(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
20 January 2005 (20.01.2005)

PCT

(10) International Publication Number
WO 2005/006215 A2

(51) International Patent Classification[7]: G06F 17/30

(21) International Application Number:
PCT/EP2004/051382

(22) International Filing Date: 7 July 2004 (07.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/619,641 14 July 2003 (14.07.2003) US

(71) Applicant *(for all designated States except US)*: **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, NY 10504 (US).

(71) Applicant *(for MG only)*: **IBM UNITED KINGDOM LIMITED** [GB/GB]; PO Box 41, North Harbour, Portsmouth Hampshire PO6 3AU (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **HETZLER, Steven, Robert** [US/US]; 246 Eleanor Avenue, Los Altos, CA 94022 (US). **SMITH, Daniel, Felix** [GB/US]; 7048 Via Blanca, San Jose, CA 95139 (US).

(74) Agent: **LITHERLAND, David, Peter**; IBM United Kingdom Limited, Intellectual Property Law, Hursley Park, Winchester Hampshire SO21 2JN (GB).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/006215 A2

(54) Title: DATA STORAGE ARRAY

(57) Abstract: The error tolerance of an array of m storage units is increased by using a technique referred to as "dodging." A plurality of k stripes are stored across the array of storage units in which each stripe has n + r elements that correspond to a symmetric code having a minimum Hamming distance d = r + 1. Each respective element of a stripe is stored on a different storage unit. An element is selected when a difference between a minimum distance of the donor stripe and a minimum distance of a recipient stripe is greater or equal to 2. The selected element is also stored on a storage unit having no elements of the recipient stripe. A lost element of the recipient stripe is then rebuilt on the selected element.