

This document contains a paper backup of binary data



```

Identifier:           Sample backup of random_testfile
Size of binary data:  4096 bytes
Date of backup:       2021-01-03
Backup created on:    kongo.eli.rumia.org

Block size of backup: 1500 bytes
Blocks used:          3
CRC32 checksum:       0x915389a9
MD5 hash:             179f13a3194c6379edfc0ee502a9e880
  
```

To restore this backup, follow one of the following restore methods:

1) Read the QR-Codes with PaperStorage

Scan all pages (including this one) with any kind of scanner / scanning app available to you and save the resulting scans as images on your computer. Install Python and the PaperStorage module (available on pip, 'python -m pip install paperstorage[full]') on your computer and start the restore process by typing 'python -m paperstorage --interactiverestore' into a terminal.

2) Read the QR-Codes manually

Every page (except this first one) contains a QR-Code with one data block. Use any QR-Reader available to you to save the data blocks as plain text files. The first four characters of every data block contain the block id (starting from 0), the following four characters contain a document id, both Base64 encoded big endian integers. The remaining string is the binary data of the data block, also encoded in Base64. Concatenate the binary data in the correct order to restore the original file. The following shell script restores a backup from JPEG or PNG scans of a backup using zbar:

```

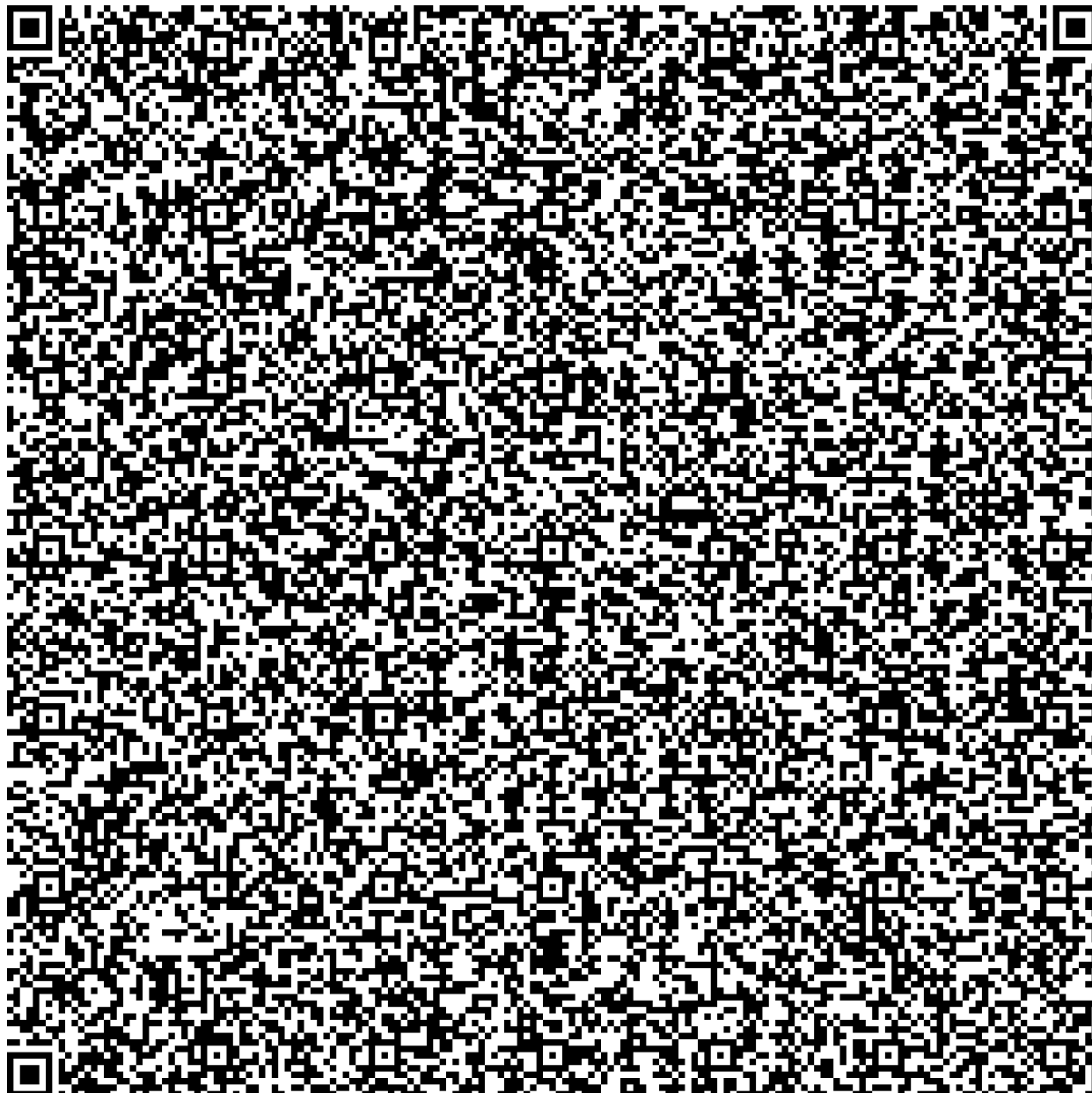
for i in *.jpg,png; do block=$(zbarimg --raw --quiet $i); if [ "$block" = "" ]; then \
echo "image $i not readable!"; continue; fi; echo $block | tail -c +9 | base64 -d > "${echo $block | \
head -c 4 | base64 -d | od --endian big -A n -t u2 -w2 | xargs}.hcbpbblock"; done; \
for i in *.hcbpbblock; do cat $i >> restored_backup; rm -f $i; done;
  
```

3) Manual backup restoration

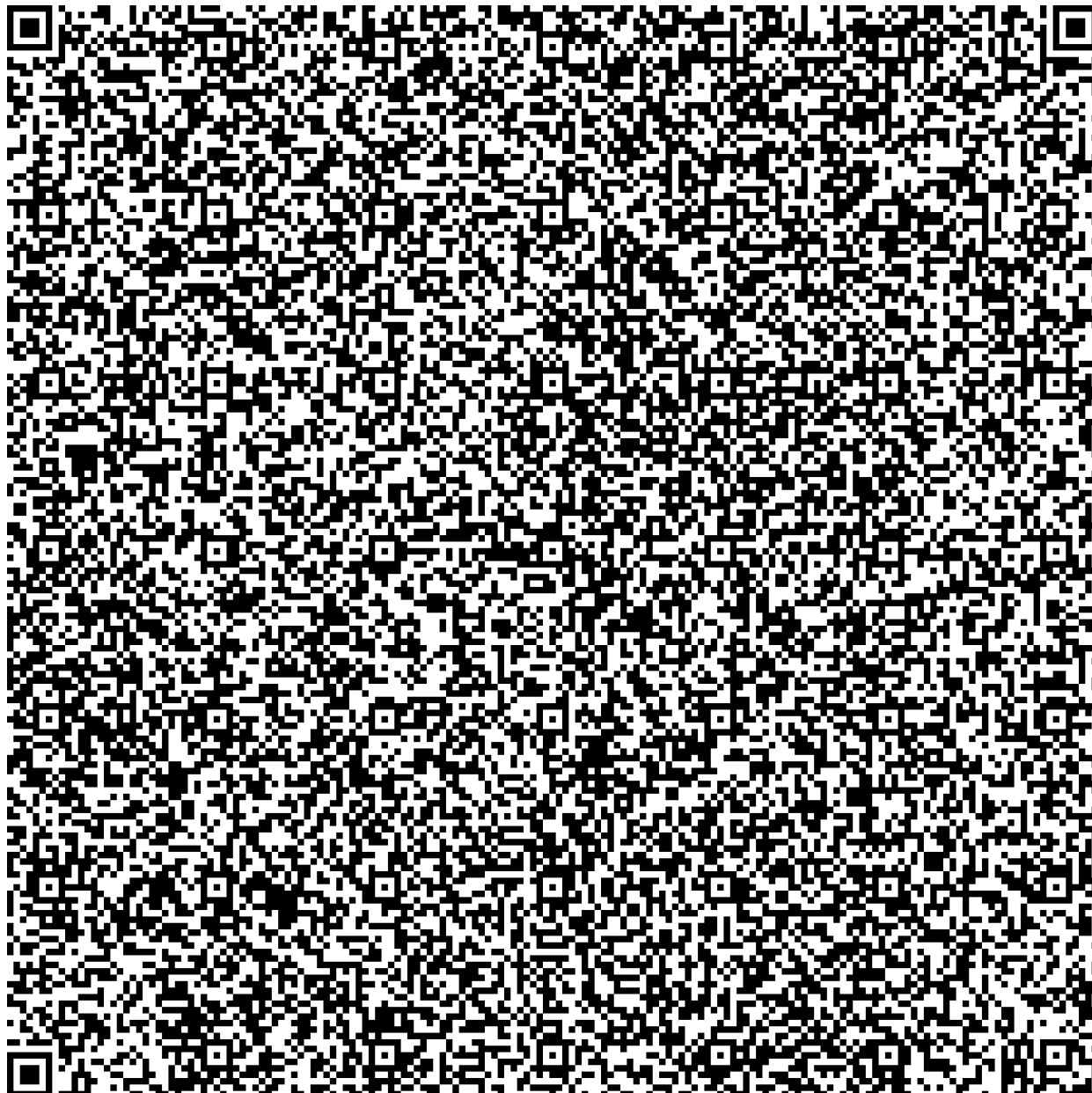
Each page also contains the binary data encoded in Base32, below the QR-Code. Each line contains a line number, up to 80 characters of base32 encoded data (splitted into 8 character chunks for enhanced readability). The last five characters are a Base85 encoded CRC32 checksum of the decoded binary data of the line, allowing the verification of each line. Only the Base32 encoded binary data is necessary to restore the original file. The following python script can be used to manually restore a backup from the Base32 data:

```

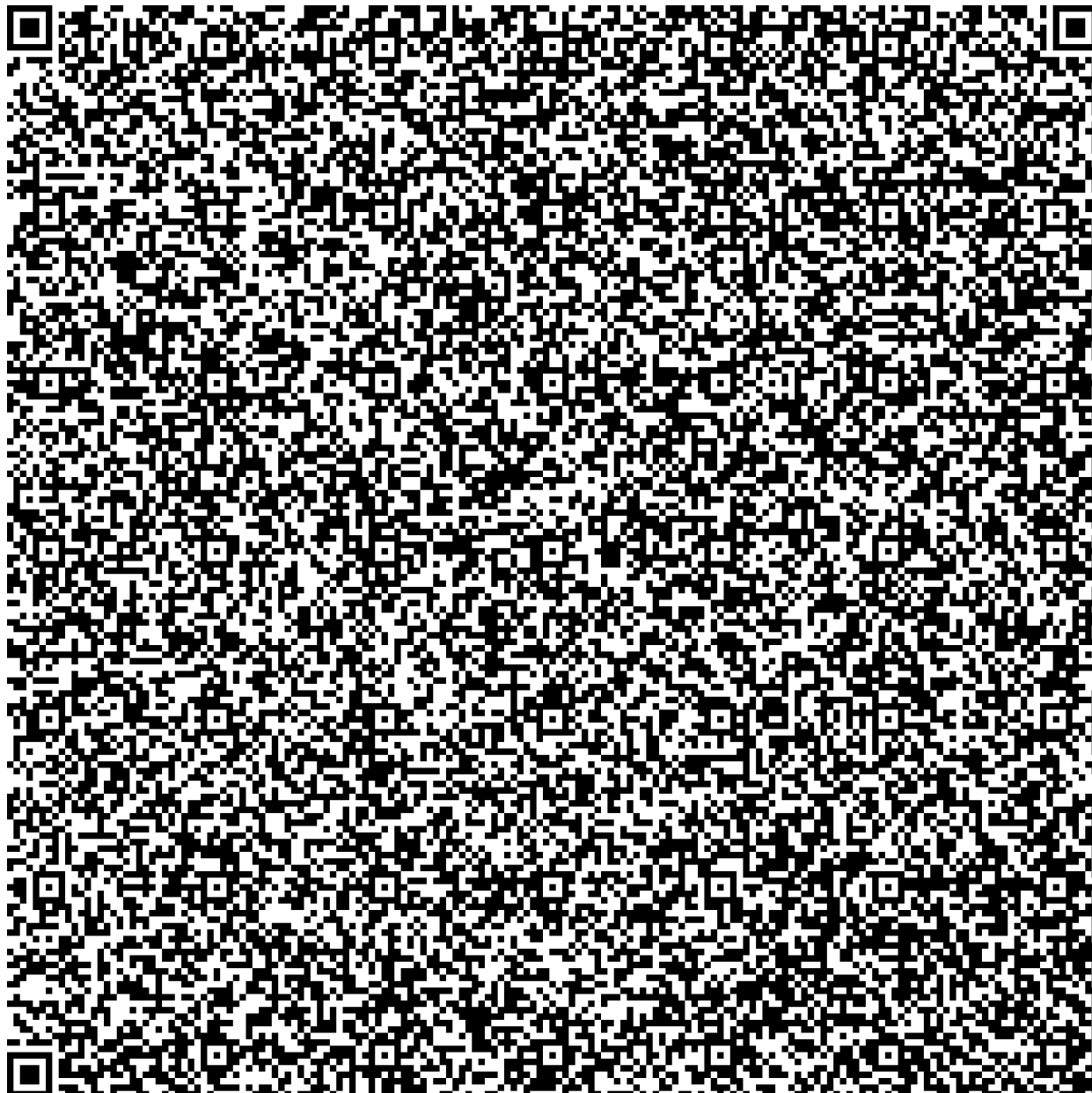
import base64, sys, math, binascii
from base64 import b85encode, b32decode
dS, bS, eD = int(input('size of binary data: '), int(input('block size used for backup: ')), ''
rB = (dS // bS)
if (dS % bS != 0): rB += 1
for i in range(rB):
    print(f'page {i + 2} of {rB + 1}')
    if (((dS - (bS * i)) // bS) >= 1): rB, pD = math.ceil((bS * 8 + 4) / 5), ''
    else: rB, pD = math.ceil(((dS - (bS * i)) * 8 + 4) / 5), ''
    for n in range(math.ceil((rB - 1) / 80)):
        lD, nL = '', False
        while (not nL):
            lD = input(f'input line {n + 1} of {math.ceil((rB - 1) / 80)}: ').upper().replace(' ', '')
            try:
                c32 = b85encode(binascii.crc32(b32decode(lD)).to_bytes(4, byteorder='big'))
            except (binascii.Error):
                print('invalid line, restart')
                continue
            if (input(f'crc32 is {c32.decode("utf-8")}, ok? ') != 'no'): nL = True
        pD += lD
    eD += pD
(open(input('enter filename: '), 'wb+').write(base64.b32decode(eD)))
  
```



01	43USRNND	PSQST3M5	LTELJLLX	YTWI7EB7	CO6WXOSI	4ZNIVDNY	YG3TZVCR	UABZN55I	HZY7DD37	EWAWSC5W	v&\$\$p
02	QUZSK500	EIHM4OG5	NRWRB5YM	XDATK4DC	73F625CA	MHUHAH DU	ERLMPDIF	ILUZXTIE	UKZ446MW	B2FB5HHE	KZJF&
03	CASXLF44	DIEPOQY7	DNFNVAXJ	EH4SHLLK	6BKVZIXV	TWQSETDD	F3ESBRDL	OPJGUEM2	WRXHIKG2	LWIYCEHR	DoW2Q
04	RPC56UPO	NVNU37B	C3FSP23N	Q4G7Y7JP	TQBC4CR5	5RNUIMBV	GNQDXDYL	LHASOCZN	RKWMBHIW	XMAEFHHX	fml(l
05	22J3KY7D	EKGIOX4W	RP5MDT43	RM3Z3PU6	4YJWGHIO	KLV63RO3	RWHFHKU7	IVGKJT4K	WZK2DL6D	N3RC234R	RXE+k
06	ZOC6EZF2	HBWBFABF	NUD2WEBO	CTPGPH4K	6OF6AT3R	3IGMUQ53	675ATP6D	XUAE XORW	QVG3XQEO	VXD6SUBO	Vnj)v
07	NDXJBFRC	35M5XJYF	2ZRFGPWV	SM4JRAIJ	UJYF4IO4	27NEMDY2	VNQXTEEV	E3TQJZPZ	OU3KW6O	FAYEPLVN	T3<Av
08	L4QTRJBZ	6S54DDFV	K5SFJG3N	XMGVWTJ6	VKAXWETW	YA7WOPVC	YU3IF342	BLEIGCWQ	6BRORRGL	L63MOBNE	Ptg4N
09	YBLR3V66	STMZFWUA	K64EO5V5	G5BLGCTI	JLDBRJJOJ	27JIYFI7	2OOSD4WC	QDKVQNRV	MEK3T4DY	72JNNQFE	BgCWu
10	32IFDL7U	LCVRUWSG	25K4ALYQ	4GMR7B45	3TNV3HHC	2JFOEZEE	R2FY4EJN	XAIQ2SF7	CAENXJYQ	P2T2LSTZ	bNVsE
11	YAPKMHF6	M2ZKACX7	A3YXGVRQ	DLXFWULS	QH63AQWQ	5LSOFY3R	F5S6WP7N	K2Q6HUXN	H3YUKZ2Y	6IUQGVFY	D~isl
12	W2MV43CJ	TOLF27OP	33F4SND3	WTBIJNBV	6TAPJWBH	SNL702CJ	MFPXBAH5	SDYU3ZBD	ZIXH36X7	NRA4GZ6S	!w7:!
13	UY4EXS2T	YVUU336U	RN3PIISN	X3R2YZEZ	WFHX7KOG	56Q2QJK4	7CVK5WLK	BMJSHSYV	Q6B3Y352	6A06U2DS	fP04n
14	RWSDSKX5	SQNJV5E	Q2WNY6F4	QRAJ553B	IXPKKQTK	JQNMYPDR	36SBCXJZ	6SIAMDRL	TERCOYVV	UGTMH77	eZoHg
15	Q6HGWMZC	X3BT6BFU	5JQZPOHE	PCA2MLG7	Q73H6HVE	DN236ITQ	U6NWSKRN	CI5IWLH	DIEPARVQ	L4MZKOW	!!~uM
16	22YHKZ4Y	XBJJX5X5	MGYXY6DT	ZVDWFPB3	FUHFNAFI	PIUOODOC	EQ6ANIE5	DNSH427S	Y6PTJNQN	FXFLNOTB	z8B%D
17	TMBPWX3T	NJVHVCQ7	ZHYS3CJC	RMEN2HBQ	G6MAYKKT	IISOZVBN	2CVMHRF6	WXIJQU7O	MLYYWIDV	TYQJQEXD	^\$E^
18	N2N6GLQ7	65SYUOWW	CWP7PXWR	KAX254QJ	SA4FOEU3	6ESSERX4	C5XENLR3	JKDLXT2K	B6EW25EZ	ZYPDN7I2	Np(X7
19	PW7XT2FW	GS6LBI7L	UMJ72TAS	LBL63GK4	3DYHOFZJ	5OJJQQBV	AWQPQHXX	I6BBKURH	DB2B7WMU	3LUOERWT	AaUPz
20	5LMTYTET	PI6AG5DW	52YMRQEG	PHIHL7FD	DFI2GSJK	FS2NMLR4	NWBJFXDN	OZFN5EOC	PGSWOQWY	ADYADZ2N	&t%ZT
21	RGABZFGY	2M43FBFL	EY04W2EV	YQYZN4ZL	37BTOEOT	FDWPOMLW	UZ4QG7YJ	IHGT7RAX	ABIURWBL	QQ5Y7AB3	-vEd+
22	OK3FI556	GB2ZN625	3RMWVNZD	OIBP2FLY	MTY73QZ4	W7QDF3NT	JSZOS2D5	OCTSTUHM	NXEMMXB2	E3MJZYKZ	-YAQJ
23	T4SP6VNU	TFXFKK4U	LPAT3KVQ	QIVG3XS3	N3VEY67C	7GJEB3MK	KNZZ6CYL	JRA5IB6Z	M7HU7A57	4VRWC4QW	X1\$RM
24	6EKZY57S	IK3DHQXW	CY7PCIXT	WS5NTSFB	6T2T5CLT	RCYWX7LB	NAEUHRQB	KZQTWNV6	UCJDHLEZ	60LJQISD	SJ*E6
25	VIUXGE63	MJNRQHK7	ATVT2OUL	E5NB3SYV	LCRIIDAD	BHKW4ION	6ENFY5YH	HJSL2FCD	EN743SMG	U3PGI6S5	>Pb)N
26	4WMBMC7S	FGQOS35S	EG3V4FBC	K4UVYB7C	07AJNIPP	ZCGSL65Z	SKJDVQ42	R5DCQG67	PFPYOSCD	XXASWUXB	@{^=
27	SXF5TMVJ	G50AJEVD	AXTLOTZH	J3MNSOMU	IB67AUQG	6DK7PBXR	AUJ7QMKP	EHJTNXC4	2PILZNMK	IUST407B	Yxb=f
28	K3LVAB65	PYTMG2P5	2HBXQXFL	ZE5IUBAX	ZKALZNLV	DY5RGBIL	YPPFHOEY	NFDQLLBI	GNDLTUNL	PXDFES35	kt>nY
29	CGVKEJQ5	DOVJSYRU	7BU7S2IH	JBLTYRIY	J5CZZ37A	GUHSUXFT	AWLQPV6L	A7LL2VXT	XMMIUL5B	XZR7NSQV	3V>QJ
30	5U4CB2AH	VQRSMILI	3LNIQY4I	CFNEKODJ	S4ANTQLB	CSLHJ5V2	RJ2WKL3H	MUQ32CNJ	CMSDXBMH	OE2EUQF3	1Wdx3



01	LU6B23IJ	2UJP3FRM	4ON5DLNC	YUSJSLJR	LUFPURON	WNAQUYUZ	SWXR4ULS	W5JOZTES	QUR27OST	34HA3FBC	CLFNb
02	NXGMJYFS	KWPPSBGE	LSNCWGDK	WI6ILKNK	NFGJDGZK	IASTJM4D	4DVYHGV4	MFAIPL2R	ITPHU6N6	AXO3YEJF	g4TpL
03	6SZ54AOW	KXM4KUBP	ZQI2RG6L	B7GMRK2X	C3FYLUOQ	E6NCUST3	UF6HDF7X	56OFUZOM	JD4J576U	JO3PVQSZ	NPY@A
04	E37BR3CT	35QEPG57	EKTXPZNV	HGHPWYRL	NFD3Y25V	UI45DWOR	WOSH4ONV	RL6RKYZV	IJQEDHCV	4AEWJVL5	QZ+ 5
05	3DAYC77V	Z5JYZGCS	WT5WQ2C4	VUXSMN6F	RWLWF7BF	5BL6MVLU	L4XDPVZ5	ID4VCPCA	QMOPBDPW	VBjGTvMA	XR-cQ
06	X4BDZIJ6	TIVKZVO7	MQUI6V5U	JDBH63YL	EVN36MDA	RAI4JFJT	6LKT7NEV	GTWNIQGD	NGKSVSZ5	5DH7Z2TC	y06T_
07	VDX3J5EC	LIJBIJ6M	DGXYXELT	XL6XGG36	5ECGAQG2	T7SBUYHE	HUOOHHLN	BY43LDPB	6L3T6ADS	MPSZCQP3	T4JsI
08	JD5USTOV	VCVUZVLM	DLW5MMQ4	FDOOCWIQ	4K2RNPBK	3U4BSRJP	GBXWYIXS	GTWX7P6K	32Y4M6U2	B23GUUDS	X*bf>
09	SB546U4F	2XI2GLE2	5UEZ2W3F	HNKCMI3F	Z75AO7DG	FAK6FRVP	YK3TUFNZ	MBUTLTQQ	PFUCPTJ3	OTZTMAER	T<Mn+
10	ZHFHAU6B	O267X6E3	TGC3EF4N	EU7T4GLI	B7Z62SBP	BRX5GFQL	HLW7LTPB	5N667A4M	WOP7O6PB	NZH3LVAO	KW^JM
11	RW27PU6U	OCB32FB6	TXQIDH3Y	I5PC43CE	NICE6GRA	DPOICQJH	FWWKTP5G	OBXIW4RE	QNVD4I53	PFAJLEFA	\$;o>-
12	R2QOIS4I	T3DY3V5O	7QYVAAL2	BCVBGFSM	C5B46N52	NYW6FM74	3DMW7MRD	HTUAYB42	4203QRJA	UAAFHUZ4	d>JEK
13	X7NRYI5N	SENHYSZV	GLQPAMLY	DLCVRIMI	XDFWP4L4	GRFZLBZZ	3QYLR544	WO3BYTJY	2BYX6DAR	ZGCR2YVV	JUjEt
14	ZXHC5LZV	3TQGMXND	QB5MLRSN	IAARIUPP	ZOJ2RJQ4	V7QK7LUQ	JAE3ZTKI	B6MM7P6Q	3ZJUSQDQ	RUY5CQAN	DdQ&o
15	NUQ656EL	66SXCHNN	SNFK54QV	Q7COQEMV	54QYRWOD	HPJPR2PD	K4LMWBAO	JZRDF2KK	VRLQCBPO	ZQOET34T	hUQtN
16	DUNENLXP	6YZNJ6TX	QALOEM36	HSPJHNI3	72FLNFEA	TH7JUBAT	ANCQXUDS	WRW5H3AH	RXHYMFOD	CEXD6CKH	{QWWA
17	JM36MEQW	OYGD2IDF	TZBUYKMC	J7BRKBCQ	WINKCPC6	VYSQ4AGF	H6LJ5433	ZT6WGC2D	MLVSMG7Z	MFQ2B5PK	18hhp
18	VIDGIAAY	EWAKVH33	JIXNIZO2	NIPTW5A5	XZEOGDLY	DJ2ON467	5JIVSUL7	2CDBJAJK	PWN72EZ4	L5I5GEJS	N_cwr
19	X5ITHM6Y	V3UNYHV6	LEOPZQAU	4YU5EYSE	25XX4TSK	4HMGNK56	VFER53P5	46IPWOYW	ZSHCQR6T	NSM6NWUW	EVu^9
20	ULP6NEB7	PH7ZOKWY	QQNYO56R	7MYG4GZG	CQESEXQE	5MHCPR3G	MEERLOQT	IQAJEXEG	IF5IQSPZ	FSZU47RK	5oRN
21	BMGYKUN5	DEONXJW4	ZELWDKQD	BVKQU3RO	65TYHT4F	MFZF4POJ	5CYPRTVC	BAVN5MXA	Y6XGJFYQ	5LTWE7WK	Ne6rv
22	EFOWRFAQ	U4JH5CBL	LIPZHYUL	LG4UQPUK	UDQKIOTI	QDO5AORI	UXI3U27T	H4EVUS7I	UXCQRNWK	PWHEMCS4	#P{0J
23	QVMYGTMT	BJQUXMR3	TY243SFC	JWVJN7AY	HMN644NJ	R6LFRYRF	6AGEZXZD	BWGVR3D	U4JB05XC	IAYIXLJN	5e?3j
24	XDEF7FLA	2US3G2RO	AGBUTREI	CURRFJD6	72CZ5JW5	B4XDQA3G	PGQPJRUI	WQEQC7HL	HKM6IJDH	O5ORVYXD	C_z{7
25	6I2RETFE	PEI5KW4G	NWIIT735	BZNLOYIZ	BCEQ3MFP	YISW5EPF	SFYNV43Q	EFBYVVJE	KFQRNLWW	EKA2DDB3	=XvQB
26	JKA2XSG7	FSPC6BVU	UIE2LPY2	J5Z3IR4H	NCCRYJOL	HKI6H5KA	JYEKK4LO	YN2RETHB	KF7KSBUX	KJUITXOT	s)Aiu
27	PI43HYM7	KZYWGPF7	BAVVJ3GH	5BSJAP5E	C27UTJRQ	V3X6ML3M	TX3TPQQP	YZA56VYP	CS6UXUW4	K5T3JT37	(N?Yk
28	VTQFBOVE	KMSRV3SN	DUJ27SMV	KYPHMZOI	QKHA7KZP	RUKVM6HZ	7XZ4T2M6	7BMJ4MFV	RP472GEL	XQOI7XPD	9eDvY
29	5Y6URN4Z	ECLMXRQY	BTW3XSW2	XBQIYHG3	EVFGMYAB	I4XWAPJV	PKPSXXII	UFE2B776	WAGOUW4K	ZZ75WR2R	I{TxS
30	3LERFZDE	S7RUWVVW	XFQSSIQZ	H6RPV27H	6O6PWKMQ	Q5G2VTOZ	WHL2GM5Z	V6EZYRFH	MPAWTEPO	HJPGULSV	@xe6G



01	ALJNIBAK	PALBG3O3	RFYB3Z6O	2QOJPIVN	FSEDCQNH	QKZGC7Q4	YD56GLWT	5KFZ2ISF	OKSMUBQJ	FLYLEVIZ	N__RN
02	43FVZIWH	O3HYLEGG	G3DYTTDK	DNA26LNN	6M6G7KLP	WNOOAZNS	4I26L7E6	KFFFGGHX	AW3KFEKT	EZJT6W7P	dziQ~
03	EBRRB74T	LHUL55AU	XDGM7SD	QRIPN2PC	KYO6GLRN	4ZZI6UFA	S3IBHXTR	NW6V4UDR	2QZEACXA	HNDWHZBM	b+_dw
04	7ORITKED	4TWUQXD5	AEBVD5QP	SGF4SPQO	AJVZHDCC	CSW4NZTV	GDO7GVQO	VAJGLUVB	5GNKIQV3	YR3LQYJG	JdD1d
05	HJBAJXKF	VDDWVBPG	GZKCFP5Q	Q2V3EGLN	CEDBB46C	GPD3AHET	CQQQVPWR	MBQLO36X	JAU2IKOT	K56GK7H4	pyrkI
06	QIIHVKIE	DPWST7NW	LXT2R2W2	J6DXCL2Z	TRO7WCYC	WSODDJQW	HYUTHQ2R	DL4NOL6R	ALH4SURN	ZSELOO6F	v#k2>
07	53QGJAQU	H4JWAITJ	Z2IZM32L	KF6S3IAR	KXMRVMVG	3YL727CC	Y2SCVFO2	5PPQ62WX	6DGYHQLT	SBVPCSUZ)Mn3
08	W3CA2DUN	SZT6TPMW	FTTGXWCK	WHLRYC4B	XFxE4J7N	K22CA3WF	MHCQSQUW	YGKXNLWH	PAWIEKO2	ZS7TH5CS	j; &Zb
09	P7CFHGWR	RKK4JFMJ	SZJASBMR	GBJPPC2M	5NHOXLPF	P7OXIXEC	FYYFNUQ4	4DFKMYSJ	4GHP3PGY	LSVBPQR	^K6O^
10	TKBGH3N5	3TN7K6P4	O7NMJAOE	HYEP3EGO	BIQHBLRC	EIHMTUS	JW4ER6NS	JUXFYATL	CWZO2YR	FSLFQEKW	>p8FE
11	S6E6BOQV	VYX2FMQY	ABNMS665	IAEXX7IH	AOAILAUJ	7L7SBLMG	SMNTXSQO	4KKI2XKH	3LU7H5UK	D72Z65P2	w`M(1
12	2UZSDGMM	CIBKR7JQ	SNUQBLGC	T3SXLJNE	HYT3I6ZD	7IUEJ5LU	EAJUJEAJ	36WIAMCT	3UURLA2C	HXEFGFPY	PT_40
13	VDWAJ2EO	BJ34VEZS	GKX65ANG	LVGXWPYD	JZY5MT5J	VJDXCZED	WOQZ2PMC	XAITXSKG	ICQVZAPI	IKRTGIO5	8%emX
14	GC6DHKBZ	NQ5VQC7R	462MU3WO	OKS62HR4	7QTROCXH	ALIEN5U7	KF5JJPZ5	LT2H7TMU	FHIPTAYT	WQ4GVK4Y	t0`Kw
15	HFZS46O2	Q6B4MJWM	CPTY5QXC	YCOG3SML	4KT3E756	PHLEC45W	X6U5BNRX	J33C7YOE	RK35GTI7	FESB2VWR	!mTAN
16	BTDUQP33	ZDDX2UQM	WL3FKS5B	NILUH3TS	XLOIM2DK	QUM7IBJY	DOHNUWBH	HCUJCMF4	NAGT5QXI	KFSVUIDL	Jq?L{
17	JY36QVWX	YUCLLVR3	RQLBXE7J	ISUL3V3J	X6GDT3VR	YY4D47QL	ZOW242TB	37E7BDDN	5P62FJGQ	IGDOQCG3	xd#19
18	Q3R2QFND	MY5ZR4S6	C7TQPZJD	CLH2XEMF	LQCI7MSU	7A22RROR	UQPKSQEM	X7STWMHQ	7SHDQIMV	HYKXTGMO	+t9%1
19	JCE3LCVK	RF3JWHHA	T7MLJ2IB	FQDME2DZ	GQREW4Y5	ZYLKOGAC	ZAK75I5M	BT6A6MIM	Y5JG3POI	P4E5FWHL	u5x5!
20	OXJKOQVJ	3JIKGI7J	TIOCDFM2	IL6K7GHJ	WOHB3LD2	SRTGL6W4	SAYS2I1J	YWZFM3HK	VSEPHOHC	XHGHPJWV	^gyeS
21	PQO6BPBX	N4JW7V4F	5KGQOEPO	HOJQX6IV	43KLX57V	NOCE6EHO	6N3N2XG4	YBHNAMAQ	RYY4AT7G	D5UP7QRJ	uT`I}
22	RVQHf3GS	UO4NBRsq	NTKXKV3T	IJ4V3ZJ7	I2WEUV73	RHVNW3KY	YOS34PSG	OJj5X4YG	Q3YNBRH6	TQ=====	&_f53