COM 326: Operating Systems

Winchester 11

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Software Design Document

Introduction

The purpose of this document is to provide a framework for the program we are creating. The documents intended audience is the consumer.

System Overview

Design Approach:

We are approaching the design of this program by using agile methodologies to iteratively implement our operating system.

Requirements

- Store processes
- Print a list of active processes
- Update and add processes

Design Considerations

Assumptions and Dependencies:

General Constraints:

Goals and Guidelines:

Moving forward we would like to place an extra emphasis on having our program looking and "feeling" like an existing product. Although we would like to make sure our program works as intended, we think that having a polished look & feel will make it more attractive to users even if it sacrifices minor functionality.

Development Methods:

Architectural Strategies

strategy-1 name or description

strategy-2 name or description

System Architecture

Node Class - stores process as nodes in order to keep important attributes and update them as needed

Attributes

ID - int (length 5)

Active

Priority - int > 0

Time_created - Time

Mode - boolean(T = user, F = kernel)

Priority Queue Class - allows us to store process as nodes with a priority, and access those that are of top priority

Policies and Tactics

policy/tactic-1 name or description

policy/tactic-2 name or description

Detailed System Design

PCB Class

getInput

Reads in processes off a file

verify

Makes sure a process is in the process list before operating on it

update

Updates attributes of the process

add_new_process

Adds new process

Process queue

print_cr_tree

process_list

push

Add a process to the queue

pop

Remove a process from the queue using its id

top

Returns highest priority process

get_pid

Returns a process by its id

Test Plan

For testing purposes, we created lists of processes to have our PCB read in. One, containing processes with all of the required attributes, passes with no errors. Others, that are missing various attributes such as status, or id, will throw errors and not be accepted as processes.

Glossary

Bibliography

P.S. We are a not for profit organization.

Project Plan

Key components

Create an O/S Scheduler that allows for the simulation of several scheduling algorithms. It will be data-driven, have a User Interface and based on our team's chosen development technology. All of the other requirements will be derived by our team, via interviews/email with the CUSTOMER. Your ability correctly capture, document and implement the requirements as well as your enhancements will be key to your grade.

Roles and responsibilities.

- Project Manager (JALEEL WATLER) – coordinates the development effort, provides status updates on the effort to the customer. Manages a Project Plan.
- Architect (JOHNATHAN EVANILLA) – designs the high-level view of the key components in the solution, how they integrate and what they do, leads Software Design Document authoring. Present design to customer.
- Lead Software Designer (NATE DEVINE) – leads the coding effort, defines the data structures, classes and overall design of the code. Specifies testing approach. Presents how the solution will work to the customer.
- Business Analyst (SAM BARNES) – creates the requirements for the solution (both functional and non-function (so what it does as well as how it must work), customer facing for understanding the requirements. Helps in authoring requirements sections and other customer centric areas of SDD.

Kickoff meeting

- Kickoff meeting was held on Tuesday, October 2nd. We also used this time for team building by discussing things over the dinner table. The topics discussed during the kickoff meeting included deciding the roles and responsibilities of each team member. We also covered how the team will make decisions. We will first try to come to a decision as a whole and if the team is split on something, it will be put to a vote with 3/5 votes necessary for final decision. We also decided on some important ground rules:

Scope Statement.

The aim of this project will be to create an O/S Scheduler that allows for the simulation of several scheduling algorithms. It will be data-driven, have a User Interface and based on your team's chosen development technology. All of the other requirements will be derived by your team, via interviews/email with the CUSTOMER. Your ability to correctly capture, document and implement the requirements as well as your enhancements will be key to your grade.