CIS11 Course Project Part 1: Documenting the Project

Fill in the following areas (purple).

Introduction

1.1 Purpose

The purpose of my program is to take in a users input (full name) and output the numerical value that represents the frequency of a character in the user's full name

1.2 Intended Audience and Users

Dr. Nguyen and programming peers

1.3 Product Scope

To output the numerical value that represents the frequency of a character in the users full name or whatever string they input

1.4 Reference

Source Documents for the Program Requirements and Specification

Reference LC-3 Simulator and Documentation

2. Overall Description

2.1 Product Perspective

Primary program objectives and goals.
The program stores the characters in a stack and calls subroutines to take input of users' inputs and outputs the number of times each letter is typed in the string. The string can be more than just a name and can be a sentence(without pressing enter). To stop the program to receive inputs, press "enter", then the output will appear. Within the subroutines, loops are being used to traverse each index in the string and convert each character into an ASCII value.
Data type
This program only accounts for strings and characters. This program does not account for numbers and symbols.

2.2 Product Functions

The overall description of functionality:

Highlight the program functionality: Identify tasks and subtasks of the program in summary.

The program begins and prompts the user to input their full name or a string

Subroutine get_user_input activates and takes in input

Loop within the subroutine takes character by character from the user, and stops when “enter” is entered

Call another subroutine get_user_output to output the alphabet letters in the format of a: 1 b: 2 c:3

Technical functionality

What are the technical functions of the program? Subroutines and operations.

2.3 User Classes and Characteristics

N/A

2.4 Operating Environment

LC-3 Editing Tool & Simulator - Development Platform
Windows Operating System
Online LC-3 Simulator (LC3Tutor.org)

2.5 Design and Implementation Constraints

The limitations of this program are that it does not account for numeral values and symbols. It can be further improved by implementing the ability to take in user-inputted numbers and symbols

2.6 Assumptions and Dependencies

Windows Simulator LC3 Simulator
Online Simulator LC3Tutor.org

3. External Interface Requirements

3.1 User Interfaces

The user will interact with the program through the console and simulator (set values)

3.2 Hardware Interfaces

A computer that has a mouse and keyboard

3.3 Software Interfaces

N/A

3.4 Communications Interface

An internet connection is required to download the LC3 editing tool & simulator and to access the online simulator LC3Tutor.org

4. Detailed Description of Functional requirements

4.1 Type of Requirement (summarize from Section 2.2)

What are the functions? Their purposes? Inputs? Outputs? Data? Where is the data stored (internal or external to the application)?

There are several functions

get_user_input: takes in user inputted data (string), located at x3200

user_convert: conversion to ASCII values x3600

get_user_output: outputs the numerical value of the frequency of each character from the user inputted string x3400

The characters in the string are stored in a stack, which is located at xFE00

All the data is stored internally

4.2 Performance requirements

What is the expected performance level of the program?

The performance level of the program is ideal. It can definitely be improved by a senior assembly programmer

4.3 Flow Chart