BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13 FLAG 2nd

Page:- 1 Col:- 00 20 - 5 sectors.

Step	Instruction		Address	Comment	Octal	Step
00				→ Class Name Table (Reloc 11) 1750-		00
01	Offset Addresses			→ Matrix Table origin 2363-		01
02				→ Day Table origin 2346-		02
03					000000	03
04	JSBR	I2	1670	FETCH *FLAG		04
05	R1= 000002			Open Library		05
06	R2=0/0211			Line-Log Reloc (11)		06
07	JSBR	I2	1652	GET "SWITCH INHIBIT FLAGS"		07
10	R1= 2106-					10
11	JSBR		0034	Display		11
12	JSBR	I2	1635	GET MESSWORD		12
13	R=0/1300					13
14	JSBR	I2	1640	GET "SWITCH No" *NEXT		14
15	R= 2173-					15
16	LDA		0000	→ Class Table origin		16
17	LDA		0033	Input Class No.		17
20	LDA	I2	R			20
21	AND					21
22	JUMP	I2	1641	Error - Invalid class		22
23	LDA	I	0356	Bit 16		23
24	LRA			Establish Flag Bit Mask.		24
25	DESZ		0033	Class No.		25
26	JUMP		0024			26
27	XORA	I	0171	Set/Clear flag bit		27
30	STA	I	0171			30
31	JSBR		0034	Display		31
32	JUMP		0014	and Exit.		32
33				CLASS No.	000001	33
34	*ENTRY			DISPLAY	← A →	34
35	CHA					35
36	STA		1203	Class No.		36
37	LDA	I	0220	CF16		37
40	STA		1201	Loop Counter		40
41	LDA		0000	→ Class Name Table origin		41
42	STA		1202	Table Pointer.		42
43	LDA	I	0256	Bit 16		43
44	STA		1204	Mask.		44
45	JSBR	I2	1652	GET Heading		45
46	R1= 2130-					46
47	INS2		1203	Class No. *NEXT CLASS		47
50	INS2		1202	Table Pointer		50
51	LDA		1204			51
52	LRA			Intake Mask		52
53	STA		1204			53
54	LDB	I	1202	→ ASCII Name		54
55	BNØ					55
56	JUMP		0077	Class not in use - Bypass		56
57	ANDA	I	0171	Flag Word		57
60	A=Ø					60
61	LDA		0170	"SP SO"		61
62	STA		0155			62
63	STB		0065			63
64	JSBR	I2	1741	Read Word (Class Name)		64
65	R1= /					65
66	R2= 2140-					66
67	R3= 26 chars					67
70	JSBR	I2	1765	Class Nm. → ASCII		70
71	R1= 0,0,1,3					71
72	R2= 3203-					72
73	R3= 2136-					73
74	JSBR	I2	1652	GET Line		74
75	R1=2135½-					75
76	NOOP					76
77	JUMP		0164	Patch		77

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BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13 Plug

Page:- | Col:- 01- 21-

Step	Instruction		Address	Comment	Octal	Step
00				CR S		00
01				W I		01
02				T C		02
03				H SP		03
04				N O		04
05				SP NUL		05
06				CR S		06
07				W I		07
10				T C		10
11				H SP		11
12				I N		12
13				H I		13
14				B I		14
15				T SP		15
16				F L		16
17				A G		17
20				S NUL		20
21				SP SP		21
22				SO I		22
23				N H		23
24				I B		24
25				I T		25
26				E D		26
27				SI NUL		27
30				CR LF		30
31				N O		31
32				SP SP		32
33				N A		33
34				M E		34
35				NUL CR		35
36				class No.		36
37				SP		37
40						40
41						41
42						42
43						43
44						44
45						45
46				class Hoop.		46
47						47
50						50
51						51
52						52
53						53
54						54
55				((NUL) or (SP SO)	-	55
56				I N		56
57				H I		57
60				B I		60
61				T E		61
62				D SI		62
63				NUL		63
64	DESZ		1201	Loop Counter (Jam 0077)		64
65	JUMP		0047	Rela root		65
66	JUMP	I	0034	Return.		66
67						67
70				SP SO		70
71				⇒ Flag Word in System Control Block 0/0474		71
72				Ib 0/1402		72
73					044500	73
74				2100-		74
75				GET "SWITCH NO" 2033-		75
76				Min=1 0/0201		76
77				Max=16 0/0220		77

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BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13

Page:- | Col:- 02- 22-

Step	Instruction		Address	Comment	Octal	Step
00	JSBR	I2	1652	PUT Task to KICK		00
01	P1 = 2300-					01
02	JSBR	I2	1640	SPLIT "PROCESS?"		02
03	P1 = 2276-					03
04	JUMP	Z	1402	No.		04
05	CLA			Yes.		05
06	STA		1200			06
07	INSZ		1200	Task No. to Next Task		07
10	LDB	Z	0047	→TCA Task entry		10
11	ADB		1200	Task No.		11
12	LDB	I2	B	→TCA (3720-)		12
13	STB		1201			13
14	LDA	I	1201	Output Word (3720-)		14
15	APOS			Output in Progress?		15
16	JSBR		0234	Yes - test Hardware Flags.		16
17	LDA	I	1201	Control Word (3720-)		17
20	AMSB			Input in Progress?		20
21	JSBR		0230	Yes - test Hardware Flags.		21
22	LDA		1200	Task No.		22
23	CMPA	Z	0051	Have Task No.		23
24	JUMP	Z	1402	to "PROCESS!"		24
25	JUMP		0207	exit next task.		25
26						26
27						27
30	* ENTRY			Test Input Flags.	<— BA —>	30
31	SWAPA					31
32	JSBR		0234			32
33	JUMP	I	0230	Return.		33
34	* ENTRY			Test Hardware Flags.	<— BA —>	34
35	ANDA	Z	0277	(Removes device code)		35
36	ADA		0274	010700		36
37	STA		0245	"BUSY"		37
40	ADA	Z	0302	000100		40
41	STA		0257	"START"		41
42	ADA		0273	002700		42
43	STA		0246	"NOT DONE"		43
44	INT OFF					44
45	BUSY			0107xx		45
46	NOT DONE			0137xx		46
47	JUMP		0263	OUT.		47
50	INT ON			ASLEEP!		50
51	ANDA	Z	0277			51
52	JSBR	I2	1612	Ofld → MSCTI (Device Code)		52
53	P1 = 2325-					53
54	LDA		1200	Task No.		54
55	JSBR	I2	1612	→ MSCTI		55
56	P1 = 2316-					56
57	START			0110xx		57
60	JSBR	I2	1652	PUT "Task Kicked"		60
61	P1 = 2313-					61
62	JUMP	I	0234	Return.		62
63	INT ON					63
64	JUMP	I	0234	Return.		64
65						65
66						66
67						67
70						70
71						71
72						72
73					002700	73
74					010700	74
75				P0 0/1400		75
76				SPLIT "PROCESS!"	300400	76
77				7/1634		77

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BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

05-13

Page:- 1 Col:- 03-23-

Step	Instruction	Address	Comment	Octal	Step
00			CR A		00
01			W A		01
02			R E		02
03			N SP		03
04			S L		04
05			E E		05
06			P Y		06
07			SP D		07
10			E V		10
11			I C		11
12			E S		12
13			MR CR		13
14			T A		14
15			S T		15
16			SP		16
17					17
20					20
21			SP		21
22			D E		22
23			V I		23
24			C E		24
25			SP		25
26					26
27					27
30			SP		30
31			T I		31
32			C K		32
33			E D		33
34			MAC		34
35					35
36					36
37					37
40					40
41			Date	/	41
42			NEW YEAR indicator (if=1)	000000	42
43			MASK	177740	43
44			MASK	001041	44
45			MASK	177000	45
46			0 SP S		46
47			U N		47
50			1 SP H		50
51			O N		51
52			2 SP T		52
53			U E		53
54			3 SP W		54
55			E D		55
56			4 SP T		56
57			H 4		57
60			5 SP F		60
61			R I		61
62			6 SP S		62
63			A T		63
64			January 365	000555	64
65			February 396	000614	65
66			March 59	000073	66
67			April 90	000132	67
70			May 120	000170	70
71	Monthly Table		June 151	000227	71
72			July 181	000265	72
73			August 212	000324	73
74			September 243	000363	74
75			October 273	000421	75
76			November 304	000460	76
77			December 334	000516	77

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BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13

Page:- | Col:- 04-24-

Step	Instruction		Address	Comment	Octal	Step
00	*ENTRY			Calculate Days since 31 Dec 1899	← BA →	00
01	CLSA					01
02	STA	Z	0177	Date		02
03	RSA					03
04	RSA					04
05	RSA					05
06	RSA					06
07	RSA					07
10	STA	Z	0176	Month		10
11	RSA					11
12	RSA					12
13	RSA					13
14	RSA					14
15	LDB	Z	A	=Year		15
16	LDA	Z	0176	Month		16
17	ANDA	Z	0217	=Month Number		17
20	CMPA	Z	0201	January ?		20
21	DECB			Yes.		21
22	CMPA	Z	0202	February ?		22
23	DECB			Yes		23
24	ADA		0001	→ Month Table		24
25	STA	Z	0176	→ Month Value		25
26	LDA	Z	B			26
27	RSB			2 + Year Leap (leaves no of leap days)		27
30	RSB					30
31	ADB	Z	A	B71		31
32	LSA					32
33	LSA					33
34	ADB	Z	A	B43		34
35	LSA					35
36	ADB	Z	A	B14		36
37	LSA			+ 365 x Year		37
40	LSA					40
41	ADB	Z	A	B16		41
42	LSA					42
43	ADB	Z	A	B17		43
44	LSA					44
45	LSA					45
46	ADB	Z	A	B19		46
47	LDA	Z	0177	Date		47
50	ANDA	Z	0237	leaves Date of Month		50
51	ADA	IZ	0176	+ Month Value		51
52	ADA	Z	B	+ 365 x Y + int (Y/4)		52
53	JUMP	I	0400	Return.		53
54	*ENTRY			INCREMENT DATE	← BA →	54
55	LDA		0341	Date		55
56	JSBR		0400	Calculate Days		56
57	INCA					57
60	STA	Z	0170			60
61	LDA		0341	Date		61
62	ANDA		0345	177000		62
63	ADA		0344	001041		63
64	STA	Z	0171			64
65	JSBR		0400	Calculate Days		65
66	CMPA	Z	0170			66
67	JUMP		0501	New Year		67
70	LDA		0341	Date		70
71	ANDA		0343	177740		71
72	ADA	Z	0241	000041		72
73	STA	Z	0171			73
74	JSBR		0400	Calculate Days		74
75	CMPA	Z	0170			75
76	JUMP		0502	New Month		76
77	INSZ		0341	Date		77

Programmer:-

BCL/MI8/PSI

BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13

Page:- | Col:- 05- 25 -

Step	Instruction		Address	Comment	Octal	Step
00	JUMP	I	0454	Return.		00
01	INSZ		0342	Next Year Indicator		01
02	LDA	Z	0171			02
03	STA		0341	Date		03
04	JUMP	I	0454	Return.		04
05	*ENTRY			DAY of WEEK	← BA →	05
06	JSBR	I2	1732	DIVIDE with Remainder		06
07	P1=1,0/0170			Days → Remainder.		07
10	P2=1,0/0207			CF7		10
11	P3=1,0/0171			Result		11
12	LDA	Z	0170	Remainder.		12
13	LSA			x2		13
14	ADA		0002	+ Days Table origin		14
15	STA		0522			15
16	LDA	I	0505	=P1		16
17	STA		0523			17
20	INSZ		0505			20
21	JSBR	I2	1741	Write/Read Day of Week		21
22	P1=/					22
23	P2=/					23
24	P3=4 digits					24
25	JUMP	I	0505	Return.		25
26						26
27						27
30						30
31						31
32						32
33						33
34						34
35						35
36						36
37						37
40						40
41						41
42						42
43						43
44						44
45						45
46						46
47						47
50						50
51						51
52						52
53						53
54						54
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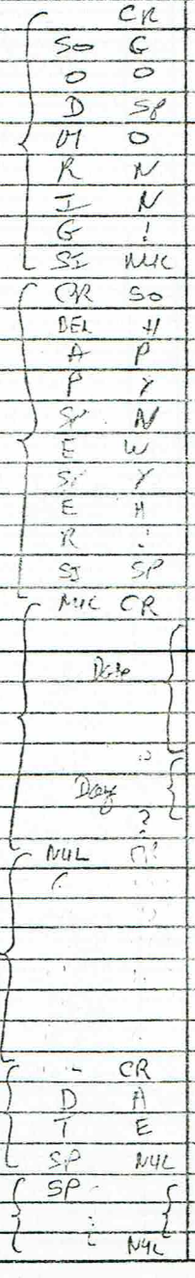
72						72
73						73
74						74
75						75
76						76
77						77



Programmer:-

BCL/MI8/PSI

BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS 13

Page:- 1 Col:- 06 26-

Step	Instruction		Address	Comment	Octal	Step
00	NOOP			↓DAY		00
01	NOOP					01
02	JSBR	I2	1640	GET "DATE" ↓next		02
03	P1 = 2676-					03
04	JSBR	I2	1607	PACK DATE		04
05	JSBR		0400	Calculate Days		05
06	STA	Z	0170			06
07	JSBR		0505	DAY of WEEK		07
10	P1 = 2575½-					10
11	JSBR	I2	1652	PUT		11
12	P1 = 2575-					12
13	JUMP		0602	ask next		13
14	JSBR	I2	1652	PUT "Good Morning" ↓DATE		14
15	P1 = 2572½-					15
16	LDA	I2	0077	System Date.		16
17	STA		0341	Date		17
20	JSBR		0454	Increment ↓Next day		20
21	JSBR		0505	Day of Week		21
22	P1 = 2557½-					22
23	LDA		0341	Date		23
24	JSBR	I2	1751	Convert Date		24
25	P1 = 2553-					25
26	JSBR	I2	1640	SPLIT date ?		26
27	P1 = 2673-					27
30	JUMP		0630	No. ask next		30
31	LDA		0341	Yes.		31
32	JUMP	I2	0644	[illegible] Date		32
33	LDA	I2	0076	"Year"		33
34	IORA	Z	0201	201 } Initialise Programmers' Workstation		34
35	STA	I2	0076			35
36	DES2		0342	New Year ?		36
37	JUMP		0642	No.		37
40	JSBR	IL	1653	Yes FLUSH		40
41	P1 = 2540-					41
42	JSBR	I2	1667	STOW Control Record		42
43	JUMP	Z	1402	to "PROCLOOP"		43
44	STA	I2	0077	New Date from 0632		44
45	LDA	I2	0066	SIS "Status of Input Buffer"		45
46	COMA		0657	"Y NUL"		46
47	JUMP		0636	Double Initialise Prgm Utilities		47
50	JUMP		0633			50
51						51
52						52
53						53
54						54
55						55
56						56
57				Y NUL		57
60				P0 2754-		60
61				SPLIT "RETRIEVE"	300400	61
62				3147-		62
63				P0 0/1402		63
64					100500	64
65				GET "SERIAL NO" 3112½-		65
66				2776-		66
67				P0 0/1402		67
70				GET "PRINTER A"	200401	70
71				3104½-		71
72				P0 0/1402		72
73				SPLIT Date	300401	73
74				2552½-		74
75				P0 0/1402		75
76				GET "DATE"	200410	76
77				2571½-		77

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BCL/MI8/PSI

BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13 Reprint Utility

Page:- 1 Col:- 07- 27-

Step	Instruction		Address	Comment	Octal	Step
00	JSBR	I2	1652	Get HHP +RP		00
01	P:= 3100-					01
02	LDA	Z	0051	Max. Task No.		02
03	SFA	Z	0055	No. of I/O Stations (leaves No. of printers)		03
04	DECA					04
05	APOS					05
06	JUMP	Z	1402	No printers, so nothing to reduce.		06
07	STA		1640			07
10	ANØ			More than one printer ?		10
11	JUMP		0730	No - bypass		11
12	JSBR	I2	1640	GET "PRINTER #?"		12
13	P:= 2670-					13
14	LDA	I2	0066			14
15	SWAPA			1st character input.		15
16	ANDA	Z	1752			16
17	ANØ					17
20	JUMP		0730	Default to printer #1		20
21	SFA	Z	0303	"NUL A"		21
22	APOS					22
23	JUMP	I2	1641	Error		23
24	CMPA		1640	(No. of printers-1)		24
25	NOOP					25
26	SKNCT					26
27	JUMP	I2	1641	Error		27
30	ADA	Z	0055	No. of I/O Stations (gives Printer Task No.-1)		30
31	LDB	Z	0057	Max. Print Q		31
32	SFB	Z	0051	Max. Task No.		32
33	ADB	Z	A	Printer Task No.-1		33
34	LDA	Z	B	= Reprint Queue No.		34
35	LSB			x2		35
36	ADB	Z	0022	+ Print Q Table origin		36
37	STB		0775	=> Print Q Element		37
40	JSBR	I2	1613	Specify I/O Station Print Q		40
41	JSBR	I2	1640	GET "Serial No."		41
42	P:= 2664-					42
43	CLA					43
44	STA		0777	Indicate		44
45	LDA	I	0775	= 1st Header in Queue		45
46	STA		1376	Next in Queue.		46
47	JUMP		0771	Next Header (Path) +NEXT HEADER		47
50	A=Ø					50
51	JUMP		0760			51
52	JSBR	I2	1652	PUT "End of Queue"		52
53	P:= 3120-					53
54	LDA		0777	Control Word (+Escape from "Reprint ?")		54
55	APOS			Reprint asked for ?		55
56	JSBR	I2	1651	Yes. Good BYE		56
57	JUMP	Z	1402	to "PROGRAM ?"		57
60	STA		0775			60
61	JSBR	I2	1670	FETCH Header into Master Buffer		61
62	P= 000000					62
63	P:= 2775-					63
64	P:= 0					64
65	LDA		1376			65
66	AMSB			Duplicate Header ?		66
67	JSBR		1000	? Yes - printed		67
70	JUMP		0747	Go to next Header		70
71	LDA		1376	(0747)		71
72	ANDA		0774	077777		72
73	JUMP		0750			73
74				VUSSH	077777	74
75				=> Print Q element / Current Header Word	-	75
76				Serial No.	-	76
77				Default Control Word	-	77

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BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13 Reprint

Page:- | Col:- 10 - 30 -

Step	Instruction		Address	Comment	Octal	Step
00	*ENTRY			Process Duplicate Header	← BID →	00
01	JSBR	I2	1741	Move Wand Pgm Name		01
02	P1 = 3374 -					02
03	P2 = 3130 -					03
04	P3 = 4 chars					04
05	JSBR	I2	1765	Serial No. → ASCII		05
06	P1 = 0,0,1,7					06
07	P2 = 3373 -					07
10	P3 = 3136 -					10
11	JUMP		1064	Patch		11
12	LDB		1376	Reprint Control Word		12
13	BPOS			Pending ?		13
14	LDA	Z	0216	Yes. "MIL SO"		14
15	JSBR	I2	1775	Store Byte		15
16	P1 = 3142 - -					16
17	JSBR	I2	1652	P4T defeats		17
20	P1 = 3127½ -					20
21	LDA		0776	Serial No. (input)		21
22	ANB					22
23	JUMP		1026	Duplicate (Engraving entry)		23
24	CMPA		1373	Serial No. (this Header)		24
25	JUMP		1053	Found.		25
26	LDA		0777	Defeating Control Word		26
27	INCA/ANSB					27
30	JUMP	I	1000	Return - discipline only.		30
31	LDA		1376	Reprint Control Word		31
32	APOS					32
33	JUMP	I	1000	Return - reprint already pending.		33
34	JSBR	I2	1640	SPLIT "REPRINT!"		34
35	P1 = 2661 -					35
36	JUMP	I	1000	No. Return.		36
37	LDA		0777	Yes.		37
40	CLSA/COMSA			Indicate reprint asked for		40
41	STA		0777			41
42	JSBR	I2	1670	FETCH & LOCK Header Record		42
43	P1 = 200000					43
44	P2 = 2775 -					44
45	P3 = 0					45
46	LDA		1376			46
47	CLSA/COMSA			Flag for reprint		47
50	STA		1376			50
51	JSBR	I2	1671	REMOTE		51
52	JUMP	I	1000	Return.		52
53	LDA		0777	(1025)		53
54	IORA	Z	0201	bit 1 Terminal not enquiring mode		54
55	STA		0777			55
56	JUMP		1026			56
57						57
60						60
61						61
62						62
63						63
64	LDA		1130	(from 3017)		64
65	ANDA		1071	ensure true ASCII		65
66	STA		1130			66
67	CLA					67
70	JUMP		1012	Continue		70
71				MASK	077577	71
72						72
73	CLA			*KP (Printer)		73
74	STA		1734	Force Queue Ø		74
75	LDA	I2	0067	Terminal Table No.		75
76	STA		1742	Completion request word		76
77	JUMP	Z	1402	to Control Area.		77

Programmer:-

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BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13

Page:- 1 Col:- 11 - 31 -

Step	Instruction		Address	Comment	Octal	Step
00				CR R		00
01				E P		01
02				R I		02
03				N T		03
04				NUL CR		04
05				P R		05
06				I N		06
07				T E		07
10				R SP		10
11				A ?		11
12				NUL CR		12
13				S: E		13
14				R I		14
15				A L		15
16				SP N		16
17				O SP		17
20				NUL CR		20
21				E N		21
22				D SP		22
23				O F		23
24				SP Q		24
25				U E		25
26				U E		26
27				NUL CR		27
30				Name		30
31						31
32				SP SP		32
33				S E		33
34				R I		34
35				A L		35
36						36
37				Send Up		37
40						40
41				SP		41
42				[illegible] P		42
43				E N		43
44				D I		44
45				N G		45
46				SI NUL		46
47				SP R		47
50				E P		50
51				R I		51
52				N T		52
53				? NUL		53
54						54
55						55
56				7/1415		56
57				7/1501		57
60	DATE2A/START				015231	60
61	2DA		1157	Next		61
62	ADA		1157	x2		62
63	STA	I	1156	7/1415 Inx 2		63
64	JSUB	IL	1625	Step/END		64
65	LDA	I	1156	7/1415		65
66	A=Ø					66
67	JUMP		1164	Point		67
70	JSUB	IL	1652	DAT		70
71	P= 7/1500					71
72	JUMP		1161	data input		72
73						73
74						74
75						75
76						76
77						77

Programmer:-

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BUSINESS COMPUTERS LTD. **MOLECULAR 18**

Sheet:-

Date:-

OS-13

Page:- 1 Col:- 12 - 32 -

Step	Instruction		Address	Comment	Octal	Step
00				Clears No-Empty it	—	00
01				Prog Counter	—	01
02				Table Pointer	—	02
03				Class No- (Display)	—	03
04				Mask	—	04
05						05
06						06
07						07
10						10
11						11
12						12
13						13
14						14
15						15
16						16
17						17
20						20
21						21
22						22
23						23
24						24
25						25
26						26
27						27
30						30
31						31
32						32
33						33
34						34
35						35
36						36
37						37
40						40
41						41
42						42
43						43
44						44
45						45
46						46
47						47
50						50
51						51
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54						54
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61						61
62						62
63						63
64						64
65						65
66						66
67						67
70						70
71						71
72						72
73						73
74						74
75						75
76						76
77						77

Programmer:-