Here is a list of Arduino Operating Systems:

What is an OS:

An operating system (**OS**) is software that manages computer hardware resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function.

Arduino Command-Line Tool “MiniPirate”
http://www.instructables.com/id/Arduino-comand-line-tool-MiniPirate/?ALLSTEPS

TaOS is a simple Graphical User Interface that lets you execute pre-programmed code blocks by tapping squares on the TouchShield Slide. Basically an example for Arduino-TouchShield communication, text drawing, user input, and squares. Includes samples from http://arduino.cc, and from http://liquidware.com/apps
http://www.liquidware.com/apps/show/54
This requires a very expensive touch screen at a whooping $175 dollars.
http://www.liquidware.com/shop/show/TSL/TouchShield+Slide+

Arduino Basic:
A port of TinyBasic from 68k assembler to the Arduino
http://ec2-122-248-210-243.ap-southeast-1.compute.amazonaws.com/mediawiki/index.php/Arduino_Basic
And the Github fork of TinyBasic:
https://github.com/BleuLlama/TinyBasicPlus

TinyOS
http://tinyos.stanford.edu/tinyos-wiki/index.php/Main_Page
may not be for the Arduinos

leOS
leOS (***l**ittle **e**mbedded **O**perating **S**ystem*), a system that can manage the background execution of little routines with customizable interval launch times using a scheduler that can start them indipendently by the main loop of the user’s program. leOS can start new tasks, pause and resume them and delete them too. All is done using a scheduler that can start tasks without the partecipation of the user so that the tasks will appear trasparent at the main loop
http://www.leonardomiliani.com/en/2012/leos-un-semplice-so-per-arduino/

Avr-OS: Multitasking on Arduino
avr-os is a library that provides a very basic rutime that enables your program to multitask. The library uses pre-emptive multitasking to switch tasks and each task has its own stack that is restored when a task is resumed. An AVR timer is used to provide ticks and this interrupt is used to switch tasks.

http://www.chrismoos.com/2012/12/05/avr-os-multitasking-on-arduino

ArdOS An Os for Arduino:
ArdOS is a powerful but compact multitasking operating system for the Arduino series of microcontroller boards centered around the Atmel ATmega 168, 328, 1280 and 2560 microcontrollers
http://fibasile.github.io/ardos-operating-system.html
https://bitbucket.org/ctank/ardos-ide/wiki/Home

DuinOS: FreeRTOS based real time operating system for Arduino compatible boards
https://code.google.com/p/duinos/

Femto OS:
The Femto OS is a very concise portable real time - preemptive operating system (RTOS) for embedded microcontrollers with minimal ram and flash, say 2KB .. 16KB flash and 128 .. 1024 bytes ram. The main target is the Atmel AVR architecture, such as the ATtiny or smaller ATmega series. The OS runs well on larger hardware also. The system is written in C with a separate port file. Porting has been done for 44 AVR devices.
http://www.femtoos.org/index.html

A(rduino) OS: Simple Task Scheduler for Arduino Development Board.
http://dagon666.github.io/avr_Aos/
(Very Early Stage of development)

ChibiOS/NiRTOS/FreeRTOS:
https://code.google.com/p/rtoslibs/
Contains 3 different Real Time OS for Arudino/Avr
More info:
http://jeelabs.org/2013/05/25/chibios-for-the-arduino-ide-2/

Bitlash: BitLash a programmable command shell for Arduino
http://bitlash.net/
The user guide: http://bitlash.net/bitlash-users-guide.pdf

AVRSH: A command Interpreter shell for Arduino/AVR
http://www.instructables.com/id/AVRSH-A-Command-Interpreter-Shell-for-ArduinoAVR/

StickOS Basic (For the PIC microcontrollers, not Arduinos)
http://chipkit.net/tag/stick-os/

Pyxis OS (No Longer Available, and a commercial product)
Also looks like it probably used that expense touch screen from the second OS listed.
http://www.liquidware.com/shop/show/PXOS/Pyxis+OS

ArduOS: A small preemptive multitasking-system
http://playground.arduino.cc//Code/ArduOS

Ardunix: Open Source Arduino Operating System which aims to adapt the unix-functionality *without any complicated source code*. The entire source code is easy to understand for everyone who learns the C++ language.
https://docs.google.com/document/d/1mdI5eHBpW1ZuwJPufsePbI-DrXoGu-mZubbwxNbUoF4/edit
This looks like a work in progress.