, JSF, Linux, Docker.

## Work Experience

**Software Engineer(Backend) eVision(website)— Cairo, Egypt 1/ 2023 - Present**

eVision provides solutions to banks in Egypt, Africa, the Middle East, and hopefully Europe in the near future.
I am working on the 2 main products of the company ,Bingo and Orchstro, contributing to both the frontend and backend (with a heavy focus on backend).

**Bingo**: A Reconciliation System that automates and digitalizes all back-end operations.Bingo parses and matches millions of transactions daily. Bingo is used by many banks including NBE, MDB, ADIB, Al Rajhi Bank, ABK, EALB, and ADCB.

**Orchstro**: A system that digitally transforms the user experience of all stakeholders of a swift transaction. Orchstro is being deployed now at CIB and trust link(Straight).

During my time in eVision, Some of the things that I did:
● Saved countless development work by building a dynamic report module, enabling the technical support team to write queries on demand, instead of 50+ static report modules.
● Refactored a large, duplicated, and unmaintainable module using the Template Method pattern, improving code readability, maintainability, and reducing redundancy.
● Contributed to the system's redesign, adopting CQRS architecture to optimize both read and write operations.
● Increased the performance of posting service by about 50% by visiting the database only once instead of thousands or millions of times.
● Developed efficient code and sql queries to scale the code to NBE and MDB.
● Implemented security including authentication and authorization by using JWT and mitigated external attacks such as cross-site scripting (XSS) by sanitizing and cleaning incoming requests.
**Technologies and Tools:** Java, Spring MVC, Spring Boot, Spring Data, Spring Security, Primefaces, Kafka, SQL, Microsoft Sql Server, Oracle, Junit, Docker, AWS, Microservice.

**Backend developer intern  Banque Misr Digital Factory-Cairo,Egypt  8/2022-9/2022**

● Attended workshops about software life cycle and agile methodology.
● Designed and built with 2 of my team the backend of the coffee-shop app using java and spring
Github repository of the coffee app backend : link

## Education

**Bachelor of  Computer Science from Helwan University  7 / 2018 - 7 / 2022**

## Online Education

**cs121 (Databases) from Caltech University**
**11 / 2023 - present  course :  link**
**6.1800(Computer systems) from MIT.**
**6 / 2024 - present  course:  link**
**Cs61c (Low-level programming, Multi-threading, Reliability, etc) from University of Berkeley**
**7 / 2021 - 7 / 2022  course :  link**
**CS61B  (OOP, Data Structures and Algorithms) from University of Berkeley**
**7 / 2020 - 3 / 2021  course :  link**
**CS61A (Structure and Interpretation of Computer Programs) from University of Berkeley**
**9 / 2019 - 6 / 2020  course :  link**
**CS50 (Introduction to Computer Science)  from Harvard University**
**12 / 2018 - 8 / 2019  course :  link**

## Selected Personal Projects

**Bear Maps:** A google map clone with basic map features using Java. 1 /1/2021-15/2/2021
●Built the backend of the web app including:
●A* algorithms to find the shortest path between 2 locations.
● an Autocomplete system using a Trie data structure, which allows matching a prefix to valid location.
Github repository:  **link**

**WorldGenerationGame:**  A pac-man clone game with random world generation feature using Java.  6 / 2020 - 9 / 2020
● Designed and built a 2D tile-based game.
● Implemented object oriented methodologies and S.O.L.I.D principles.
Github repository :  **link**

**NUMC:** A numpy library clone (a Python library for performing mathematical and logical operations on arrays and matrices, whose underlying code is written in C) 5/2022- 6/2022
● Built a numpy library clone using C and optimized it using data-level parallelism and Thread-level parallelism.
● Using optimization methods of SIMD, OpenMP, cache manipulation, matrix transposition, and carefully chosen mathematical techniques, I achieved 75x speedup for matrix multiplication, 750x speedup matrix exponentiation, and 2x speedup for other basic matrix operations compared to the naively implemented solutions.
Github repository :  **link**

**Scheme interpreter:** A scheme interpreter using python.  2 / 2020 - 3 / 2020
● Built an interpreter for a subset of scheme language.
● Learned alot about functional programming and recursion.
Github repository :  **link**

## Languages

Arabic, English