1. Develop a 15 minute presentation on the architectural details of any specific modern CPU in a specific microcontroller with a specific package.

Typical topics you should consider, with evidence:

What is the long-form part number for your specific device?

How many pins in what package?

What signals are on what pins?

What does the part cost?

What is the part temperature range?

What are the minimum and maximum clock rates and how are they achieved?

What are the minimum and maximum power consumption, and under what conditions are these found?

How do you program and debug it?

What peripherals does it have?

How many GPIO pins does it have?

How many registers does it have in the register file and how big are they?

What special function registers does it have and what do they do?

What happens and where does it execute when it comes out of reset?

How does it know configuration when it comes out of reset?

What are the stages in the pipeline and what do they do?

What memory size and type does it have?

What cache does it have?

How much current will it source & sink to an IO pin?

Are program and data spaces on the same bus (von Neumann) or separate buses (Harvard)?

How wide is data?

How wide is a program word (instruction)?

How large is the program counter and where is it?

What addressing modes does it have?

How does it apply pointers to access memory?

How does the ALU work?

Which status bits are controlled by the ALU?

What status bits can be used to control branching?

What is the binary instruction for NOP?

How does it handle the stack pointer?

Where does the stack start, and how big is the stack?

How many different instructions does it have?

How many different instruction formats does it have and what are they?

How does is perform an unconditional branch?

How does it perform a conditional branch?

What events can interrupt?

How does it handle interrupt service?

How does it support hardware Multiply, if at all?

Be prepared to present in class.