ABSTRACT

The system memory is the place where the computer holds current programs and data that are in use. System memory is an important part of the main processing subsystem of the PC, tied in with processor, cache, motherboard and chipset. Memory plays a significant role in the following important aspects of computer system, performance, software support, reliability and stability, and upgradeability. In fact, the ability to store and transmit various kinds of information has become of increasing importance. In the computer model, one of the major components was the memory.

Dynamic Random Access Memories (DRAM) is the dominant solid-state memory devices used for primary memories in the ubiquitous microprocessor systems of today. In recent years, processor frequencies have grown at high rate per year, while DRAM latencies have improved at low rate per year. This growing gap has been referred to as the “Memory Wall.” DRAM architectures have been going through rapid changes in order to reduce the performance impact attributable to this increasing relative latency of primary memory accesses. This thesis examines conventional DRAM architectures.

The framework for DRAM implementations, based on a number of perspectives and criteria. Reading, writing and refreshing cycles are major components of the DRAM working. The hardware project used to examining the underlying performance enhancing characteristics of DRAM. An important contribution of this work is identification and examination of a set of characteristics, which try to determine the DRAM system performance. The intent of this thesis is examining DRAM architectures and performance

the circuit design contains two section, the first one work instead of DRAM controller that not available in the local market, then we use 74273 latch register that work at up-edge, further more, we add the transparent latch 74373 to eliminate the conflict due to the read-write operation from/to the DRAM, and the second circuit contains DRAM TMS4416.The experiment results taken from the practical circuit operation in conformity with the program results shown.

تجريد

إن ذاكرة نظام الحاسوب هي المكان الذي تحمل فيه البرامج والبيانات المستخدمة بالجهاز ، وهي اي ذاكرة النظام جزء مهم من العمليات الرئيسية في نظام الحاسوب مرتبطة مع المعالج وذاكرة وسيطة واللوحة الام ومجموعة رقائق . للذاكرة دور هام في السمات التالية لنظام الحاسوب تتمثل في , الاداء, دعم البرامج الحاسوبية, الأعتمادية والأستقرار,والقابلية للترفيع والتطوير. ويجدر القول ان القدرة لخزن وارسال الانواع المختلفه من المعلومات اصبحت من الاهمية بمكان. فالذاكره هي احد المكونات الرئيسيه بالحاسوب.

الذواكر العشوائية الديناميكية هي الغالبة علي ذواكر الحالة الصلبةِ و التي إستعملتْ للذواكر الأساسيةِ في أنظمةِ المعالج الدقيقِ الموجودة في كلّ مكانِ اليوم. في السَنوات الأخيرة، نَمتْ ترددات المعالجِ بنسب عاليةِ بالسّنة، بينما نسبة الكمون في الذاكرة الفعالة تَحسّنَ بمعدل منخفض بالسّنة. هذه الفجوةِ المُتزايدةِ هي ما تعرف باسم "حائط الذاكرةِ" . مرت بنية الذاكرة الفعالة بتغييرات سريعة بالرغم من تدني الكفاءة نتيجة للزياده الملحوظة في الكمون للوصول للذاكرة الاولية. ففي هذه الاطروحة تم تناول الذاكرة الفعالة التقليدية.

أن الاطار العام لتطبيقات الذاكرة الفعالة ,يستند علي عدد من المنظورات والمعايير . فالقراءة, الكتابة ودورة تنشيط الذاكرة هي مكونات اساسية في عمل الذاكرة الفعالة. فالتطبيق العملي لهذا البحث استخدم لاختبار الاداء التحتي الذي يحسن خصائص الذاكرة الفعالة .ان أهمية هذا العمل هو تعريف وفحص مجموعة من الخصائص التي من خلالها يمكن للذاكرة الفعالة تحديد أداء النظام ,فالمقصد من هذا البحث فحص اداء وبنية الذاكرة الفعالة.

يتكون تصميم الدائرة الالكترونية من جزئين, ففي الاول تم استخدام رقائق مسجل المزلاج ذو الحافة الصاعدة بالنمرة 74273 بدلآ عن جهاز تحكم الذاكرة الفعالة الذي لم يتسني الحصول عليه. كذلك تم استخدام المسجل الشفاف بالنمرة 74373 للتخلص من التضارب الناتج بسبب عملية القراءة والكتابة من والي الذاكرة الفعالة. والدائرة الثانية تتكون من رقائق الذاكرة الفعالة بالنمرة TMS4416 . وعليه تم الحصول علي نتائج هذه التجربة بعد تشغيل الدائرة مع استخدام برنامج حاسوب لهذا الغرض.

DEDICATION

For my role model in personality, behavior and demeanor, my father.

For my wonderful and loving mother.

To my brothers and sisters.

For the person who has always supported and encouraged me when I have doubted myself, and for the purest joy of my life, my wife.

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