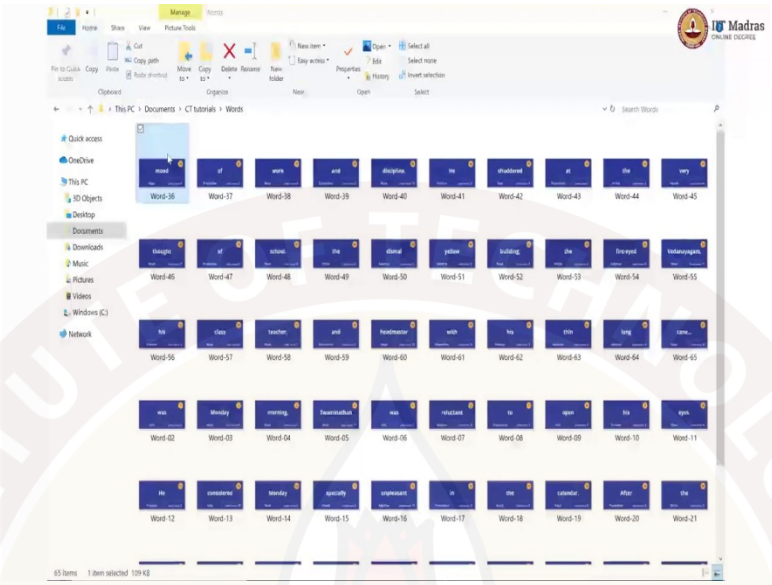

# IIT Madras

## ONLINE DEGREE

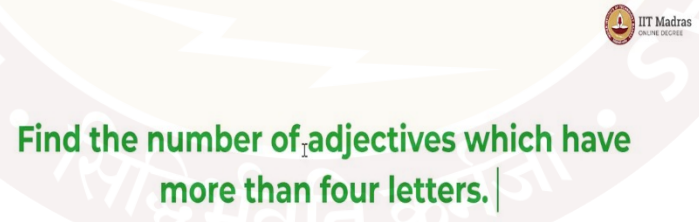
**Computational Thinking**
**Indian Institute of Technology, Madras**
**Tutorial for Lecture 3**

(Refer Slide Time: 0:12)



Hello. Computational Thinking students. In this tutorial we will look at procedure similar to what the processors have done in lecture 3. In lecture 3, you must have seen the procedure where they picked up the number of girls from Chennai which is filtering on two variables which is one is a gender and the other is city. And this was done in the mark sheet data. We will done something similar now in the paragraph words data.

(Refer Slide Time: 0:47)



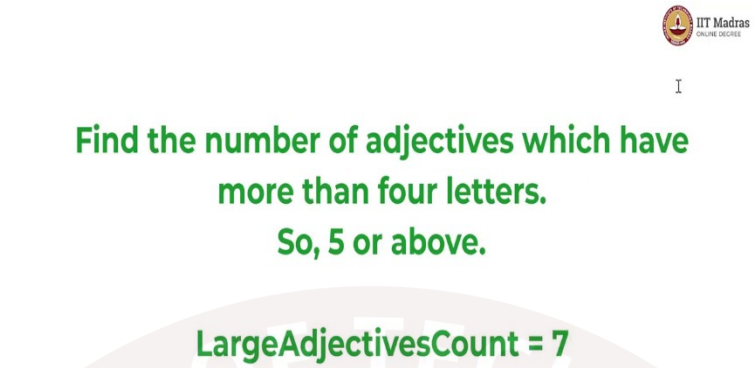
Let us try to pick out the number of adjectives which have more than 4 letters. So, 5 or above. So, let us again iterate. Let us go card by card. This is our first card and before we start we should declare our variable which is LargeAdjectivesCount and this LargeAdjectivesCount is initialise to 0. We will increment it every time we come across an adjective whose letter count is greater than 4 that is, 5 or above.

So, card number one, not an adjectives, not an adjective, this is an adjective, but 'long' is a 4 letter word. So, we shall not increment our variable. 'Thin' is also a 4 letter adjective, so we are not incrementing our variable. Not an adjective, not an adjective, not an adjective, not an adjective, not an adjective and this pronoun, noun, adjective. And this is 8 letters. So, we finally come across a card which has an adjective greater than 4 letters, so we increment our variable by 1.

Moving on, article, noun, adjective 6 letters. So, we increment again which makes the count 2. Moving on, one more 6 letter adjective, so increment again, we have the count to be 3. Moving on article, noun, preposition, noun, adverb, article, preposition, verb, pronoun, noun, conjunction, preposition, noun, article, noun, verb, preposition, article, preposition, adjective, 9 letters. So, now we increment again we have 4 large adjectives, so the count is now 4.

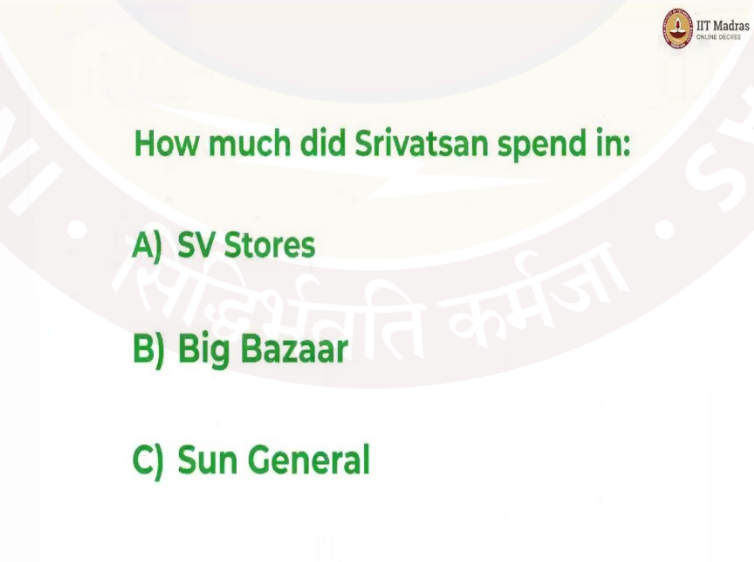
Moving on, preposition, verb, preposition, adjective and 9 letters again. So, we increment one more time and now we have our variable equal to 5. Going further. Verb, pronoun, noun, conjunction, noun, preposition, noun, noun, article, preposition, adjective and 10 letters. So, we increment again we are now at 6. Adverb, noun, verb, pronoun, noun, pronoun, adjective 9. So, increment again. We are at 7. Verb, noun, noun, verb, noun, pronoun and the number of cards is exhausted. We are at our last card.

(Refer Slide Time: 4:04)




So, we have found that there are 7 large adjectives that is, with number of letters greater than 4. Now, in lecture 3, another interesting problem that is being taken up for multiple filters was the number of boys and girls born in the first half of the year. So, number of boys born in the first half of the year and number of girls born in the first half of the year. So, we will do something similar to that with the shopping bill data now.

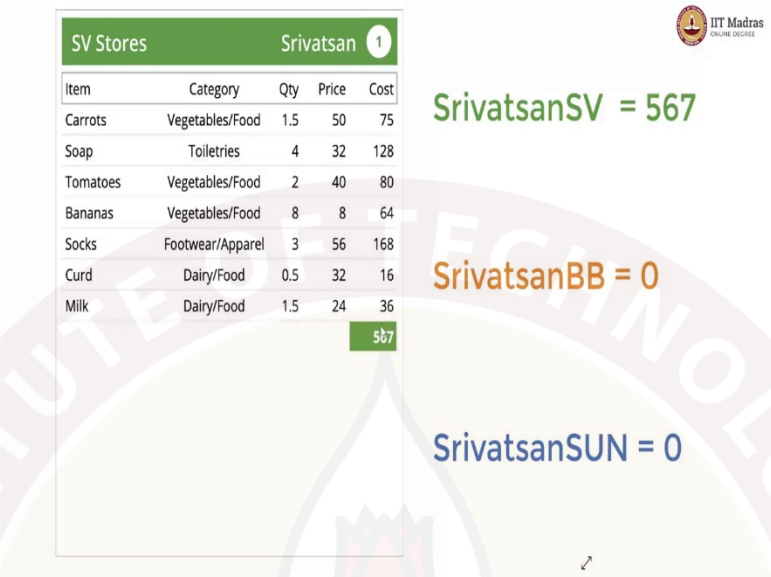
(Refer Slide Time: 4:42)




What we will do is, we will calculate the amount spent by one particular customer in each individual store. So, let us look at a customer called Srivatsan. So, how much did Srivatsan

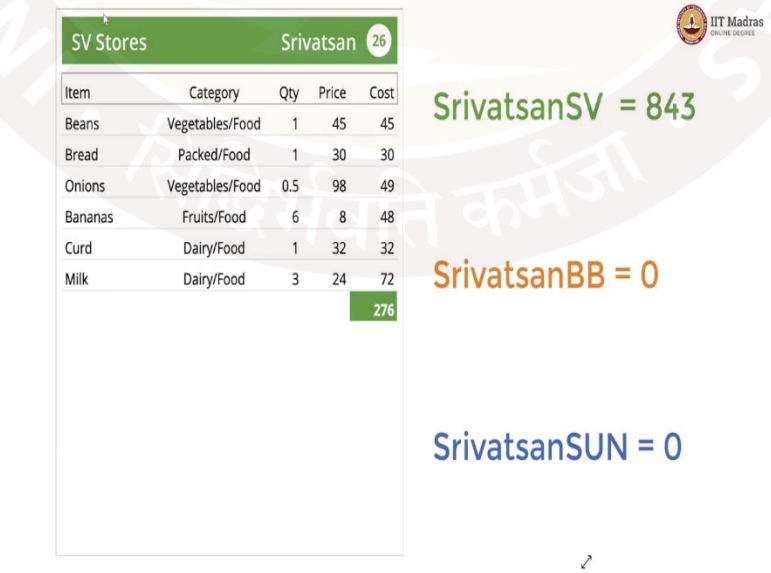
spend in SV stores, in Big Bazaar and in Sun General? This is what we will try to find out. So, let us start from the first card again.

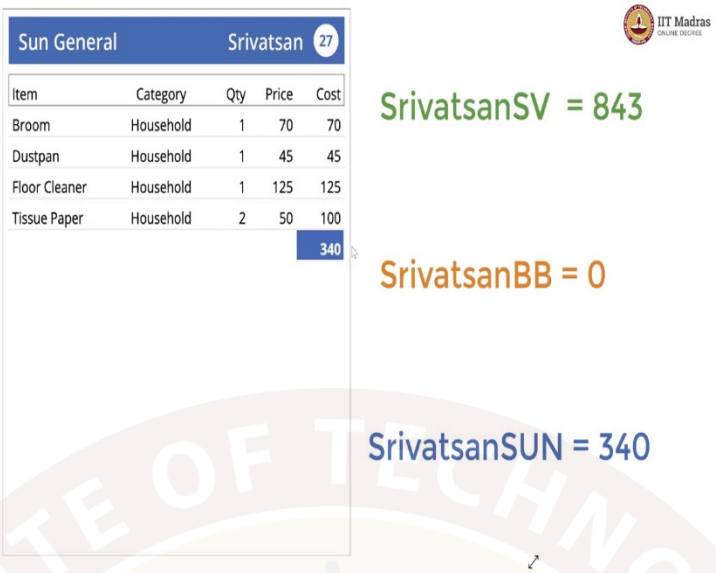
(Refer Slide Time: 5:14)




We initialise 3 variables now. So, that would be SrivatsanSV, SrivatsanBB, SrivatsanSUN. So, these 3 variables indicate why sum amount spend by Srivatsan in that particular store. We initialise to 0. This first card it is Akshaya, it is not Srivatsan so, we just move on Abhinav, Ahmed, Ahmed again, Srivatsan. So, Srivatsan in SV Stores spend 567 Rs. So, let us increment that particular variable with 567.

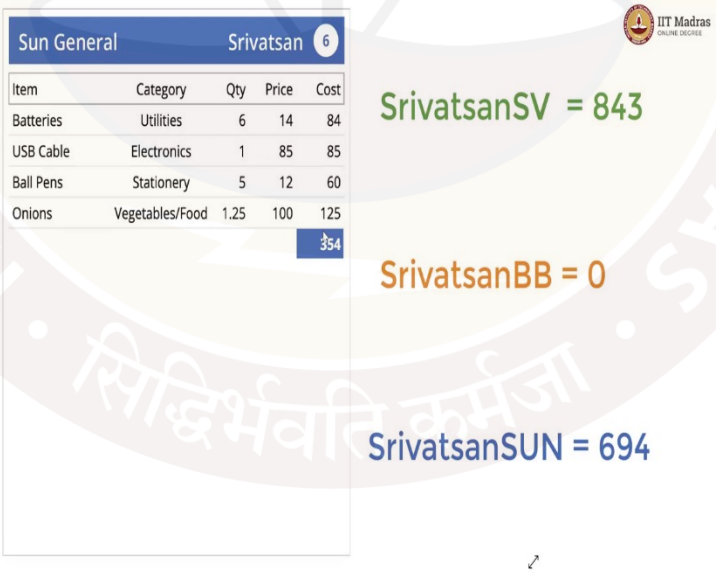
(Refer Slide Time: 5:58)






And then if we go further, Sudeep, Suresh, Akshaya, Vignesh, Vignesh, Mohit, Radha and Srivatsan again in SV Stores again. So, we add 276 to 567 and we have 843 rupees spend by Srivatsan on SV Stores so far. Going forward. Advaith, Julia, Ahmed, Rajesh, Neeraja, Srivatsan again but now in Sun General. In Sun General, Srivatsan spend 340. So, now we will increase this variable to 340 from 0.

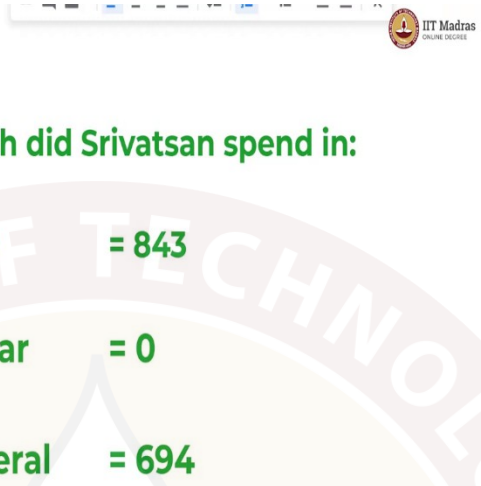
(Refer Slide Time: 6:46)




And then we go forward and there is one more Sun General, and we had 340 earlier, now we add 354 to this variable so, we will have 694 rupees spend by Srivatsan in Sun General. This Advaith, Aparna, George, Abhinav, Ahmed, Akshaya, Advaith again, Abhinav, Akhil,

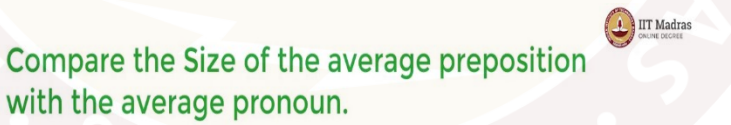
Neeraja and so Srivatsan has not made any purchases in Big Bazaar. So, the Big Bazaar counts stays, the sum stays 0.

(Refer Slide Time: 7:30)




In Sun General, he spend 694 rupees and in SV Store, he spend 843 rupees. For our last task in this tutorial, we will do something similar to what you have seen in the lecture. In the lecture you have seen the case where the average mathematic marks of boys and girls were calculated in one iteration by using multiple variables. So, let us do something similar with the word data here.

(Refer Slide Time: 8:16)



Four Variables:

- PrepositionCount
- PronounCount
- TotalPrepositionLength
- TotalPronounLength

So, what we will do in this task or with this data is we could compare the size of the average preposition with the average pronoun. Both prepositions and pronouns tend to be small words. So, in this paragraph, let us try to find out the average length of prepositions and average length of pronouns. So, we could compare that.

For doing this what we do is, we first establish 4 variables, one would be PrepositionCount, the other would be PronounCount, and then we also set up two variables which is TotalPrepositionLength where we just sum the length of every preposition that we come across. And likewise we have a TotalPronounLength which will give us the sum of all the letters of the pronouns we encounter till that step.

(Refer Slide Time: 9:10)

TotalPrepositionLength/PrepositionCount
=
Average Preposition Length

TotalPronounLength/PronounCount
=
Average Pronoun Length

And at the end of the iterations, what we do, we divide the TotalPrepositionLength by the PrepositionCount and we divide the TotalPronounLength by the PronounCount. This way we get the averages we are looking for. So, let us start with our first card. Here, this is a noun, so we are not interested and this is a noun again, not interested. Adjective, adjective and we have a pronoun. So, we increment pronoun by 1 and we sum 3 to 0. So, the TotalPronounLength so far is 3.

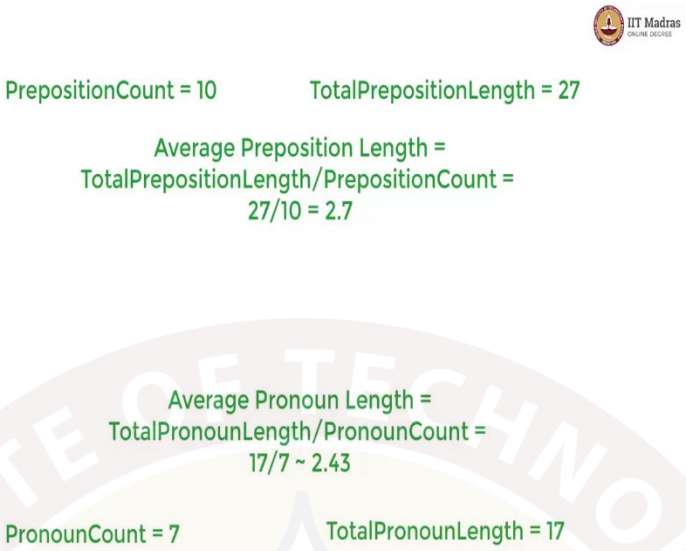
Now we have a preposition, we increment preposition by 1 and we add 4 to the total PrepositionLength making it 4. And now we have noun, conjunction, noun again, noun and we have a pronoun of length 3. So, we have 2 pronouns with a total length of 6. Noun again, adjective, article, noun, adjective, adjective, article, noun, preposition. So, we add 2 to our preposition length and we increment preposition by 1.

And then we go further, noun, adverb, article, preposition again, add 2 to preposition length again, TotalPrepositionLength and increment preposition by 1. Verb, pronoun, so we are now incrementing pronoun by 1 and adding 2 to the TotalPronounLength. And now we have noun again, conjunction, preposition of 2 again, increment preposition by, preposition count by 1 and TotalPrepositionLength is increased by 2.

Noun, article, noun, verb, preposition so, this is one more 2. So, we have right now 5 prepositions and a total length of 12. Going forward article, preposition, so we have 6 prepositions with a total length of 17. Adjective, preposition, so 7 prepositions with a total length of 21. Verb, preposition again. So, 8 prepositions with total length of 23. Adjective, verb, pronoun. So, we are now incrementing pronoun by 1, pronoun count by 1 and we are adding 2 to the TotalPronounLength.

And noun, conjunction, noun, preposition again. So, we have one more preposition and we are increasing the preposition length by 2. And noun and noun, article, preposition, so, we now have 10 prepositions with a total length of 27. Adjective, adverb, noun, verb, pronoun. So, now we have a, we now have 5 pronouns with total letter count of 12. Noun, pronoun so that make it is 6 pronouns with total length of 15. Adjective, verb, noun, noun, verb, noun, pronoun that is, 7 pronouns with total length of 17. And this is also the last card.

(Refer Slide Time: 13:20)




So, we see that the average preposition length is 27 by 10 which gives 2.7. It is the average pronoun length is 17 by 7 which gives us roughly 2.43. So, in this paragraph, the average preposition length is greater than, just slightly greater than the average pronoun length. Thank you.