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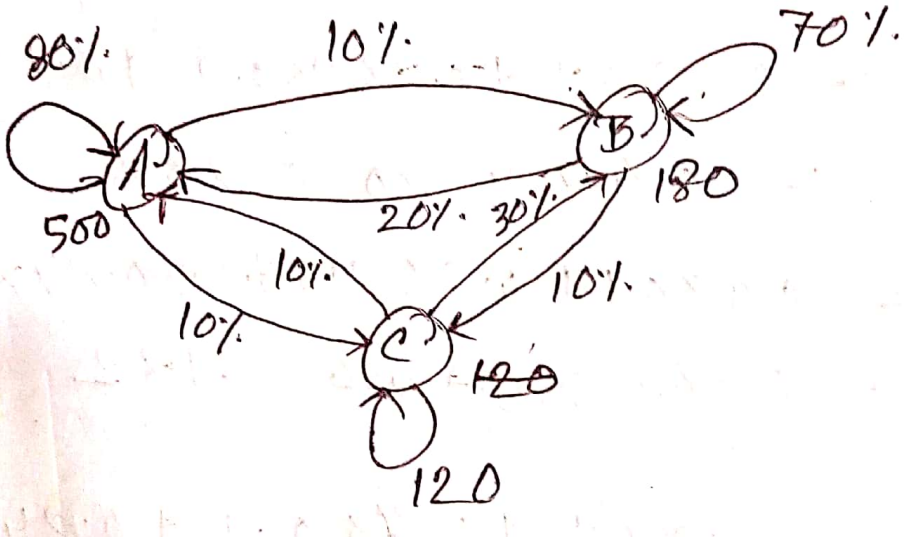
Given that, the numbers for A = 200, B = 180, and C = 1200, and id [0] = 5+5 = 10

Total number of customer = 500

Now, Transition diagram =



for 2nd week:

Probability:

$$A = \frac{200}{500} = 0.4$$

$$B = \frac{180}{500} = 0.36$$

$$C = \frac{120}{500} = 0.24$$

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	A	B	C
A	0.8	0.1	0.1
B	0.2	0.7	0.1
C	0.1	0.3	0.6

customers remain for this week

$A = 0.4 \times 0.8 + 0.36 \times 0.2 + 0.24 \times 0.1$

$= 0.416 \times 500 = 208$

$B = 0.4 \times 0.1 + 0.36 \times 0.7 + 0.24 \times 0.3$

$= 0.364 \times 500 = 182$

$C = 0.4 \times 0.1 + 0.36 \times 0.1 + 0.24 \times 0.6$

$= 0.22 \times 500 = 110$

3rd week:

$A = \frac{208}{500} = 0.416$

$B = \frac{182}{500} = 0.364$

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$$C = \frac{110}{500} = 0.22$$

Customer remain for this week:

$$A = 0.416 \times 8 + 0.364 \times 0.2 + 0.22 \times 0.1$$
$$= 0.4276 \times 500 = 216$$

$$B = 0.416 \times 0.1 + 0.364 \times 0.7 + 0.22 \times 0.3$$
$$= 0.3624 \times 500 = 181$$

$$C = 0.416 \times 0.1 + 0.364 \times 0.1 + 0.22 \times 0.6$$
$$= 0.2 \times 500 = 105$$

4th week:

$$A = \frac{214}{500} = 0.428$$

$$B = \frac{181}{500} = 0.362$$

$$C = \frac{105}{500} = 0.21$$

Customer remain for this week

$$A = 0.428 \times 0.8 + 0.362 \times 0.2 + 0.2 \times 0.1$$
$$= 0.4358 \times 500 = 218$$

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$B = 0.428 \times 0.1 + 0.362 \times 0.7 + 0.21 \times 0.3$

$= 0.3592 \times 500 = 180$

$C = 0.428 \times 0.1 + 0.362 \times .1 + 0.21 \times .6$

$= 0.205 \times 500 = 102$

5th week

$A = \frac{218}{500} = 0.436$

$B = \frac{180}{500} = 0.36$

$C = \frac{102}{500} = 0.204$

$\therefore A = 0.436 \times 0.8 + 0.36 \times 0.2 + 0.204 \times 0.1$

$= 0.4412 \times 500 = 221$

$B = 0.436 \times .1 + 0.36 \times .07 + 0.204 \times 0.3$

$= 0.3568 \times 500 = 178$

$C = 0.436 \times 0.1 + 0.36 \times 0.1 + 0.204 \times 0.6$

$= 0.202 \times 500 = 101$

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6th week:

$A = \frac{221}{500} = 0.442$

$B = \frac{178}{500} = 0.356$

$C = \frac{101}{500} = 0.202$

$A = 0.442 \times 0.8 + 0.356 \times 0.2 + 0.202 \times 0.1$

$= 0.445 \times 500 = 223$

$B = 0.442 \times 0.1 + 0.356 \times 0.7 + 0.202 \times 0.3$

$= 0.354 \times 500 = 177$

$C = 0.442 \times 0.1 + 0.356 \times 0.1 + 0.202 \times 0.6$

$= 0.201 \times 500 = 100$

7th week

$A = \frac{223}{500} = 0.446$

$B = \frac{177}{500} = 0.354$

$C = \frac{100}{500} = 0.2$

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$A = 0.446 \times 0.8 + 0.354 \times 0.2 + 0.2 \times 1$

$= 0.4476 \times 500 = 224$

$B = 0.446 \times 0.1 + 0.354 \times 0.7 + 0.2 \times 0.3$

$= 0.3524 \times 500 = 176$

$C = 0.446 \times 0.1 + 0.354 \times 0.1 + 0.2 \times 0.6$

$= 0.2 \times 500 = 100$

8th week

$A = \frac{224}{500} = 0.448$

$B = \frac{176}{500} = 0.352$

$C = \frac{100}{500} = 0.2$

$A = 0.448 \times 0.8 + 0.352 \times 0.2 + 0.2 \times 0.1$

$= 0.4488 \times 500 = 224$

$B = 0.448 \times 0.1 + 0.352 \times 0.7 + 0.2 \times 0.3$

$= 0.3512 \times 500 = 176$

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C = 0.448 X 0.1 + 0.352 X 0.1 + 0.2 X 0.6

= 0.2 X 500 = 100

9th week

$A = \frac{224}{500} = 0.448$

$B = \frac{176}{500} = 0.352$

$C = \frac{100}{500} = 0.2$

~~Ratio~~

A = 0.448 X 0.8 + 0.352 X 0.2 + 0.2 X 0.1

= 0.4488 X 500 = 224

B = 0.448 X 0.1 + 0.352 X 0.7 + 0.2 X 0.3

= 0.3512 X 500 = 176

C = 0.448 X 0.1 + 0.352 X 0.1 + 0.2 X 0.6

= 0.2 X 500 = 100

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10th week:

$$A = \frac{224}{500} = 0.448$$

$$B = \frac{176}{500} = 0.352$$

$$C = \frac{100}{500} = 0.2$$

$$A = 0.448 \times 0.8 + 0.352 \times 0.2 + 0.2 \times 0.1$$

$$= 0.4488 \times 500 = 224$$

$$B = 0.448 \times 0.1 + 0.352 \times 0.7 + 0.2 \times 0.8$$

$$= 0.3512 \times 500 = 176$$

$$C = 0.448 \times 0.1 + 0.352 \times 0.1 + 0.2 \times 0.6$$

$$= 0.2 \times 500 = 100$$