Z80 INSTRUCTION SET:

Instruction	T(Z80)		Opcode	Size
ADC A,(HL)	7	2	8E	1
ADC A,(IX+o)	19	5	DD 8E oo	3
ADC A,(IY+o)	19	5	FD 8E oo	3
ADC A,n	7	2	CE nn	2
ADC A,r	4	1	88+r	1
ADC A,IXp	8	2	DD 88+p	2
ADC A,IYq	8	2	FD 88+q	2
ADC HL,BC	15	2	ED 4A	2
ADC HL,DE	15	2	ED 5A	2
ADC HL,HL	15	2	ED 6A	2
ADC HL,SP	15	2	ED 7A	2
ADD A,(HL)	7	2	86	1
ADD A,(IX+o)	19	5	DD 86 oo	3
ADD A,(IY+o)	19	5	FD 86 oo	3
ADD A,n	7	2	C6 nn	2
ADD A,r	4	1	80+r	1
ADD A,IXp	8	2	DD 80+p	2
ADD A,IYq	8	2	FD 80+q	2
ADD HL,BC	11	1	09	1
ADD HL,DE	11	1	19	1
ADD HL,HL	11	1	29	1
ADD HL,SP	11	1	39	1
ADD IX,BC	15	2	DD 09	2
ADD IX,DE	15	2	DD 19	2
ADD IX,IX	15	2	DD 29	2
ADD IX,SP	15	2	DD 39	2
ADD IY,BC	15	2	FD 09	2
ADD IY,DE	15	2	FD 19	2
ADD IY,IY	15	2	FD 29	2
ADD IY,SP	15	2	FD 39	2
AND (HL)	7	2	A6	1
AND (IX+o)	19	5	DD A6 oo	3
AND (IY+o)	19	5	FD A6 oo	3
AND n	7	2	E6 nn	2
AND r	4	1	A0+r	1
AND IXp	8	2	DD A0+p	2
AND IYq	8	2	FD A0+q	2
BIT b,(HL)	12	3	CB 46+8*b	2
BIT b,(IX+o)	20	5	DD CB oo 46+8*b	4
BIT b,(IY+o)	20	5	FD CB oo 46+8*b	4
BIT b,r	8	2	CB 40+8*b+r	2
CALL nn	17	5	CD nn nn	3
CALL C,nn	17/10	5/3	DC nn nn	3
CALL M,nn	17/10	5/3	FC nn nn	3
CALL NC,nn	17/10	5/3	D4 nn nn	3
CALL NZ,nn	17/10	5/3	C4 nn nn	3
CALL P,nn	17/10	5/3	F4 nn nn	3
CALL PE,nn	17/10	5/3	EC nn nn	3
CALL PO,nn	17/10	5/3	E4 nn nn	3
CALL Z,nn	17/10	5/3	CC nn nn	3
CCF	4	1	3F	1
CP (HL)	7	2	BE	1
CP (IX+o)	19	5	DD BE oo	3
CP (IY+o)	19	5	FD BE oo	3
CP n	7	2	FE nn	2
CP r	4	1	B8+r	1
CP IXp	8	2	DD B8+p	2
CP IYq	8	2	FD B8+q	2
CPD	16	4	ED A9	2
CPDR	21/16	4	ED B9	2
CPI	16	4	ED A1	2
CPIR	21/16	4	ED B1	2
CPL	4	1	2F	1
DAA	4	1	27	1
DEC (HL)	11	4	35	1
DEC (IX+o)	23	7	DD 35 oo	3
DEC (IY+o)	23	7	FD 35 oo	3
DEC A	4	1	3D	1
DEC B	4	1	05	1
DEC BC	6	1	0B	1
DEC C	4	1	0D	1
DEC D	4	1	15	1

Instruction	T(Z80)		Opcode	Size
DEC DE	6	1	1B	1
DEC E	4	1	1D	1
DEC H	4	1	25	1
DEC HL	6	1	2B	1
DEC IX	10	2	DD 2B	2
DEC IY	10	2	FD 2B	2
DEC IXp	8	2	DD 05+8*p	2
DEC IYq	8	2	FD 05+8*q	2
DEC L	4	1	2D	2
DEC SP	6	1	3B	1
DI	4	2	F3	1
DJNZ o	13/8	2	10 oo	2
EI	4	1	FB	1
EX (SP),HL	19	5	E3	1
EX (SP),IX	23	6	DD E3	2
EX (SP),IY	23	6	FD E3	2
EX AF,AF'	4	1	08	1
EX DE,HL	4	1	EB	1
EXX	4	1	D9	1
HALT	4	2	76	1
IM 0	8	3	ED 46	2
IM 1	8	3	ED 56	2
IM 2	8	3	ED 5E	2
IN A,(C)	12	3	ED 78	2
IN A,(n)	11	3	DB nn	2
IN B,(C)	12	3	ED 40	2
IN C,(C)	12	3	ED 48	2
IN D,(C)	12	3	ED 50	2
IN E,(C)	12	3	ED 58	2
IN H,(C)	12	3	ED 60	2
IN L,(C)	12	3	ED 68	2
IN F,(C)	12	3	ED 70	3
INC (HL)	11	4	34	1
INC (IX+o)	23	7	DD 34 oo	3
INC (IY+o)	23	7	FD 34 oo	3
INC A	4	1	3C	1
INC B	4	1	04	1
INC BC	6	1	03	1
INC C	4	1	0C	1
INC D	4	1	14	1
INC DE	6	1	13	1
INC E	4	1	1C	1
INC H	4	1	24	1
INC HL	6	1	23	1
INC IX	10	2	DD 23	2
INC IY	10	2	FD 23	2
INC IXp	8	2	DD 04+8*p	2
INC IYq	8	2	FD 04+8*q	2
INC L	4	1	2C	1
INC SP	6	1	33	1
IND	16	4	ED AA	2
INDR	21/16	4/3	ED BA	2
INI	16	4	ED A2	2
INIR	21/16	4/3	ED B2	2
JP nn	10	3	C3 nn nn	3
JP (HL)	4	1	E9	1
JP (IX)	8	2	DD E9	2
JP (IY)	8	2	FD E9	2
JP C,nn	10	3	DA nn nn	3
JP M,nn	10	3	FA nn nn	3
JP NC,nn	10	3	D2 nn nn	3
JP NZ,nn	10	3	C2 nn nn	3
JP P,nn	10	3	F2 nn nn	3
JP PE,nn	10	3	EA nn nn	3
JP PO,nn	10	3	E2 nn nn	3
JP Z,nn	10	3	CA nn nn	3
JR o	12	3	18 oo	2
JR C,o	12/7	3/2	38 oo	2
JR NC,o	12/7	3/2	30 oo	2
JR NZ,o	12/7	3/2	20 oo	2
JR Z,o	12/7	3/2	28 oo	2

Instruction	T(Z80)		Opcode	Size
LD (BC),A	7	2	02	1
LD (DE),A	7	2	12	1
LD (HL),n	10	3	36 nn	2
LD (HL),r	7	2	70+r	1
LD (IX+o),n	19	5	DD 36 oo nn	4
LD (IX+o),r	19	5	DD 70+r oo	3
LD (IY+o),n	19	5	FD 36 oo nn	4
LD (IY+o),r	19	5	FD 70+r oo	3
LD (nn),A	13	4	32 nn nn	3
LD (nn),BC	20	6	ED 43 nn nn	4
LD (nn),DE	20	6	ED 53 nn nn	4
LD (nn),HL	16	5	22 nn nn	3
LD (nn),IX	20	6	DD 22 nn nn	4
LD (nn),IY	20	6	FD 22 nn nn	4
LD (nn),SP	20	6	ED 73 nn nn	4
LD A,(BC)	7	2	0A	1
LD A,(DE)	7	2	1A	1
LD A,(HL)	7	2	7E	1
LD A,(IX+o)	19	5	DD 7E oo	3
LD A,(IY+o)	19	1	FD 7E oo	3
LD A,(nn)	13	4	3A nn nn	3
LD A,n	7	2	3E nn	2
LD A,r	4	1	78+r	1
LD A,IXp	8	2	DD 78+p	2
LD A,IYq	8	2	FD 78+q	2
LD A,I	9	2	ED 57	2
LD A,R	9	2	ED 5F	2
LD B,(HL)	7	2	46	1
LD B,(IX+o)	19	5	DD 46 oo	3
LD B,(IY+o)	19	5	FD 46 oo	3
LD B,n	7	2	06 nn	2
LD B,r	4	1	40+r	1
LD B,IXp	8	2	DD 40+p	2
LD B,IYq	8	2	FD 40+q	2
LD BC,(nn)	20	6	ED 4B nn nn	4
LD BC,nn	10	3	01 nn nn	3
LD C,(HL)	7	2	4E	1
LD C,(IX+o)	19	5	DD 4E oo	3
LD C,(IY+o)	19	5	FD 4E oo	3
LD C,n	7	2	0E nn	2
LD C,r	4	1	48+r	1
LD C,IXp	8	2	DD 48+p	2
LD C,IYq	8	2	FD 48+q	2
LD D,(HL)	7	2	56	1
LD D,(IX+o)	19	5	DD 56 oo	3
LD D,(IY+o)	19	5	FD 56 oo	3
LD D,n	7	2	16 nn	2
LD D,r	4	1	50+r	1
LD D,IXp	8	2	DD 50+p	2
LD D,IYq	8	2	FD 50+q	2
LD DE,(nn)	20	6	ED 5B nn nn	4
LD DE,nn	10	3	11 nn nn	3
LD E,(HL)	7	2	5E	1
LD E,(IX+o)	19	5	DD 5E oo	3
LD E,(IY+o)	19	5	FD 5E oo	3
LD E,n	7	2	1E nn	2
LD E,r	4	1	58+r	1
LD E,IXp	8	2	DD 58+p	2
LD E,IYq	8	2	FD 58+q	2
LD H,(HL)	7	2	66	1
LD H,(IX+o)	19	5	DD 66 oo	3
LD H,(IY+o)	19	5	FD 66 oo	3
LD H,n	7	2	26 nn	2
LD H,r	4	1	60+r	1
LD HL,(nn)	16	5	2A nn nn	5
LD HL,nn	10	3	21 nn nn	3
LD I,A	9	2	ED 47	2
LD IX,(nn)	20	6	DD 2A nn nn	4
LD IX,nn	14	4	DD 21 nn nn	4
LD IXh,n	11	3	DD 26 nn	2
LD IXh,p	8	2	DD 60+p	2
LD IXl,n	11	3	DD 2E nn	2
LD IXl,p	8	2	DD 68+p	2
LD IY,(nn)	20	6	FD 2A nn nn	4
LD IY,nn	14	4	FD 21 nn nn	4
LD IYh,n	11	3	FD 26 nn	2
LD IYh,q	8	2	FD 60+q	2
LD IYl,n	11	3	FD 2E nn	2
LD IYl,q	8	2	FD 68+q	2

Instruction	T(Z80)		Opcode	Size
LD L,(HL)	7	2	6E	1
LD L,(IX+o)	19	5	DD 6E oo	3
LD L,(IY+o)	19	5	FD 6E oo	3
LD L,n	7	2	2E nn	2
LD L,r	4	1	68+r	1
LD R,A	9	2	ED 4F	2
LD SP,(nn)	20	6	ED 7B nn nn	4
LD SP,HL	6	1	F9	1
LD SP,IX	10	2	DD F9	2
LD SP,IY	10	2	FD F9	2
LD SP,nn	10	3	31 nn nn	3
LDD	16	4	ED A8	2
LDDR	21/16	4	ED B8	2
LDI	16	4	ED A0	2
LDIR	21/16	4	ED B0	2
NEG	8	2	ED 44	2
NOP	4	1	00	1
OR (HL)	7	2	B6	1
OR (IX+o)	19	5	DD B6 oo	3
OR (IY+o)	19	5	FD B6 oo	3
OR n	7	2	F6 nn	2
OR r	4	1	B0+r	1
OR IXp	8	2	DD B0+p	2
OR IYq	8	2	FD B0+q	2
OTDR	21/16	4/3	ED BB	2
OTIR	21/16	4/3	ED B3	2
OUT (C),A	12	3	ED 79	2
OUT (C),B	12	3	ED 41	2
OUT (C),C	12	3	ED 49	2
OUT (C),D	12	3	ED 51	2
OUT (C),E	12	3	ED 59	2
OUT (C),H	12	3	ED 61	2
OUT (C),L	12	3	ED 69	2
OUT (n),A	11	3	D3 nn	2
OUTD	16	4	ED AB	2
OUTI	16	4	ED A3	2
POP AF	10	3	F1	1
POP BC	10	3	C1	1
POP DE	10	3	D1	1
POP HL	10	3	E1	1
POP IX	14	4	DD E1	2
POP IY	14	4	FD E1	2
PUSH AF	11	4	F5	1
PUSH BC	11	4	C5	1
PUSH DE	11	4	D5	1
PUSH HL	11	4	E5	1
PUSH IX	15	5	DD E5	2
PUSH IY	15	5	FD E5	2
RES b,(HL)	15	5	CB 86+8*b	2
RES b,(IX+o)	23	7	DD CB oo 86+8*b	4
RES b,(IY+o)	23	7	FD CB oo 86+8*b	4
RES b,r	8	2	CB 80+8*b+r	2
RET	10	3	C9	1
RET C	11/5	3/1	D8	1
RET M	11/5	3/1	F8	1
RET NC	11/5	3/1	D0	1
RET NZ	11/5	3/1	C0	1
RET P	11/5	3/1	F0	1
RET PE	11/5	3/1	E8	1
RET PO	11/5	3/1	E0	1
RET Z	11/5	3/1	C8	1
RETI	14	5	ED 4D	2
RETN	14	5	ED 45	2
RL (HL)	15	5	CB 16	2
RL (IX+o)	23	7	DD CB oo 16	4
RL (IY+o)	23	7	FD CB oo 16	4
RL r	8	2	CB 10+r	2
RLA	4	1	17	1
RLC (HL)	15	5	CB 06	2
RLC (IX+o)	23	7	DD CB oo 06	4
RLC (IY+o)	23	7	FD CB oo 06	4
RLC r	8	2	CB 00+r	2
RLCA	4	1	07	1
RLD	18	5	ED 6F	2
RR (HL)	15	5	CB 1E	2

Instruction	T(Z80)		Opcode	Size
RR (IX+o)	23	7	DD CB oo 1E	4
RR (IY+o)	23	7	FD CB oo 1E	4
RR r	8	2	CB 18+r	2
RRA	4	1	1F	1
RRC (HL)	15	5	CB 0E	2
RRC (IX+o)	23	7	DD CB oo 0E	4
RRC (IY+o)	23	7	FD CB oo 0E	4
RRC r	8	2	CB 08+r	2
RRCA	4	1	0F	1
RRD	18	5	ED 67	2
RST 0	11	4	C7	1
RST 8H	11	4	CF	1
RST 10H	11	4	D7	1
RST 18H	11	4	DF	1
RST 20H	11	4	E7	1
RST 28H	11	4	EF	1
RST 30H	11	4	F7	1
RST 38H	11	4	FF	1
SBC A,(HL)	7	2	9E	1
SBC A,(IX+o)	19	5	DD 9E oo	3
SBC A,(IY+o)	19	5	FD 9E oo	3
SBC A,n	7	2	DE nn	2
SBC A,r	4	1	98+r	1
SBC A,IXp	8	2	DD 98+p	2
SBC A,IYq	8	2	FD 98+q	2
SBC HL,BC	15	2	ED 42	2
SBC HL,DE	15	2	ED 52	2
SBC HL,HL	15	2	ED 62	2
SBC HL,SP	15	2	ED 72	2
SCF	4	1	37	1
SET b,(HL)	15	5	CB C6+8*b	2
SET b,(IX+o)	23	7	DD CB oo C6+8*b	4
SET b,(IY+o)	23	7	FD CB oo C6+8*b	4
SET b,r	8	2	CB C0+8*b+r	2
SLA (HL)	15	5	CB 26	2
SLA (IX+o)	23	7	DD CB oo 26	4
SLA (IY+o)	23	7	FD CB oo 26	4
SLA r	8	2	CB 20+r	2
SRA (HL)	15	5	CB 2E	2
SRA (IX+o)	23	7	DD CB oo 2E	4
SRA (IY+o)	23	7	FD CB oo 2E	4
SRA r	8	2	CB 28+r	2
SRL (HL)	15	5	CB 3E	2
SRL (IX+o)	23	7	DD CB oo 3E	4
SRL (IY+o)	23	7	FD CB oo 3E	4
SRL r	8	2	CB 38+r	2
SUB (HL)	7	2	96	1
SUB (IX+o)	19	5	DD 96 oo	3
SUB (IY+o)	19	5	FD 96 oo	3
SUB n	7	2	D6 nn	2
SUB r	4	1	90+r	1
SUB IXp	8	2	DD 90+p	2
SUB IYq	8	2	FD 90+q	2
XOR (HL)	7	2	AE	1
XOR (IX+o)	19	5	DD AE oo	3
XOR (IY+o)	19	5	FD AE oo	3
XOR n	7	2	EE nn	2
XOR r	4	1	A8+r	1
XOR IXp	8	2	DD A8+p	2
XOR IYq	8	2	FD A8+q	2

In this overview, the following variables were used:

b 3-bit value
n 8-bit value
nn 16-bit value
o 8-bit offset (2-complement)
r Register. This can be A, B, C, D, E, H, L or (HL). Add the following value to the last byte of the opcode:

Register	Register bits value
A	7
B	0
C	1
D	2
E	3
H	4
L	5
(HL)	6

p, Ixp Denotes the high or low part of the IX register: IXh or IXl. Add the following value to the last byte of the opcode:

Register	Register bits value
A	7
B	0
C	1
D	2
E	3
IXh	4
IXl	5

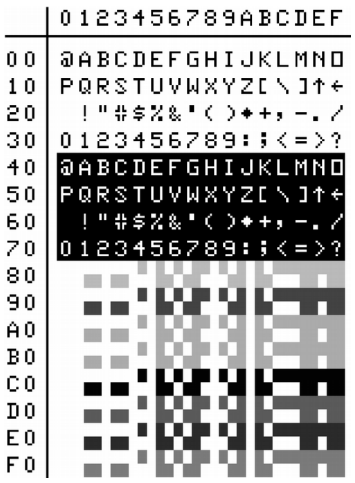
q, Iyq Denotes the high or low part of the IY register: IYh or IYl. Add the following value to the last byte of the opcode:

Register	Register bits value
A	7
B	0
C	1
D	2
E	3
IYh	4
IYl	5

Hex-Table:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
20	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
30	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
40	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
50	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
60	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
70	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
80	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
90	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A0	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B0	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C0	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D0	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E0	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F0	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

ASCII-Table



Speicherbelegung:

```
0000-1FFF   ROM 0 8K (VZ-200)
2000-3FFF   ROM 1 8K (VZ-200)
4000-5FFF   DOS ROM 8K
6000-67FF   RESERVED FOR ROM CARTRIDGES (2K)
6800-6FFF   MEMORY MAPPED I/O 2K; KEYBOARD, CASSETTE I/O, SPEAKER, VDP CONTROOL
7000-77FF   VIDEO RAM 2K
7800-8FFF   INTERNAL USER RAM 6K (RESERVED RAM VZ-200)
9000-CFFF   16K EXPANSION (VZ-200)
7AE9 31465  START OF USER MEMORY
9000 36864  TOP OF MEMORY VZ-200 (6K)
B800 45184  TOP OF MEMORY VZ-300 (16K)
D000 53348  TOP OF MEMORY VZ-200 (6K + 16K EXPANSION)
F800 63488  TOP OF MEMORY VZ-300 (16K + 16k EXPANSION)
FFFF 65535  THE VERY TOP
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Systemvariablen:

```
30790       STORES FOREGROUND COLOUR; 0,16,32,48,64,80,96,112 -colours green to
            orange
30845-7     INTERRUPT EXIT
30862-3     USR POINTER
30864       RND NUMBER SEED
30873       LAST KEY PRESSED
30880-1     BASIC STACK ADDRESS/LOWER BOUNDARY OF STRING SPACE
30882-3     CURRENT BASIC LINE NUMBER/ADDRESS OF LINE WITH ERROR
30884-5     START OF PROGRAM
30886       TAB CURSOR POSITION
30890-3     RANDOM NUMBER SEED
30897-8     TOP OF MEMORY  POINTER
30969-70    END OF PROGRAM/START SIMPLE VARIABLES TABLE
30973-4     START OF FREE MEMORY
31003       TRACE FLAG 1=on 0=off
```