**Table 6**

*Square name matrix for Byzantine emperors. Each row and column corresponds to 4 decades. The size of the matrix is equal to* $28 \times 28$

(1) 1:12,8,7; 9,2,2; 12:1,1; 15:1,1,3,2,4,1. (2) 2:4,2,1; 11:1. (3) 3.1. (4) 4:2,2; 11:1,2,1,1,1,1. (5) 5:4,2; 11:2,1. (6) 6:3,3; 10:2,1; 14:1,1; 19:1; 23:1,2. (7) 7:2,2; 10:1,1. (8) 8:2,3,1,1,1,1,1,1,1,1. (10) 10:2. (11) 11:2. (12) 12:1. (13) 13:9,3,1,1,2; 19:3,2; 24:1,1. (14) 14:2. (15) 15:2,1. (16) 16:2,2; 19:1,1. (17) 17:2; 21:1,1; 24:2; 27:3,2. (19) 19:7,1,2,2,3. (20) 20:5,1; 23:5,2. (22) 22:1; 28:1. (23) 23:6,3,1,2,2. (24) 24:1,2,2,2,1. (27) 27:1.

popes, which was constructed from the canonical sources; see Table 3. Each row and column corresponds to one decade. The total time interval is 50–1700 A.D. the size of the matrix is equal to $165 \times 165$. For other square name matrices see Tables 4, 5 and 6.

Let us demonstrate examples of relation matrices for the following lists: list 1, the name list for the Roman popes in the period 50–1950 A.D.; list 2, the name list for the Roman emperors; list 3, the name list for the Byzantine emperors; list 4, the name list for Armenian catholicoses, 20–1900 A.D. Let us introduce the real values of the constants into formulas (5), (6) and (7). We have $c = 25$ for all four lists. For each list we choose a concrete value of the parameter $k$ (which defines the size of the determining neighbourhood $\Delta$), namely $2 \leqslant k \leqslant 5$. Then we choose one of the three relation functions $L_0$, $L_1$, $L_2$. It was discovered that in our cases the relation matrix does not depend on the choice of the relation among $L_0$, $L_1$, $L_2$ (and on the choice of $k$, where $2 \leqslant k \leqslant 5$). For all our lists we put $l_d = 2k + 1 = l_r - 2$, where $l_d$ is the length of the determining neighbourhood and $l_r$ is the length of the relating neighbourhood. Each relation matrix consists of the 'spots' usually having the form of rectangles. In special cases they may degenerate into a point. The main diagonal of the relation matrix may intersect a rectangle. In this case the rectangle is transformed into a trapesium or into a triangle. Each 'spot'-rectangle has two orthogonal projections onto the two sides of the matrix. Each projection covers a certain time interval. Both intervals of this pair are connected with some value of the relation $L_i$ $(0 \leqslant i \leqslant 2)$. We list all such time intervals. We demonstrate the approximate interval containing at least one concrete value of the relation $L_i$ for a pair of the time intervals which are connected by a 'spot'-rectangle. We use the following notation: (260–370, 1520–1570), 86–100. It means that in the relation matrix (for the name list of Roman popes) there exists the 'spot'-rectangle, with projection 260–370 A.D. on the vertical side of the matrix and with projection 1520–1570 A.D. on the horizontal side of the matrix. At least one value of the relation $L_1$ is contained in the interval 86–100 for this 'spot'-rectangle. All boundaries of time intervals are of course approximate.

The relation name matrix for Roman popes is shown in Table 7: the relation is $L_1$, $k = 3$, $c = 25$, the mean value of the relation $L_1$ equals 32 in the matrix. The mean value 32 is close to the constant $c = 25$. We use the years A.D.

The relation name matrix for Roman emperors is shown in Table 8: the relation is $L_0$, $k = 3$, $c = 25$, the mean value of the relation $L_0$ equals 29 in the matrix (29 is close to $c = 25$). We use years B.C. and A.D.

**Table 7**

*Relation name matrix for Roman popes*

(370–390, 500–500), 50–55. (230–250, 1040–1090), 50–55. (170–250, 1170–1190), 66–70. (130–190, 1450–1470), 56–60. (130–180, 1560–1570), 56–60. (310–320, 1460–1470), 56–60. (260–370, 1520–1570), 86–100. (340–390, 1040–1050), 56–60. (520–560, 930–950), 56–60. (520–690, 960–990), 76–80. (610–680, 890–900), 66–70. (680–1010, 680–1010), 50–60. (600–640, 1270–1290), 61–65. (610–620, 1400–1410), 50–55. (1080–1900, 1080–1900), 50–60.