Αναφορά Δεύτερης Εργαστηριακής Άσκησης

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| **Main Memory** | | |
| Κώδικας εντολής | Θέση | Περιεχόμενο |
| LDA #03 | 00 | 00 |
| 01 | 03 |
| STA $18 | 02 | 06 |
| 03 | 18 |
| LDA ($17) | 04 | 02 |
| 05 | 17 |
| STA $18 | 06 | 06 |
| 07 | 18 |
| LDX #17 | 08 | 01 |
| 09 | 17 |
| STA $18 | 0a | 06 |
| 0b | 18 |
| LDAX | 0c | 02 |
| STA $18 | 0d | 06 |
| 0e | 18 |
| LDA $01,X | 0f | 03 |
| 10 | 01 |
| STA $18 | 11 | 06 |
| 12 | 18 |
| LDA ($08,X) | 13 | 05 |
| 14 | 08 |
| STA $18 | 15 | 06 |
| 16 | 18 |
|  | 17 | 18 |
|  | 18 |  |

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| **Mapper** | | |
| Κώδικας εντολής | Opcode/Θέση | Περιεχόμενα |
| LDA #K | **00000000** | 02 |
| LDX #K | **00000001** | 06 |
| LDA ($K) | **00000010** | 0a |
| LDAX | **00000011** | 10 |
| LDA $K,X | **00000100** | 14 |
| LDA ($K,X) | **00000101** | 19 |
| STA $K | **00000110** | 1f |

Σπυριδάκης Ορέστης Νεκτάριος (ΑΜ:1067541)

Λουδάρος Ιωάννης (ΑΜ:1067400)

Τμήμα Εργαστηρίου: Β05

Δηλωμένοι Registers

Program Counter: 1000

Accumulator: 0001

Βοηθητικός Καταχωρητής Χ: 0000

Αποτέλεσμα

Η θέση μνήμης 18 καταλήγει να έχει την τιμή 18.

**Micromemory**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **BOOTSTRAP** | BRA | BIN | CON | I | I | I | APORT | BPORT | DDATA | SH~ | SELB | MWE~ | MARCLK | MSTATUS | LDS~ | PCE~ | CARRYE~ | MDE~ | DDATAE~ | **ADDRESS** |
|  | (4:0) | (2:0) | (2:0) | (2:0) | (5:3) | (8:6) | (3:0) | (3:0) | (1:0) |  |  |  |  |  |  |  |  |  |  |  |
| SW+0->PC,MAR | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | 1000 | xx | x | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | m00 |
| NEXT(PC) | xxxxx | 000 | xxx | xxx | xxx | 001 | xxxx | xxxx | xx | x | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | m01 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **LDA #K** | BRA | BIN | CON | I | I | I | APORT | BPORT | DDATA | SH~ | SELB | MWE~ | MARCLK | MSTATUS | LDS~ | PCE~ | CARRYE~ | MDE~ | DDATAE~ | **ADDRESS** |
|  | (4:0) | (2:0) | (2:0) | (2:0) | (5:3) | (8:6) | (3:0) | (3:0) | (1:0) |  |  |  |  |  |  |  |  |  |  |  |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m02 |
| MDR+0->ACC | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | 0001 | xx | X | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m03 |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m04 |
| NEXT(PC) | xxxxx | 000 | xxx | xxx | xxx | 001 | xxxx | xxxx | xx | X | Χ | 1 | 0 | 0 | 0 | Χ | Χ | Χ | Χ | m05 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **LDX #K** | BRA | BIN | CON | I | I | I | APORT | BPORT | DDATA | SH~ | SELB | MWE~ | MARCLK | MSTATUS | LDS~ | PCE~ | CARRYE~ | MDE~ | DDATAE~ | **ADDRESS** |
|  | (4:0) | (2:0) | (2:0) | (2:0) | (5:3) | (8:6) | (3:0) | (3:0) | (1:0) |  |  |  |  |  |  |  |  |  |  |  |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m06 |
| MDR+0->X | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | 0000 | xx | X | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m07 |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m08 |
| NEXT(PC) | xxxxx | 000 | xxx | xxx | xxx | 001 | xxxx | xxxx | xx | X | Χ | 1 | 0 | 0 | 0 | Χ | Χ | Χ | Χ | m09 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **LDA ($K)** | BRA | BIN | CON | I | I | I | APORT | BPORT | DDATA | SH~ | SELB | MWE~ | MARCLK | MSTATUS | LDS~ | PCE~ | CARRYE~ | MDE~ | DDATAE~ | **ADDRESS** |
|  | (4:0) | (2:0) | (2:0) | (2:0) | (5:3) | (8:6) | (3:0) | (3:0) | (1:0) |  |  |  |  |  |  |  |  |  |  |  |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m0a |
| MDR+0->NOP,MAR | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | xxxx | xx | X | x | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m0b |
| MDR+0->NOP,MAR | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | xxxx | xx | X | x | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m0c |
| MDR+0->ACC | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | 0001 | xx | X | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m0d |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m0e |
| NEXT(PC) | xxxxx | 000 | xxx | xxx | xxx | 001 | xxxx | xxxx | xx | X | Χ | 1 | 0 | 0 | 0 | Χ | Χ | Χ | Χ | m0f |

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| **LDAX** | BRA | BIN | CON | I | I | I | APORT | BPORT | DDATA | SH~ | SELB | MWE~ | MARCLK | MSTATUS | LDS~ | PCE~ | CARRYE~ | MDE~ | DDATAE~ | **ADDRESS** |
|  | (4:0) | (2:0) | (2:0) | (2:0) | (5:3) | (8:6) | (3:0) | (3:0) | (1:0) |  |  |  |  |  |  |  |  |  |  |  |
| X+0->NOP,MAR | xxxxx | 000 | xxx | 100 | 000 | 001 | 0000 | xxxx | xx | X | x | 1 | 1 | 0 | 1 | x | 1 | x | x | m10 |
| MDR+0->ACC | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | 0001 | xx | X | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m11 |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m12 |
| NEXT(PC) | xxxxx | 000 | xxx | xxx | xxx | 001 | xxxx | xxxx | xx | X | Χ | 1 | 0 | 0 | 0 | Χ | Χ | Χ | Χ | m13 |

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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **LDA $K,X** | BRA | BIN | CON | I | I | I | APORT | BPORT | DDATA | SH~ | SELB | MWE~ | MARCLK | MSTATUS | LDS~ | PCE~ | CARRYE~ | MDE~ | DDATAE~ | **ADDRESS** |
|  | (4:0) | (2:0) | (2:0) | (2:0) | (5:3) | (8:6) | (3:0) | (3:0) | (1:0) |  |  |  |  |  |  |  |  |  |  |  |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m14 |
| MDR+X->NOP,MAR | xxxxx | 000 | xxx | 101 | 000 | 001 | 0000 | xxxx | xx | X | x | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | m15 |
| MDR+0->ACC | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | 0001 | xx | X | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m16 |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m17 |
| NEXT(PC) | xxxxx | 000 | xxx | xxx | xxx | 001 | xxxx | xxxx | xx | X | Χ | 1 | 0 | 0 | 0 | Χ | Χ | Χ | Χ | m18 |

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| **LDA ($K,Χ)** | BRA | BIN | CON | I | I | I | APORT | BPORT | DDATA | SH~ | SELB | MWE~ | MARCLK | MSTATUS | LDS~ | PCE~ | CARRYE~ | MDE~ | DDATAE~ | **ADDRESS** |
|  | (4:0) | (2:0) | (2:0) | (2:0) | (5:3) | (8:6) | (3:0) | (3:0) | (1:0) |  |  |  |  |  |  |  |  |  |  |  |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m19 |
| MDR+0->NOP,MAR | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | xxxx | xx | X | x | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m1a |
| MDR+X->NOP,MAR | xxxxx | 000 | xxx | 101 | 000 | 001 | 0000 | xxxx | xx | X | x | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | m1b |
| MDR+0->ACC | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | 0001 | xx | X | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m1c |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m1d |
| NEXT(PC) | xxxxx | 000 | xxx | xxx | xxx | 001 | xxxx | xxxx | xx | X | Χ | 1 | 0 | 0 | 0 | Χ | Χ | Χ | Χ | m1e |

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| **STA $K** | BRA | BIN | CON | I | I | I | APORT | BPORT | DDATA | SH~ | SELB | MWE~ | MARCLK | MSTATUS | LDS~ | PCE~ | CARRYE~ | MDE~ | DDATAE~ | **ADDRESS** |
|  | (4:0) | (2:0) | (2:0) | (2:0) | (5:3) | (8:6) | (3:0) | (3:0) | (1:0) |  |  |  |  |  |  |  |  |  |  |  |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m1f |
| MDR+0->NOP,MAR | xxxxx | 000 | xxx | 111 | 000 | 011 | xxxx | xxxx | xx | X | x | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | m20 |
| ACC+0->NOP, MWE | xxxx | 000 | xxx | 100 | 000 | 001 | 0001 | xxxx | xx | x | x | 0 | 0 | 0 | 1 | x | 1 | x | x | m21 |
| PC+1->PC,MAR | xxxxx | 000 | xxx | 101 | 000 | 011 | 1000 | 1000 | 01 | X | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | m22 |
| NEXT(PC) | xxxxx | 000 | xxx | xxx | xxx | 001 | xxxx | xxxx | xx | x | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | m23 |