



- (51) **International Patent Classification:**
G06F 9/30 (2006.01) *G06F 15/00* (2006.01)
- (21) **International Application Number:**
PCT/IB2021/060215
- (22) **International Filing Date:**
04 November 2021 (04.11.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
17/093,757 10 November 2020 (10.11.2020) US
- (71) **Applicant:** **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, New York, 10504 (US).
- (71) **Applicants (for MG only):** **IBM UNITED KINGDOM LIMITED** [GB/GB]; PO Box 41, North Harbour, Portsmouth Hampshire PO6 3AU (GB). **IBM (CHINA) INVESTMENT COMPANY LIMITED** [CN/CN]; 25/F, Pangu Plaza, No. 27, Central North 4th Ring Road, Chaoyang District, Beijing 100101 (CN).
- (72) **Inventors:** **BATTLE, Steven**; IBM Corporation, 11400 Burnet Road, AUSTIN, Texas 78758-3493 (US). **LEENSTRA, Jentje**; IBM Corporation, IP Law, 11501 Bur-

net Road, Austin, Texas 78758-3493 (US). **BARRICK, Brian**; IBM Corporation, 11400 Burnet Road, Austin, Texas 78758-3493 (US). **NGUYEN, Dung**; IBM CORPORATION, 11400 BURNET ROAD, AUSTIN, Texas 78758-3493 (US). **THOMPSTON, Brian**; IBM Corporation, 11400 Burnet Road, Austin, Texas 78758-3493 (US).

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

(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,

- (54) **Title:** ASSIGNMENT OF MICROPROCESSOR REGISTER TAGS AT ISSUE TIME

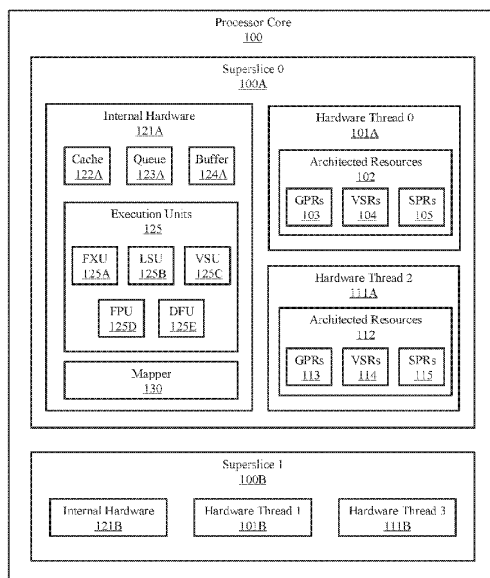


FIG. 1

(57) **Abstract:** Provided is a method for assigning register tags to instructions at issue time. The method comprises receiving an instruction for execution by a microprocessor. The method further comprises dispatching the instruction to an issue queue without assigning a register tag to the instruction. The method further comprises determining that the instruction is ready to issue. In response to determining that the instruction is ready to issue, the method comprises assigning an available register tag to the instruction. The method further comprises issuing the instruction.

TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE