Hamza Bin Yusuff

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TECHNICAL SKILLS

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

WORK EXPERIENCE

Chittagong Grammar School Chittagong, Bangladesh
Software Engineering Intern Aug – Dec '20

- Worked in a team of two to build a Social Media Web App for the school staff with **React** and **Firebase**
- Designed an efficient database schema which reduced CRUD AJAX calls by **50%** saving **$6000** annually
- Developed a reward based algorithm which increased resource sharing among the staff by **70%**
- Wrote python script to **automate** user registration, password generation and email sending to 500 staff

Chittagong Medical College Hospital Cancer Department Chittagong, Bangladesh
Software Engineering Intern Apr – Jul '20

- Built a Patient Database Management System 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%**
- Implemented token authentication and CORS using django-rest-auth and django-cors-headers packages
- Deployed the REST API on Digital Ocean by configuring an Ubuntu 18.04 server instance with Gunicorn
- Setup **Nginx** 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 as endpoints, including **AES**, **SHA 256/512**, **RSA**, **Vigenere**, **Caesar**, and **large prime** generation algorithms
- Implemented the RSA Cipher, and leveraged pynacl and pycryptodome libraries for other cryptosystems
- Developed an equivalent python library with 18 cryptographic methods, and uploaded the library to PyPI
- Deployed the API for public use, and comprehensively documented 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

- Developed a blog which hosts **visualizations** of computational and procedural generation algorithms
- 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**

EDUCATION

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