|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **LABEL** | **-** | **I** | **OP** | **R** |  |  |  |  |  |  |  |  |  |
| **-** | **-** | **0** | **123** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **HEX** |  |
| **START** | 0 | 0 | 110 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 640 | RD, R5 |
|  | 1 | 0 | 010 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 211 | STR, R5, NUM |
|  | 2 | 0 | 010 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 212 | STR, R5, STEP |
|  | 3 | 1 | 111 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | F10 | GTR, R5 |
|  | 4 | 0 | 100 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 40A | JMP, FINISH |
| **SUM** | 5 | 0 | 011 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 30E | LD, R5, I |
|  | 6 | 0 | 001 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 10E | ADD, R5, STEP |
|  | 7 | 0 | 010 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 20C | STR, R5, I |
|  | 8 | 0 | 011 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 30C | LD, R5, STEP |
|  | 9 | 0 | 001 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 10C | ADD, R5, DCR |
|  | 10 | 1 | 111 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | F30 | NEQ, R5 |
|  | 11 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 402 | JMP, FINISH |
|  | 12 | 0 | 010 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 208 | STR, R5, STEP |
|  | 13 | 0 | 100 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 437 | JMP, SUM |
| **FINISH** | 14 | 0 | 011 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 304 | LD, R5, NUM |
|  | 15 | 0 | 011 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 384 | LD, R4, I |
|  | 16 | 0 | 110 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 620 | WR, R5 |
|  | 17 | 0 | 110 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6A0 | WR, R4 |
|  | 18 | 0 | 110 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 610 | HLT |
| NUM | 19 | 0 | 000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 000 | DATA |
| I | 20 | 0 | 000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 000 | DATA |
| STEP | 21 | 0 | 000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 000 | DATA |
| DCR | 22 | 1 | 111 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | FFF | DATA |

CHK LEN = 017  
START = 000