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COURSEWORK

COMP40: Machine Structure and Assembly Language
Language: C

Homework 1
- ➔ Implemented a program that calculates the average brightness of a grayscale image
- ➔ Implemented a program that prints "similar lines" from a file tree in groups

Homework 2
- ➔ Implemented a program that checks if a sudoku puzzle solution passed as a graymap file is valid
- ➔ Implemented a program that removes black edges from photocopy passed as bitmap files

Homework 3
- ➔ Implemented an image manipulator using portable pixmap files
- ➔ Functions include rotating, flipping, and transposing by row-, column-, or block-major
- ➔ Effects of locality/cache performance was for functions called with row-, column-, and block-major

Homework 4
- ➔ Implemented an image compressor and decompressor for portable pixmap files
- ➔ Using cosine transformations between RBG and video component and bit packing to handle compression

Homework 5
- ➔ Analyzed assembly code to defuse Bryant and O'Halloran's binary bomb and secret phase
- ➔ Wrote code for personal interpretation for each phase of the bomb

Homework 6
- ➔ Implemented a Turing complete, 32-bit Universal Machine
- ➔ Handled 14 instructions, for register and segmented memory manipulation

Homework 7
- ➔ Optimized previously implemented Universal Machine
- ➔ Analyzed resulting assembly code to see if further improvement possible

Homework 8
- ➔ Implemented reverse polish notation calculator in UM assembly

COMP15: Data Structures
Language: C++

Homework 1
- ➔ Implemented string manipulation using sequences
- ➔ Functions included removing at a specific index, insertion alphabetically, and concatenation of strings

Homework 2

➔ Implemented string manipulation using linked lists
➔ Functions included removing at a specific index, insertion alphabetically, and concatenation of strings

Homework 3
➔ Implemented a reverse polish notation calculator using a stack

Homework 4
➔ Implemented an alphabetizer using a binary search tree

Homework 5
➔ Implemented insertion, merge, and quick sort
➔ Analyzed time complexity for each algorithm

Project 1
➔ Implemented a warehouse simulation, handling packages for delivery
➔ Functions included simulating the use of conveyer belts equally versus using conveyer belts as they are available for use

Project 2
➔ Implemented a search function for a given file tree using a hash table
➔ Functions included a case-sensitive and case-insensitive search

COMP11: Introduction to Computer Science
Language: C++
Homework 1
➔ Implemented program to print marathon time given in seconds to hour, minute, and seconds
➔ Implemented program to convert age in years to hours

Homework 2
➔ Implemented program to calculate change in terms of US currency
➔ Implemented program to determine how many bikes could be made given number of wheels, frames, and links

Homework 3
➔ Implemented rock, paper, scissors game
➔ Implemented nim game

Homework 4
➔ Implemented program that checks if a sudoku board is valid and reports any errors in incorrect solutions

Homework 5
➔ Implemented program that determines the rank of a given baby name

Homework 6
➔ Implemented a command-line animation given by Specially-formatted text files

COMP00: Advanced Placement
Language: Java
Project 1
➔ Created a landscape scene using Java's graphics library

Project 2
➔ Implemented Conway's Game of Life

Project 3
➔ Implemented Space Invaders

You may contact me at ThomasLChan@gmail.com if you would like to view the source code or inquire about lab work. Given Tufts' academic integrity policy, the repositories holding my solutions are private.