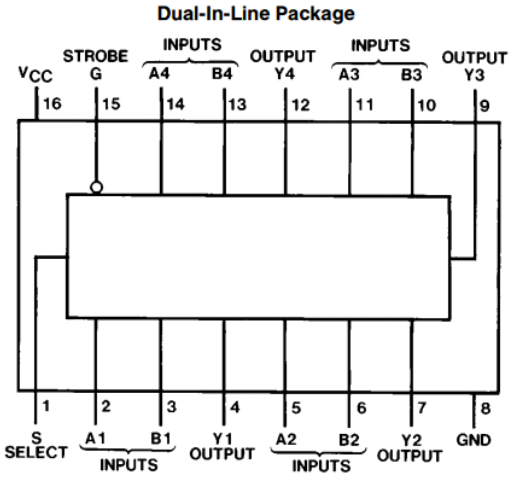
First, please complete the previous week's experiment on (i) rolling roll no. display and (ii) getting a better looking E in the roll no. display.

For the new set of experiments, you will get familiarized with multiplexers. Let us see what are they.

IC 74157 is a quad (i.e. 4 units in one IC), 2 to 1 Multiplexer.



Inputs				Output Y
Strobe	Select	A	B	
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

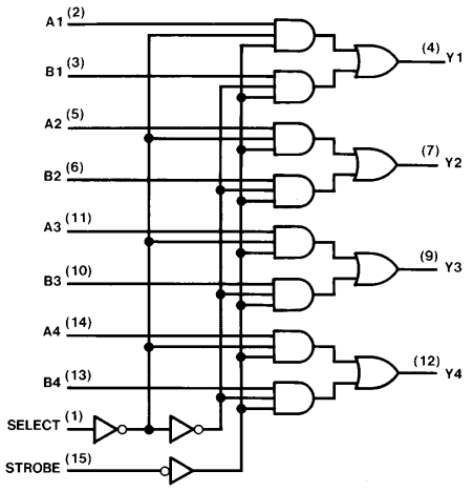
H = High Level, L = Low Level, X = Don't Care

Note that the select line is common for all 4 multiplexers.

Recommended Operating Conditions

Symbol	Parameter	DM54157			DM74157			Units
		Min	Nom	Max	Min	Nom	Max	
V_{CC}	Supply Voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH}	High Level Input Voltage	2			2			V
V_{IL}	Low Level Input Voltage			0.8			0.8	V
I_{OH}	High Level Output Current			−0.8			−0.8	mA
I_{OL}	Low Level Output Current			16			16	mA
T_A	Free Air Operating Temperature	−55		125	0		70	°C

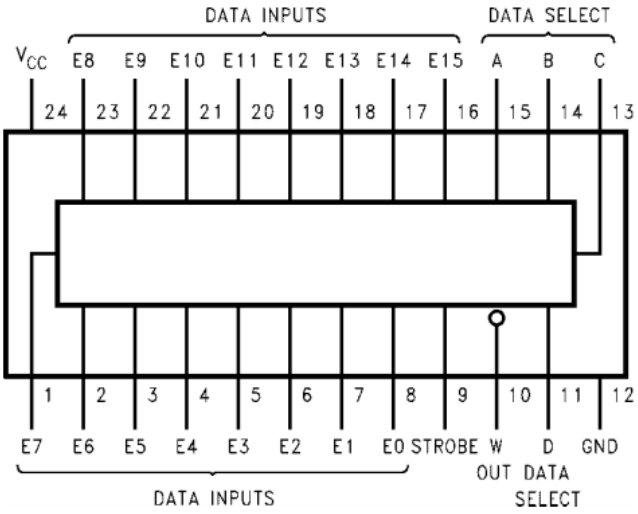
Note the difference in operating range in temperature for 54 series against 74 series.



Task:

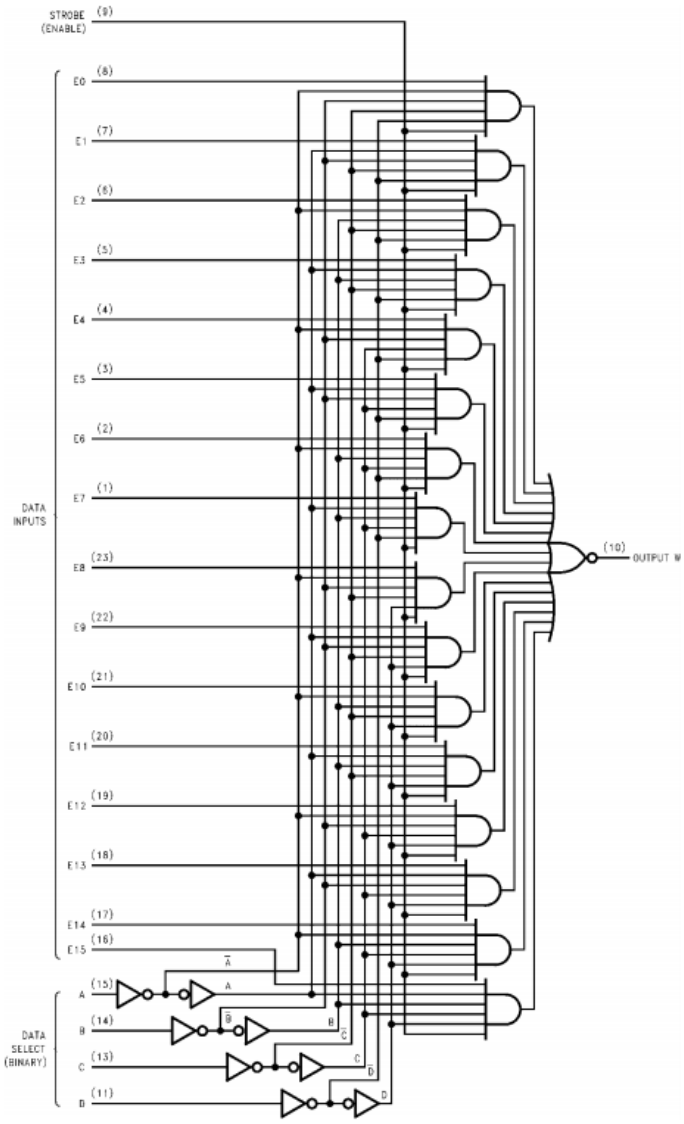
In the previous roll no. display experiment, the roll no. of only one of the Group member was displayed. Use IC 74157 by which roll no. of both the members can be shown in the same display but in time-multiplexed manner.

IC 74150: 16 to 1 Multiplexer



Inputs					Outputs
Select				Strobe	W
D	C	B	A	S	
X	X	X	X	H	H
L	L	L	L	L	$\overline{E0}$
L	L	L	H	L	$\overline{E1}$
L	L	H	L	L	$\overline{E2}$
L	L	H	H	L	$\overline{E3}$
L	H	L	L	L	$\overline{E4}$
L	H	L	H	L	$\overline{E5}$
L	H	H	L	L	$\overline{E6}$
L	H	H	H	L	$\overline{E7}$
H	L	L	L	L	$\overline{E8}$
H	L	L	H	L	$\overline{E9}$
H	L	H	L	L	$\overline{E10}$
H	L	H	H	L	$\overline{E11}$
H	H	L	L	L	$\overline{E12}$
H	H	L	H	L	$\overline{E13}$
H	H	H	L	L	$\overline{E14}$
H	H	H	H	L	$\overline{E15}$

H = HIGH Level
L = LOW Level
X = Don't Care
$\overline{E0}$, $\overline{E1}$ …$\overline{E15}$ = the complement of the level of the respective E input



Task:

In the previous roll no. display experiment, whose roll no. will be displayed needs to be decided by majority vote of 5 members / inputs.