Core i7: A Research into the Processor

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Abstract— In late 2008, Intel launched the core i7 processor. This processor was made as an intention to target business and markets for laptops and computers. This processor was made mainly for gaming, intensively graphics tasks etc. This processor can handle a wide variety of tasks at once and hence are best suited for those who wants a computer with powerful performance. For data crunching, this processor is the most suitable. It has a fast clock speed and integrate max 4 cores. It also has Virtualization Technology and Streaming SIMD Instructions. It also supports Intel Turbo Boost technology.

Keywords—gaming;graphics;clockspeed;DDR3memory.

I. INTRODUCTION

The Intel core i7 processor was first launched in late 2008. It is distinguished from in predecessor core i5 which was a mainstream processor as core i7 targets business and markets for laptops and computers. Core i7 family processors are particularly best for extreme 3D gaming, intensive graphics tasks, and multimedia production in standard computer level. These processors are best suited for anyone who wants a computer with powerful performance that handle a wide variety of tasks at once. This processor is also more appropriate for tasks such as data crunching.

The general specification of core i7 are All support 64-bit execution, Integrate maximum four Cores (latest Core i7 processor incorporate six cores), Speed ranges from 2.66GHz to 3.33GHz, Front Facet Bus Speed embrace 2GHz, 4.8GHz or 6.4GHz, Support DDR3 main memory, Support Hyper-threading technology, 1MB L2 and 8MB L3 cache, Enhanced Intel Speed Step Technology, Virtualization Technology, Streaming SIMD Instructions (MMX), Over clocking capability, Supports Intel Turbo Boost technology Rest of the paper is organized as follows,

Section I contains the introduction of the Intel Core i7 processor, Section II contain the related work of Intel Core i7 processor, Section III contain the results and discussion, Section IV contain the Platform Overview and Applications of the processor; Section V concludes research work with future directions.

II. RELATED WORK

In [1] this paper we have examined the hardware-centric approaches of exploiting instruction level parallelism (ILP) used in the Intel Core i7 family of processors. The Intel Core i7 is also very popular processor which means that documentation is abundant. Here we can say that "Intel Core i7 processors" do not share a single microarchitecture. The goal of this paper is to develop a better understanding of the concept of instruction level parallelism (ILP) and to explore the methods used to exploit ILP in Intel Core i7 family of processors. To do this, the pipeline of the 4th generation "Haswell" Intel Core i7 processor can be examined and ILP exploitation can be identified.

In [2] this paper we determined that Intel Core i7 is the first processor using Nehalem Micro architecture and with faster and multicore technology. The road of Core i7 started with the demise of Intel's Net burst architecture. These methodors are unit supported the Penryn producing process the corporate introduced last year, but otherwise there are few similarities with the Core 2 Duo, Core 2 Quad, and Core 2 Extreme lines. The Core i7 could be a fully new design that is way quicker and additional economical than the Core a pair of couple. This processor is ideal for computer 3D gaming and multi-threading applications. Core i7 CPUs are at the high end of the product line Engineers and scientists can expect to see processing performance gains as well as increases in memory and data turnout once comparison this microarchitecture to previous microarchitectures.

In [3] this paper we studied that the processor supports several advanced technologies: execute disable bit, Intel 64 technology, enhanced Intel speed step technology, Intel virtualization technology, Intel turbo boost technology and hyper- threading technology. Intel core i7 desktop processor extreme edition series are multi-core   processors based on 45nm process technology. The processors support all the

existing streaming SIMD extensions2 (SSE2), (SSE3) and (SSE4). Intel core i7-900 desktop processor series are intended for high-performance high-end desktop, uniprocessor server and workstation systems. The core i7 processors have been designed to help Intel create different versions that means 8-core processors, 6-channel memory and larger cache processors. Over-clocking in the Core i7 processors is also seems to be easier. Overclocking is the method of forcing the pc part to run at higher clock rate it had been designed to extend the performance of the computers.

III.   RESULTS AND DISCUSSION

We have analysed that the core i7 is faster as it has many cores and have hyper-threading. Number of cores in Intel Core i7 is 2 to 4. The clock speed range is around 2.9GHz-4.2GHz. The i7 is basically used for Movie and video editing. It is power efficient, very fast and high performance. It supports Turbo Boost technology. It is sensitive to higher voltages which is one of the drawbacks of Intel core i7. It is best for Graphics. It can handle a wide variety of task at once. Currently, the most effective laptop chip on the market is the Intel core i7 980X. With a thirty-two nm design, the Intel core i7 980X has 6 cores and 12 threads in all! Forget quad core or dual core, the age of six core processors has dawned. With a 12 MB sensible cache and 3.6 GHz of most duration frequency, this is often a beast of a processor, that take multitasking to a full new level.

These processors are much more advanced to deal with the integrated memory of e system and has ability to increase the memory.

IV.   INTEL CORE I7 PLATFORM OVERVIEW AND APPLICATIONS

with the help of i7 processors users can enjoy the high speed of working with the additional feature of the multitasking i.e. using 2 completely different documents or the files at a similar time. dual core technology is additionally an area of i7 processors that offer reliable and high rate operating performance to the buyers. a big feature of the i7 processors is the turbo boost technology. this technology provides the high performance to the system to the users to overcome the workload of different applications on the system and maintain the speed of the system. like i5 and i3 processors i7 also have a feature of hyper threading technology enhances the activity and the speed of the system by managing the multitasking, workload and different types of heavier applications of the users.
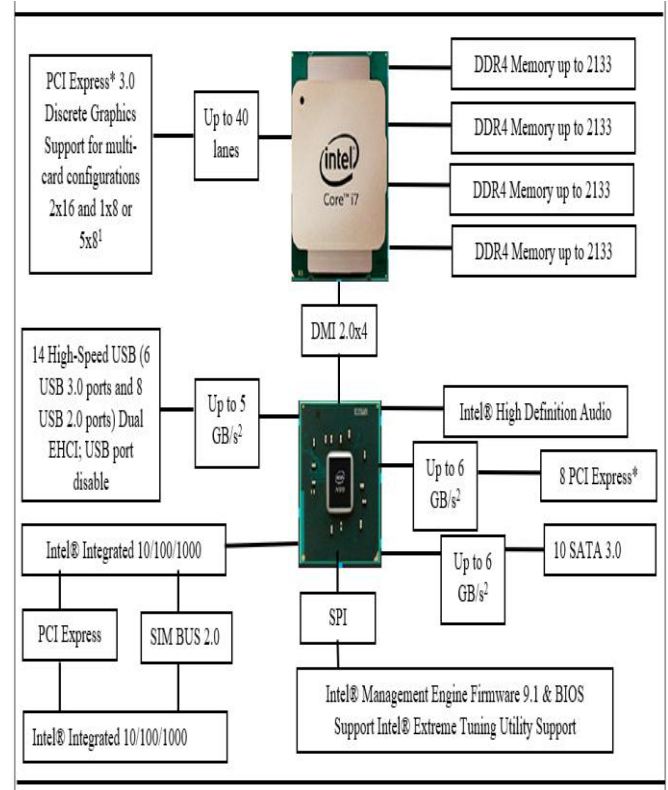

Fig. 4.1 Platform overview

V. CONCLUSION AND FUTURE SCOPE

We have finally got acquainted with the new Core i7 processor it can handle a wide variety of task at once. Core i7 improve multi-threading performance. It can execute one or more threads at once, runs at higher base frequency. This processor is ideal for computer 3D gaming, multitasking. It is power efficient, very fast and high performance. It supports new fascinating technologies, such as SMT and Turbo Boost. The core i7 supports Hyper-Threading as well as Turbo Boost technology. It is also used for Graphics.

We can say that Core i7 series of processors for users who will be handling extreme applications, such as video and photo editing. This is the best of the best when it comes to Intel's processor offerings, sporting the most cache, the largest number of physical and virtual cores, and the most advanced integrated graphics.

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