1) **ECP:**

1	100	101	350	351	500	501	750	751	1000	1000	∞

Test Case Number	Inputs	Expected Outputs		
	No. of Shares	Portfolio Amount	Customer Status	Brokerage Fees
1	1	$0.0	Non-Prime	$ 0.00
2	100	$14,110.60	Non-Prime	$ 0.00
3	101	$14,299.78	Non-Prime	$ 0.00
4	350	$49,553.70	Non-Prime	$ 0.00
5	351	$49,959.35	Non-Prime	$ 75.00
6	500	$71,199.00	Non-Prime	$ 75.00
7	501	$71,530.93	Non-Prime	$ 75.00
8	750	$107,119.50	Non-Prime	$ 75.00
9	751	$107,630.42	Non-Prime	$ 75.00
10	1000	$143,341.00	Non-Prime	$ 75.00
11	1001	$144,731.66	Prime	$ 75.00
12	1800	$260,316.60	Prime	$ 75.00

Assumptions:

a) Customers having less than 1001 shares have been assumed to have a status of “Non-Prime”.

b) Customers having less than 351 shares are assumed to have paid $ 0.00 brokerage fees.

c) For checking the Prime status of customers having greater than 1001 shares, I have tested No. of Shares = 1800.

2)

Test Case Number	Inputs		Expected Output
	Time	Type of Day	(Passengers / hr)
1	12:00:00 am	Weekday	12
2	06:00:00 am	Weekday	12
3	06:00:01 am	Weekday	123
4	08:00:00 am	Weekday	123
5	08:00:01 am	Weekday	12
6	01:59:59 pm	Weekday	12
7	02:00:00 pm	Weekday	123
8	07:00:00 pm	Weekday	123
9	07:00:01 pm	Weekday	12
10	11:59:59 pm	Weekday	12
11	12:00:00 am	Weekend	7
12	06:00:00 am	Weekend	7
13	06:00:01 am	Weekend	73
14	08:00:00 am	Weekend	73
15	08:00:01 am	Weekend	7
16	01:59:59 pm	Weekend	7
17	02:00:00 pm	Weekend	73
18	07:00:00 pm	Weekend	73
19	07:00:01 pm	Weekend	7
20	11:59:59 pm	Weekend	7
21	12:00:00 am	Holiday	21
22	06:00:00 am	Holiday	21
23	06:00:01 am	Holiday	219
24	08:00:00 am	Holiday	219
25	08:00:01 am	Holiday	21
26	01:59:59 pm	Holiday	21
27	02:00:00 pm	Holiday	219
28	07:00:00 pm	Holiday	219
29	07:00:01 pm	Holiday	21
30	11:59:59 pm	Holiday	21

- **Weekday Average** = 45 (Given)
- **Weekday Low** = (24*45 – 7*123) / 17 = 12
- **Weekday High** = 35 * 2.75 (Factor Given) = 123

Similarly, multiplying by given factors:

- **Weekend Low** = 7
- **Weekend High** = 73

- **Holiday Low** = 21
- **Holiday High** = 219

3)

Test Case Number	Inputs	Expected Outputs				
	Fuel Level (Gallons)	Bell	Buzzer	Red Light	Yellow Light	Green Light
1	25.0	OFF	OFF	OFF	OFF	OFF
2	20.1	OFF	OFF	OFF	OFF	OFF
3	20.0	OFF	OFF	ON	OFF	OFF
4	15.0	OFF	OFF	ON	OFF	OFF
5	14.9	OFF	OFF	ON	ON	OFF
6	12.6	OFF	OFF	ON	ON	OFF
7	12.5	ON	OFF	ON	ON	OFF
8	6.35	ON	OFF	ON	ON	OFF
9	6.25	ON	ON	ON	ON	OFF
10	05.6	ON	ON	ON	ON	OFF
11	05.5	ON	ON	ON	ON	ON
12	00.0	ON	ON	ON	ON	ON

4)

Test Case No	Inputs	Expected Outputs		
	No. of Shares	Portfolio Amount	Customer Status	Brokerage fees
1	1,037	$149,999.99	Not Prime	$75.0
2	1,038	$150,084.16	Silver	$75.0
3	1,383	$199,992.55	Silver	$75.0
4	1,384	$200,137.21	Gold	$75.0
5	1,728	$249,900.94	Gold	$75.0
6	1,729	$250,045.6	Platinum	$75.0
7	1,800	$260,316.6	Platinum	$75.0

NOTE – This question has assumption as question 1 (Only assumption a in this case).

5)

5.1)

Conditions	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6
0 <= No. of Shares <= 100	Y					
101 <= No. of Shares <= 350		Y				
351 <= No. of Shares <= 500			Y			
501 <= No. of Shares <= 750				Y		
751 <= No. of Shares <= 1000					Y	
1001 <= No. of Shares <= ∞						Y
Actions:						
Brokerage Fees	$0.00	$0.00	$75.00	$75.00	$75.00	$75.00
Customer Status	Not Prim	Not Prime	Not Prime	Not Prime	Not Prime	Prime
Dividend	0.79%	1.13%	1.82%	2.09%	2.44%	3.33%

5.2)

Condition	**Rule 1**	**Rule 2**	**Rule 3**	**Rule 4**	**Rule 5**	
12:00:00 am to 6:00:00 am	Y					
6:00:01 am to 8:00:00 am		Y				
8:00:01 am to 1:59:59 pm			Y			
2:00:00 pm to 7:00:00 pm				Y		
7:00:01 pm to 11:59:59 pm					Y	
Actions						
Weekend (Passengers/hour)	7	73	7	73	7	
Weekday (Passengers/hour)	12	123	12	123	12	
Holiday (Passengers/hour)	21	219	21	219	21	

5.3)

Condition	**Rule 1**	**Rule 2**	**Rule 3**	**Rule 4**	**Rule 5**	**Rule 6**
20.1 Gallons to 25 Gallons	Y	Y	Y	Y	Y	Y
15 Gallons to 20 Gallons		Y	Y	Y	Y	Y
12.6 Gallons to 14 Gallons			Y	Y	Y	Y
6.3 Gallons to 12.5 Gallons				Y	Y	Y
5.6 Gallons to 6.2 Gallons					Y	Y
0 Gallon to 5.5 Gallons						Y
Actions:						
Bell	N	N	N	Y	Y	Y
Buzzer	N	N	N	N	Y	Y
Red Light	N	Y	Y	Y	Y	Y
Yellow Light	N	N	Y	Y	Y	Y
Green Light	N	N	N	N	N	Y

NOTE: 5.1 has same assumptions as question 1.

6)

The state diagram is represented as follows:
a) State **S0** is idle state.

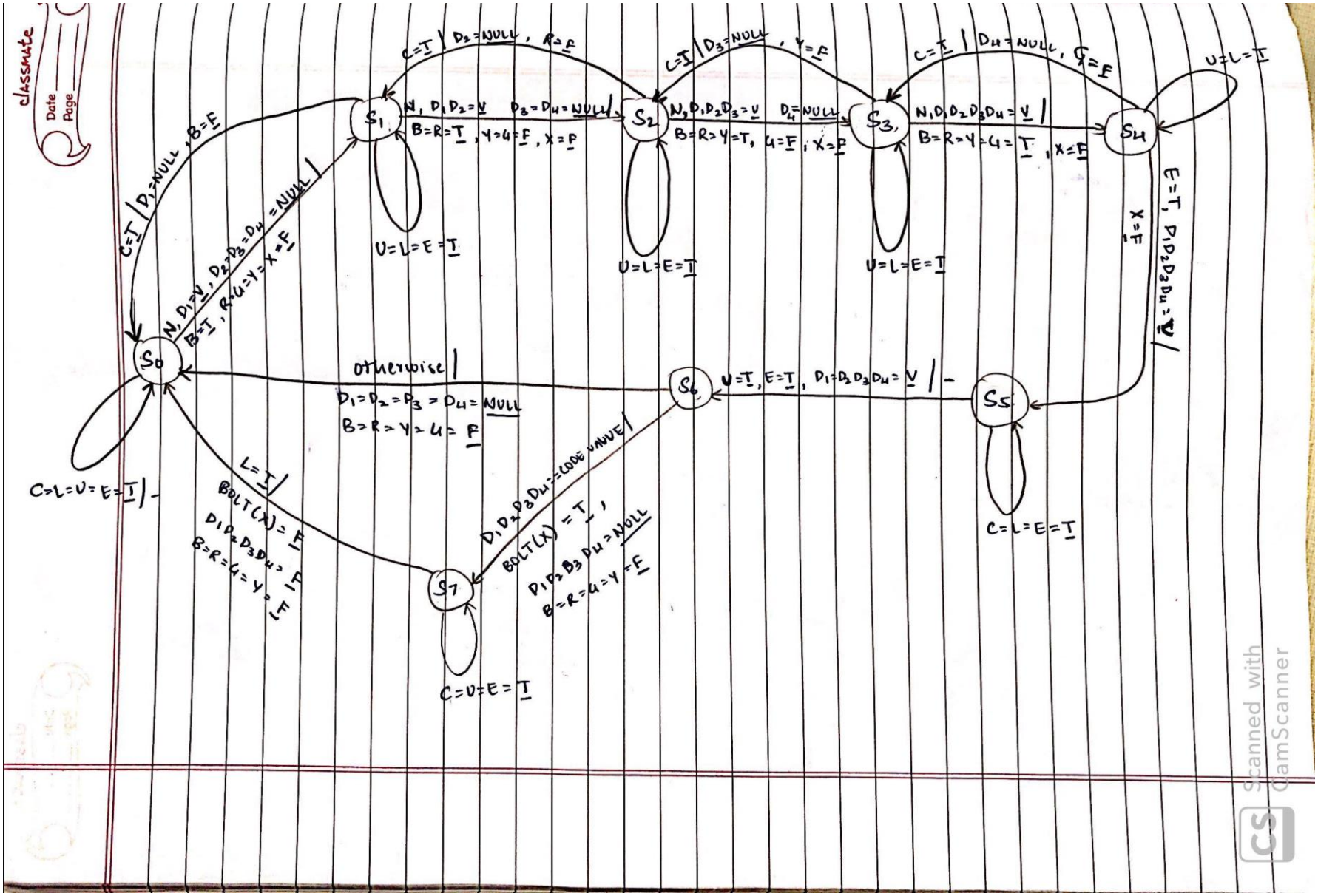
b) The system will enter State **S1** when 1st digit is entered. Subesquently, it will enter States **S2, S3, S4** when 2nd 3rd and 4th digits are pressed respectively.

c) When Enter button is pressed, the system enters state **S5**.

d) When Unlock button is pressed, the system enters state **S6** and check if the entered code is equal to the code set (Correct code).

e) Safe unlocks in state **S7**.

The entire flow of the system is shown below in state diagram shown below:


S0
S1
S2
S3
S4
S5
S6
S7
C=T | D1=NULL, B=F
N, D1=V, D2=D3=D4=NULL | B=T, R=U=Y=X=F
C=T | D2=NULL, R=F
N, D1D2=V D3=D4=NULL | B=R=T, Y=U=F, X=F
C=T | D3=NULL, Y=F
N, D1D2D3=V D4=NULL | B=R=Y=T, U=F, X=F
C=T | D4=NULL, U=F
N, D1D2D3D4=V | B=R=Y=U=T, X=F
U=L=T
E=T, D1D2D3D4=V
X=F
U=L=E=T
U=L=E=T
U=L=E=T
C=L=E=T
otherwise | D1=D2=D3=D4=NULL, B=R=Y=U=F
U=T, E=T, D1=D2D3D4=V | -
C=L=U=E=T | -
L=T | BOLT(X)=F, D1D2D3D4=F, B=R=U=Y=F
D1D2D3D4=CODE VALVE | BOLT(X)=T, D1D2B3D4=NULL, B=R=U=Y=F
C=U=E=T