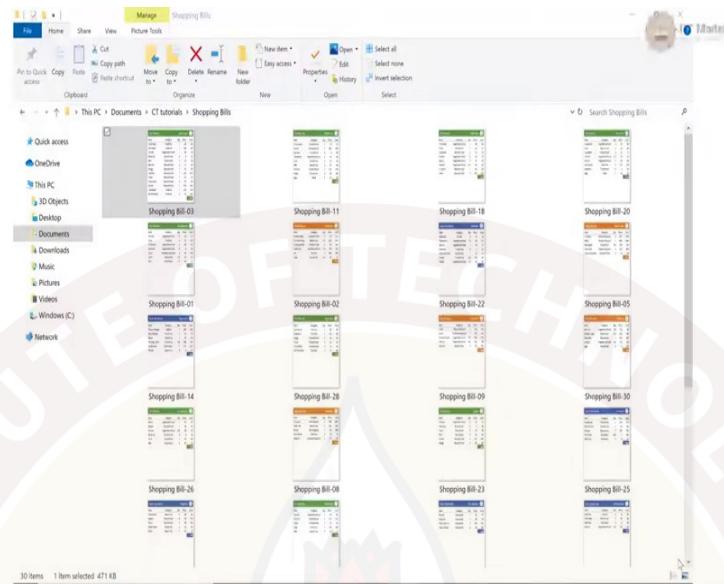


# IIT Madras

## ONLINE DEGREE

## Computational Thinking Tutorial for Lecture 2

(Refer Slide Time: 0:12)



Hello students of Computational Thinking. In this tutorial video, we will try to do some of the same procedures that the professors have done in lecture 2, except what they have done is on the mark sheet dataset and here we will work with the shopping bills data. As you can see here, these are the shopping bills that we are using and they are all randomised. So, this is bill number 3, this is bill number 11, 18 and so on. So, this is not in a particular order, now let us start looking at our first problem.

(Refer Slide Time: 0:54)

Item	Category	Qty	Price	Cost
Face Wash	Toiletries	1	89	89
Shampoo	Toiletries	1	140	140
Onions	Vegetables/Food	1	98	98
Bananas	Fruits/Food	4	8	32
Milk	Dairy/Food	1	24	24
Biscuits	Packed/Food	2	22	44
Maggi	Packed/Food	1	85	85
Horlicks	Packed/Food	1	270	270
Chips	Packed/Food	1	20	20
Chocolates	Packed/Food	4	10	40
Cereal	Packed/Food	1	220	220
Handwash	Toiletries	1	139	139
Air freshener	Toiletries	2	70	140

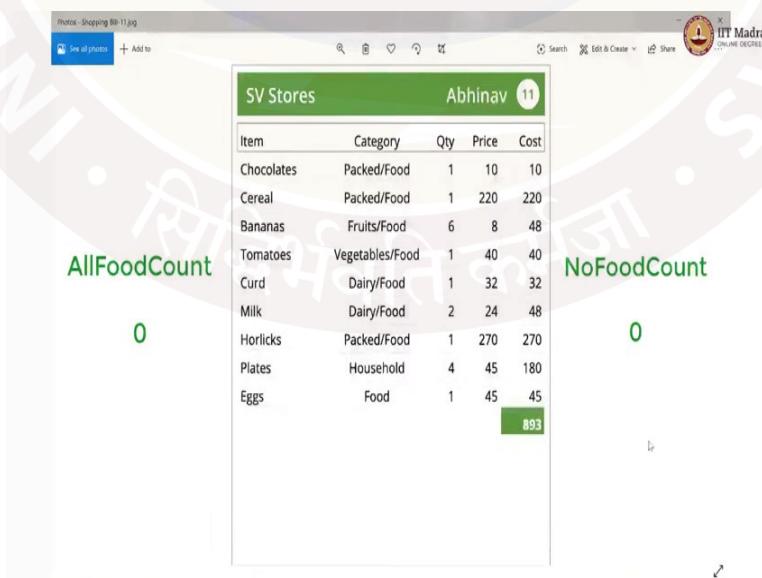
## Count the number of bills which have

a) no food item purchases

b) only food item purchases.

We see that, food is a very common category of purchase in our bills, so let us try to count the number of purchases where there is no food at all or where there is only food and no other category. So, for this we will maintain two variables one will be all food count and the other one will be no food count. So every time a bill comes up which has only food, we shall increment the all food count variable and wherever there is a bill without any food, we will increment the no food count variable. And we initialise these variables to the number 0. So let us begin with this is our first shopping bill and as you can see there is food but there is also toiletries, so there is nothing to increment here, this is neither all food nor no food.

(Refer Slide Time: 2:19)



The screenshot shows a shopping bill from SV Stores for Abhinav. The bill lists various items with their quantities, prices, and costs. The items and their categories are:

Item	Category	Qty	Price	Cost
Chocolates	Packed/Food	1	10	10
Cereal	Packed/Food	1	220	220
Bananas	Fruits/Food	6	8	48
Tomatoes	Vegetables/Food	1	40	40
Curd	Dairy/Food	1	32	32
Milk	Dairy/Food	2	24	48
Horlicks	Packed/Food	1	270	270
Plates	Household	4	45	180
Eggs	Food	1	45	45

**AllFoodCount** 0      **NoFoodCount** 0

**893**

So the next bill here there is food, food, food, food and then there is one household item, so again neither all food nor no food, so we are not incrementing anything.

(Refer Slide Time: 2:33)

The screenshot shows a shopping bill titled "SV Stores Ahmed 18". The table lists the following items:

Item	Category	Qty	Price	Cost
Tomatoes	Vegetables/Food	1	40	40
Curd	Dairy/Food	1	32	32
Cupcakes	Packed/Food	2	25	50
Carrots	Vegetables/Food	1.5	50	75
Beans	Vegetables/Food	1	45	45
Onions	Vegetables/Food	0.5	98	49
Turmeric	Packed/Food	1	82	82
Ghee	Packed/Food	1	230	230

Subtotal: 603

Variables shown: AllFoodCount = 1, NoFoodCount = 0.

And here we see everything is food, there is no non-food items in this purchase. So this one will lead to an increment in the all food count variable, so that that makes it plus 1.

(Refer Slide Time: 2:51)

The screenshot shows a shopping bill titled "SV Stores Ahmed 20". The table lists the following items:

Item	Category	Qty	Price	Cost
Tomatoes	Vegetables/Food	2	40	80
Curd	Dairy/Food	2	32	64
Cupcakes	Packed/Food	3	25	75
Carrots	Vegetables/Food	0.5	50	25
Onions	Vegetables/Food	1	98	98
Handwash	Toiletries	1	139	139
Bananas	Fruits/Food	12	8	96
Eggs	Food	1	45	45

Subtotal: 622

Variables shown: AllFoodCount = 1, NoFoodCount = 0.

And here again we see food, food, food but toiletries, so we do not make any increment.

(Refer Slide Time: 3:00)

AllFoodCount 1 NoFoodCount 0

SV Stores		Srivatsan 1		
Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Soap	Toiletries	4	32	128
Tomatoes	Vegetables/Food	2	40	80
Bananas	Vegetables/Food	8	8	64
Socks	Footwear/Apparel	3	56	168
Curd	Dairy/Food	0.5	32	16
Milk	Dairy/Food	1.5	24	36
				567

And here we see food and toiletries, no increment again in either variable.

(Refer Slide Time: 3:07)

AllFoodCount 1 NoFoodCount 0

Big Bazaar		Sudeep 2		
Item	Category	Qty	Price	Cost
Baked Beans	Canned/Food	1	125	125
Chicken Wings	Meat/Food	0.5	600	300
Cocoa powder	Canned/Food	1	160	160
Capsicum	Vegetables/Food	0.8	180	144
Tie	Apparel	2	390	780
Clips	Household	0.5	32	16
				1525

And here we see food and apparel so no increment again in either available.

(Refer Slide Time: 3:13)

AllFoodCount 1 NoFoodCount 0

Sun General		Suresh 22		
Item	Category	Qty	Price	Cost
Batteries	Utilities	2	14	28
Tomatoes	Vegetables/Food	1.5	80	120
Spinach	Vegetables/Food	1	15	15
Bananas	Fruits/Food	4	5	20
Mosquito coils	Household	1	24	24
Guava	Fruits/Food	0.4	120	48
Potato	Vegetables/Food	1.5	40	60
				315

And here we see utilities and food, no increment.

(Refer Slide Time: 3:18)

AllFoodCount 1 NoFoodCount 0

Big Bazaar		Akshaya 9		
Item	Category	Qty	Price	Cost
Trousers	Women/Apparel	2	870	1740
Shirts	Women/Apparel	1	1350	1350
Detergent	Household	0.5	270	135
Tee shirts	Women/Apparel	4	220	880
Instant Noodles	Canned/Food	3	23	69
				1740

Apparel, apparel, household apparel but food, so again no increment.

(Refer Slide Time: 3:24)

The screenshot shows a shopping bill from Sun General for Vignesh. The bill includes items such as a Phone Charger, Razor Blades, and Shaving Lotion. The total cost is 656. The background features a watermark of the Indian Institute of Technology Madras logo.

Sun General		Vignesh 14		
Item	Category	Qty	Price	Cost
Phone Charger	Utilities	1	230	230
Razor Blades	Grooming	1	12	12
Razor	Grooming	1	45	45
Shaving Lotion	Grooming	0.8	180	144
Earphones	Electronics	1	210	210
Pencils	Stationery	3	5	15
				656

AllFoodCount

1

NoFoodCount

1

And now we have come to a bill where there is no food item at all, so we will increment the no food count by 1, so both are on 1 now.

(Refer Slide Time: 3:38)

The screenshot shows a shopping bill from SV Stores for Vignesh. The bill includes items such as Face Wash, Shampoo, Maggi, Chips, Chocolates, and Air Freshener. The total cost is 514. The background features a watermark of the Indian Institute of Technology Madras logo.

SV Stores		Vignesh 28		
Item	Category	Qty	Price	Cost
Face Wash	Toiletries	1	89	89
Shampoo	Toiletries	1	140	140
Maggi	Packed/Food	1	85	85
Chips	Packed/Food	1	20	20
Chocolates	Packed/Food	4	10	40
Air Freshener	Toiletries	2	70	140
				514

AllFoodCount

1

NoFoodCount

1

Going further, toiletries and food so no increment.

(Refer Slide Time: 3:44)

Big Bazaar		Mohith 9		
Item	Category	Qty	Price	Cost
Lindt	Chocolate/Food	1	125	125
Socks	Footwear/Apparel	1	120	120
Spring Onions	Vegetables/Food	0.5	220	110
Lettuce	Vegetables/Food	0.6	150	90
Cookies	Snacks/Food	2	75	150
				595

AllFoodCount

1

NoFoodCount

1

Food, apparel so no increment.

(Refer Slide Time: 3:48)

Big Bazaar		Radha 30		
Item	Category	Qty	Price	Cost
Broccoli	Vegetables/Food	0.5	120	60
Chicken Legs	Meat/Food	0.5	320	160
Basa Fish	Meat/Food	1	350	350
Lettuce	Vegetables/Food	0.8	150	120
Eggs	Meat/Food	12	9	108
				798

AllFoodCount

2

NoFoodCount

1

Only food, right so all food count is now incremented by 1 we are at 2.

(Refer Slide Time: 3:56)

The screenshot shows a shopping bill titled "Photos - Shopping Bill-26.jpg" from "SV Stores". The total count is 26. The items listed are:

Item	Category	Qty	Price	Cost
Bears	Vegetables/Food	1	45	45
Bread	Packed/Food	1	30	30
Onions	Vegetables/Food	0.5	98	49
Bananas	Fruits/Food	6	8	48
Curd	Dairy/Food	1	32	32
Milk	Dairy/Food	3	24	72

The total cost is 276.

AllFoodCount 3 NoFoodCount 1

Again all food so we are now at 3 on the all food count, no food count is still at 1.

(Refer Slide Time: 4:08)

The screenshot shows a shopping bill titled "Photos - Shopping Bill-08.jpg" from "Big Bazaar". The total count is 8. The items listed are:

Item	Category	Qty	Price	Cost
Trousers	Men/Apparel	2	950	1900
Basa Fish	Meat/Food	1	350	350
Boxers	Men/Apparel	4	160	640
Face Wash	Toiletries	1	72	72
Slippers	Footwear/Apparel	1	170	170

The total cost is 3132.

AllFoodCount 3 NoFoodCount 1

And here we have apparel and food, so no increment.

(Refer Slide Time: 4:12)

The screenshot shows a shopping bill titled "SV Stores" for "Julia" (ID 23). The items listed are Carrots, Bananas, Curd, Milk, Cereal, and Maggi. The total amount is 888.

SV Stores		Julia 23		
Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Bananas	Fruits/Food	12	8	96
Curd	Dairy/Food	3	32	96
Milk	Dairy/Food	4	24	96
Cereal	Packed/Food	2	220	440
Maggi	Packed/Food	1	85	85
				888

AllFoodCount

4

NoFoodCount

1

All food again, so increment all food by 1, so we now are at 4.

(Refer Slide Time: 4:22)

The screenshot shows a shopping bill titled "Sun General" for "Ahmed" (ID 25). The items listed are Earphones, Phone cover, Dongle, A4 sheets, and Ball Pens. The total amount is 1364.

Sun General		Ahmed 25		
Item	Category	Qty	Price	Cost
Earphones	Electronics	1	210	210
Phone cover	Accessories	1	140	140
Dongle	Electronics	1	790	790
A4 sheets	Stationery	200	1	200
Ball Pens	Stationery	2	12	24
				1364

AllFoodCount

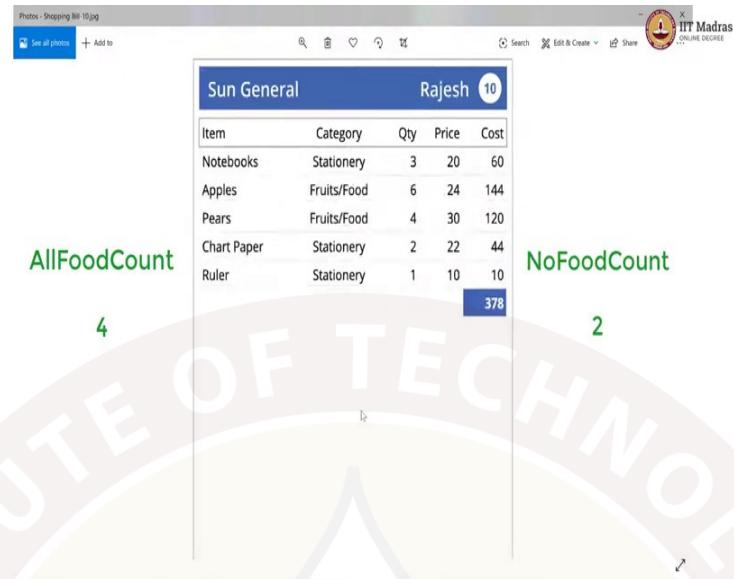
4

NoFoodCount

2

No food, so that will be 2.

(Refer Slide Time: 4:28)



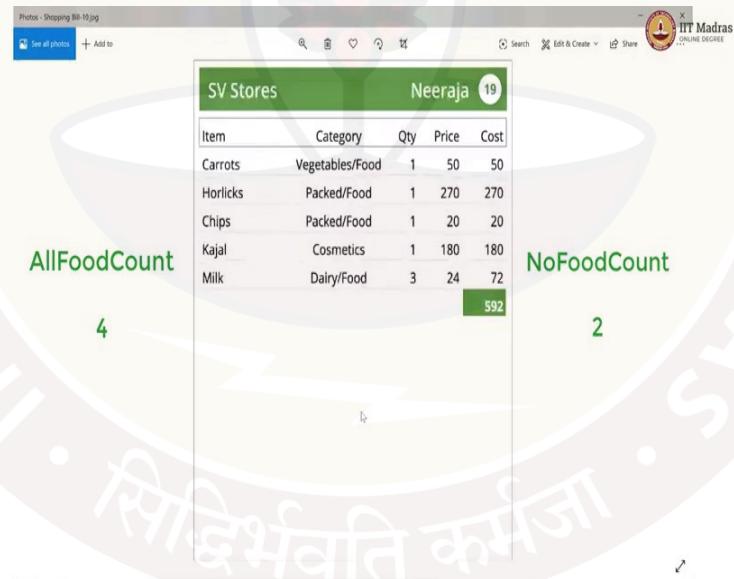
AllFoodCount 4

NoFoodCount 2

Sun General		Rajesh 10		
Item	Category	Qty	Price	Cost
Notebooks	Stationery	3	20	60
Apples	Fruits/Food	6	24	144
Pears	Fruits/Food	4	30	120
Chart Paper	Stationery	2	22	44
Ruler	Stationery	1	10	10
			378	

Food and stationery so no increment.

(Refer Slide Time: 4:32)



AllFoodCount 4

NoFoodCount 2

SV Stores		Neeraja 19		
Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1	50	50
Horlicks	Packed/Food	1	270	270
Chips	Packed/Food	1	20	20
Kajal	Cosmetics	1	180	180
Milk	Dairy/Food	3	24	72
			592	

Food, food, food and cosmetics, so no increment.

(Refer Slide Time: 4:37)

The screenshot shows a shopping bill from Sun General to Srivatsan. The bill details four household items: Broom, Dustpan, Floor Cleaner, and Tissue Paper. The total cost is 340.

Item	Category	Qty	Price	Cost
Broom	Household	1	70	70
Dustpan	Household	1	45	45
Floor Cleaner	Household	1	125	125
Tissue Paper	Household	2	50	100
				340

AllFoodCount

4

NoFoodCount

3

And all household items, so no food increments by 1 so we are at 3.

(Refer Slide Time: 4:44)

The screenshot shows a shopping bill from Sun General to Srivatsan. The bill details four non-food items: Batteries, USB Cable, Ball Pens, and Onions. The total cost is 354.

Item	Category	Qty	Price	Cost
Batteries	Utilities	6	14	84
USB Cable	Electronics	1	85	85
Ball Pens	Stationery	5	12	60
Onions	Vegetables/Food	1.25	100	125
				354

AllFoodCount

4

NoFoodCount

3

Utilities, electronic, stationary and foods, so no increment.

(Refer Slide Time: 4:49)

AllFoodCount      NoFoodCount

4                    4

Sun General		Advaita 16		
Item	Category	Qty	Price	Cost
Pencils	Stationery	2	5	10
Notebooks	Stationery	4	20	80
Geometry Box	Stationery	1	72	72
Graph Book	Stationery	1	25	25
		187		

Only stationary, so we are now at 4 on the no food count.

(Refer Slide Time: 4:56)

AllFoodCount      NoFoodCount

4                    4

Sun General		Aparna 12		
Item	Category	Qty	Price	Cost
Mosquito Coil	Household	2	24	48
Bananas	Fruits/Food	6	5	30
Ball Pens	Stationery	4	12	48
Paper Clips	Stationery	1	60	60
		186		

Household and food, so no increment.

(Refer Slide Time: 5:00)

The screenshot shows a shopping bill for George at SV Stores. The bill includes four items: Cereal, Milk, Cupcakes, and Chocolates, all categorized as Packed/Food. The total cost is 279.

SV Stores		George 17		
Item	Category	Qty	Price	Cost
Cereal	Packed/Food	1	220	220
Milk	Dairy/Food	1	24	24
Cupcakes	Packed/Food	1	25	25
Chocolates	Packed/Food	1	10	10
		279		

AllFoodCount 5 NoFoodCount 4

Only food again, so increment all food count by 1.

(Refer Slide Time: 5:08)

The screenshot shows a shopping bill for Abhinav at Big Bazaar. The bill includes three items: Shoes, Polish, and Socks, all categorized as Footwear/Apparel. The total cost is 3060.

Big Bazaar		Abhinav 13		
Item	Category	Qty	Price	Cost
Shoes	Footwear/Apparel	1	2700	2700
Polish	Footwear/Apparel	1	120	120
Socks	Footwear/Apparel	2	120	240
		3060		

AllFoodCount 5 NoFoodCount 5

And there is no food on this, so no food count also is incremented by 1.

(Refer Slide Time: 5:14)

The screenshot shows a shopping bill for Ahmed at SV Stores. The bill lists three items: Chocolates (Packed/Food), Curd (Dairy/Food), and Bananas (Fruits/Food). The total cost is 106. The bill is divided into two sections: 'AllFoodCount' (containing Chocolates and Curd) and 'NoFoodCount' (containing Bananas). The numbers 6 and 5 are displayed below the respective sections.

SV Stores					Ahmed 29
Item	Category	Qty	Price	Cost	
Chocolates	Packed/Food	1	10	10	
Curd	Dairy/Food	2	32	64	
Bananas	Fruits/Food	4	8	32	
				106	

All food again only food, food, food, food, so all food count is incremented by 1.

(Refer Slide Time: 5:22)

The screenshot shows a shopping bill for Akshaya at SV Stores. The bill lists three items: Curd (Dairy/Food), Butter (Dairy/Food), and Milk (Dairy/Food). The total cost is 128. The bill is divided into two sections: 'AllFoodCount' (containing Curd, Butter, and Milk) and 'NoFoodCount'. The numbers 7 and 5 are displayed below the respective sections.

SV Stores					Akshaya 21
Item	Category	Qty	Price	Cost	
Curd	Dairy/Food	0.5	32	16	
Butter	Dairy/Food	0.2	320	64	
Milk	Dairy/Food	2	24	48	
				128	

All food count is again incremented by 1.

(Refer Slide Time: 5:26)

The screenshot shows a shopping bill titled "SV Stores" for "Advaith". The bill lists three items: Milk (Dairy/Food, 2 units at 24), Bread (Packed/Food, 1 unit at 30), and Eggs (Food, 1 unit at 45). The total amount is 123. The bill is displayed on a computer screen with a circular watermark in the background.

SV Stores		Advaith 4		
Item	Category	Qty	Price	Cost
Milk	Dairy/Food	2	24	48
Bread	Packed/Food	1	30	30
Eggs	Food	1	45	45
		123		

AllFoodCount 8 NoFoodCount 5

One more increment for all food count.

(Refer Slide Time: 5:30)

The screenshot shows a shopping bill titled "Sun General" for "Abhinav". The bill lists two items: Keyboard (Toiletries, 1 unit at 89) and Mouse (Toiletries, 1 unit at 140). The total amount is 229. The bill is displayed on a computer screen with a circular watermark in the background.

Sun General		Abhinav 15		
Item	Category	Qty	Price	Cost
Keyboard	Toiletries	1	89	89
Mouse	Toiletries	1	140	140
		229		

AllFoodCount 8 NoFoodCount 6

And now 1 increment for no food count.

(Refer Slide Time: 5:36)

The screenshot shows a shopping bill for 'Akhil' at 'SV Stores'. The bill details two items: Bread (Packed/Food) and Biscuits (Packed/Food). The total cost is 96.

SV Stores					Akhil 7
Item	Category	Qty	Price	Cost	
Bread	Packed/Food	1	30	30	
Biscuits	Packed/Food	3	22	66	
					96

Below the table, there are two sections: 'AllFoodCount' (value 9) and 'NoFoodCount' (value 6).

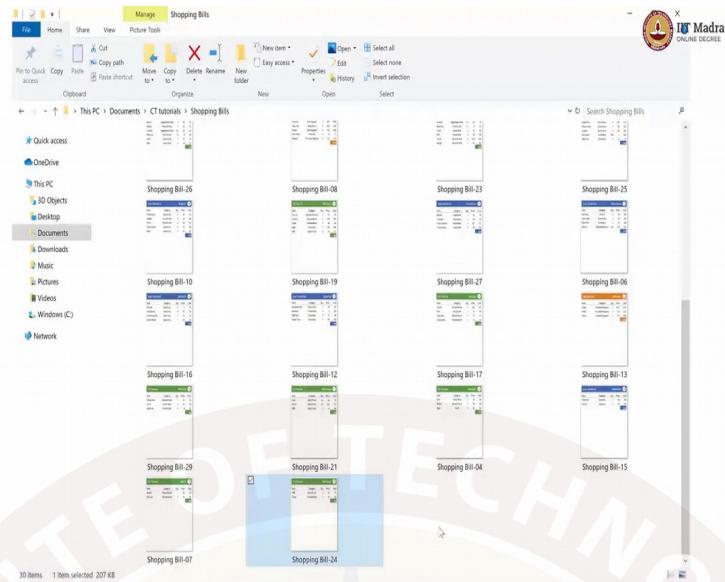
One more increment for all food count.

(Refer Slide Time: 5:41)

The screenshot shows a shopping bill for 'Neeraja' at 'SV Stores'. The bill details two items: Milk (Dairy/Food) and Chips (Packed/Food). The total cost is 92.

SV Stores					Neeraja 24
Item	Category	Qty	Price	Cost	
Milk	Dairy/Food	3	24	72	
Chips	Packed/Food	1	20	20	
					92

Below the table, there are two sections: 'AllFoodCount' (value 10) and 'NoFoodCount' (value 6).



And one more for all food count, I think now we have reached 10 and we have also reached the end of the dataset, this is the last card so if I close this you can see that we are at the last card.

(Refer Slide Time: 6:02)

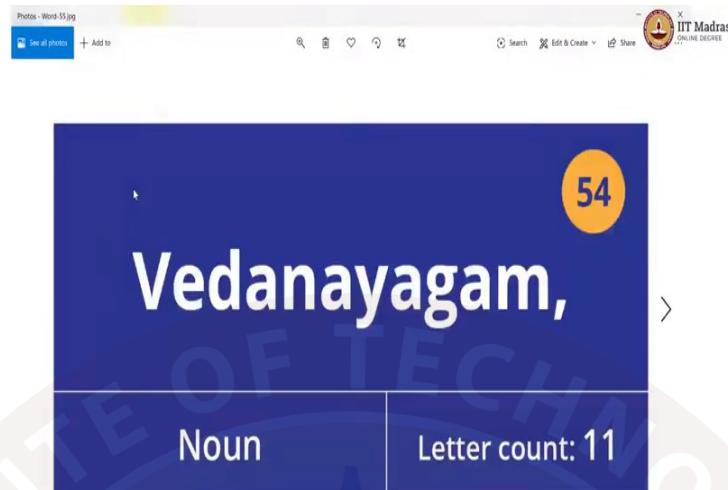
**Count the number of bills which have**

**a) no food item purchases = 6**

**b) only food item purchases = 10**

So these are the counts we have arrived at after iterating through the shopping bill data and maintaining two separate variables for counting bills which have no food at all and bills which have only food as all the purchased items. Now let us do another problem which is similar to what the professors have done in the lecture video.

(Refer Slide Time: 6:42)



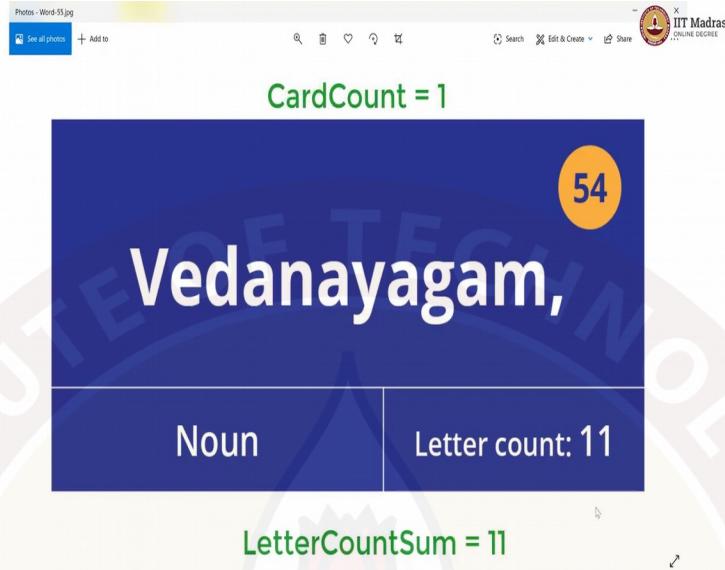
So, for that let us go to the words dataset and again here I have randomised it considerably and this is what the data cards look like. What we shall do in this problem is we will try to calculate the average word length in this data, so we have the letter count here, so we are going to use this to calculate the average of the word length and for this as the professors have done with the maths average in the lecture for the mark sheet data, we will maintain two variables again, one would be the count of the cards, how many cards are there and the other is the sum of the letter count. So, that way at the end of it we will have the sum of all the letters, the total number of letters and also the total number of words.

(Refer Slide Time: 7:43)

$$\begin{aligned} \text{Average word length} \\ = \\ \text{LetterCountSum/CardCount} \end{aligned}$$

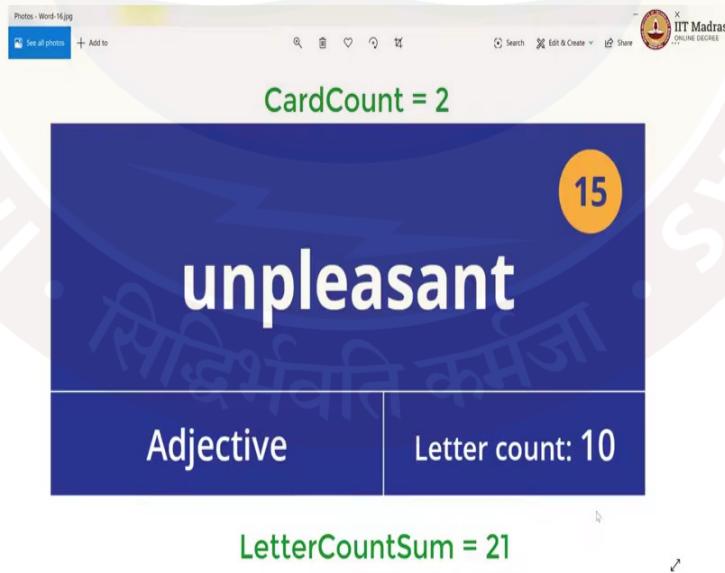
So, if we divide the sum by the count, we should be able to get the average word length in this data.

(Refer Slide Time: 7:52)



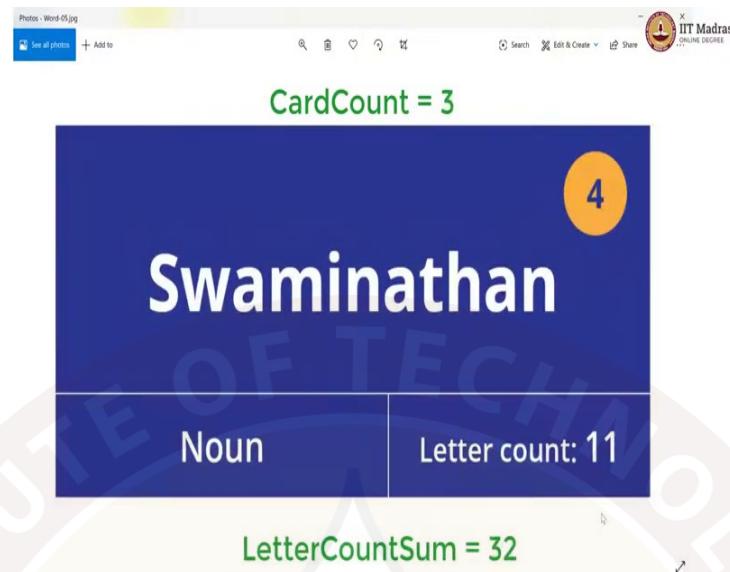
So, beginning with the first card we have in the order the sum we will initialise it to 0 and the letter count also we will initialise it to 0 and now we are adding 11 to the select count.

(Refer Slide Time: 8:15)



The next card we have 10 which uses the sum to be 21 and the count is 2.

(Refer Slide Time: 8:25)



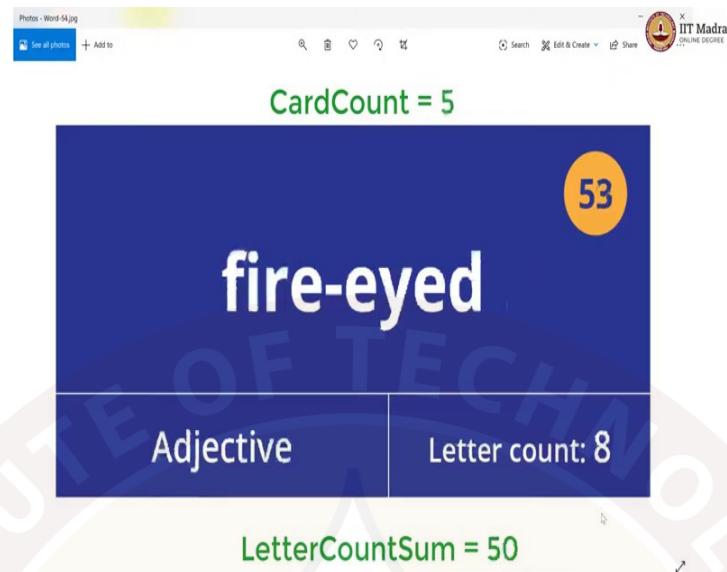
And this one again is 11 which gives us the count to be 3 and the sum to be 32.

(Refer Slide Time: 8:35)



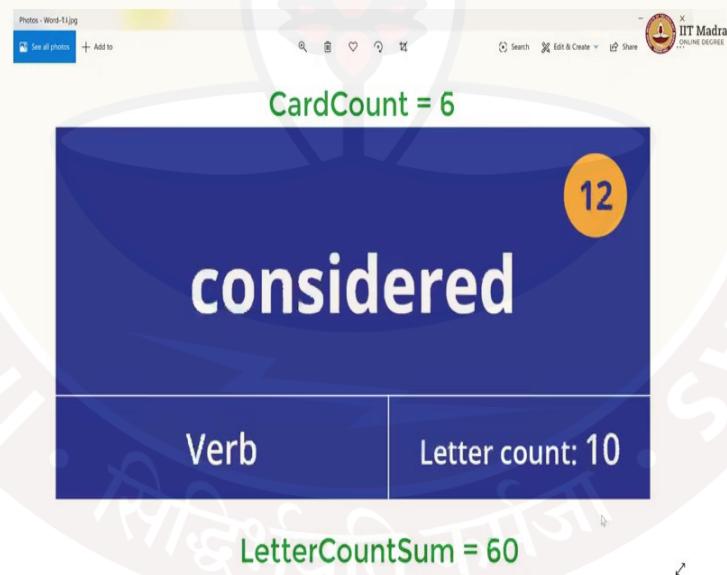
And once again we have 10, so this is 42 count is 4.

(Refer Slide Time: 8:42)



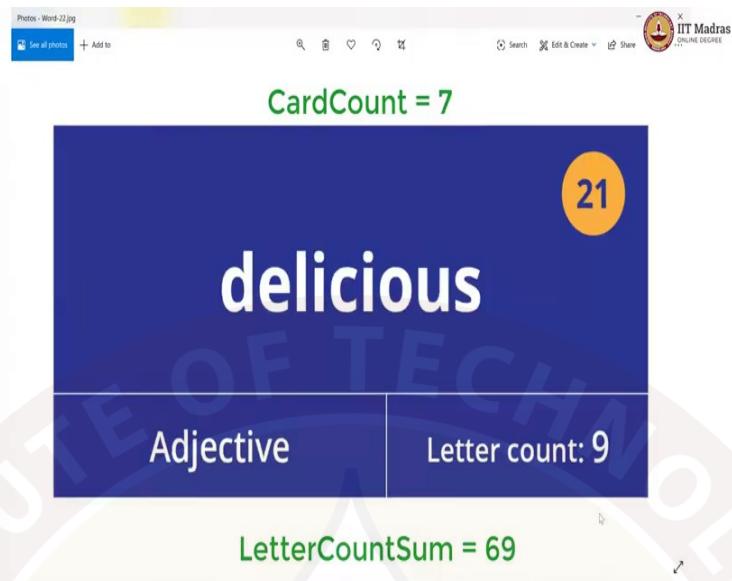
Now, we have letter count of 8 which gives us the sum to be 50 and the count to be 5.

(Refer Slide Time: 8:50)



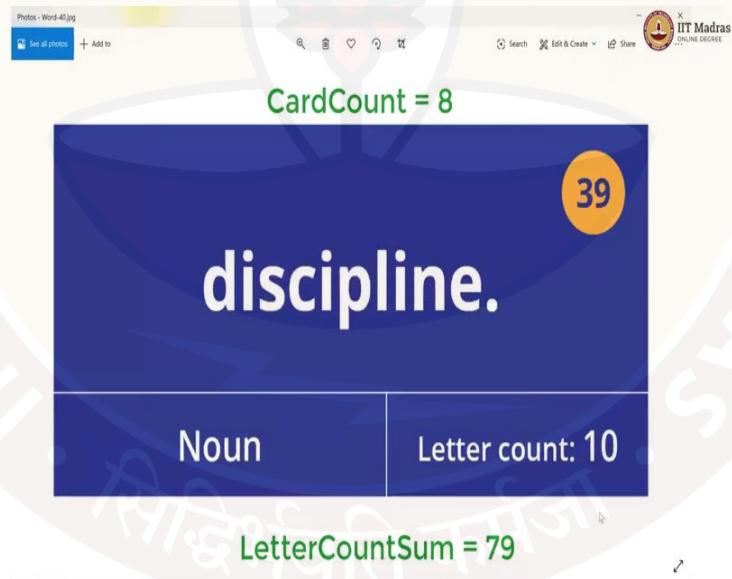
And again we have a 10 which gives us the sum to be 60 and the count to be 6.

(Refer Slide Time: 8:59)



And now we have a 9, the sum is 69 and the count is 7.

(Refer Slide Time: 9:05)



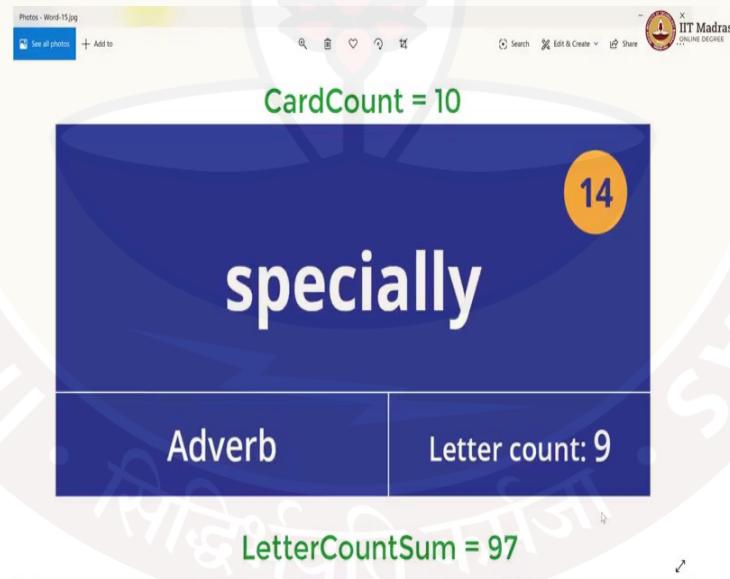
And we have a 10 again the sum is 79 and the count is 8.

(Refer Slide Time: 9:13)



And now we have a 9 again, so the sum is 88 and the count is 9.

(Refer Slide Time: 9:20)



Another 9, so the sum is 97 and the count is 10.

(Refer Slide Time: 9:27)



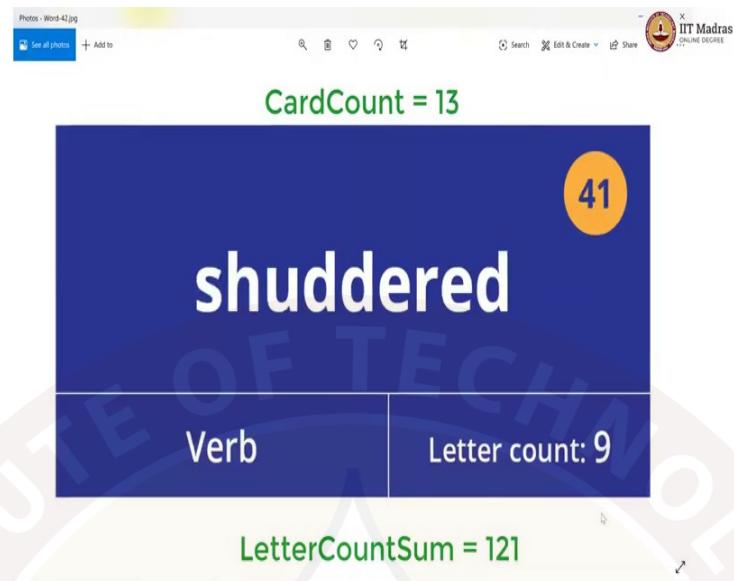
Plus one more 9, so the sum is 106 and the count is 11.

(Refer Slide Time: 9:34)



And now a 6 so the sum is 112 and the count is 12.

(Refer Slide Time: 9:40)



And now another 9, so the sum is 121 and the count is 13.

(Refer Slide Time: 9:47)



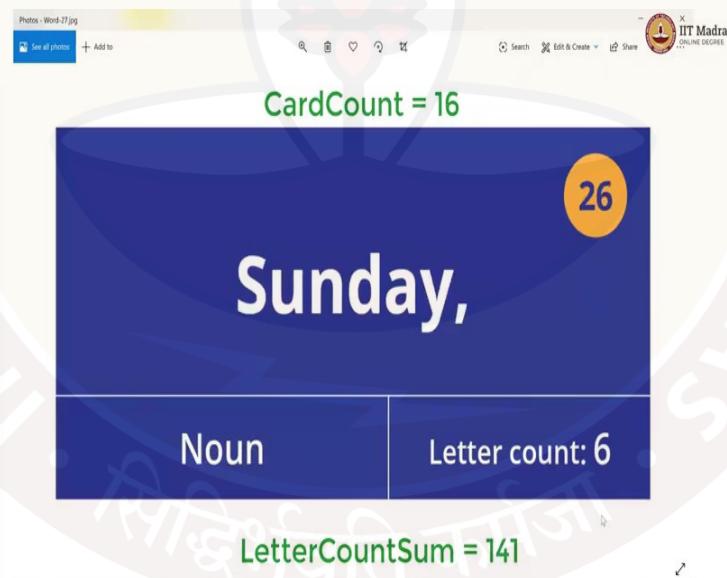
Now we have an 8 the sum is then 129 and the count is 14.

(Refer Slide Time: 9:54)



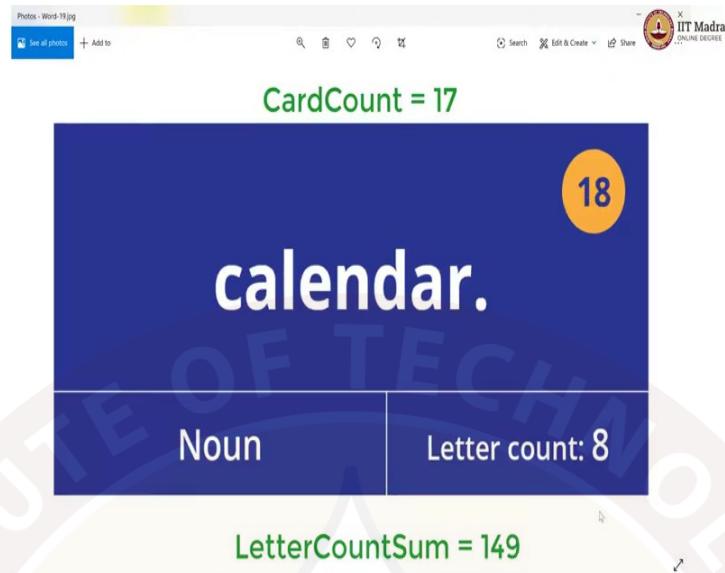
And now we have a 6 the sum becomes 135 and the count is 15.

(Refer Slide Time: 10:02)



And here we have yet another 6, the sum is 141 and the count is 16.

(Refer Slide Time: 10:09)



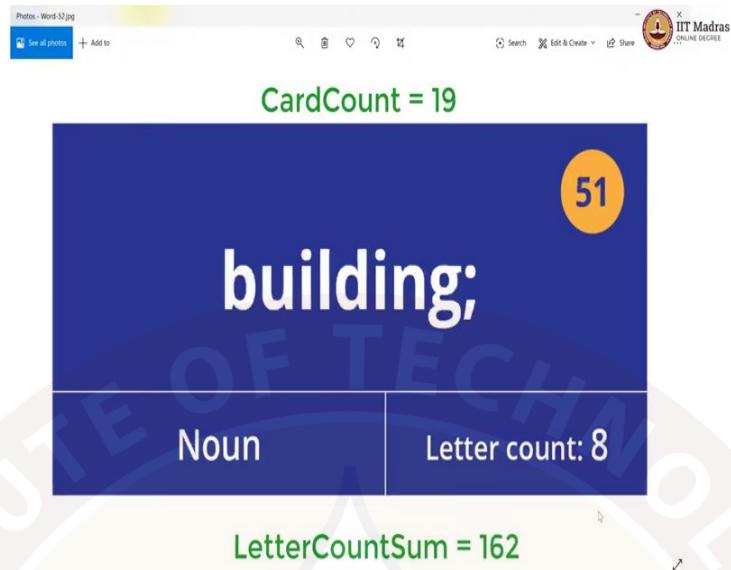
Now we have an 8, the sum is 149 count is 17.

(Refer Slide Time: 10:16)



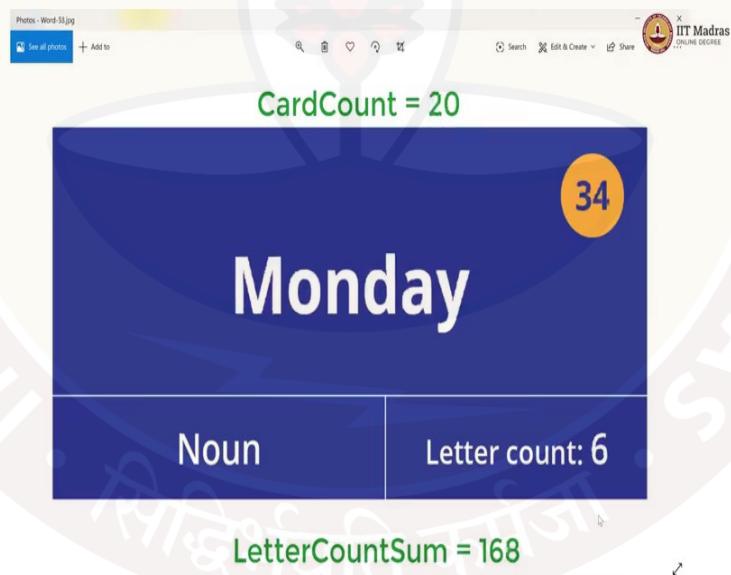
Plus 5 on the sum and plus 1 on the count.

(Refer Slide Time: 10:22)



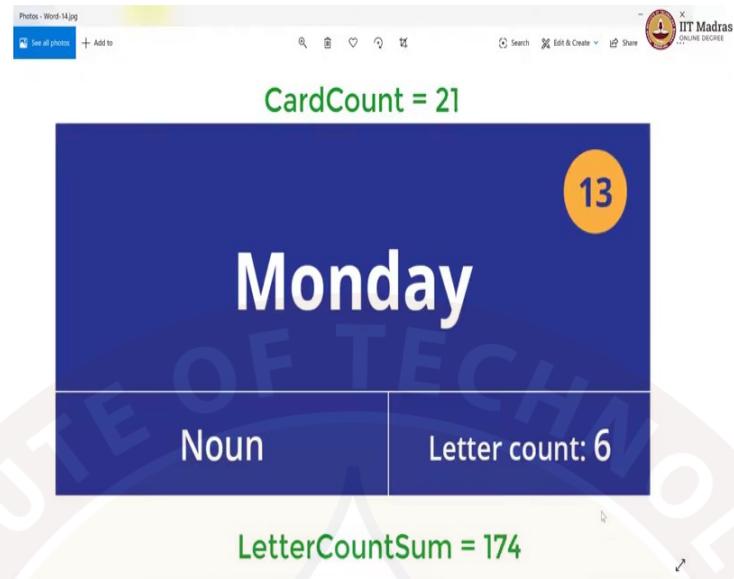
Then again plus 8 on the sum giving us 162 plus 1 on the count giving us 19.

(Refer Slide Time: 10:30)



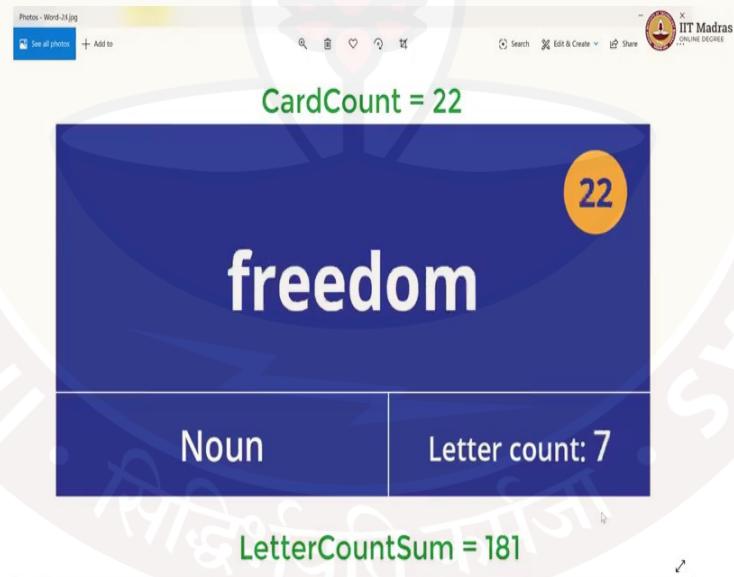
Then we have six additionally making it 168 and we have 20 cards.

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One more 6, so 174 21 cards.

(Refer Slide Time: 10:44)



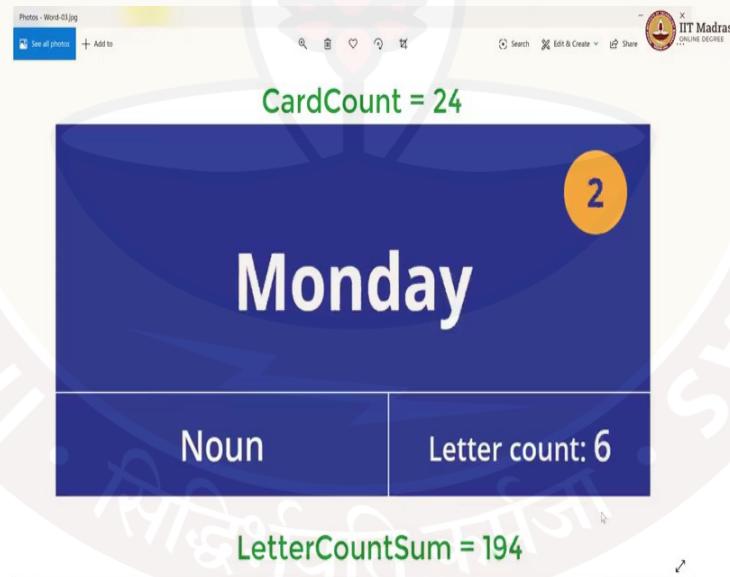
Plus a 7, sum is 181 for 22 cards.

(Refer Slide Time: 10:57)



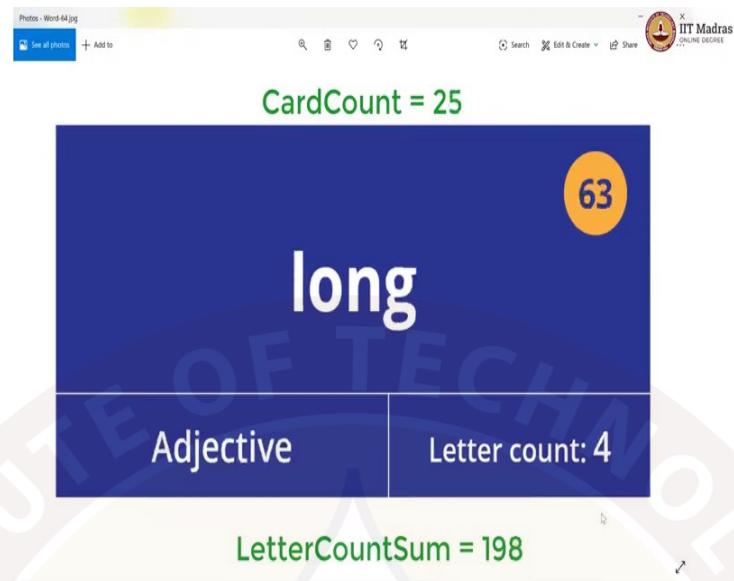
We have one more 7 which is a 188 sum for 23 cards.

(Refer Slide Time: 10:57)



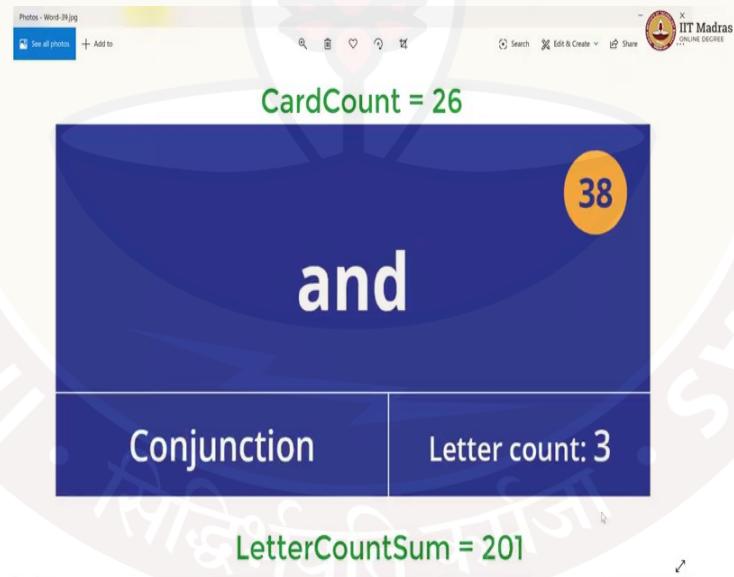
Plus 6 again sum is 194, cards is 24.

(Refer Slide Time: 11:04)



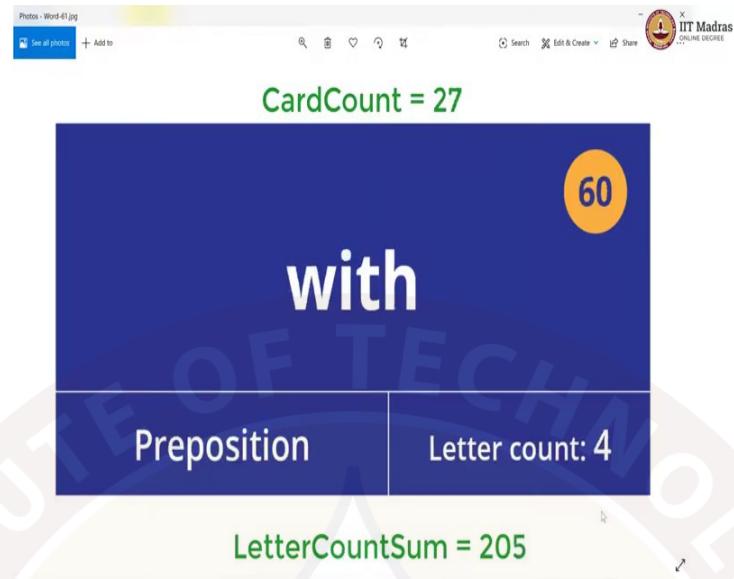
Plus 4 sum gives 198 and count is 25.

(Refer Slide Time: 11:11)



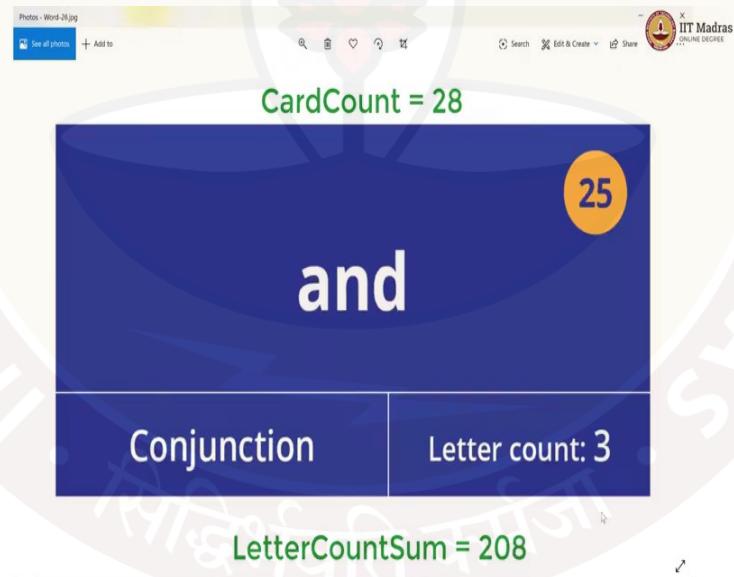
Plus 3 the sum is 201 the count is 26.

(Refer Slide Time: 11:18)



Plus 4 sum is 205, cards is 27.

(Refer Slide Time: 11:24)



Plus 3 sum is 208 number of cards is 28.

(Refer Slide Time: 11:29)



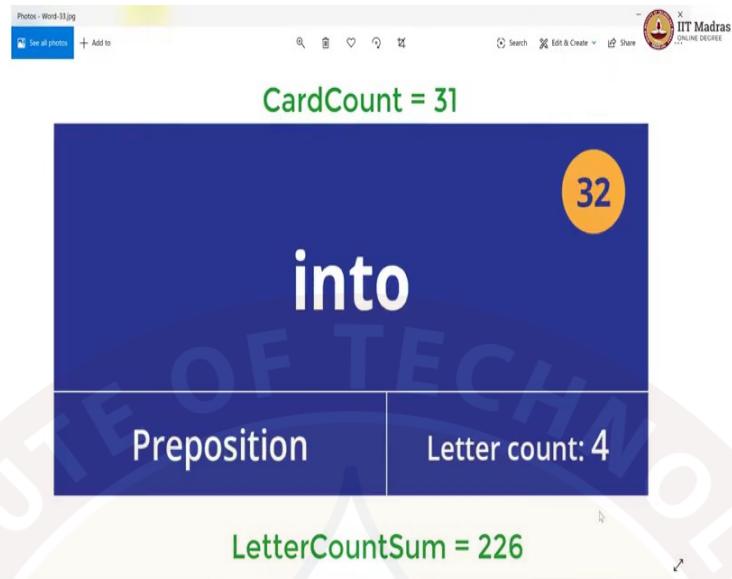
Then we have a plus 7 giving us sum is 215 and number of cards is 29.

(Refer Slide Time: 11:38)



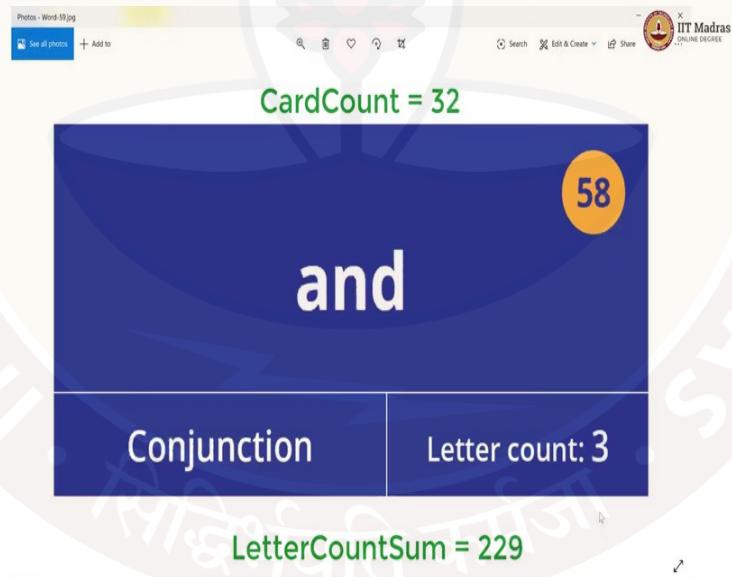
Plus 7 again, sum is 222 number of cards is 30.

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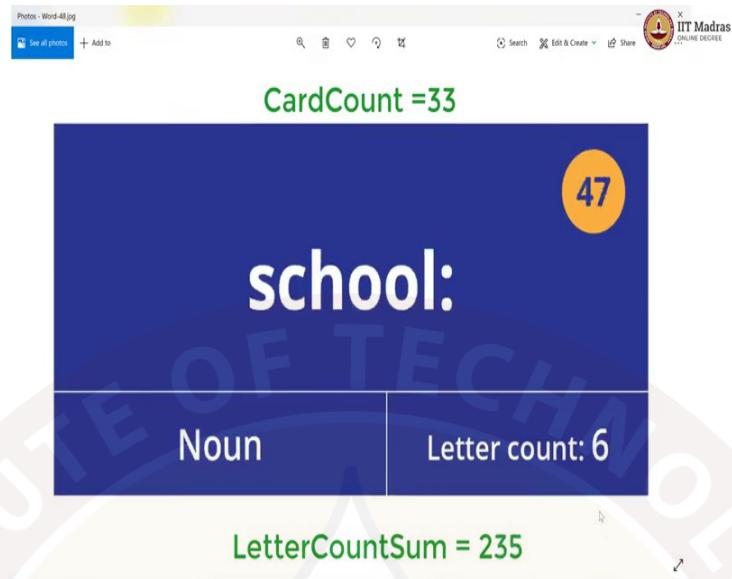
Plus 4 226 and 31.

(Refer Slide Time: 11:49)



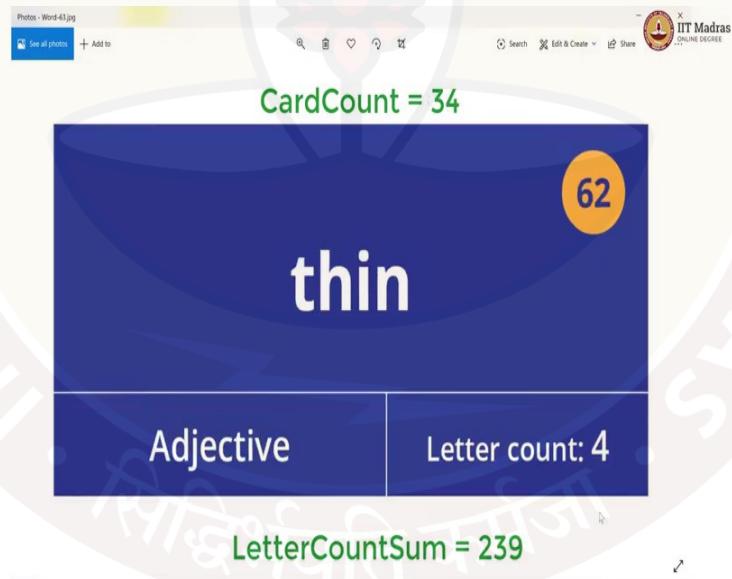
Plus 3 229 and 32.

(Refer Slide Time: 11:54)



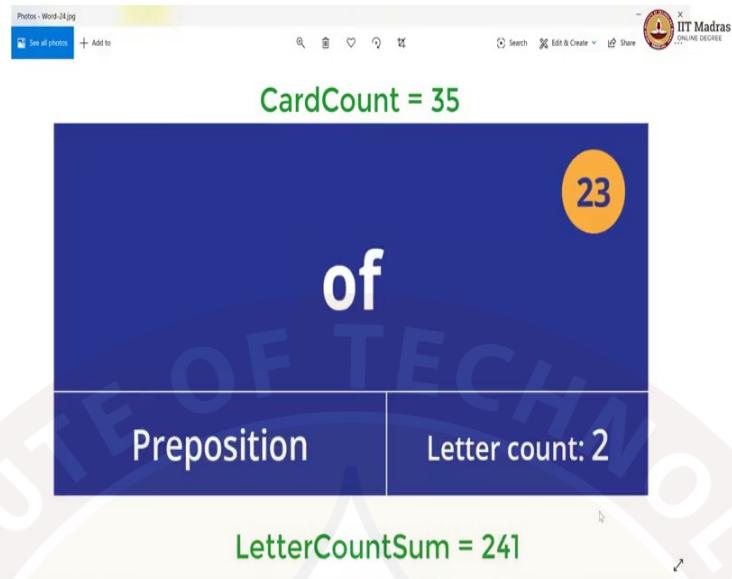
Plus 6 235 and 33.

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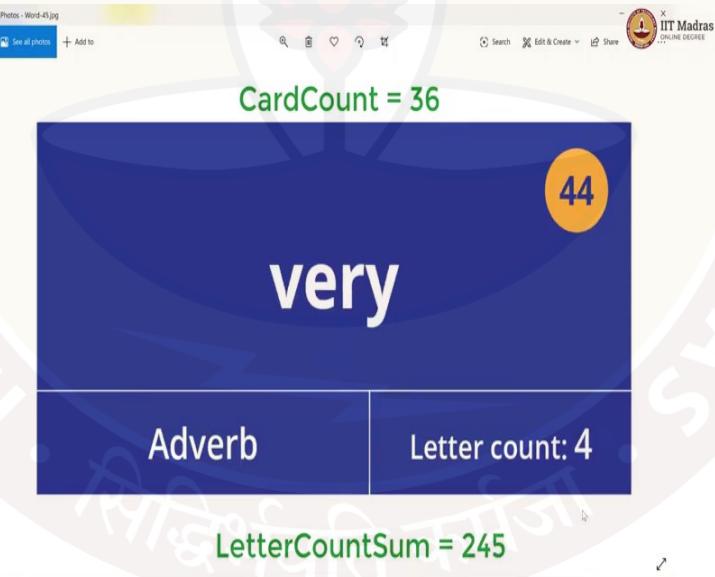
Plus 4 239 and 34.

(Refer Slide Time: 12:04)



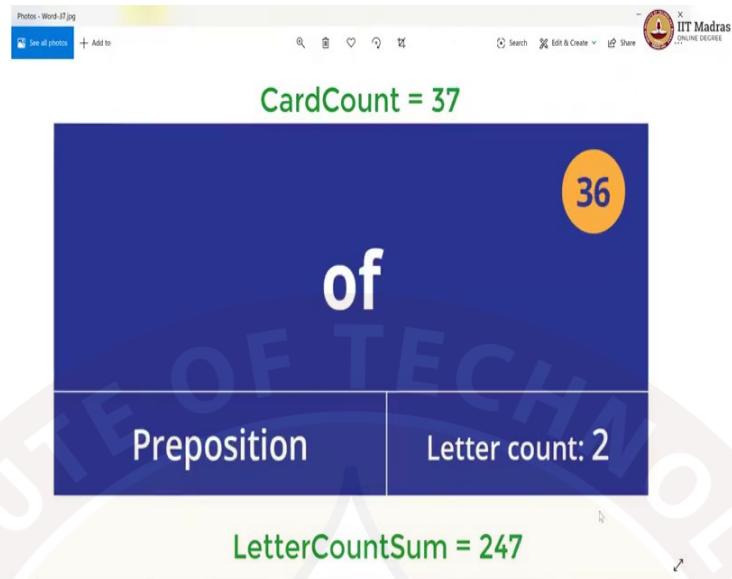
Plus 2 241 and 35.

(Refer Slide Time: 12:08)



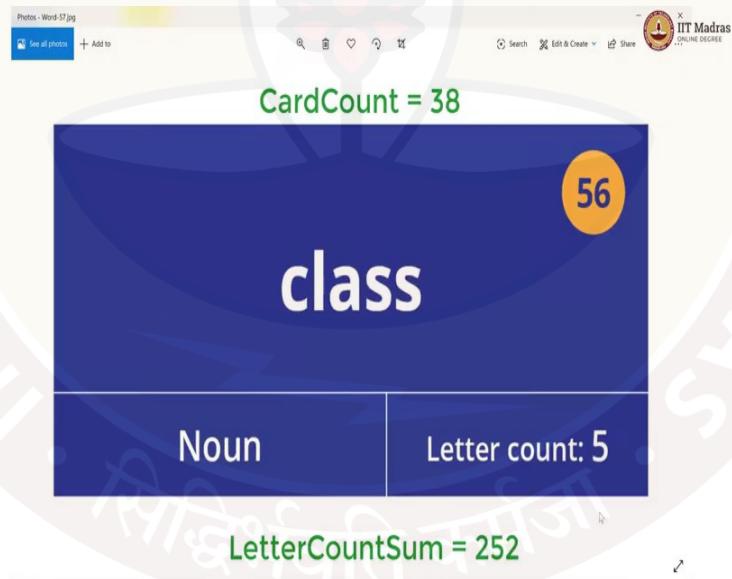
Plus 4 245 and 36.

(Refer Slide Time: 12:12)



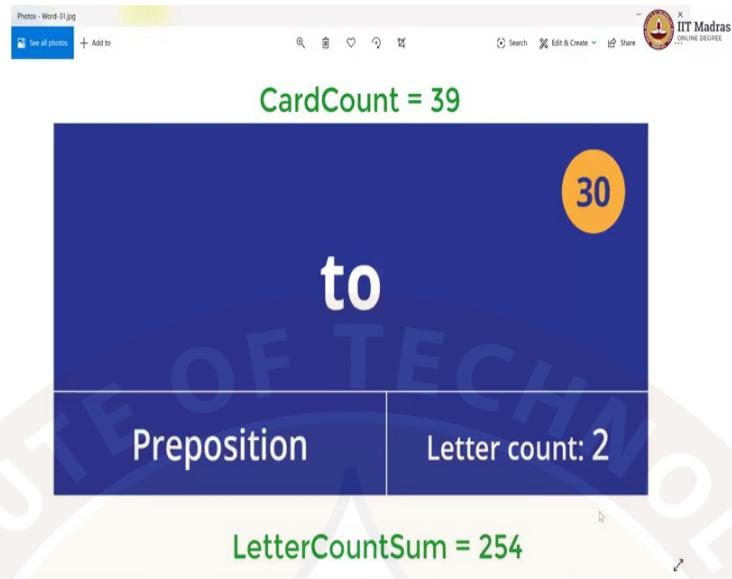
Plus 2 247 and 37.

(Refer Slide Time: 12:17)



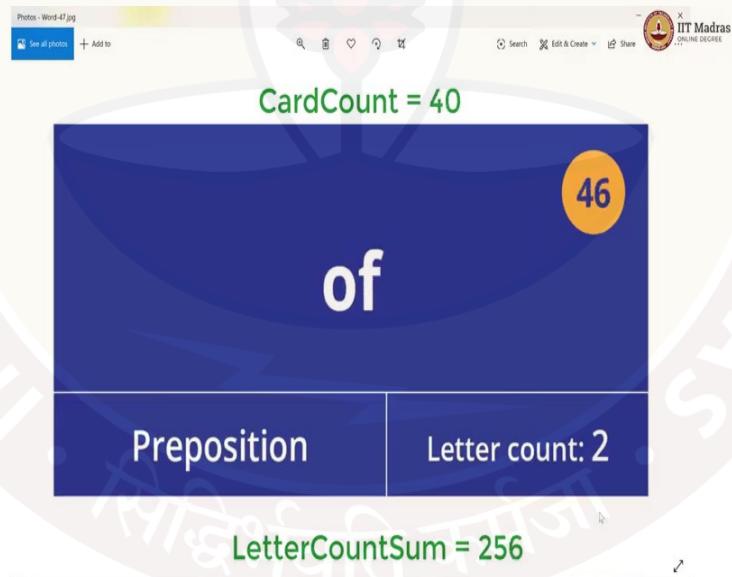
Plus 5 252 and 38.

(Refer Slide Time: 12:21)



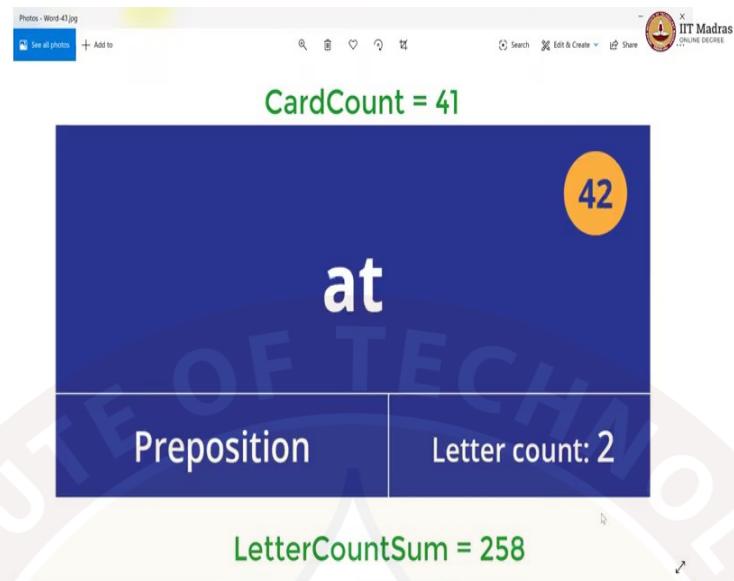
Plus 2 254 and 39.

(Refer Slide Time: 12:26)



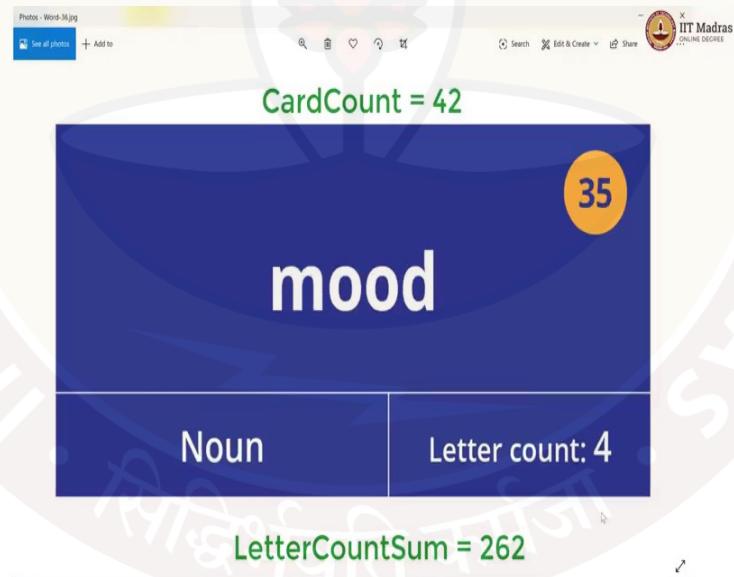
Plus 2 again 256 and 40.

(Refer Slide Time: 12:30)



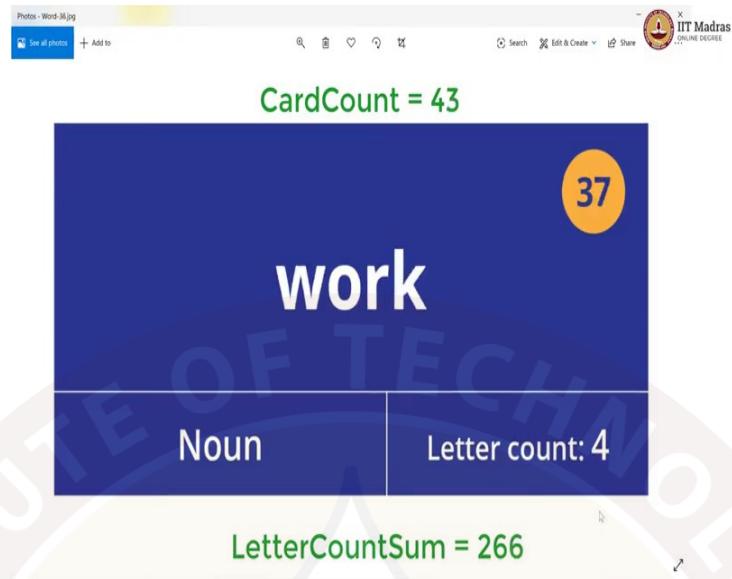
Plus 2 again 258 and 41.

(Refer Slide Time: 12:35)



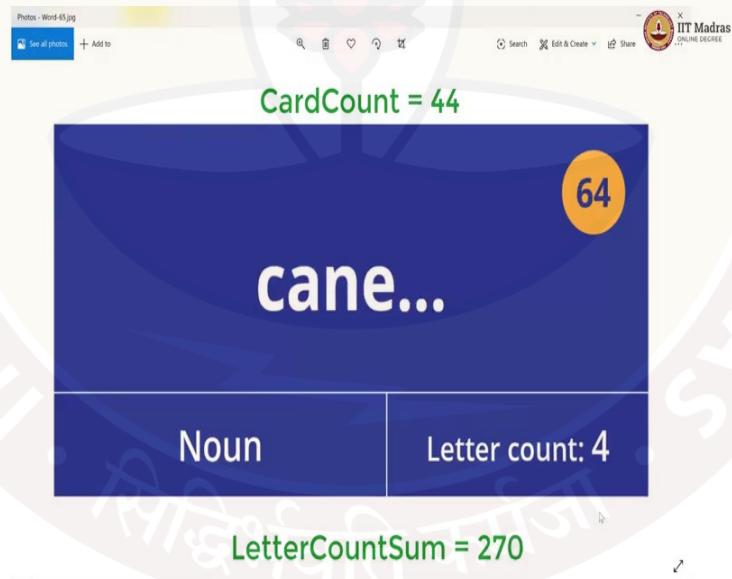
Plus 4 262 and 42.

(Refer Slide Time: 12:39)



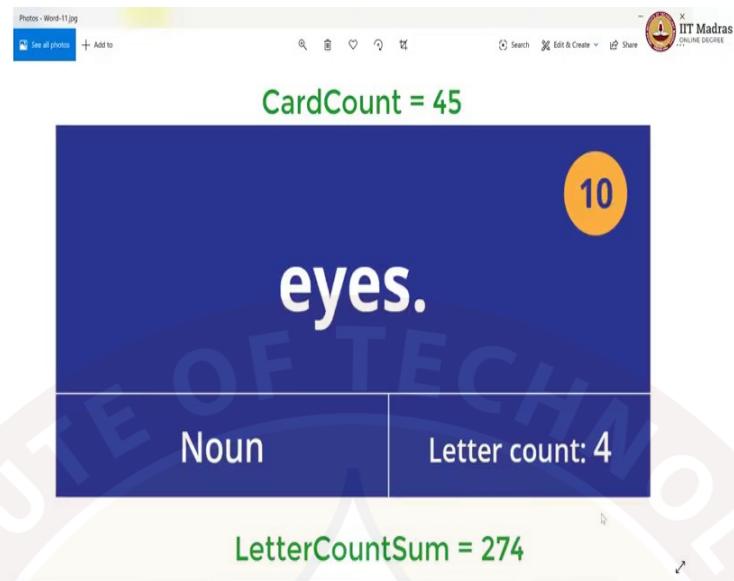
Plus 4 266 and 43.

(Refer Slide Time: 12:45)



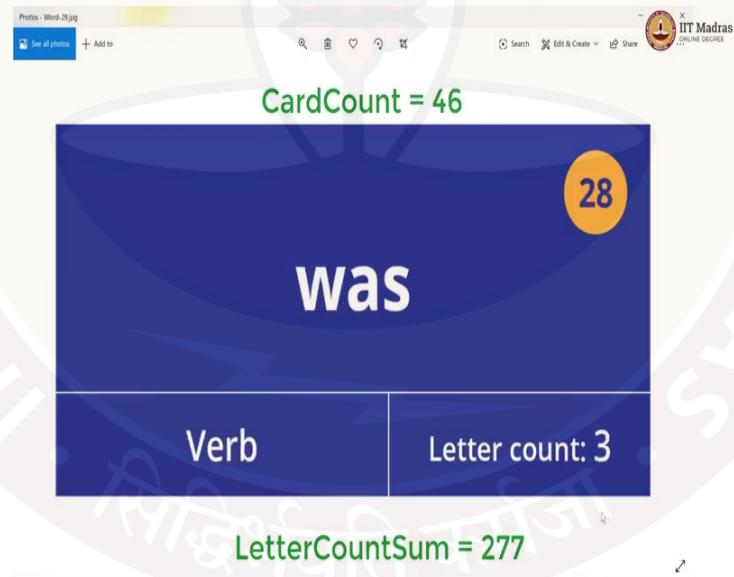
Plus 4 again 270 and 44.

(Refer Slide Time: 12:49)



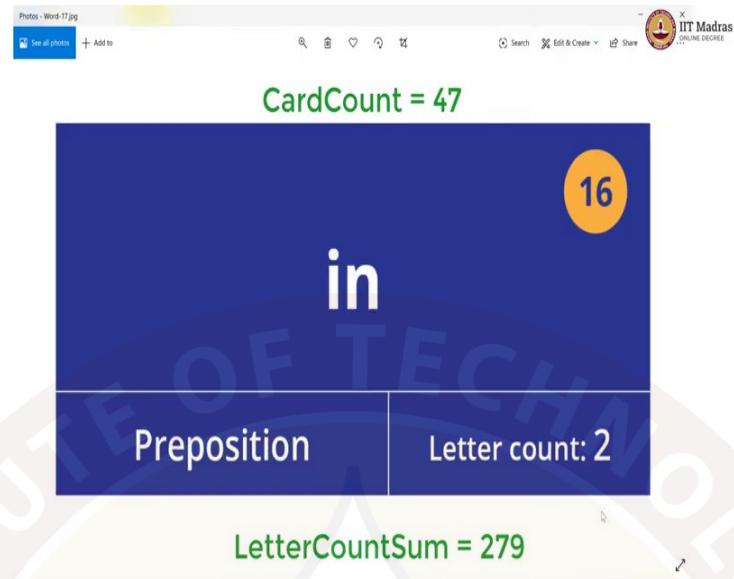
Plus 4 again 274 and 45.

(Refer Slide Time: 12:54)



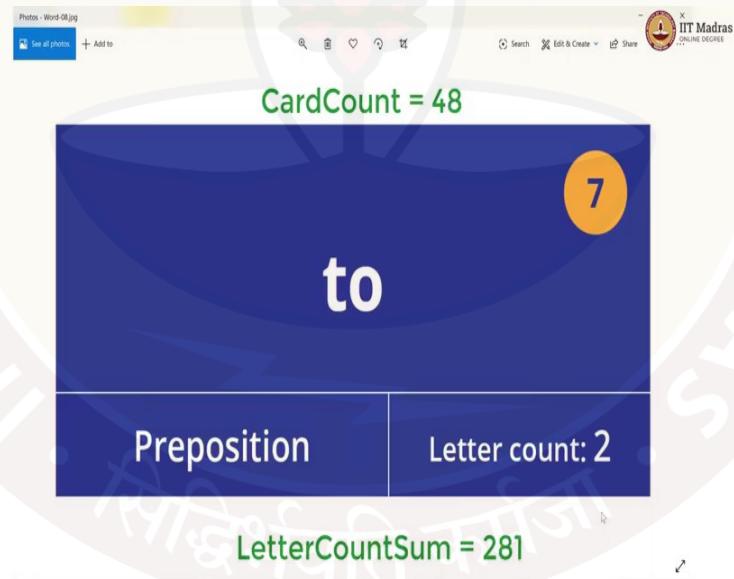
Plus 3 is 277 and 46.

(Refer Slide Time: 13:00)



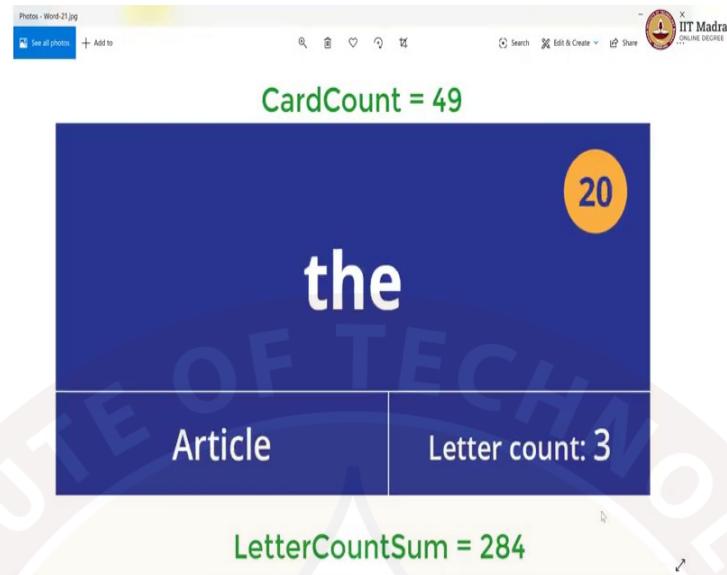
Plus 2 is 279 and 47.

(Refer Slide Time: 13:04)



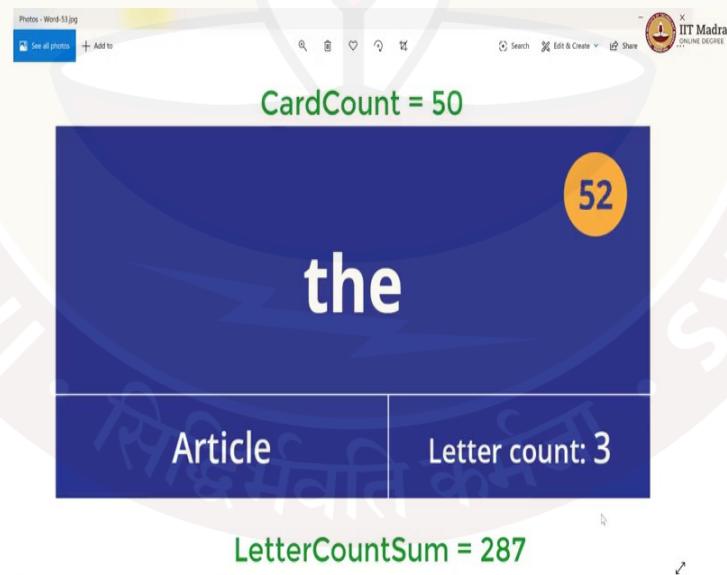
Plus 2 again 281 and 48.

(Refer Slide Time: 13:08)



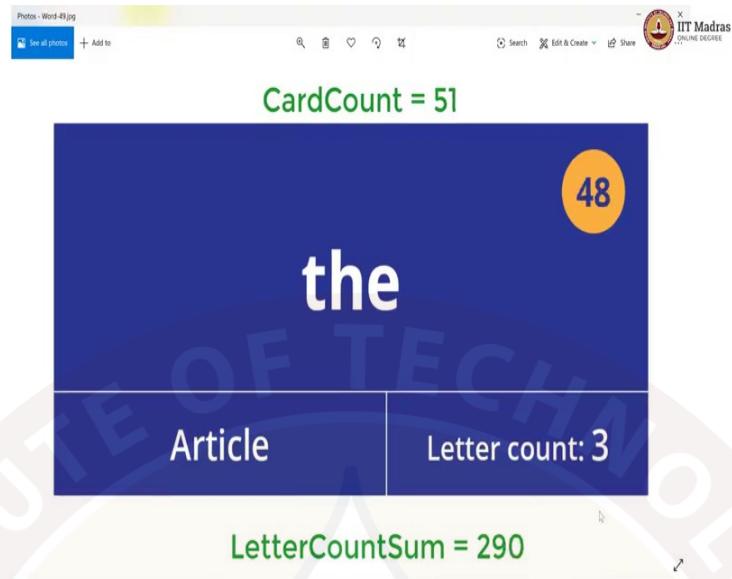
Plus 3 is 284 and 49.

(Refer Slide Time: 13:13)



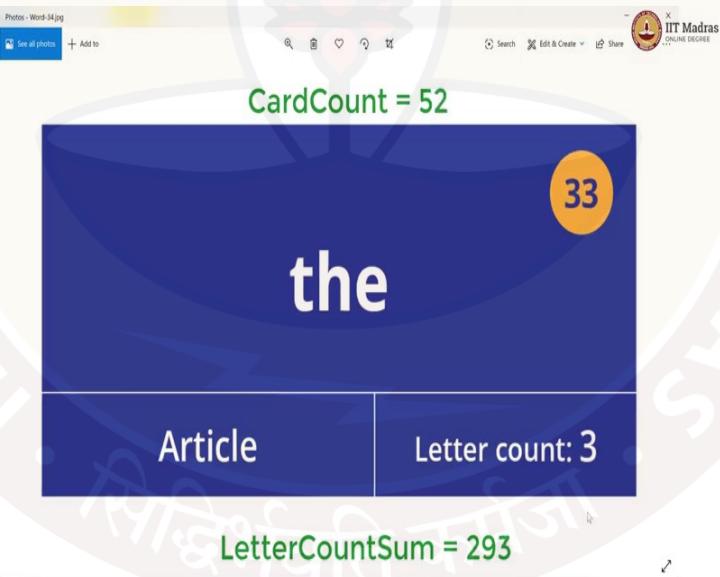
Plus 3 again is 287 and 50.

(Refer Slide Time: 13:19)



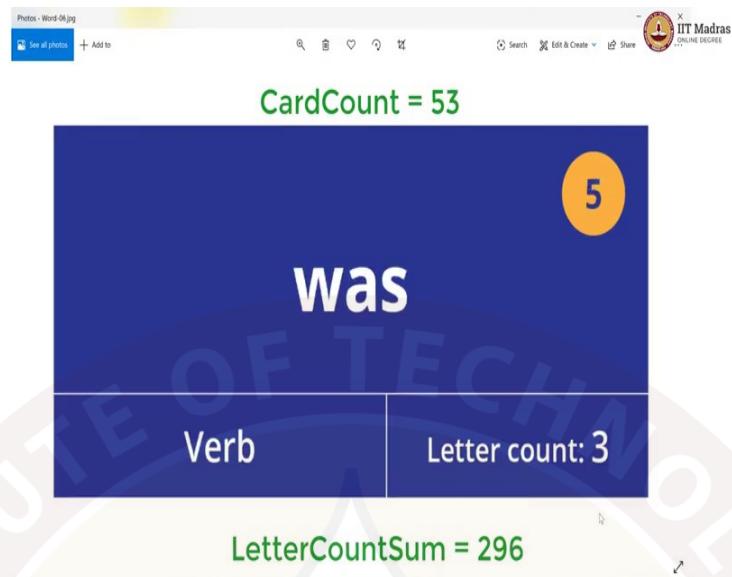
Plus 3 again is 290 and 51.

(Refer Slide Time: 13:23)



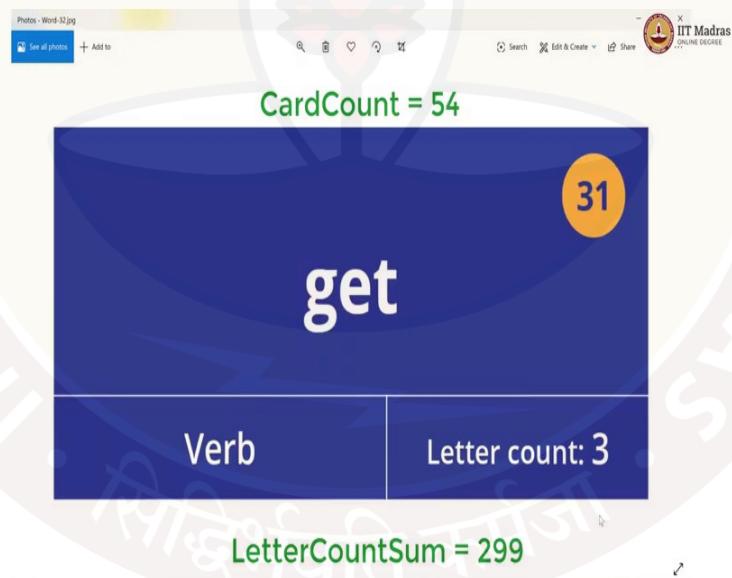
Plus 3 again 293 and 52.

(Refer Slide Time: 13:26)



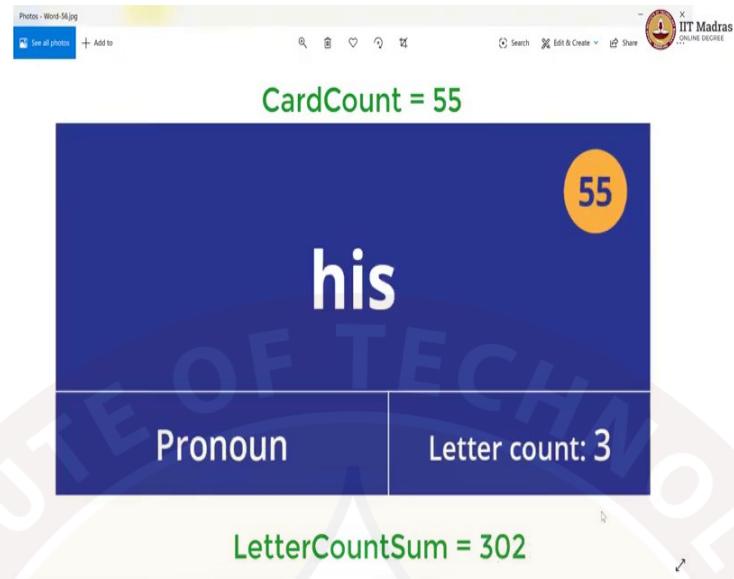
Plus 3 again 296 and 53.

(Refer Slide Time: 13:31)

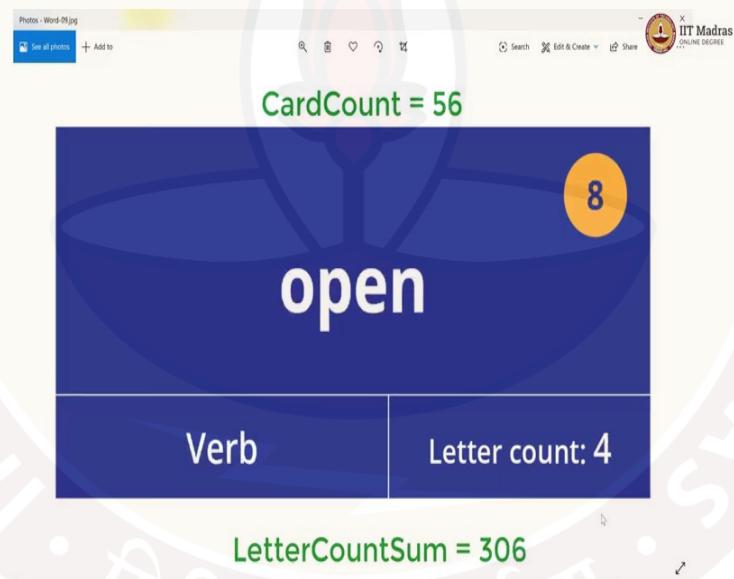


Plus 3 again 299 and 54.

(Refer Slide Time: 13:34)

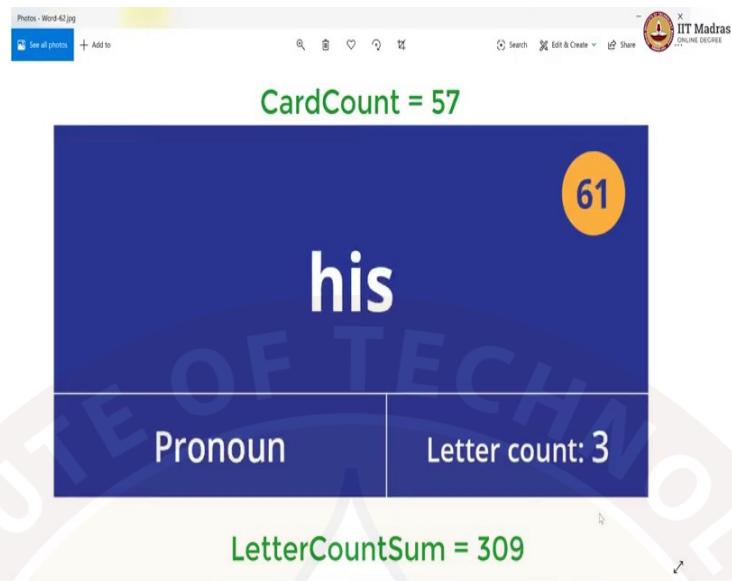


(Refer Slide Time: 13:40)



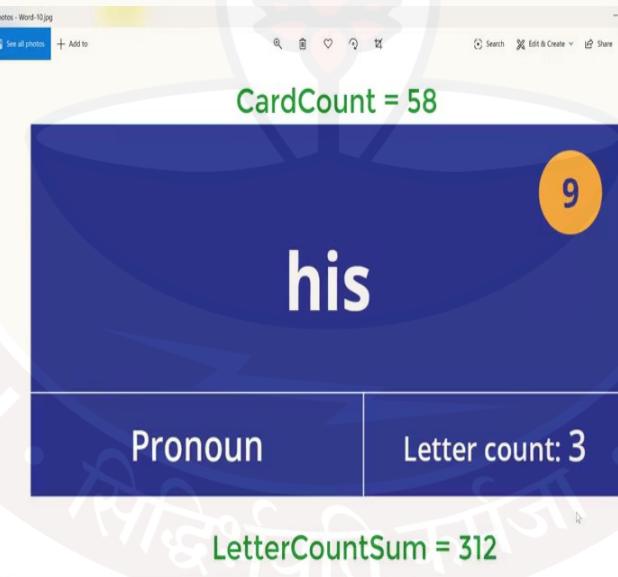
306 and 56.

(Refer Slide Time: 13:42)



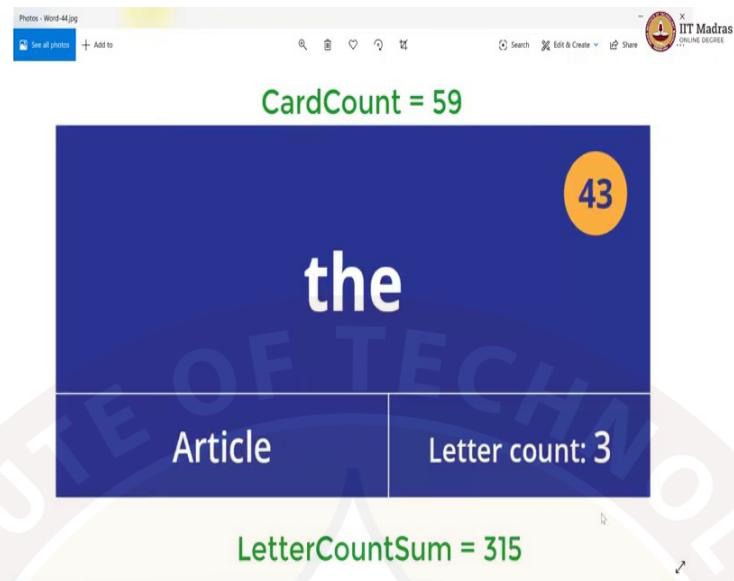
Plus 3 is 309 and 57.

(Refer Slide Time: 13:47)



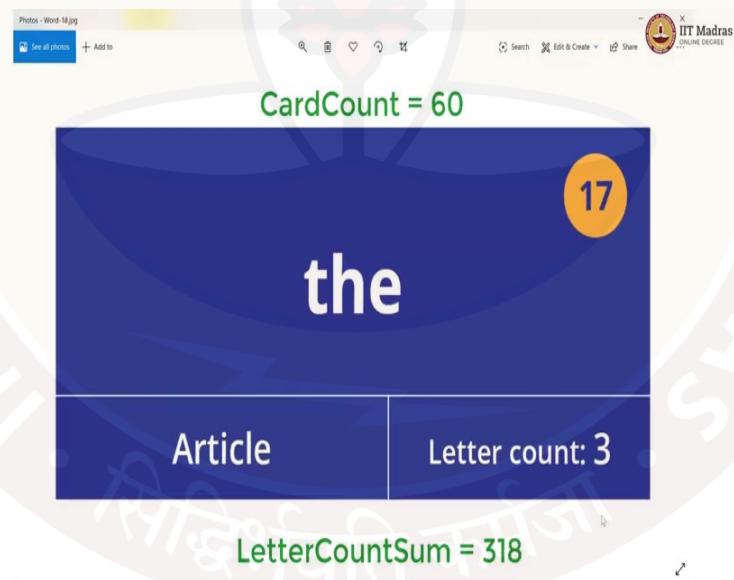
Plus 3 again which is 312 and 58.

(Refer Slide Time: 13:52)



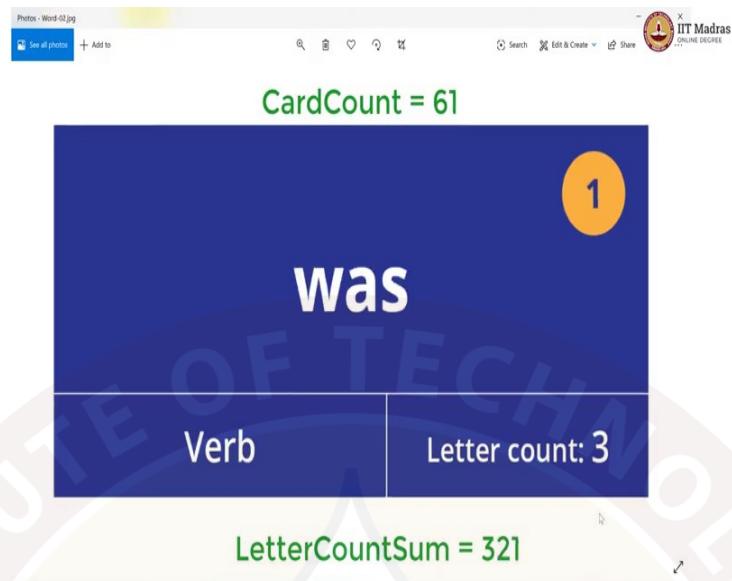
Plus 3, 315 and 59.

(Refer Slide Time: 13:55)



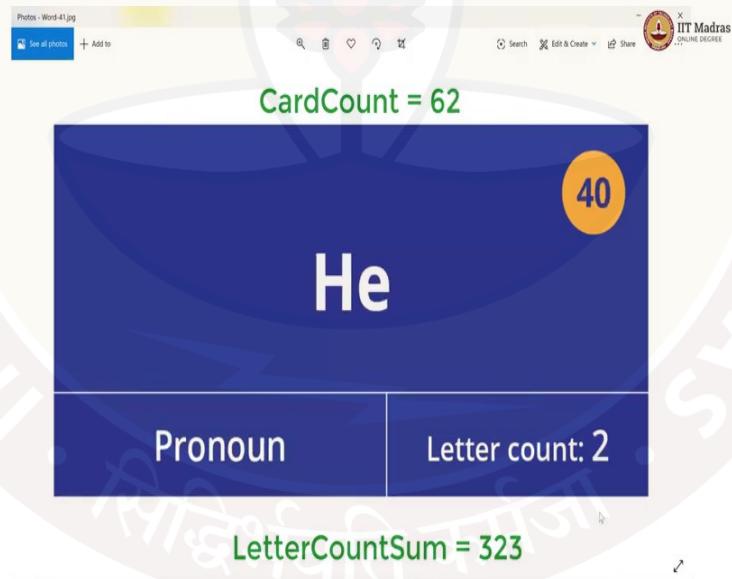
Plus 3 318 and 60.

(Refer Slide Time: 13:59)



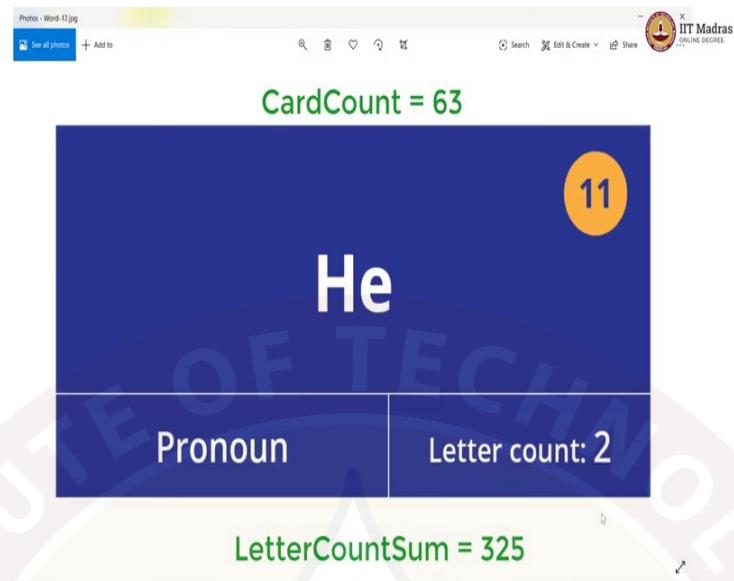
Plus 3 321 and 61.

(Refer Slide Time: 14:04)



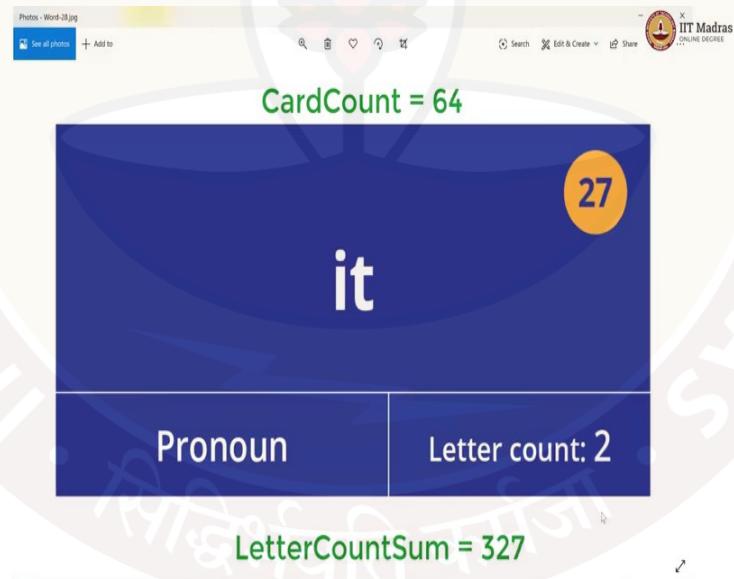
Plus 2 323 and 62.

(Refer Slide Time: 14:08)



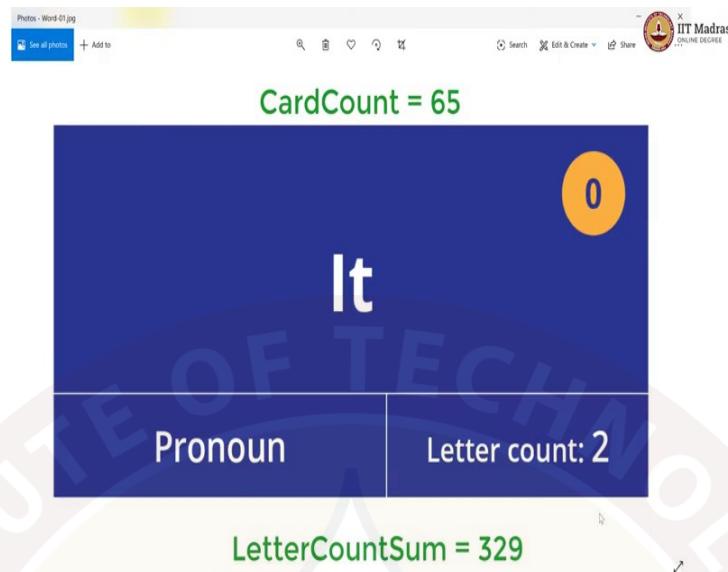
Plus 2, 325 and 63.

(Refer Slide Time: 14:13)



Plus 2 is 327 and 64.

(Refer Slide Time: 14:18)



Plus 2 again gives us 329 and 65.

(Refer Slide Time: 14:25)

$$\begin{aligned} \text{Average word length} &= \\ \text{LetterCountSum}/\text{CardCount} &= \\ 329/65 &= \\ \sim 5 \text{ letters per word} & \end{aligned}$$

So, now we perform division of the sum quantity by the count quantity which is 329 by 65 which gives us an average word length of pretty much 5, roughly 5 it is 5.06 but since these are words we can say that this paragraph has an average word length of about 5 letters a word. Thank you.