CoE 164

Computing Platforms

Machine Problem 03

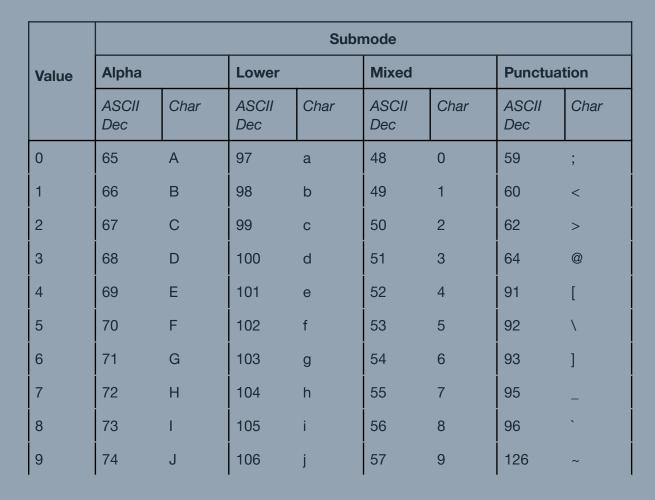Academic Period: 2nd Semester AY 2021-2022
Workload: 3 hours
Synopsis: Faster flights with barcodes!
Submission Platform: Google Forms

Annex A

Table of Mapped Values for Each Submode

This table shows a mapping between ASCII characters and their corresponding ASCII values, and their values in the barcode. These mapped values are the ones used to build the symbol character values (SCVs).

Value	Submode							
	Alpha		Lower		Mixed		Punctuation	
	ASCII Dec	*Char*	*ASCII Dec*	*Char*	*ASCII Dec*	*Char*	*ASCII Dec*	*Char*
0	65	A	97	a	48	0	59	;
1	66	B	98	b	49	1	60	<
2	67	C	99	c	50	2	62	>
3	68	D	100	d	51	3	64	@
4	69	E	101	e	52	4	91	[
5	70	F	102	f	53	5	92	\
6	71	G	103	g	54	6	93	]
7	72	H	104	h	55	7	95	_
8	73	I	105	i	56	8	96	`
9	74	J	106	j	57	9	126	~

10	75	K	107	k	38	&	33	!
11	76	L	108	l	13	<CR>	13	<CR>
12	77	M	109	m	09	<HT>	09	<HT>
13	78	N	110	n	44	,	44	,
14	79	O	111	o	58	:	58	:
15	80	P	112	p	35	#	10	<LF>
16	81	Q	113	q	45	-	45	-
17	82	R	114	r	46	.	46	.
18	83	S	115	s	36	$	36	$
19	84	T	116	t	47	/	47	/
20	85	U	117	u	43	+	34	"
21	86	V	118	v	37	%	124	|
22	87	W	119	w	42	*	42	*
23	88	X	120	x	61	=	40	(
24	89	Y	121	y	94	^	41	)
25	90	Z	122	z		Lp	63	?
26	32	<SP>	32	<SP>	32	<SP>	123	{
27		LL		Sa		LL	125	}
28		Lm		Lm		La	39	'
29		Sp		Sp		Sp		La

Submode Switch Legend

L<x> - Latch to submode x

S<x> - Shift to submode x

<x>a - destination to submode alpha

<x>L - destination to submode lower

<x>m - destination to submode mixed

<x>p - destination to submode punctuation

Examples

La - Latch to submode alpha

Sp - Shift to submode punctuation

Annex B
Submode Switching State Machine

The data encoder and decoder should follow the state machine shown given its current submode, control value read, and target submode. Note that the encoder or decoder will start in the alpha submode.