Spurthy Mutturaj

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EDUCATION

Master of Science at Arizona State University   Dec '23

Relevant Coursework: Advanced Operating Systems, Computer Architecture, Data structures & Algorithms, Object Oriented Concepts, Computer Networks, Unix and Shell Programming, Advanced DBMS, Cloud Computing (AWS)   GPA (4.0 /4.0)

TECHNICAL SKILLS

Languages: C, C++, Python, JavaScript, SQL

Tools/Technologies/Frameworks: Git, GDB, AWS, Tableau, Flask, Node.js.

Database: MongoDB, MS SQL

ACADEMIC PROJECTS (https://github.com/spurthym/Operating-Systems)

Custom Bootloader Development for xv6 OS Kernel   May '23

- Developed a **custom bootloader** for the xv6 OS kernel. Main Tasks:
    - Load bootloader before the OS loads, set up initial configurations.
    - Load kernel binary selected by user, configure PMP to enable access of memory at S-mode.
- Implemented a **linker script** to specify the starting address of the bootloader binary.

Memory Management   May '23

- Enabled on-demand binary loading to memory.
- Implemented **heap memory** allocation.
- Designed **page fault handler** to manage memory access errors, redirect exceptions and load necessary pages from disk.
- Implemented FIFO page swapping algorithm to swap pages from heap memory to disk for optimal use.

User-Level Threading Library (ULTLib)   May '23

- Created a **user-level threading library** for managing and scheduling user-level threads within a process.
- Implemented thread creation, context switching, thread yielding, and thread destruction functionalities.
- Developed scheduler thread capable of making decisions based on round-robin, FIFO, and priority algorithms.
- Ensured proper initialization, tracking, and integration of user thread with the xv6 operating system's clock times.

Relevant Projects   Aug '20 – Dec '23

- Comprehensive knowledge of cloud computing concepts and **AWS Resources**. Focused on:
    - servers, virtual networks, storage solutions, security best practices, deployment and CI/CD pipelines.
- Developed a **relational database system** using **MS SQL** for allocating vaccine to individuals.
    - Implemented triggers, stored procedures, and user defined functions.
- Developed a web-based restaurant recommendation application using python libraries: Flask, NLTK.
    - Used cosine similarity to match user profiles with business profiles, yielding scores between 0 to 1.

PROFESSIONAL EXPERIENCE

Arizona State University, Tempe: *Software Developer*   Mar 2022 – Dec 2023

- Migrated an application based on jqGrid and Select2 UI to DataTables and Fomantic UI for enhanced UX.
- Identified & fixed bugs introduced during the migration and development process leading to a more stable release.
- Refactored the architecture of 50+ applications by centralizing the app administrator contact info.
- Developed a real-time contact management system using JS and CFML gathering data from 30+ applications.
- Accomplished an 80% surge in user engagement (Google Analytics) through consistent content updates and marketing.

UXL Technology Academy, Bangalore, India: *Programmer*   Jun 2020 - Oct 2020

- Mentored and instructed high school students at a coding academy, elucidating **object-oriented programming (OOPS)** concepts **and programming paradigms** using **Python** and **Java** programs.