

Delve into the depths of Epson's HX-20 with a machine code disassembler — Elizabeth Wald explains.

The HX-20

The Epson HX-20 has a powerful monitor which enables the user easily to enter machine code programs. However, listing such programs can be laborious and slow, and requires you to be familiar with the hexadecimal codes. It is therefore useful to have a disassembler program to allow listings to be made using the standard 6301 machine code mnemonics.

6301 machine code is based on 6800 machine code with the addition of several new instructions (see table). Most of these additional instructions are the direct result of the ability to combine registers A and B to form a 16 bit register, known as B. Within register D the upper 8-bits are formed by A, and B forms the lower 8-bits. Any alteration to the contents of A or B will affect register D, and vice versa.

The instructions using register D are as follows: 'LDD' and 'STD' will load and store register D respectively. Addition and subtraction are done by 'ADD D' and 'SUB D' placing the result in D. All four instructions can be used on the immediate, direct, indexed or extended modes, with the obvious exception of 'STD' which cannot be used in the immediate mode. It is possible to perform an arithmetic shift left ('ASL D') and a logical shift right ('LSR D'). The contents of D can be exchanged with the contents of X using the 'XGDX' instruction.

Further instructions provided are a multiply instruction (MUL), which multiplies register A by register B, and places the result in register D, instructions to push or pull register X ('PSH X' and 'PUL X') and a 'sleep' instruction ('SLP'), which sends the processor into a low power 'sleep' mode.

The final group of additional instructions on the 6301 are the so-called

6301 INSTRUCTIONS NOT FOUND IN 6800

	IMPLIED	IMMEDIATE	DIRECT	INDEXED	EXTENDED
ADD D	—	C3	D3	E3	F3
ASL D	05	—	—	—	—
LDD	—	CC	DC	EC	FC
LSR D	04	—	—	—	—
MUL	3D	—	—	—	—
PSH X	3C	—	—	—	—
PUL X	38	—	—	—	—
SLP	1A	—	—	—	—
STD	—	83	DD	ED	FD
SUB D	—	—	93	A3	B3
XGDX	18	—	—	—	—

0000 C3 PSH X	0073 B0 BSR	0060	00CE 01 NOP	00F4 C6 LDA B C50	0C12 44 45 50 DEX	00E7 4C 44 53 LDS
0001 36 PSH B	0075 33 PUL B		00CF 01 NOP	00F6 17 TBA	0C15 43 4C 56 CLV	00E8 53 54 53 STS
0002 37 PSH B	0076 18 BBA		00D0 00 BSR	00F7 B0 JSR	0C18 53 45 56 BCL	00E9 4B 50 52 STX
0003 87 TPN	0077 33 PUL B		00F5 00 BSR	00F8 B0 JSR	0C21 44 45 56 BCL	00EA 53 54 50 STX
0004 36 PSH B	0078 39 RTS		00F6 38 PUL X	00F9 C3 PUL A	0C24 53 45 43 SEC	00EB 2A 20 20 ***
0005 87 STS	0079 00 BSR		00F7 18 JBA	00FA C6 LDA B C50	0C27 49 49 41 SBC	00EC 49 49 41 SBC
0006 27 BEQ	0080 00 BSR		00F8 83 SUB D C03B5	00FB 04 AND A C0C	0C2A 53 45 49 SEI	00ED 00 00 00 ***
0007 27 BEQ	0081 36 PSH A		00FA FD STA D 00F0	00FC 27 BEQ	0C2D 54 42 41 TBA	00EE 00 00 00 ***
0008 27 BEQ	0082 00 BSR		00FB 04 AND A C0C	00FD C6 LDA B C23	0C30 54 42 41 TBA	
0009 CC LDA D C000	0083 36 PSH A		00FC 27 BEQ	00FE 04 AND A C0C	0C33 50 44 51 BEQ	
0010 36 PSH A	0084 16 TAD		00FD C6 LDA B C23	00FF C6 LDA B C23	0C36 44 41 41 DAA	
0011 FD STA D 0004	0085 00 BSR	006B	00FE 04 AND A C0C	00FF C6 LDA B C23	0C39 53 42 50 SLP	
0012 4E JWP	0086 37 PSH B	006B	00FF C6 LDA B C23	00FF C6 LDA B C23	0C3C 42 52 41 BRR	
0013 FD STA D 0004	0087 36 PSH A		00FF C6 LDA B C23	00FF C6 LDA B C23	0C3F 52 42 41 BRR	
0014 36 PSH A	0088 37 PSH B	006B	00FF C6 LDA B C23	00FF C6 LDA B C23	0C42 42 52 41 BRR	
0015 36 PSH A	0089 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C45 42 48 49 BRT	
0016 36 PSH A	0090 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C48 42 42 43 BLS	
0017 36 PSH A	0091 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C4B 42 42 43 BLS	
0018 36 PSH A	0092 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C4E 42 42 43 BLS	
0019 36 PSH A	0093 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C51 42 42 43 BLS	
0020 36 PSH A	0094 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C54 42 42 43 BLS	
0021 36 PSH A	0095 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C57 42 42 43 BLS	
0022 36 PSH A	0096 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C5A 42 42 43 BLS	
0023 87 TPN	0097 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C5D 42 42 43 BLS	
0024 36 PSH A	0098 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C5F 42 42 43 BLS	
0025 87 STS	0099 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C62 42 42 43 BLS	
0026 87 STS	0100 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C65 42 42 43 BLS	
0027 38 RTI	0101 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C68 42 42 43 BLS	
0028 38 RTI	0102 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C6B 42 42 43 BLS	
0029 38 RTI	0103 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C6E 42 42 43 BLS	
0030 38 RTI	0104 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C6F 42 42 43 BLS	
0031 38 RTI	0105 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C72 42 42 43 BLS	
0032 87 STS	0106 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C75 42 42 43 BLS	
0033 87 STS	0107 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C78 42 42 43 BLS	
0034 87 STS	0108 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C7B 42 42 43 BLS	
0035 87 STS	0109 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C7E 42 42 43 BLS	
0036 87 STS	0110 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C81 42 42 43 BLS	
0037 87 STS	0111 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C84 42 42 43 BLS	
0038 87 STS	0112 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C87 42 42 43 BLS	
0039 87 STS	0113 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C8A 42 42 43 BLS	
0040 87 STS	0114 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C8D 42 42 43 BLS	
0041 87 STS	0115 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C8E 42 42 43 BLS	
0042 87 STS	0116 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C8F 42 42 43 BLS	
0043 87 STS	0117 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C92 42 42 43 BLS	
0044 87 STS	0118 38 PUL X		00FF C6 LDA B C23	00FF C6 LDA B C23	0C95 42 42 43 BLS	
0045 47 CLR A	0046 36 PSH A	009A	00F0 20 BBA	00F2	0C98 42 42 43 BLS	
0046 36 PSH A	0047 32 PUL A	009A	00F1 16 TAD	00F4	0C9B 42 42 43 BLS	
0047 32 PUL A	0048 36 PSH A	009A	00F2 20 BBA	00F6	0C9E 42 42 43 BLS	
0048 36 PSH A	0049 32 PUL A	009A	00F3 20 BBA	00F8	0CA1 42 42 43 BLS	
0049 32 PUL A	0050 36 PSH A	009A	00F4 20 BBA	00FA	0CA4 42 42 43 BLS	
0050 36 PSH A	0051 32 PUL A	009A	00F5 20 BBA	00FB	0CA7 42 42 43 BLS	
0051 32 PUL A	0052 36 PSH A	009A	00F6 20 BBA	00FD	0CAB 42 42 43 BLS	
0052 36 PSH A	0053 32 PUL A	009A	00F7 20 BBA	00FE	0CAC 42 42 43 BLS	
0053 32 PUL A	0054 36 PSH A	009A	00F8 20 BBA	00FF	0CAD 42 42 43 BLS	
0054 36 PSH A	0055 32 PUL A	009A	00F9 20 BBA	00FF	0CAE 42 42 43 BLS	
0055 32 PUL A	0056 36 PSH A	009A	00FA 20 BBA	00FF	0CAF 42 42 43 BLS	
0056 36 PSH A	0057 32 PUL A	009A	00FB 20 BBA	00FF	0CB0 42 42 43 BLS	
0057 32 PUL A	0058 36 PSH A	009A	00FC 20 BBA	00FF	0CB3 42 42 43 BLS	
0058 36 PSH A	0059 32 PUL A	009A	00FD 20 BBA	00FF	0CB6 42 42 43 BLS	
0059 32 PUL A	0060 36 PSH A	009A	00FE 20 BBA	00FF	0CB9 42 42 43 BLS	
0060 36 PSH A	0061 32 PUL A	009A	00FF 20 BBA	00FF	0CBC 42 42 43 BLS	
0061 32 PUL A	0062 36 PSH A	009A	00FF 20 BBA	00FF	0CBF 42 42 43 BLS	
0062 36 PSH A	0063 32 PUL A	009A	00FF 20 BBA	00FF	0CC0 42 42 43 BLS	
0063 32 PUL A	0064 36 PSH A	009A	00FF 20 BBA	00FF	0CC3 42 42 43 BLS	
0064 36 PSH A	0065 32 PUL A	009A	00FF 20 BBA	00FF	0CC6 42 42 43 BLS	
0065 32 PUL A	0066 36 PSH A	009A	00FF 20 BBA	00FF	0CC9 42 42 43 BLS	
0066 36 PSH A	0067 32 PUL A	009A	00FF 20 BBA	00FF	0CCB 42 42 43 BLS	
0067 32 PUL A	0068 36 PSH A	009A	00FF 20 BBA	00FF	0CCD 42 42 43 BLS	
0068 36 PSH A	0069 32 PUL A	009A	00FF 20 BBA	00FF	0CCF 42 42 43 BLS	
0069 32 PUL A	0070 36 PSH A	009A	00FF 20 BBA	00FF	0CD0 42 42 43 BLS	
0070 36 PSH A	0071 32 PUL A	009A	00FF 20 BBA	00FF	0CD3 42 42 43 BLS	
0071 32 PUL A	0072 36 PSH A	009A	00FF 20 BBA	00FF	0CD6 42 42 43 BLS	
0072 36 PSH A	0073 32 PUL A	009A	00FF 20 BBA	00FF	0CD9 42 42 43 BLS	
0073 32 PUL A	0074 36 PSH A	009A	00FF 20 BBA	00FF	0CDB 42 42 43 BLS	
0074 36 PSH A	0075 32 PUL A	009A	00FF 20 BBA	00FF	0CDE 42 42 43 BLS	
0075 32 PUL A	0076 36 PSH A	009A	00FF 20 BBA	00FF	0CDF 42 42 43 BLS	
0076 36 PSH A	0077 32 PUL A	009A	00FF 20 BBA	00FF	0CE0 42 42 43 BLS	
0077 32 PUL A	0078 36 PSH A	009A	00FF 20 BBA	00FF	0CE3 42 42 43 BLS	
0078 36 PSH A	0079 32 PUL A	009A	00FF 20 BBA	00FF	0CE6 42 42 43 BLS	
0079 32 PUL A	0080 36 PSH A	009A	00FF 20 BBA	00FF	0CE9 42 42 43 BLS	
0080 36 PSH A	0081 32 PUL A	009A	00FF 20 BBA	00FF	0CEB 42 42 43 BLS	
0081 32 PUL A	0082 36 PSH A	009A	00FF 20 BBA	00FF	0CED 42 42 43 BLS	
0082 36 PSH A	0083 32 PUL A	009A	00FF 20 BBA	00FF	0CEE 42 42 43 BLS	
0083 32 PUL A	0084 36 PSH A	009A	00FF 20 BBA	00FF	0CEF 42 42 43 BLS	
0084 36 PSH A	0085 32 PUL A	009A	00FF 20 BBA	00FF	0CF0 42 42 43 BLS	
0085 32 PUL A	0086 36 PSH A	009A	00FF 20 BBA	00FF	0CF3 42 42 43 BLS	
0086 36 PSH A	0087 32 PUL A	009A	00FF 20 BBA	00FF	0CF6 42 42 43 BLS	
0087 32 PUL A	0088 36 PSH A	009A	00FF 20 BBA	00FF	0CF9 42 42 43 BLS	
0088 36 PSH A	0089 32 PUL A	009A	00FF 20 BBA	00FF	0CFC 42 42 43 BLS	
0089 32 PUL A	0090 36 PSH A	009A	00FF 20 BBA	00FF	0CFD 42 42 43 BLS	
0090 36 PSH A	0091 32 PUL A	009A	00FF 20 BBA	00FF	0CFF 42 42 43 BLS	
0091 32 PUL A	0092 36 PSH A	009A	00FF 20 BBA	00FF		
0092 36 PSH A	0093 32 PUL A	009A	00FF 20 BBA	00FF		
0093 32 PUL A	0094 36 PSH A	009A	00FF 20 BBA	00FF		
0094 36 PSH A	0095 32 PUL A	009A	00FF 20 BBA	00FF		
0095 32 PUL A	0096 36 PSH A	009A	00FF 20 BBA	00FF		
0096 36 PSH A	0097 32 PUL A	009A	00FF 20 BBA	00FF		
0097 32 PUL A	0098 36 PSH A	009A	00FF 20 BBA	00FF		
0098 36 PSH A	0099 32 PUL A	009A	00FF 20 BBA	00FF		
0099 32 PUL A	0100 36 PSH A	009A	00FF 20 BBA	00FF		
0100 36 PSH A	0101 32 PUL A	009A	00FF 20 BBA	00FF		
0101 32 PUL A	0102 36 PSH A	009A	00FF 20 BBA	00FF		
0102 36 PSH A	0103 32 PUL A	009A	00FF 20 BBA	00FF		
0103 32 PUL A	0104 36 PSH A	009A	00FF 20 BBA	00FF		
0104 36 PSH A	0105 32 PUL A	009A	00FF 20 BBA	00FF		
0105 32 PUL A	0106 36 PSH A	009A	00FF 20 BBA	00FF		
0106 36 PSH A	0107 32 PUL A	009A	00FF 20 BBA	00FF		
0107 32 PUL A	0108 36 PSH A	009A	00FF 20 BBA	00FF		
0108 36 PSH A	0109 32 PUL A	009A	00FF 20 BBA	00FF		
0109 32 PUL A	0110 36 PSH A	009A	00FF 20 BBA	00FF		
0110 36 PSH A	0111 32 PUL A	009A	00FF 20 BBA	00FF		
0111 32 PUL A	0112 36 PSH A	009A	00FF 20 BBA	00FF		
0112 36 PSH A	0113 32 PUL A	009A	00FF 20 BBA	00FF		
0113 32 PUL A	0114 36 PSH A	009A	00FF 20 BBA	00FF		
0114 36 PSH A	0115 32 PUL A	009A	00FF 20 BBA	00FF		
0115 32 PUL A	0116 36 PSH A	009A	00FF 20 BBA	00FF		
0116 36 PSH A	0117 32 PUL A	009A	00FF 20 BBA	00FF		
0117 32 PUL A	0118 36 PSH A	009A	00FF 20 BBA	00FF		
0118 36 PSH A	0119 32 PUL A	009A	00FF 20 BBA	00FF		
0119 32 PUL A	0120 36 PSH A	009A	00FF 20 BBA	00FF		
0120 36 PSH A	0121 32 PUL A	009A	00FF 20 BBA	00FF		
0121 32 PUL A	0122 36 PSH A	009A	00FF 20 BBA	00FF		
0122 36 PSH A	0123 32 PUL A	009A	00FF 20 BBA	00FF		
0123 32 PUL A	0124 36 PSH A	009A	00FF 20 BBA	00FF		
0124 36 PSH A	0125 32 PUL A	009A	00FF 20 BBA	00FF		
0125 32 PUL A	0126 36 PSH A	009A	00FF 20 BBA	00FF		
0126 36 PSH A	0127 32 PUL A	009A	00FF 20 BBA	00FF		
0127 32 PUL A	0128 36 PSH A	009A	00FF 20 BBA	00FF		
0128 36 PSH A	0129 32 PUL A	009A	00FF 20 BBA	00FF		
0129 32 PUL A	0130 36 PSH A	009A	00FF 20 BBA	00FF		
0130 36 PSH A	0131 32 PUL A	009A	00FF 20 BBA	00FF		
0131 32 PUL A	0132 36 PSH A	009A	00FF 20 BBA	00FF		
0132 36 PSH A	0133 32 PUL A	009A	00FF 20 BBA	00FF		
0133 32 PUL A	0134 36 PSH A	009A	00FF 20 BBA	00FF		
0134 36 PSH A	0135 32 PUL A	009A	00FF 20 BBA	00FF		
0135 32 PUL A	0136 36 PSH A	009A	00FF 20 BBA	00FF		
0136 36 PSH A	0137 32 PUL A	009A	00FF 20 BBA	00FF		
0137 32 PUL A	0138 36 PSH A	009A	00FF 20 BBA	00FF		
0138 36 PSH A	0139 32 PUL A	009A	00FF 20 BBA	00FF		
0139 32 PUL A	0140 36 PSH A	009A	00FF 20 BBA	00FF		
0140 36 PSH A	0141 32 PUL A	009A	00FF 20 BBA	00FF		
0141 32 PUL A	0142 36 PSH A	009A	00FF 20 BBA	00FF		
0142 36 PSH A	0143 32 PUL A	009A	00FF 20 BBA	00FF		
0143 32 PUL A	0144 36 PSH A	009A	00FF 20 BBA	00FF		
0144 36 PSH A	0145 32 PUL A	009A	00FF 20 BBA	00FF		
0145 32 PUL A	0146 36 PSH A	009A	00FF 20 BBA	00FF		
0146 36 PSH A	0147 32 PUL A	009A	00FF 20 BBA	00FF		
0147 32 PUL A	0148 36 PSH A	009A	00FF 20 BBA	00FF		
0148 36 PSH A	0149 32 PUL A					

'immediate mode' instructions, of which there are four: 'AIM' (And Immediate Mode), 'EIM' (Exclusive or), 'OIM' (Or) and 'TIM' (Test). Each instruction requires one byte of immediate data, and a direct or indexed mode memory address. These instructions perform the appropriate logical operation on the immediate data and the contents of the specified location. The first three instructions place the result in the memory location, but 'TIM' merely sets the N and Z (negative and zero) flags, and discards the result. Note that the 'TIM' instruction is similar to the 'AIM' instruction, and not to the 6800 instruction 'TST'. The machine code requires that the immediate data is the first byte following the op-code, and the address the second byte.

The Basic program provided stores the machine code, held in data statements, and transfers control to the machine code program at &H0B00. The program operates as follows:

1000 Prints 'wait' message.

1010 Stores machine code program.

1020 & 1030 Define functions to obtain the upper and lower bytes of an address entered as a string.

1040 Selects the language, sets top address for machine code stack and start address of

machine code program.

1050 & 1055 Input and store the start address for disassembly.

1060 & 1065 Input and store the end address for disassembly.

1070 Executes machine code until a character needs to be printed, or the machine is finished.

1080 Loops back to line 1040.

1081 Checks whether the user wishes to terminate the program following a null input in lines 1050 or 1060.

1090 to 1090 Machine code data.

Machine code program

The machine code program set up by Basic operates as follows:

0800-081B Save the Basic stack pointer, load the machine code stack pointer and transfer control to the main body of machine code at 0F00 onwards.

Subroutines:
0820-082B Saves machine code stack pointer, loads basic stack pointer, and returns to Basic.

0830-083B Character input routine from the keyboard.

0840-084E Character output routine to the display.

0854-085C Routine to terminate the

machine code program.

0860-086A Inputs one hexadecimal digit.

086B-087B Inputs two hexadecimal digits.

0880-088C Inputs four hexadecimal digits.

0890-089B Prints one hexadecimal digit.

089A-08AB Prints two hexadecimal digits.

08AB-08B2 Prints four hexadecimal digits.

08BB-08BC Prints a space.

08C0-08C3 Sets output mode to LCD.

08C4-08CB Sets output mode to internal printer.

Main program:

0F00-0F26 Start of main body of disassembler, initialization, etc.

0F27-0F2E Prints character return and line feed.

0F31-0F40 Prints address of instruction and op-code.

0F43-0F64 Prints mnemonic.

0F67-0F87 Prints register, if any.

0F8A-0F8A Prints mode character, if any, ie '#', '\$' or 'X'.

0FA7-0FAD Jumps to 0FDB if branch relative/BSR.

0FAF-0FBB Outputs one or two bytes of either address or data.

0FBD-0FC3 Branches to 0FCE to terminate the program if disassembly is completed.

0FC5-0FCC Branches back to 0F27.

0FDB-0F7F Calculates and prints the absolute address, for a relative branch or 'BSR', from the relative offset, and branches to 0FBD.

Locations 0C00-0EFF hold two tables: 0C00-0CFF contains a list of mnemonics, and 0D00-0EFF contains two bytes per op-code, the first byte representing the mnemonic number, and the second byte the relevant details.

Using the program

On typing 'RUN' the program displays 'PLEASE WAIT: LOADING' to indicate that the machine code is being set up. This is followed by prompts for the start and end addresses of the memory area to be disassembled. The addresses are entered in hexadecimal but the prefix '&H' is not required. The program may be terminated at this point by pressing 'RETURN', and the user confirms that the program is to be terminated by entering 'Y', or 'N' to continue.

The program prints the disassembled program, one instruction per line, in five columns. Column one contains the instruction's address as a four digit hexadecimal number. The second column contains two hexadecimal digits representing the op-code, and third column gives the corresponding mnemonic. The fourth column gives the register, if applicable, and the fifth column contains the address or data field, in either immediate ('#'), direct ('\$'), indexed ('X') or extended mode.

All branches and branch to subroutine instructions are followed by an absolute address.

Illegal op-codes are printed as '***', and the following mnemonics have been changed: 'INX', 'DEX', 'LDD' and 'STD' are printed as 'INCX', 'DECX', 'LDAD', and 'STAD' respectively, and 'XGDI' has been changed to 'XDX'.

```
00F4 36 03 20 00 64 26
00F5 37 03 38 03 76 84
00F6 38 03 40 00 64 26
00F7 39 28 40 00 64 26
00F8 3A 28 40 00 64 26
00F9 3B 28 40 00 64 26
00FA 3C 28 40 00 64 26
00FB 3D 28 40 00 64 26
00FC 3E 28 40 00 64 26
00FD 3F 28 40 00 64 26
00FE 40 28 40 00 64 26
00FF 41 28 40 00 64 26
0100 42 28 40 00 64 26
0101 43 28 40 00 64 26
0102 44 28 40 00 64 26
0103 45 28 40 00 64 26
0104 46 28 40 00 64 26
0105 47 28 40 00 64 26
0106 48 28 40 00 64 26
0107 49 28 40 00 64 26
0108 4A 28 40 00 64 26
0109 4B 28 40 00 64 26
010A 4C 28 40 00 64 26
010B 4D 28 40 00 64 26
010C 4E 28 40 00 64 26
010D 4F 28 40 00 64 26
010E 50 28 40 00 64 26
010F 51 28 40 00 64 26
0110 52 28 40 00 64 26
0111 53 28 40 00 64 26
0112 54 28 40 00 64 26
0113 55 28 40 00 64 26
0114 56 28 40 00 64 26
0115 57 28 40 00 64 26
0116 58 28 40 00 64 26
0117 59 28 40 00 64 26
0118 5A 28 40 00 64 26
0119 5B 28 40 00 64 26
011A 5C 28 40 00 64 26
011B 5D 28 40 00 64 26
011C 5E 28 40 00 64 26
011D 5F 28 40 00 64 26
011E 60 28 40 00 64 26
011F 61 28 40 00 64 26
0120 62 28 40 00 64 26
0121 63 28 40 00 64 26
0122 64 28 40 00 64 26
0123 65 28 40 00 64 26
0124 66 28 40 00 64 26
0125 67 28 40 00 64 26
0126 68 28 40 00 64 26
0127 69 28 40 00 64 26
0128 6A 28 40 00 64 26
0129 6B 28 40 00 64 26
012A 6C 28 40 00 64 26
012B 6D 28 40 00 64 26
012C 6E 28 40 00 64 26
012D 6F 28 40 00 64 26
012E 70 28 40 00 64 26
012F 71 28 40 00 64 26
0130 72 28 40 00 64 26
0131 73 28 40 00 64 26
0132 74 28 40 00 64 26
0133 75 28 40 00 64 26
0134 76 28 40 00 64 26
0135 77 28 40 00 64 26
0136 78 28 40 00 64 26
0137 79 28 40 00 64 26
0138 7A 28 40 00 64 26
0139 7B 28 40 00 64 26
013A 7C 28 40 00 64 26
013B 7D 28 40 00 64 26
013C 7E 28 40 00 64 26
013D 7F 28 40 00 64 26
013E 80 28 40 00 64 26
013F 81 28 40 00 64 26
0140 82 28 40 00 64 26
0141 83 28 40 00 64 26
0142 84 28 40 00 64 26
0143 85 28 40 00 64 26
0144 86 28 40 00 64 26
0145 87 28 40 00 64 26
0146 88 28 40 00 64 26
0147 89 28 40 00 64 26
0148 8A 28 40 00 64 26
0149 8B 28 40 00 64 26
014A 8C 28 40 00 64 26
014B 8D 28 40 00 64 26
014C 8E 28 40 00 64 26
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