Hamza Bin Yusuff

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Technical Skills

Languages: Python, JavaScript, C, C++, Racket, SQL, HTML, CSS
Frameworks: Django, Django REST, FastAPI, React, Node.js, Selenium, p5.js, Bootstrap, Material UI
Technologies: Git, Bash, Heroku, Firebase, Figma, Digital Ocean, Docker

Work Experience

Chittagong Grammar School
Software Engineering Intern   *Chittagong, Bangladesh*
                                                                                                          Aug – Dec '20
- Worked in a team of two to build a **Social Media Web App** for the school staff with react.js and firebase.
- Designed an efficient database schema which reduced CRUD AJAX calls by **50%** saving **$6000** annually.
- Developed a **quantifiable reward-based** algorithm to encourage resource sharing among staff on the app.
- Wrote python script using smtplib to **automate** user registration and email sending to 500 staff members.

Chittagong Medical College Hospital Cancer Department
Software Engineering Intern   *Chittagong, Bangladesh*
                                                                                                          Apr – Jul '20
- Built a Patient Database Management System web app with Django, and a CRUD API with Django REST.
- Web app initiated the **digitization** of **patient data** in the department, and reduced **data loss** by **20%+** .
- Used django-rest-auth and django-cors-headers package for **t**oken authentication and CORS, respectively.
- Deployed the REST API in Digital Ocean by configuring an **Ubuntu 18.04** server instance with Gunicorn.
- Setup **Ngnix** in-front of **Gunicorn** to leverage its high-performance connection handling mechanism.

PROJECTS

Enigma
- Developed an **async (HTTPS)** REST API using **FastAPI**, that exposes several cryptosystems, including **AES**, **SHA 256/512**, **RSA**, **Vigenere**, **Caesar**, and **prime (supports > 128 bits) generation algorithms**.
- Implemented the RSA Cipher, and leveraged **pynacl** and **pycryptodome** for other cryptographic functions.
- Developed an equivalent **python library** with 18 cryptographic methods, and uploaded the library to **PyPI**.
- Deployed the API, and wrote a comprehensive documentation of the API's 18 endpoints on GitHub.

Lisp-ython
- Implementation of a light-weight **interpreter** and **transpiler** written in **python** for **Lisp and Racket.** .
- Transpiles mathematical operations, cons, list, variable declaration in **Racket** to **equivalent python code**.
- Interpreter supports user-defined procedures, lambda calculus, conditionals and primitive data structures.

Turing
- Built a team chat app using React Hooks, React Router Dom, Firestore and Material UI, that allows **encryption/decryption** of the visible chat on screen using AES (Enigma API) and Caesar Cipher.

Algorithma
- Designed and developed a blog which host **visualizations** of computational algorithms in an aesthetic UI.
- Implemented visualizations of **Perlin noise**, **Maurer Rose**, **Timestable** and the mandelbrot set using p5.js.

AWARDS

- **Country Highest in Cambridge O-Level Computer Science**
- **Bronze in the regional round of National High School Programming Contest (2019)**

EDUCATION

University of Waterloo   Sept '20 – Apr '25 (expected)
Bachelors of Computer Science, Dean's Honours List, Fall 2020