



# IIT Madras

ONLINE DEGREE

# Computational Thinking

## Indian Institute of Technology, Madras

### Tutorial 3.1

(Refer Slide Time: 00:12)

```

LongNoun = 0
ShortNoun = 0
while (Table 1 has more rows) {
    Read the first row X in Table 1
    if (X.PartOfSpeech == "Noun") {
        if (X.LetterCount > 7) {
            LongNoun = LongNoun + 1
        }
        else {
            ShortNoun = ShortNoun + 1
        }
    }
    Move X to Table 2
}

```

LongNoun = 1  
ShortNoun = 4

Serial Number	Word	Part of Speech	Letter count
18	calendar	Noun	8
19	After	Preposition	5
20	the	Article	3
21	delicious	Adjective	9
22	freedom	Noun	7
23	of	Preposition	2
24	Saturday	Noun	8
25	And	Conjunction	3
26	Sunday	Noun	6
27	it	Pronoun	2
28	was	Verb	3
29	difficult	Adjective	9
30	to	Preposition	2
31	get	Verb	3
32	into	Preposition	4
33	the	Article	3
34	Monday	Noun	6
35	mood	Noun	4
36	of	Preposition	2
37	work	Noun	4
38	and	Conjunction	3
39	discipline	Noun	10
40	He	Pronoun	2

Hello CT students. In this tutorial, let us use the spreadsheet table to perform the algorithm given in this pseudocode. So far, we have been using cards. And now we are going to use the rows of a spreadsheet. Each row here, you observe, it corresponds to one of the cards in the paragraph data set. So, this is It. It is a Pronoun. This letter count is 2.

And this is the card number. So, we have the word, its part of speech, letter count, and serial number. Now, in this particular pseudocode, we are first initializing two variables called LongNoun and ShortNoun. And we are initializing them both to 0. So, let us do that first. And now there is a mention of tables, while Table 1 has more rows, so this is the Table 1 here, there is also a Table 2 that is mentioned.

So that Table 2, we are going to keep it under and its currently empty. It has the same columns, but it is currently empty, it has no cards in it. So, what we are going to do is, we are going to read the first row X in Table 1, which is basically like reading the first card in Pile 1. So, this is a first card. So, it is the first word. And this is the whole first row. We are reading this row. And in this row X.PartOfSpeech. So, this is the row X, and we are looking for part of speech cell in this particular row, which is our Pronoun. If that is equal to Noun, if that part of speech is noun, then we have to go into this block.

But this is a Pronoun, so I am not going to go into this block. I am going to come out of this block, and now I am going to move this row X to Table 2. So, I am going to take this row and

I am moving it to Table 2. Now that was not there. And while Table 1 still has more rows, so Table 1 still has rows. So, we are going to do this again.

Again, we are checking for the part of speech. And there is no noun here. So again, do not do anything inside the if block, we just come out of the if and we move this card to Table 2. So now, we go back to our next row, because Table 1 still has rows. And now we have a noun in the part of speech. We read this card, and it has, it is a Noun.

Now, we check if the LetterCount is greater than 7. It is not. It is 6. So, we do not go into this if block, this if block, we do not look into it because the condition is not satisfied. And because that if block is not used, we now go to the else block here, which has to be executed and so ShortNoun should now become ShortNoun plus 1. So, it was 0 earlier, now it becomes 1. And then we come out of that block and we move our row to Table 2. So, here we are, we have 3 rows done there in Table 2 now, they have been moved away.

Now, let us go through the remaining rows here, and we again have a noun, and this time it is 7, but seven is not good enough. We need greater than 7 for our LetterCount. So again, we go to the else block, and in the else block we are supposed to increase the ShortNoun count to 2. So, we now have 2 ShortNouns and 0 LongNouns so far. And again, pick this row and go down, put it in the Table 2. Now, back here, and here we have a noun which is 11 letters long. So, we finally have a LongNoun. So, this condition is satisfied. So, we should execute this code inside, which is going to make LongNoun equal to 1.

So, we pick up this again and we drop it in Table 2. Now, verb is not a noun, so this goes to Table 2 now. Adjective is not a noun, it will go to Table 2. Preposition is not a noun, go to Table 2. Verb again, Table 2. Noun again, pronoun again, sorry, so table 2 directly, no code to execute. Now, we have a noun. And so, we enter this code here and we check if the LetterCount is greater than 7. It is not. It is 4. We now have to execute this code. So, ShortNoun becomes 3.

Take this row and move it to Table 2. Table 2 now has 11 rows. And then again, we have a pronoun, does not matter, off it goes to a Table 2. Now a verb does not matter, off it goes to Table 2. Now, we have a noun, whose LetterCount is only 6. So, this condition is not satisfied, so we do the code inside the else block giving us ShortNoun to be 4. And then we move it to table.

Adverb is not a noun. Adjective is not a noun. Preposition is not a noun. Article is not a noun. And now we have a noun again, so part of speech is noun, so thus we enter this if block. For checking this condition, we observe that the LetterCount is 8, which is greater than 7. So, we now execute this code here, which makes our LongNoun to be now 2.

And once that is done, we do not enter the else block, we just go to move this row to Table 2. So now, we shall take it down to Table 2. Preposition is again not a noun, off it goes to Table 2. Article is again not a noun, so Table 2. And adjective will be taken down to Table 2. Now, we have a noun, so this condition is satisfied.

So, we now execute this code here. For that, the condition is, "Is the letter count greater than 7?" It is not. It is equal to 7. So, we do not execute that if block. Now, we go to the else block where we increment ShortNoun, so ShortNoun now becomes 5. And after that, we move the Card X to Table 2 again. And now, we have a preposition. So, this is our Table 2. Now, we have a noun again with a LetterCount 8, so that will give us LongNoun to be incremented. And LongNoun now becomes 3.

And then we take this row again to Table 2. And then we have a conjunction, which is of not much use. So, down here. Then, here we have a noun, whose LetterCount is 6. So, we now have to increment ShortNoun by 1, making it 6. And then we pull it down to Table 2. Then we have a pronoun, so we drag it down to Table 2. And this is a verb. And this is an adjective.

This is a preposition. This is a verb. Again, up that position. And here we have an article, which we are pulling down to Table 2. And the next one is a noun, so we enter this part of the code, and we check the LetterCount, which is not greater than 7. So, we now increment ShortNoun again, ShortNoun is now 7.

Then we again drag it down to Table 2, and drop it there. We now again have a noun, whose LetterCount is 4, less than 7. So, we increment ShortNoun, and then drag this row down and place it over there. Here, we have a preposition again, which we shall drag and place in Table 2. We now have a noun with 4 letters, so ShortNoun is now incremented to 9 and this row is carried down to Table 2.

And then we have a conjunction, which again is dragged down to Table 2. And now, we come across another noun, which is of LetterCount 10, so we execute this piece of code, LongNoun is now incremented to 4. And this row is taken to Table 2. Drop there. Others are

pronoun. Those are verb. Preposition. Then we have an article, which goes off. There is an adverb. And now we have a noun again, which is of LetterCount 7, which is not greater than 7. So, we go into the else block and we increment ShortNoun to 10.

Then we have a preposition. It goes down. So now, we have a noun, which is only 6 letters. So, ShortNoun is incremented to 11. Then, we have an article. And here it is an adjective, which will also be brought down. Then we have another adjective. Now, a noun again, and this LetterCount is 8. Now, we go to this part of the code, which gives us LongNouns are 5. And this is an article, drop down. Adjective, it will go down again.

Here, we have a noun again with a LetterCount of 11, so we execute the incrementing of LongNoun, as you saw LongNoun is now 6. Then we drop this row back in Table 2. Here, we have this pronoun, which we will drop off in Table 2. And now we have a noun, which is only 5 letters long. So, we increment ShortNoun to 12. Thus, we take this noun and drop it off into the Table 2. And when we go back, we have another noun, whose LetterCount is 7.

But 7 is not greater than 7, so we increment ShortNoun and make it 13. Then we drop off this noun in Table 2. And then we go back, we have a conjunction, so we, again take it directly to Table 2. And then we go back, we have a noun, which is LetterCount 10. So, it is long. So, we now increment LongNoun and make it 7. Then we carry off this noun. Now, this is a preposition, which we will go and drop in Table 2. And same with the pronoun, it goes into Table 2.

And also same with an adjective, this is also taken at the Table 2, and dropped over there. One more Adjective, we do the same thing, we drop it off in Table 2. And then we have a noun, whose LetterCount is 4, which means ShortNoun should be incremented, and upon incrementing, it becomes 14. And then we carry it off and drop it in Table 2. And now when we get back, the table is now empty, which means this while loop condition is not satisfied.

And so, we go to the end of the while loop, where there is no more code left. So, we are now done with our task. And we can now say that there are 14 ShortNouns and 7 LongNouns in this particular data set. Thank you.