Project Proposal

COMP SCI 3800 - Intro to Operating Systems

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Goals

This project aims to write an operating system for the Texas Instruments 84+ Silver Edition calculator. The goal is a simple, multi-purpose, responsive operating system for user interface. This will be achieved through the following parts:

- a round-robin scheduler
- a filesystem for loading processes
- static memory allocation
- resource allocation with no hold and wait (to prevent deadlock)
- system calls available for interacting with hardware

These algorithms were chosen to be the simplist to implement with the smallest overhead. The hardware is capable of much more[1], so there is plenty of room for future development. The end product will consist of the operating system code and a paper detailing the development process.

Materials

The only hardware used will be the calculator itself, a USB cable, and a PC. The following list of software will be used: an emulator/debugger[2], a z80 assembler[3], a linker program to the physical calculator[4], a tool for building roms[5], a tool for signing the operating system[6], and some other miscelanious paging tools[7]. Signing the operating system also requires keys[8]. The operating system will be built on some basic assembly subroutines specific to the hardware[9]. The final material is liberal help from online forums[10].

[1] https://github.com/KnightOS
[2] http://lpg.ticalc.org/prj_tilem/
[3] https://www.nongnu.org/z80asm/
[4] http://lpg.ticalc.org/prj_tilp/index.html
[5] https://www.ticalc.org/archives/files/fileinfo/373/37341.html
[6] https://github.com/abbrev/rabbitsign
[7] https://www.ticalc.org/archives/files/fileinfo/350/35057.html
[8] https://brandonw.net/calcstuff/keys.zip
[9] https://www.cemetech.net/downloads/files/629/x629
[10] https://www.cemetech.net/