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FPU's and multimedia

The computer continually makes calculations, which can be divided into two groups.

- Whole numbers
- Floating point numbers

FPU is used when the CPU performs a lot of calculations on the decimal numbers when playing 3D games and other multimedia programs. In this property, the desired level of accuracy is determined, since the numbers can contain an infinite number of fractions and must be rounded.

Calculations involving floating point numbers are difficult for the ALU to process, that required a large number of bits(up to 80 bits), and vice versa calculations involving whole numbers(integers) are much simpler and the result is correct every time. therefore, FPU is used for its ability to handle a large number of bits with high precision.

The modern CPU has a Floating Point Unit (FPU) that acts as a number editor. But it has not always been so. For example, the Intel 80386 processor does not have an inline FPU account unit. All accounts were performed using the processor ALU. But you can buy a separate FPU (80387), which was a chip that you installed in the socket on the motherboard, next to the CPU.

3D graphics

Much of the CPU development has been pushed through 3D games. These awesome games place incredible CPU requirements in terms of computing power.

Images are created in common games such as Sims from hundreds of polygons. In order to calculate polynomial modes, floating-point numbers must be used, These numbers are called precision float When you move the shapes in a three-dimensional scene, you must perform the multiplication operation called "matrix multiplication" to calculate New swirls. For only one shape.

The CPU can be left gasping for breath when it has to work with 3D movements across the screen.

What can we do to help it?

- The higher the clock frequency, the faster the traditional FPU performance will become.
- Improvements to the CPU's FPU, using more pipelines and other forms of acceleration.

MMX instructions

The first initiative was called MMX (multimedia extension), and came out with the Pentium MMX. The idea was MMX must be used by multimedia programs. Programs must be written For MMX in order to benefit from the new system. MMX is a supplement to the existing instruction set (IA32). There are 57 new instructions Understand MMX compatible processors, which require new programs to be exploited. Many programs have been

rewritten to work with and without using MMX.

3DNow

AMD introduced a collection of CPU instructions which improved 3D processing. These were 21 new SIMD (Single Instruction Multiple Data) instructions. The new instructions could process several chunks of data with one instruction.

SSE

Intel introduced SSE with the Pentium III. SSE (Streaming SIMD Extensions), which are another way to improve 3D performance.

SSE2 and SSE3

With the Pentium 4, the SSE was expanded to use more powerful techniques. SSE2 can reduce the number of instructions that must be performed by the CPU for Perform a certain task and thus can increase processor efficiency.