

UR1974-62

Wang 700/702. Miscellaneous programme notes 1.

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PRINT ZERO

Normal print-out, using WRITE commands, omits the zero before the decimal point in numbers less than unity.

There are several ways of circumventing this situation: the simplest being the inclusion of WRITE ALPHA, 1, before the WRITE command, however this can only be used where the value in the X-register is exactly zero. A more flexible technique is to prevent the normal left hand alignment of the decimal point of the X-register when the number is less than unity. This may be done by means of the artifice used in Programme 11B2: add one to numbers less than unity, followed by the command WRITE ALPHA, LOAD PROGRAM. The format control step is 011; only this step need be altered to give the format required. The programme uses no storage registers, but if used as a subroutine, any values in the Y-register which must be retained must first be stored as the subroutine will destroy them.

Techniques using the WRITE ALPHA command are more complex and are dependent on the format chosen. This technique is used in the Programme 11B1, which is described in the following section.

SEPARATION INTO 3-FIGURE GROUPS

Programme 11B1 may be used as a subroutine to insert a space between 3-figure groups, in numbers up to 999 999.

The programme may be modified to accommodate 3 decimal places (Programme 11B1a). The following alterations of programme steps are required:

<i>Step</i>	<i>Code</i>	<i>Alter to</i>
002	0608	0514
017	0412	0009
018	0711	0508
022	0300	0303
033	0300	0303
044	0002	0008
097	0413	0003
098	0514	0003
099	0514	0413

For other formats (i.e. where steps 022 and 033 are not as above) the number of back space commands in subroutine 0009 must be altered accordingly.

PRINT X AND Y REGISTERS

It is sometimes useful, during the development of complex programmes, to be able to record the values in the X and Y registers at various points in the programme.

This is most easily achieved by starting the programme with the following subroutine:

<i>Step</i>	<i>Key</i>	<i>Code</i>
000	MARK	0408
001	0000	0000

<i>Step</i>	<i>Key</i>	<i>Code</i>
002	WRITE	0411
003	0909	0909
004	↑↓	0606
005	WRITE	0411
006	0909	0909
007	↑↓	0606
008	WRITE ALPHA	0412
009	0108	0108
010	END ALPHA	0413
011	RETURN	0511

The subroutine may then be used whilst stepping through the programme or may be called by means of additional programme steps included in the programme.

If the subroutine is used whilst stepping through the programme it should not interrupt WRITE or WRITE ALPHA commands, as this will disrupt the programme and the programme error light will glow.

[9 August 1974]

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PROGRAMME 11B1. Separation of thousands in 6-digit number, with zero print.

000	04 08	050	04 12	100	05 11
001	00 00	051	04 01	101	04 08
002	06 08	052	05 07	102	00 09
003	04 12	053	00 02	103	06 04
004	04 03	054	00 06	104	07 01
005	06 04	055	04 11	105	06 06
006	06 08	056	15 01	106	05 11
007	06 01	057	04 08		
008	04 11	058	00 06		
009	03 00	059	04 12		
010	04 12	060	04 01		
011	06 11	061	05 07		
012	04 07	062	00 02		
013	07 15	063	00 03		
014	06 05	064	04 11		
015	04 12	065	15 01		
016	07 03	066	04 08		
017	04 12	067	00 07		
018	07 11	068	00 03		
019	00 04	069	04 08		
020	05 14	070	00 08		
021	04 11	071	04 12		
022	03 00	072	00 03		
023	04 12	073	00 03		
024	07 15	074	00 03		
025	00 03	075	00 03		
026	04 08	076	04 13		
027	07 15	077	04 08		
028	06 05	078	00 02		
029	04 12	079	04 12		
030	07 03	080	03 01		
031	06 04	081	04 13		
032	04 11	082	05 11		
033	03 00	083	04 08		
034	06 04	084	00 03		
035	04 12	085	04 12		
036	00 03	086	01 08		
037	00 03	087	04 13		
038	00 03	088	05 15		
039	04 13	089	04 08		
040	07 01	090	00 04		
041	07 00	091	04 11		
042	07 00	092	15 03		
043	05 07	093	04 12		
044	00 02	094	03 01		
045	00 05	095	00 03		
046	04 11	096	00 03		
047	15 01	097	04 13		
048	04 08	098	05 14		
049	00 05	099	05 14		

V = 1160

OPERATION

- (1) Key number
- (2) Press SF 00

EXAMPLE OF PRINT-OUT

```

123 456
  1 000
    101
      0
      12
965 211
    10

```

PROGRAMME 11B2. Print zero.

000 04 08
 001 00 00
 002 06 04
 003 07 01
 004 05 07
 005 04 07
 006 07 15
 007 04 08
 008 07 14
 009 06 06
 010 04 11
 011 06 03
 012 04 12
 013 01 08
 014 04 13
 015 05 11
 016 04 08
 017 07 15
 018 07 01
 019 06 00
 020 06 05
 021 04 12
 022 05 13
 023 06 04
 024 04 07
 025 07 14

OPERATION

- (1) Key number
 (2) Press SF 00

Programme step controls format,
alter as required.

EXAMPLE OF PRINT-OUT

12.010
 254.000
 0.001
 1.010
 0.000
 12.586
 0.952

For integers:

12
 254
 0
 1

V = 337

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PROGRAMME 11B1a. Separation of thousands in 6-digit number (+ 3 decimal places) with print zero.

000	04 03	050	04 12	100	05 11
001	00 00	051	04 01	101	04 08
002	05 14	052	05 07	102	00 09
003	04 12	053	00 02	103	06 04
004	04 03	054	00 06	104	07 01
005	06 04	055	04 11	105	06 06
006	06 08	056	15 01	106	05 11
007	06 01	057	04 08		
008	04 11	058	00 06		
009	03 00	059	04 12		
010	04 12	060	04 01		
011	06 11	061	05 07		
012	04 07	062	00 02		
013	07 15	063	00 03		
014	06 05	064	04 11		
015	04 12	065	15 01		
016	07 03	066	04 08		
017	00 09	067	00 07		
018	05 08	068	00 03		
019	00 04	069	04 08		
020	05 14	070	00 08		
021	04 11	071	04 12		
022	03 03	072	00 03		
023	04 12	073	00 03		
024	07 15	074	00 03		
025	00 03	075	00 03		
026	04 08	076	04 13		
027	07 15	077	04 08		
028	06 05	078	00 02		
029	04 12	079	04 12		
030	07 03	080	03 01		
031	06 04	081	04 13		
032	04 11	082	05 11		
033	03 03	083	04 08		
034	06 04	084	00 03		
035	04 12	085	04 12		
036	00 03	086	01 08		
037	00 03	087	04 13		
038	00 03	088	05 15		
039	04 13	089	04 08		
040	07 01	090	00 04		
041	07 00	091	04 11		
042	07 00	092	15 03		
043	05 07	093	04 12		
044	00 08	094	03 01		
045	00 05	095	00 03		
046	04 11	096	00 03		
047	15 01	097	00 03		
048	04 08	098	00 03		
049	00 05	099	04 13		

V = 1133

OPERATION

- (1) Key number
- (2) Press SF 00

Example of print-out

123 456.789
 0.000
 10.001
 1 000.158