Assignment no 2
CSc101-Introduction to ICT

Submitted by:
Name: Esha Razia
SP23-BCS-040
Section = A
Submitted to:
Dr. Jawad Shafi

Department of Computer Science
COMSATS University Islamabad
Lahore Campus

Assignment statement:

Q1: Write down details about ASCII and their Table representation of ASCII 7 & ASCII 8

ASCII (American Standard Code for Information Interchange):

It is the most common character encoding format for text data in computers and on the internet. In standard ASCII-encoded data, there are unique values for 128 alphabetic, including upper and lowercase letters, punctuation marks, numeric or special additional characters, control codes and other characters using a 7-bit binary code (i.e., using combinations of 0s and 1s). In addition to the basic ASCII set, there are several extended ASCII sets that include additional characters such as accented letters, currency symbols, and mathematical symbols. It is still widely used today, it has largely been superseded by more comprehensive character encodings like Unicode, which supports a much larger range of characters and representing the writing systems of most of the world's languages. The ASCII character set is limited to English characters and does not include characters from other languages, making it less useful for international communication. It is widely used in computer systems and networks to represent text-based data in a standardized format, simple to use and easy to understand, which makes it popular among programmers, data analysts, and other professionals who need to work with text-based data. It is most modern computing systems, making it an ideal choice for use in a wide variety of applications.

Overall, ASCII has been a crucial standard for the development of computer hardware and software, as it allowed for interoperability and data exchange across different systems.

ASCII 7:

ASCII is a 7-bit character set containing **128 characters**. It contains the numbers from 0-9, the upper and lower case English letters from A to Z, and some special characters. The character sets used in modern computers, and on the Internet, are all based on ASCII. Its table shows a version of ASCII that uses 7 bits to code each character. The biggest number that can be held in 7-bits is 1111111 in binary 127 in decimal. Therefore 128 different characters can be represented in the ASCII character set (Using codes 0 to 127).

This 7-bit refers to a numbering system that uses 7 binary digits (bits) to represent numbers and other data. Each binary digit can have two values: 0 or 1. In a 7-bit system, there are 2^7, or 128, possible combinations of 0s and 1s, and each combination can represent a different number, character, or other unit of data.

Table Representation of ASCII 7:

Binary	Dec	Ascii	Binary	Dec	Ascii	Binary	Dec	Ascii	Binary	Dec	Ascii
000 0000	0	NUL	010 0000	32	space	100 0000	64	@	110 0000	96	`
000 0001	1	SOH	010 0001	33	!	100 0001	65	A	110 0001	97	a
000 0010	2	STX	010 0010	34	"	100 0010	66	B	110 0010	98	b
000 0011	3	ETX	010 0011	35	#	100 0011	67	C	110 0011	99	c
000 0100	4	EOT	010 0100	36	$	100 0100	68	D	110 0100	100	d
000 0101	5	ENQ	010 0101	37	%	100 0101	69	E	110 0101	101	e
000 0110	6	ACK	010 0110	38	&	100 0110	70	F	110 0110	102	f
000 0111	7	BEL	010 0111	39	'	100 0111	71	G	110 0111	103	g
000 1000	8	BS	010 1000	40	(	100 1000	72	H	110 1000	104	h
000 1001	9	HT	010 1001	41	)	100 1001	73	I	110 1001	105	i
000 1010	10	LF	010 1010	42	*	100 1010	74	J	110 1010	106	j
000 1011	11	VT	010 1011	43	+	100 1011	75	K	110 1011	107	k
000 1100	12	FF	010 1100	44	,	100 1100	76	L	110 1100	108	l
000 1101	13	CR	010 1101	45	-	100 1101	77	M	110 1101	109	m
000 1110	14	SO	010 1110	46	.	100 1110	78	N	110 1110	110	n
000 1111	15	SI	010 1111	47	/	100 1111	79	O	110 1111	111	o
001 0000	16	DLE	011 0000	48	0	101 0000	80	P	111 0000	112	p
001 0001	17	DC1	011 0001	49	1	101 0001	81	Q	111 0001	113	q
001 0010	18	DC2	011 0010	50	2	101 0010	82	R	111 0010	114	r
001 0011	19	DC3	011 0011	51	3	101 0011	83	S	111 0011	115	s
001 0100	20	DC4	011 0100	52	4	101 0100	84	T	111 0100	116	t
001 0101	21	NAK	011 0101	53	5	101 0101	85	U	111 0101	117	u
001 0110	22	SYN	011 0110	54	6	101 0110	86	V	111 0110	118	v
001 0111	23	ETB	011 0111	55	7	101 0111	87	W	111 0111	119	w
001 1000	24	CAN	011 1000	56	8	101 1000	88	X	111 1000	120	x
001 1001	25	EM	011 1001	57	9	101 1001	89	Y	111 1001	121	y
001 1010	26	SUB	011 1010	58	:	101 1010	90	Z	111 1010	122	z
001 1011	27	ESC	011 1011	59	;	101 1011	91	[	111 1011	123	{
001 1100	28	FS	011 1100	60	<	101 1100	92	\	111 1100	124	|
001 1101	29	GS	011 1101	61	=	101 1101	93	]	111 1101	125	}
001 1110	30	RS	011 1110	62	>	101 1110	94	^	111 1110	126	~
001 1111	31	US	011 1111	63	?	101 1111	95	_	110 0000	127	DEL

ASCII 8:

ASCII is an 8-bit code. That is, **it uses eight bits to represent a letter or a punctuation mark**. Eight bits are called a byte. A binary code with eight digits, such as 1101 10112, can be stored in one byte of computer memory. It is sets of generally 8-bit sets with 256 different characters, effectively doubling the ASCII set. Modern computers almost universally use 8-bit bytes, and the extended ASCII character set includes 127 more 8-bit characters, where the most significant bit is set to 1.

Table Representation of ASCII 8:

DC	AC	AS+UC	DC	All	DC	All	DC	All	DC	AC	UC	EA	DC	AC	UC	EA	DC	AC	UC	EA	DC	AC	UC	EA
NUL	NUL	NUL	32	SP	64	@	96	`	128	€	xxx	Ç	160		nbsp	á	192	À	À	└	224	à	à	Ó
1	☺	SOH	33	!	65	A	97	a	129		xxx	ü	161	¡	¡	í	193	Á	Á	┴	225	á	á	ß
2	☻	STX	34	"	66	B	98	b	130	‚	BPH	é	162	¢	¢	ó	194	Â	Â	┬	226	â	â	Ô
3	♥	ETX	35	#	67	C	99	c	131	ƒ	NBH	â	163	£	£	ú	195	Ã	Ã	├	227	ã	ã	Ò
4	♦	EOT	36	$	68	D	100	d	132	„	IND	ä	164	¤	¤	ñ	196	Ä	Ä	─	228	ä	ä	õ
5	♣	ENQ	37	%	69	E	101	e	133	…	NEL	à	165	¥	¥	Ñ	197	Å	Å	┼	229	å	å	Õ
6	♠	ACK	38	&	70	F	102	f	134	†	SSA	å	166	¦	¦	ª	198	Æ	Æ	ã	230	æ	æ	µ
7	•	BEL	39	'	71	G	103	g	135	‡	ESA	ç	167	§	§	º	199	Ç	Ç	Ã	231	ç	ç	þ
8	◘	BS	40	(	72	H	104	h	136	ˆ	HTS	ê	168	¨	¨	¿	200	È	È	╚	232	è	è	Þ
9	○	HT	41	)	73	I	105	i	137	‰	HTJ	ë	169	©	©	®	201	É	É	╔	233	é	é	Ú
10	◙	LF	42	*	74	J	106	j	138	Š	VTS	è	170	ª	ª	¬	202	Ê	Ê	╩	234	ê	ê	Û
11	♂	VT	43	+	75	K	107	k	139	‹	PLD	ï	171	«	«	½	203	Ë	Ë	╦	235	ë	ë	Ù
12	♀	FF	44	,	76	L	108	l	140	Œ	PLU	î	172	¬	¬	¼	204	Ì	Ì	╠	236	ì	ì	ý
13	♪	CR	45	-	77	M	109	m	141		RI	ì	173	-	-	¡	205	Í	Í	═	237	í	í	Ý
14	♫	SO	46	.	78	N	110	n	142	Ž	SS2	Ä	174	®	®	«	206	Î	Î	╬	238	î	î	¯
15	☼	SI	47	/	79	O	111	o	143		SS3	Å	175	¯	¯	»	207	Ï	Ï	¤	239	ï	ï	´
16	►	DLE	48	0	80	P	112	p	144		DSC	É	176	°	°	░	208	Ð	Ð	ð	240	ð	ð	-
17	◄	DC1	49	1	81	Q	113	q	145	‘	PU1	æ	177	±	±	▒	209	Ñ	Ñ	Ð	241	ñ	ñ	±
18	↕	DC2	50	2	82	R	114	r	146	’	PU2	Æ	178	²	²	▓	210	Ò	Ò	Ê	242	ò	ò	‗
19	‼	DC3	51	3	83	S	115	s	147	“	STS	ô	179	³	³	│	211	Ó	Ó	Ë	243	ó	ó	¾
20	¶	DC4	52	4	84	T	116	t	148	”	CCH	ö	180	´	´	┤	212	Ô	Ô	È	244	ô	ô	¶
21	§	NAK	53	5	85	U	117	u	149	•	MW	ò	181	µ	µ	Á	213	Õ	Õ	ı	245	õ	õ	§
22	▬	SYN	54	6	86	V	118	v	150	–	SPA	û	182	¶	¶	Â	214	Ö	Ö	Í	246	ö	ö	÷
23	↨	ETB	55	7	87	W	119	w	151	—	EPA	ù	183	·	·	À	215	×	×	Î	247	÷	÷	¸
24	↑	CAN	56	8	88	X	120	x	152	˜	SOS	ÿ	184	¸	¸	©	216	Ø	Ø	Ï	248	ø	ø	°
25	↓	EM	57	9	89	Y	121	y	153	™	xxx	Ö	185	¹	¹	╣	217	Ù	Ù	┘	249	ù	ù	¨
26	→	SUB	58	:	90	Z	122	z	154	š	SCI	Ü	186	º	º	║	218	Ú	Ú	┌	250	ú	ú	·
27	←	ESC	59	;	91	[	123	{	155	›	CSI	ø	187	»	»	╗	219	Û	Û	█	251	û	û	¹
28	∟	FS	60	<	92	\	124	|	156	œ	ST	£	188	¼	¼	╝	220	Ü	Ü	▄	252	ü	ü	³
29	↔	GS	61	=	93	]	125	}	157		OSC	Ø	189	½	½	¢	221	Ý	Ý	¦	253	ý	ý	²
30	▲	RS	62	>	94	^	126	~	158	ž	PM	×	190	¾	¾	¥	222	Þ	Þ	ì	254	þ	þ	■
31	▼	US	63	?	95	_	127	DEL	159	Ÿ	APC	ƒ	191	¿	¿	┐	223	ß	ß	▀	255	ÿ	ÿ	nbsp