Super pipling is the same as pipling, it just has more stages than the classic RISC pipline.

Speculative execution refers to the processor's ability to execute instructions that lie beyond a conditional branch that has not yet been resolved, and ultimately to commit the results in the order of the original instruction stream. To make speculative execution possible, the P6 family microarchitecture decouples the dispatch and execution of instructions from the commitment of results. The processor's out-of-order execution core uses data-flow analysis to execute all available instructions in the instruction pool and store the results in temporary registers.

In [computer architecture](https://en.wikipedia.org/wiki/Computer_architecture), [**register**](https://en.wikipedia.org/wiki/Processor_register)**renaming** is a technique that abstracts logical registers from physical registers. Every logical register has a set of physical registers associated with it. While a programmer in [assembly language](https://en.wikipedia.org/wiki/Assembly_language) refers for instance to a logical register accu, the processor transposes this name to one specific physical register on the fly. The physical registers are opaque and cannot be referenced directly but only via the canonical names.

This technique is used to eliminate false [data dependencies](https://en.wikipedia.org/wiki/Data_dependency) arising from the reuse of registers by successive [instructions](https://en.wikipedia.org/wiki/Instruction_(computer_science)) that do not have any real data dependencies between them. The elimination of these false data dependencies reveals more [instruction-level parallelism](https://en.wikipedia.org/wiki/Instruction-level_parallelism) in an instruction stream, which can be exploited by various and complementary techniques such as [superscalar](https://en.wikipedia.org/wiki/Superscalar) and [out-of-order execution](https://en.wikipedia.org/wiki/Out-of-order_execution) for better [performance](https://en.wikipedia.org/wiki/Computer_performance)