CS 311 Research Project Due October 29, 2013

For a selected and approved processor, conduct research to prepare a summary of its specifications. This summary should contain information concerning:

1. History/Background
   1. Based off of RISC architecture
   2. Dates back to 1980s
   3. Contributors:
      1. Stanford
      2. University of California, Berkley
2. Memory specifications
3. Registers
4. Data Types
5. Instruction Set
6. Instruction format
7. Addressing modes
8. I/O
9. Unusual features
10. Uses/Applications
11. Contributions to the computer architecture landscape

Your paper should be double-spaced, having one inch margins, using 12-point font and should use the MLA Seventh form for references. You should have at least three reliable references. You will submit both a digital and hard-copy of your paper.

The following is a list of categories of CPU architectures with examples. You may also find others not listed here with enough information to conduct your research.

**Embedded CPU architectures**

* ARM's ARM Architecture
* Atmel's AVR architecture
* Microchip's PIC architecture
* Texas Instruments's MSP430 architecture
* Intel's 8051 architecture
* [Zilog](http://en.wikipedia.org/wiki/Zilog)'s Z80 architecture
* Western Design Center's 65816 architecture
* Hitachi's [SuperH](http://en.wikipedia.org/wiki/SuperH) architecture
* [Axis Communications](http://en.wikipedia.org/wiki/Axis_Communications)' [ETRAX CRIS](http://en.wikipedia.org/wiki/ETRAX_CRIS) architecture
* [Power Architecture](http://en.wikipedia.org/wiki/Power_Architecture) (formerly [PowerPC](http://en.wikipedia.org/wiki/PowerPC))
* [EnSilica](http://en.wikipedia.org/wiki/Ensilica)'s [eSi-RISC](http://en.wikipedia.org/wiki/ESi-RISC) architecture
* [Milkymist](http://en.wikipedia.org/wiki/Milkymist) architecture
* [Inmos](http://en.wikipedia.org/wiki/Inmos)' [Transputer](http://en.wikipedia.org/wiki/Transputer) architectures

**Microcomputer CPU architectures**

* pre-x86
* [x86](http://en.wikipedia.org/wiki/X86)
  + Intel's [IA-32](http://en.wikipedia.org/wiki/IA-32) architecture, also called x86-32
  + [x86-64](http://en.wikipedia.org/wiki/X86-64) with AMD's [AMD64](http://en.wikipedia.org/wiki/X86-64#AMD64) and Intel's [Intel 64](http://en.wikipedia.org/wiki/X86-64#Intel_64) version of it
* [Motorola](http://en.wikipedia.org/wiki/Motorola)'s [6800](http://en.wikipedia.org/wiki/Motorola_6800_family) and [68000](http://en.wikipedia.org/wiki/Motorola_68000_family) architectures
* [MOS Technology](http://en.wikipedia.org/wiki/MOS_Technology)'s [6502](http://en.wikipedia.org/wiki/MOS_Technology_6502) architecture
* [Zilog](http://en.wikipedia.org/wiki/Zilog)'s Z80 architecture
* Power Architecture (formerly POWER and PowerPC)
* The Advanced RISC Machines' (originally Acorn) ARM and [StrongARM](http://en.wikipedia.org/wiki/StrongARM)/[XScale](http://en.wikipedia.org/wiki/XScale" \o "XScale) architectures
* [Renesas](http://en.wikipedia.org/wiki/Renesas) [RX CPU architecture](http://en.wikipedia.org/w/index.php?title=RX_CPU_architecture&action=edit&redlink=1) - Combination of RISC and CISC architectures

**Workstation/Server CPU architectures**

* DEC's Alpha architecture
* HP's [PA-RISC](http://en.wikipedia.org/wiki/PA-RISC) architecture
* [Power Architecture](http://en.wikipedia.org/wiki/Power_Architecture) (formerly POWER and PowerPC)
* Intel's Itanium architecture (formerly **IA-64**)
* MIPS Computer Systems Inc.'s [MIPS architecture](http://en.wikipedia.org/wiki/MIPS_architecture)
* Oracle's SPARC architecture

**Mini/Mainframe CPU architectures**

* Burroughs large systems architecture (1961-present) currently supported in the Unisys ClearPath/MCP series.
* IBM's System/360, System/370, ESA/390 and z/Architecture (1964-present)
* DEC's PDP-11 architecture, and its successor, the VAX architecture
* UNIVAC 1100/2200 series architecture (currently supported by Unisys ClearPath IX computers)
* MIL-STD-1750A - the U.S.'s military standard computer
* AP-101 - the space shuttle's computer

**Mixed-core CPU architectures**

* IBM's Cell architecture (a general purpose architecture that uses a POWER4 based core and 8 RISC based co-processors)
* CAS's [Loongson](http://en.wikipedia.org/wiki/Loongson) 3
* Parallax Propeller, a 160 MIPS multicore microcontroller with eight 32-bit RISC cores.

**Historically important CPUs**

* EDSAC - the first practical stored-program computer
* Apollo Guidance Computer, used in the moon flights
* MIL-STD-1750 An early CPU, standardized for military and aerospace embedded systems.
* MIPS R4000 - the first microprocessor to use a 64-bit datapath
* Central Air Data Computer - the first microprocessor