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AN EFFICIENT IMPLEMENTATION SCHEME FOR MULTIDIMENSIONAL INDEX ARRAY

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Department of Computer Science and Engineering

Khulna University of Engineering & Technology

Khulna 9203, Bangladesh

April, 2012

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An Efficient Implementation Scheme for Multidimensional Index Array

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A thesis submitted in partial fulfillment of the requirements for the degree of

"Bachelor of Science in Computer Science & Engineering" [*12, Normal, Centered*]

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Supervisor: [*12, bold, left aligned*]

Mr. Xyz [*12, bold, 0.8" left*

Professor [*12, Normal, 0.8" left indentation*]

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Department of Computer Science and Engineering [*12, Normal, centered*]

Khulna University of Engineering & Technology

Khulna 9203, Bangladesh

April, 2012

Acknowledgment

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All the praise to the almighty Allah, whose blessing and mercy succeeded me to complete this thesis work fairly. I gratefully acknowledge the valuable suggestions, advice and sincere co-operation of …

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Authors

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Abstract

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Multidimensional arrays are greatly used for handling hefty amount of data in scientific or engineering, and MOLAP applications. Most of the on hand data structures are static in nature….

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Contents

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CHAPTER I

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Introduction

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1.1 Introduction

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There are few classes of data structures which are as well understood or as extensively used as arrays. It is quite often for scientific, statistical and engineering applications to have computation on large multidimensional arrays [1,2]. The …

The fast random accessing capability of multidimensional arrays is a fascinating characteristic [3,4] that enables various …

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1.2 Problem Statement

There are many existing array systems to represent multidimensional data such as Traditional …

1.3 The Realization of Multidimensional Array

There are many data structures already exist to represent multidimensional data. Some of the well-known and prominent data structures are discussed next.

1.3.1 Traditional Multidimensional Array (TMA) [5]

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Conventional storage of multidimensional arrays is done by linearization. In the two dimensional case …

Traditional Multidimensional Array (TMA) is a representation scheme for multidimensional data which represent *n* dimensional data. An illustration of 3 dimensional TMA of dimension length 3×4×5 is given in Figure 1.1. F

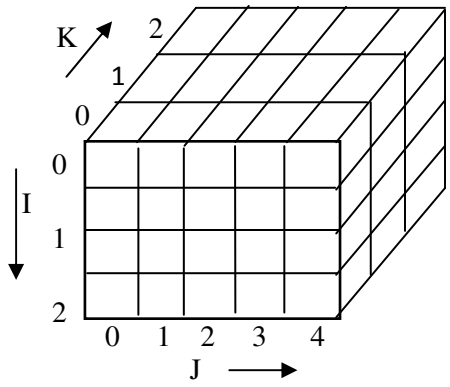

Figure 1.1: A three dimensional TMA with length of dimension 3×4×5.

The cost functions are represented as the number of array cells required to access. The parameters that are assumed are described in Table 3.1. All the lengths are in bytes. Some parameters are provided as input while others are derived from input parameters.

Table 1.1: Parameters for cost function for TMA

Parameter	Description
n	Number of dimension
d_i	Dimension i, $1 \leq i \leq n$
l_i	Length of dimension d_i
V	Initial volume
s	Number of segments in a subarray

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REFERENCES

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1. Otoo, E. J. and Merrett, T.H., 1983, "A Storage Scheme for Extendible Arrays", Computing, Vol. 31, pp. 1–9.
2. Chun, Y. L., Jen, S.L. and Yeh, C.C., 2002, "Efficient Representation Scheme for Multidimensional Array Operations," IEEE Transactions on Computers, Vol. 51, No. 3, pp. 327–354.
3. Sarawagi, S. and Stonebraker, M.,1994, "Efficient Organization of Large multidimensional Arrays", Proc. of 10th International Conference on Data Engineering, pp. 328–336, Houston, TX , USA.
4. Zhao, Y., Deshpande, P.M. and Naughton, J. F., 1997, "An Array Based Algorithm for Simultaneous Multidimensional Aggregates", ACM SIGMOD, pp. 159–170.
5. Rosenberg, A.L., 1974, "Allocating Storage for Extendible Arrays". Journal of the ACM (JACM), Vol. 21, pp. 652–670.
6. Djilali, N. and Grath store I.S., 1991, "Turbulent Flow Around A bluff rectangular plate", Part 1. Experimental investigation". ASME Journal of fluid Engineering, Vol. 113, pp.51-59.
7. Sam, R.G, lessman R.C and Test, F.L.,1979, "An experimental study of fluid Engineering, Vol. 101, 443-448.
8. Test, F.T an Lessman, R.C, 1980, "An Experimental study of heat transfer during forced convection over Rectangular Body". ASMF Journal of HEAT TRANSFER, Vol. 106, pp. 276-283.
9. Ota. T. and Ita saka, M., 1976, "A separated and Reattached flow on A blunt flat plate", ASME Journal of fluid Engineering, Vol. 98, pp. 79-86.
10. Md. Khorshed Alam and Mostafizur Rahrnan Khan, 2000, "Measurement of Temperature Distribution over a wedge in uniform flow", undergraduate Project, Dept. of Mechanical Engineering, KUET.
11. V. L. Streeter, 1975, "Fluid Mechanics", Chap 9, pp 234, MacGraw Hill, 3rd. Ed.

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