Business Analysis for Engineers
Prof. S. Vaidhyasubramaniam
Adjunct Professor, School of Law
SASTRA University-Thanjavur

Lecture-12
Cash Flow statement 2

Good morning class last class when we were discussing about the principles of preparing the cash flow statement. I had advise the class to answer this question when we finish the class we were able to identify and segregate activities based on whether they are operating, investing or financing activities. And as explained for the purpose of preparing a cash flow statement we compared the values between 2 successive accounting periods to understand the flow of cash as related to any of these activities.

And found that in some cases there was a net cashing flow some cases net cash out flow operating, investing and financing and the net of all these activities in the example that we chose in last class.

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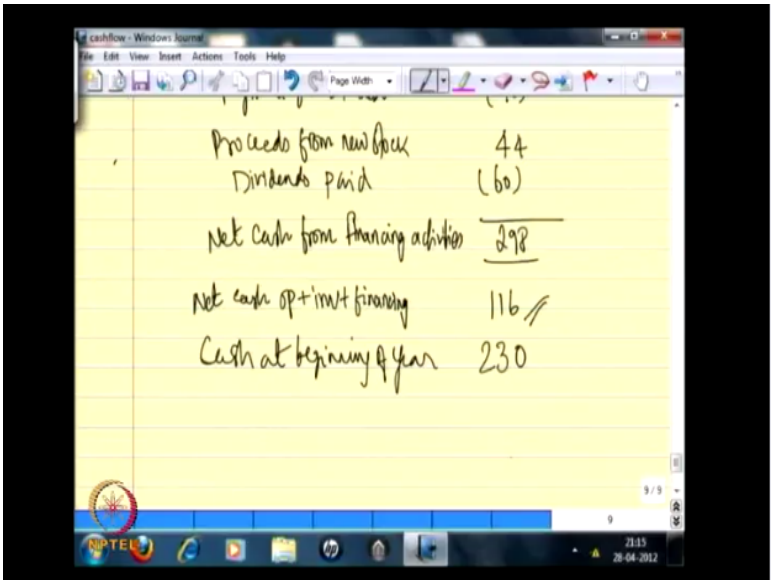

We found that the net cash from the operating, investing and financing was 116 and I explained that to prepare a cash flow statement we are beginning with the net income of this accounting period. And then to it we are adding depreciation because it was it is a non cash expense. And

then understand the transfer the flow of cash between the previous accounting period and this accounting period under the 3 titles namely operating, investing and financing activities.

And finally the net cash that is either generated or consume. In this case the net cash of the generated from these 3 activities 116 and we need to add it to the opening cash which is this accounting periods opening cash which is available in the balance sheet that I gave you before which I have written here is 230.

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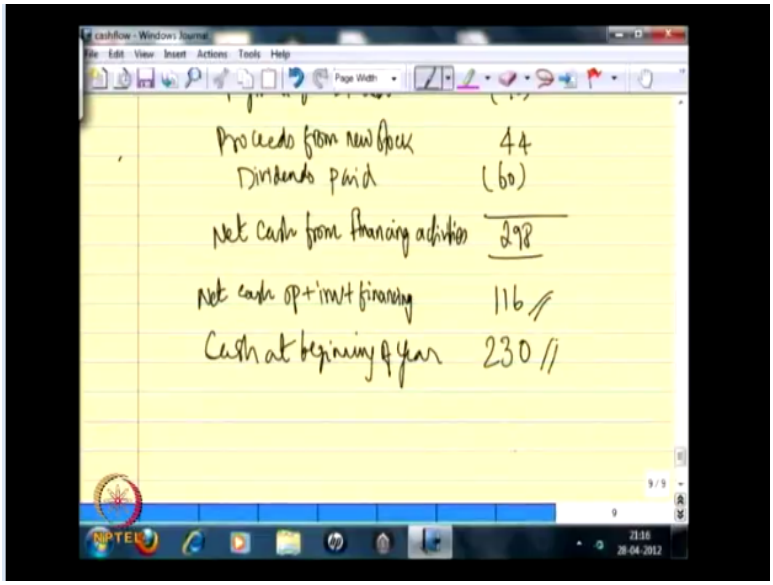

Now this opening cash for this year is nothing but the closing cash of the previous year. So, in effect what we are trying to do wish to see whether we add the opening cash or the closing cash of the previous year 2. This year's net cash outflow or inflow and see whether it equals the closing cash for this year and this we can see it from the balance sheet and in the balance sheet the example that I gave you before the closing cash is I remember it be 326.

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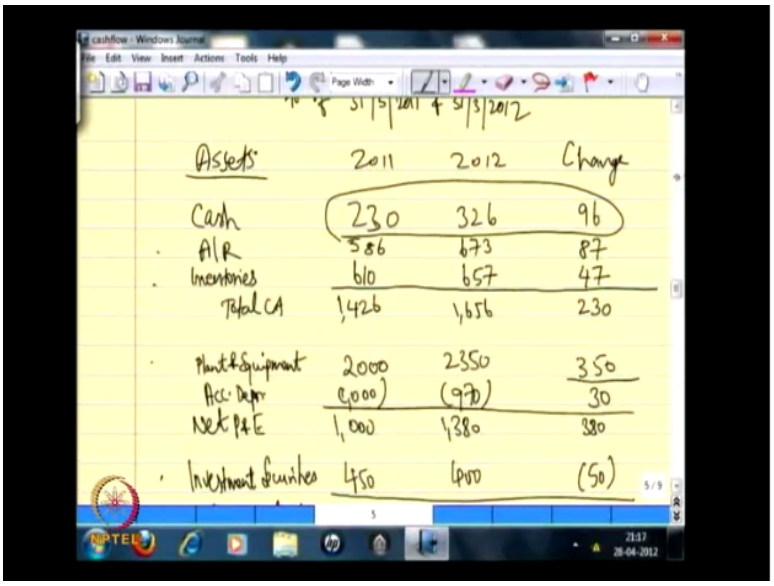

The opening cash was 230, the closing cash is 326. So, if we have prepared the cash flow statement correctly then this 230+116 must be equal to 326 which of course this is not, this is 346. So, last class I left with the question how do we accommodate for this difference of 20. The answer to that is very simple, now remember that there was one particular transaction wherein we had delt with the disposal of a fixed asset.

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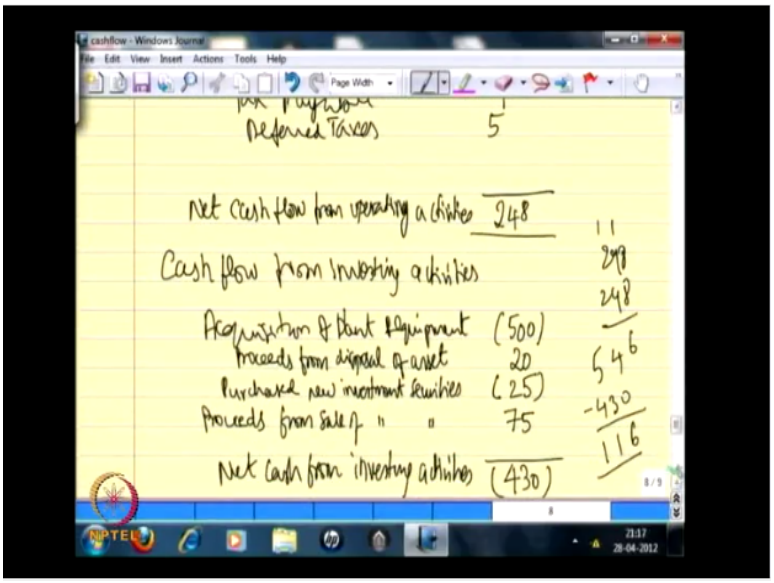

When we actually calculated the cash flow from investing activities and I told you that acquisition or disposal of fixed asset is an investing activity. And the example that was given last class was there was an asset whose cost of acquisition was 150,000. And after it has served it is entire life it has been disposed off or it has been sold and the net proceeds that the entity gained

by disposing that particular asset was 20,000 and this is what we recorded here in previous class, this is this 20,000.

Now when we go back to our t accounts and journal entries to see how we actually recorded this particular transaction. Then you will find that this asset that was disposed of from 20,000 resulted in a cash inflow of 20,000. So, you would have recorded that entry while you are prepared the journals and t accounts as cash that came in 20,000 and where did this cash come from it was gains that the entity got because this asset was disposed and it was 1 revenue generating activity.

So, you would have recorded it has cash debit and revenue credit and since that this being reflected in the balance sheet this cash item. And also in the revenue for this particular year this 20,000 would have been accommodated and that would have accommodated in your income statement example that I gave you, when we actually wrote the income statement for the previous year I am sorry this year.

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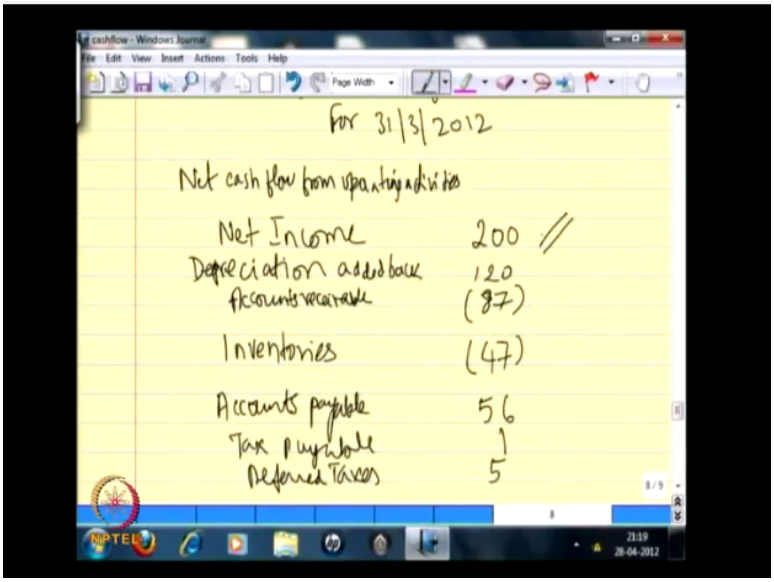

We started of with the net income of 200. Now this net income 200, this from the income statement of this particular year, in which this 20,000 as already recorded as a revenue activity in the total sales revenue that we recorded in the income statement. So, in effect what it means is

that 200,000 net income is a result of all revenues–all the expenses and by all the revenues I mean this 20,000 also included in that revenues.

And this 200, 000 net income is post revenues–expenses. And hence adding this 20,000 again in the cash flow statement amount should double counting. Because we have already accommodated that in our income statement, now how do we do the adjusting entry. So, that the cash flow statement reflects this double counting.

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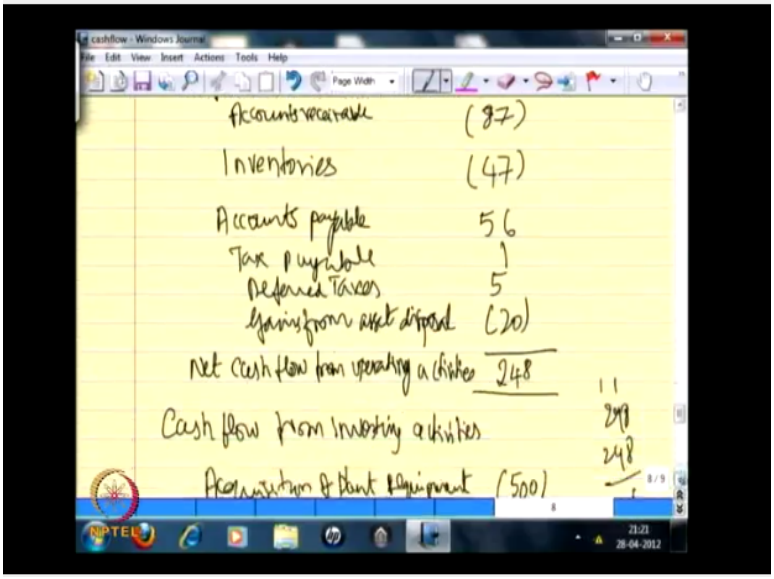

We have to in the operating activities remove the gains from asset disposal of 20.

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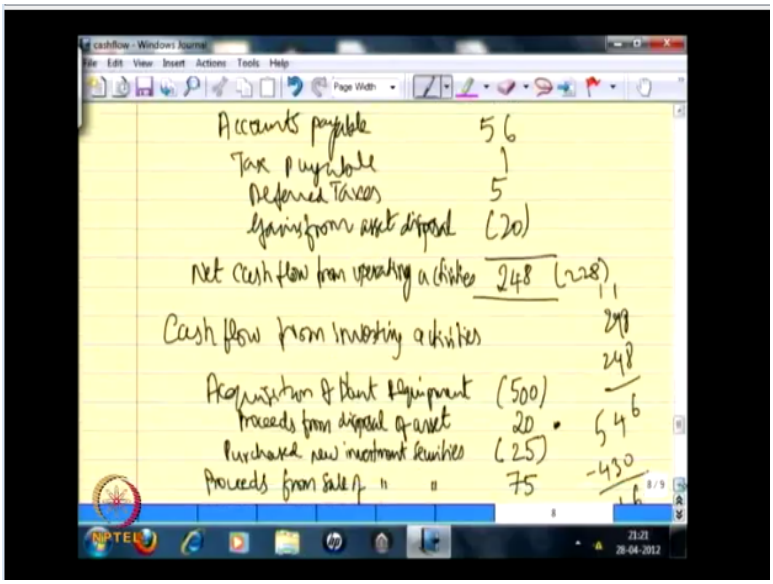

Then this would come 228, then ultimately this will become 96.

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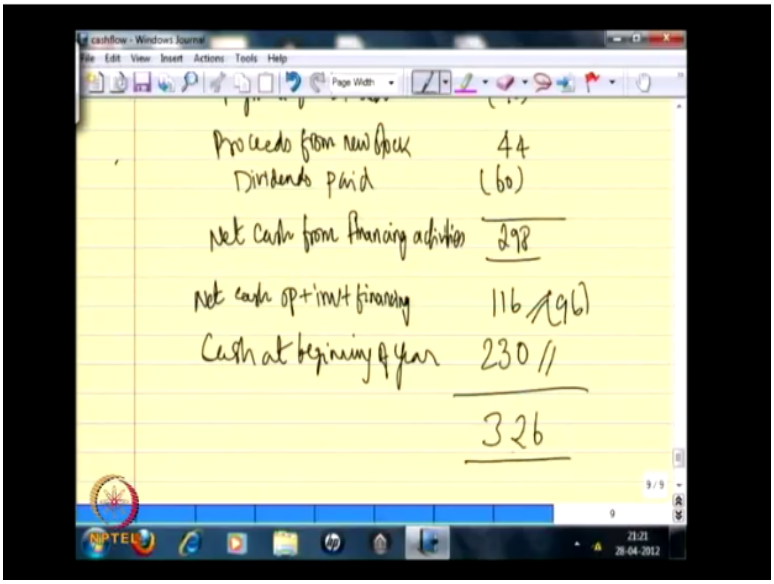

Now we should look at the cash of the beginning of this year 230+the net cash flow for this particular year from this all these 3 activities it is 326.

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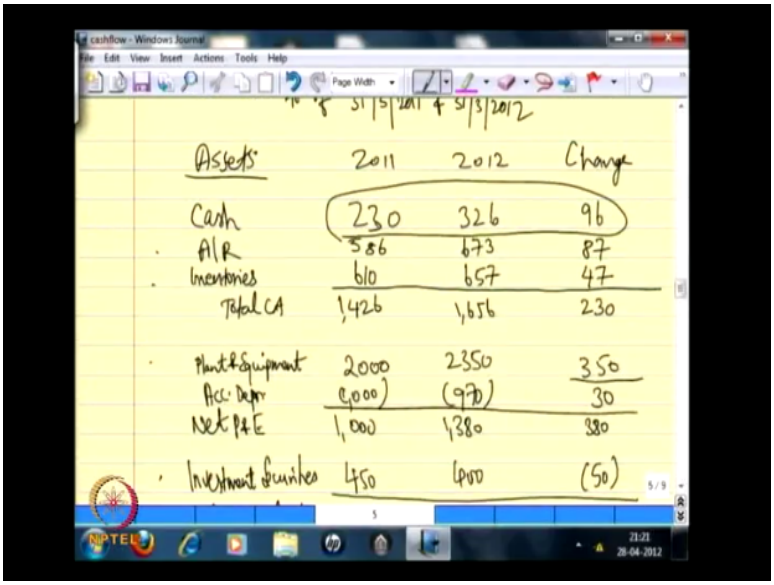

And this 326 will be the cash that appears in your balance sheet at the end of this particular year, remember we did not start with this 326, we started with net income added by depreciation and found the net cash inflow or outflow form 3 broad categories namely operating, investing and financing activities added with this 230 and find that it equals to 326.

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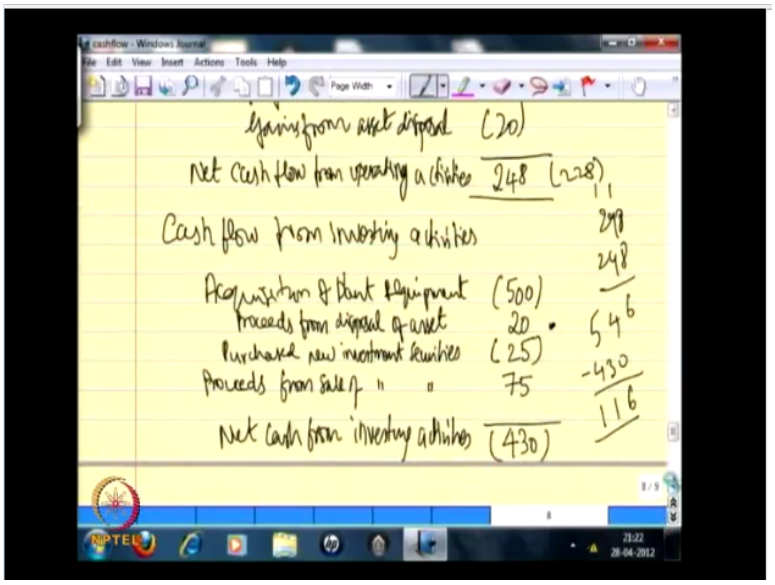

And this is the purpose of creating this cash flow statement. So, that we can understand how different activities have either consumed cash or generated cash and within each of this activities what does happened to specific activities.

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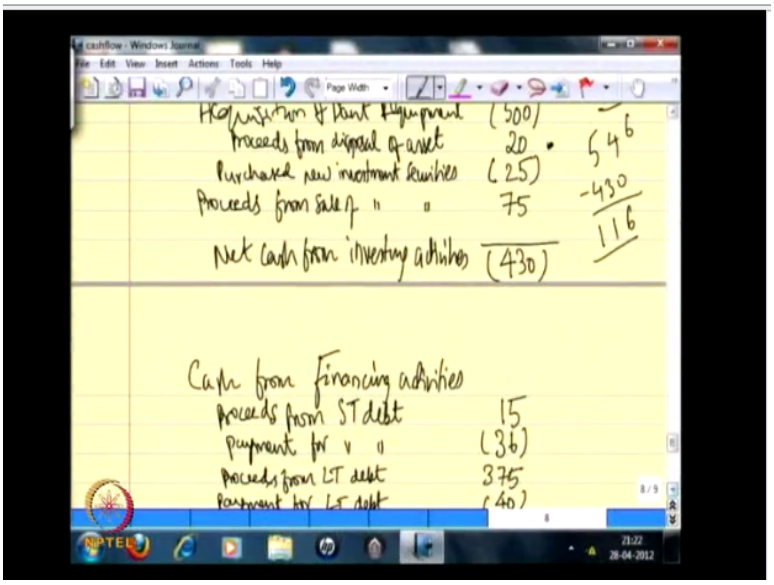

For example if you are talking about financing activities, how much did we raise as new capital, how did we repay as loans, how much did we disperse as evidence, how much did we raise in the form of issuing shares. All this information will be available in cash flow statement if you go particularly in financing activities and see what is the additional cash outflow or inflow during this accounting period by comparing it with what happens in the previous accounting period.

And this information is useful for those who want to track the behaviour of cash between 2 successive accounting periods. Because what you see in the balance sheet is just cash per state. I told you before the difference that 230 and 326 between 2 accounting periods that just tells you that between these 2 accounting periods the cash has increase from 230 to 326. But then if I hope further to understand what has cost this increase it could be as simple as an activity that just brought in cash 230+96, 326 or as complicated as set of activities as we see here.

The aggregate of which results in net cash inflow of 96. Now it is that understanding of all those activities it have either consumed or generated cash that we are interested in knowing by way of creating this cash flow statement. And for the purpose of easy understanding I have told you that we started with net income then with operating activities investing and financing activities.

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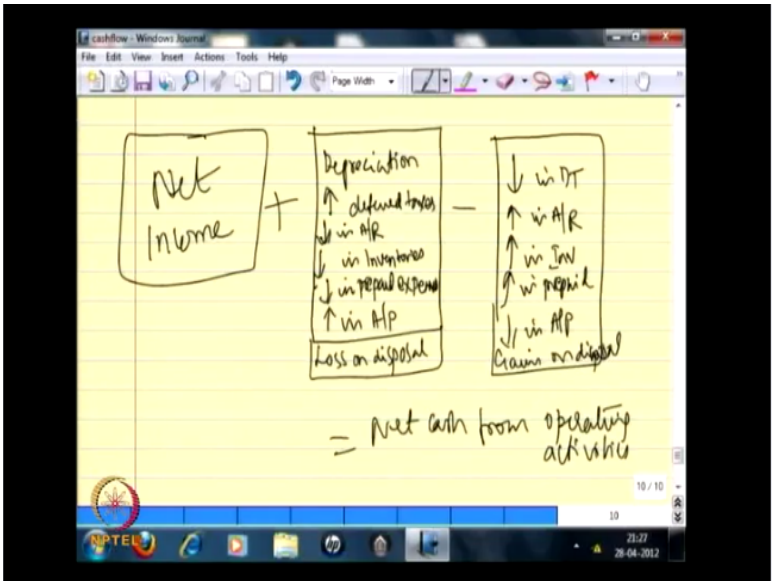

So, if you start with your net income and with specific examples I told you how you will handle increases in accounts receivable, increases in accounts payable, increases in inventories, increases in differ taxes or decreases in differ taxes what actually it means what does increase in account receivable between 2 successive accounting period means either it is a cash inflow or cash outflow, what it means if there is a decrease in accounts payable between 2 successive accounting periods whether there is a cash inflow or cash outflow.

Now this is the underline concept that we understood last class to decide whether such differences be it increase or decrease is a cash inflow or a cash outflow. To this sum it up to calculate the operating expenses we started with net income we added depreciation. We add increases in differ taxes this is just a quick summary. We add decreases in accounts receivable; we add decreases in inventories, decreases in prepaid expenses, increases in accounts payables.

And also just as we added subtracted the gains on disposal in that particular transaction there was a 20,000 that the entity gained because, dispose of it is exciting assets. It could also happen in some transactions where there is a loss on disposal and just as gains for already a part of net income the losses also a part of net income that is already factored in and hence such loses on disposal for the purpose of calculating the cash flow statement is added back to the net income.

So, the loss on disposal is added back and what gets subtracted is exactly the opposite of this, it will be decreases in differ tax, increases in accounts receivable, increases in inventories, increases in prepaid expenses, decreases in accounts payable and gains on disposal. So, what is this, this net income + and – of increases or decreases in these operating activities will be are net cash from operating activities, this is just a quick guide for you.

Of course the understanding always has to be embedded, you have to understand the logic behind treating decreases in accounts receivables as a cash inflow or increases in accounts payable as a cash inflow, why decrease in accounts payable is stated as a cash outflow this understanding has to be always there. But as quick guide I am just giving you this, so that you can immediately understand and relay has to why increases in accounts receivable is stated as a cash outflow and hence subtracted from the net income.

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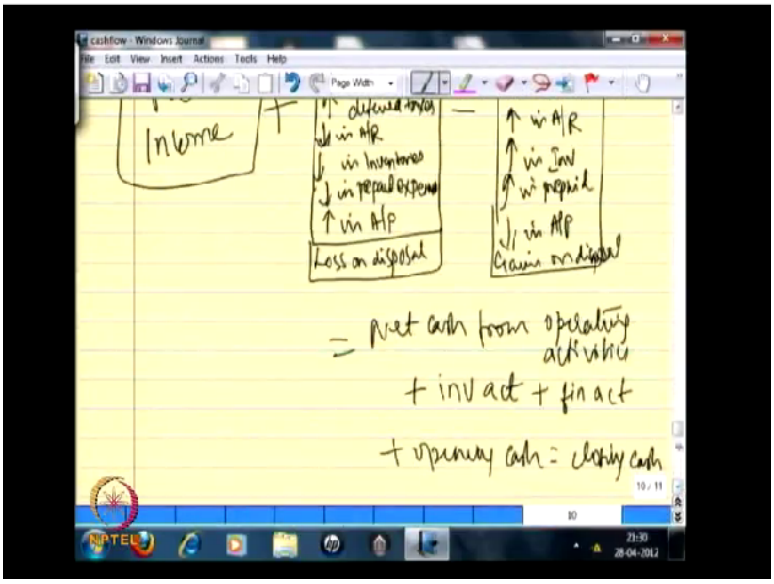

And this gives a net cash flow from updating activities + investing activities+financing activities+opening cash it will be equal to your closing cash. This in effect summarises the cash flow statement. So, what we have done in the last 10 to 12 classes is we have understood the principles of accounting and how to understand activities, how to record those record those activities.

First identify the activities, measure the activity in terms of monitory value and communicate by way of generalising them and creating t accounts and then creating balance sheets, income statement and a cash flow statement. So, this in effect summarises on how we actually understand the principles behind which these 3 main important financial statements are being created the balance sheet, the income statement and the cash flow statement.

But however I again rehydrate that I have not handle this class from an accountant`s perspective, because I am training you to clear a charted accountants examination. But as managers you must be able interpret information that you see in the balance sheet income statement and cash flow statement and to understand and make some sense and what this quantitative information reflects, what it actually conveys in the financial sense the strength of the entity or the organisation that you are actually analyse.

It was only in that perspective that we handle this class and of course there are many special cases and it could be very complicated how we need to handle those special cases is again big subject matter by itself. But I think I just would like to provide the class with 3 special cases that are easy to understand and in the same time very useful again from a manager's perspective has to how these 3 special cases, 3 special accounting entries are being handled.

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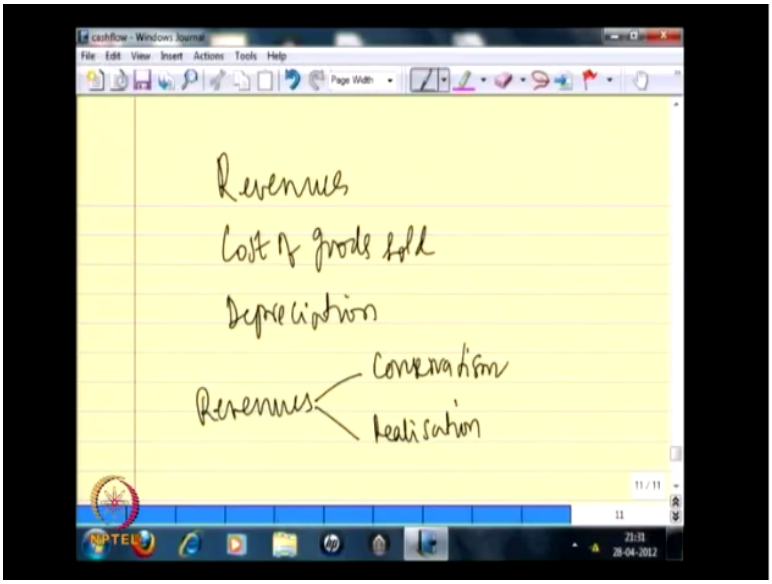

The first thing is the principle of recording revenues and these 3 that I will be handling today will be the revenues, the cost of goods sold and depreciation. Now that these are only 3 special cases that are consider to be special. But for the purpose of our classroom discussion and the requirement of the course I am just going to handle the 3 special cases and in more specifically cost of this sold and depreciation.

See recording revenues and recording cost of goods sold is very integral to your provident loss statement when you prepare the income statement, you see in your income statement it starts the top line starts with revenue and immediately it is the cost of goods sold. So, when it comes to revenues 2 principles that governed the way in which we handle transactions that generate revenue is the principle of conservatism and the realisation concept.

The conservatism concept and realisation concept provides the underline accounting principle when it comes to recognising revenues and I have spend enough time on that. And this I leave it

to the judgement of people to actually handle these transactions. Conservatism I said you record revenues if you reasonably certain, now reasonably certain is based on the judgement of the person who feels that it is reasonably certain or not.

And I already explained that what appears to be reasonably certain for me as an accountant entity X need not necessarily need be for reasonably certain for a different accountant in a different entry Z or a different accountant in the same entity X should it is left to a fair judgment that accountant state to record and interpret certain revenue generating activities has reasonably certain or not and after recognising it as a revenue based on historical experiences.

We also know to what extend will able to realise whether I will be able to 100% revenue as cash inflows or not that again it is left to the judgement of the accountant. Now since this is being left open to the judgement of the accountants there is it an empirical formula that tells you that this is the way that you have to recognise revenues and realise the extend. So, both the timing as well as the amount the recent a scientific formula that tells you if the timing behaviour is this way, this proportion must be recognised as revenue snow.

This is left open for accountants to make a very fair judgement, so I am not going to give you any formula. But you have to understand that when it comes to recognising revenues 2 concepts that always must be go in mind is the conservatism concept and the realisation concept. And based on that we make a fair judgment take a fair call and recognise revenues and recognise the amount that you think is fair and reasonable. If I leave it at that when it comes to revenue recognition.

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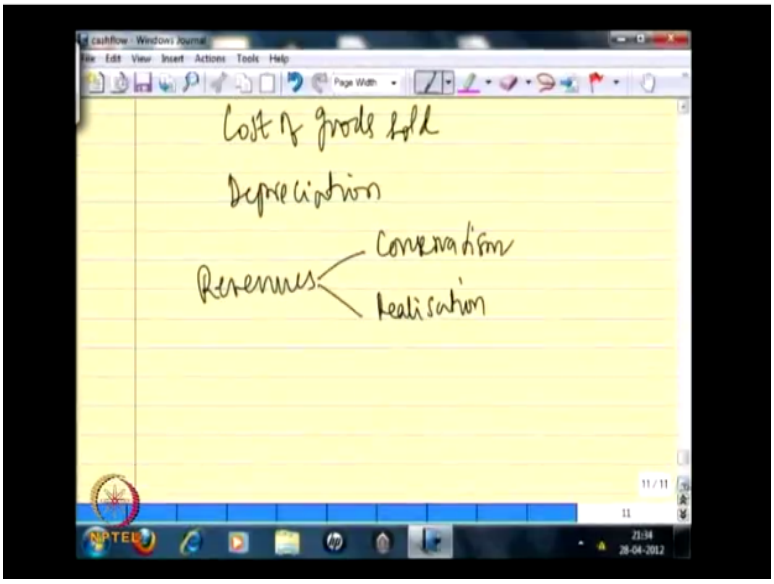

But what is more important in addition to revenue recognition is the cost of goods sold. Remember when I was talking about the income statement I have mentioned that stocks with sales revenue and then the next is the cost of goods and I told you that the cost of goods sold. The value of the economic resources that I have been consumed to generate a product or a service that is ultimately sold.

And I told you that there are also some entities that actually if you their income statement they will start with sales revenue and you would not see cost of sold, typical are these merchandising entities where they buy some they sell it, there is no value addition in that. So, cost of goods sold is not a very it is not a major addition in the income statement that you see. Now contrast that with manufacturing firms, they are into trading.

Typically in manufacturing firms cost of goods sold is an important entity that is calculated. And when you calculate the correct cost of goods sold in a manufacturing firm, there is a little complication with the issue.

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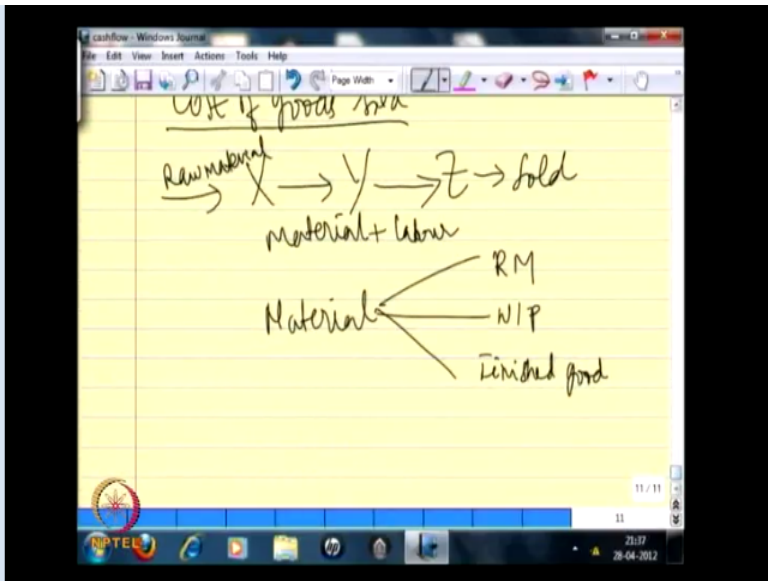

Now if you look at a manufacturing firm you get raw material X and it was labelled probably it also inverse additional material get converted into Y get converted into Z which is then being sold. This process consume some material+labour this is typically what happens then manufacturing firm and there might be value addition each of the stage and there might not value addition in each stage.

But what you get us raw material is not sold as finished good there is some addition in terms of material and in terms of labour that gets into the raw material and finally gets sold as your finished goods inventory get sold. Now when this happens in a manufacturing firm the material the gets recorded inventory in your balance sheet could be in different stages be as a raw material, could be as a work in process, could be as a finished good.

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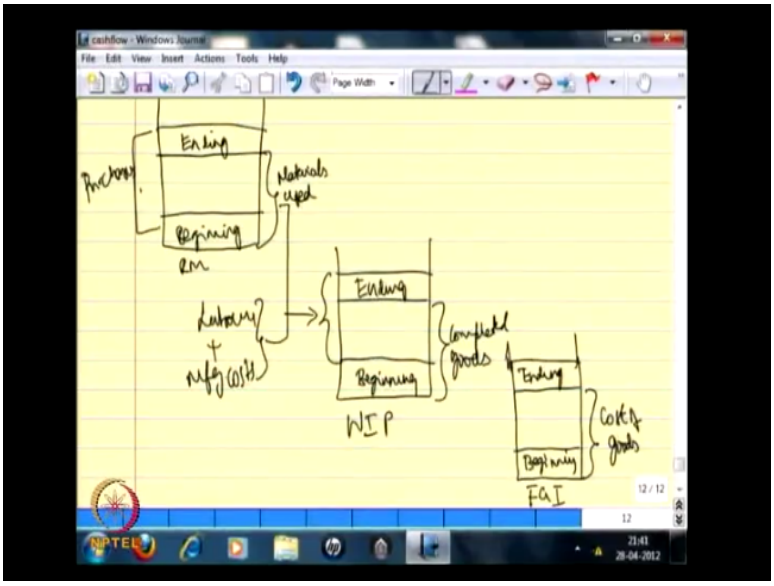

I will just illustrate this with an example, so that you will understand this better suppose there are 3 stages that I would like to capture right. This a this is the raw material inventory we had something in the beginning and you actually purchase this one is raw material and you make some purchases. Let us say this is the ending you make some purchase and then you use the material you use these materials.

And in the process you are also probably consuming some labour+other manufacturing cost let us assume, this is also gets into the process. Let us say this is your work in process here again you had a beginning inventory, let us say you have a ending inventory here. So it is this that gets translated as work in process and after you work on this you have some completed goods that gets to your finished good inventory.

Here again you would have a beginning finish good, ending, cost of goods. Now in all these 3 stages we find that it is starts with raw material and finally ends up with cost of goods that is available for sale. Now let us say we have chosen an accounting period. Now it is very likely that the during this accounting period, the entity has consumed inventory different levels of inventory at different stages.

And very likely that the cost of acquisition of the inventory has changed over this accounting period which means we need to know that let us say inventory X kg is that is consumed during a

particular accounting period. We need to understand what is the value of that inventory that was consumed, now that value could be a value of the inventory that was purchased during time t or value of the inventory that was purchased after t+ delta t.

So the delta t could be so long that the value itself it is totally different. Now what will happen is if I am interested to find the cost of goods sold. This cost of goods sold is after the finish good product is available for sale and assume that the sale as happen you are recognising revenues, now when you recognise revenues there is no problem in the principle of duality you get cash for that, so sales revenue cash there is no problem.

But the matching concept says that you should also record the relevant cost of goods sold and when we are going do that the cost the value of the cost of goods sold needs to be recorded properly and how will you do that the dualities, cost of goods sold and inventory we saw that in the example. The cost of goods sold is debit and the extend of inventory that get consumed it is credit, we remove it from the inventory account, but what is the value is the key question.

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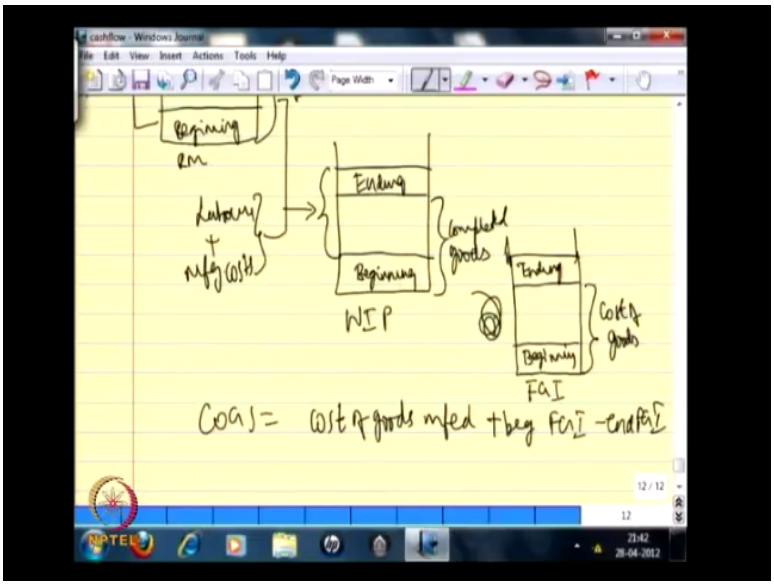

Now your cost of goods sold is your cost of goods manufactured+your beginning finish good inventory–ending finish good inventory is this process. But it is not as simple as that I told I am interested in knowing what is the exact value of the cost of goods sold, it is important to knowing the exact value of the cost of goods sold because we are going to express the cost of goods sold

in monitory terms. There is a problem if it is reported very high or there is a problem if it is also underestimated.

So, we need to have a fair basis on which this monitory value of cost of goods sold is to be recorded. The reason being that during the accounting period the value of the inventory has changed and we need to understand and capture this change in value of the inventory during this accounting period. And when it sale transaction happens and let us we are going to close and calculate prepare a balance sheet and income statement.

The cost of goods available for sale get splited to 2 components. One the cost of goods that is sold and rest remains as inventory, so broadly we need to understand the value that stays as inventory and the value that gets recorded as cost of goods sold when a sale transaction happens. These are the 2 thing that would be interested in knowing.

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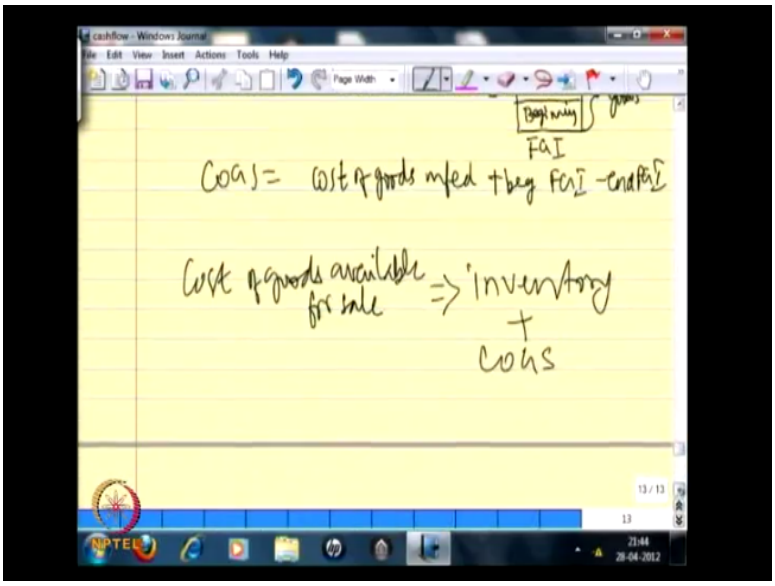

Because the cost of goods available for sale once a sales happens it gets captured in 2 forms, one as inventory, the other as cost of goods. Now the relevant question is what is the value of the inventory what is the value of the cost of goods, why this is relevant because the cost of acquiring this inventory changed during accounting period and so that has to be some fair principle that captures this change.

There are 4 ways that I will explain to the class how this particular cost of goods sold is being captured.

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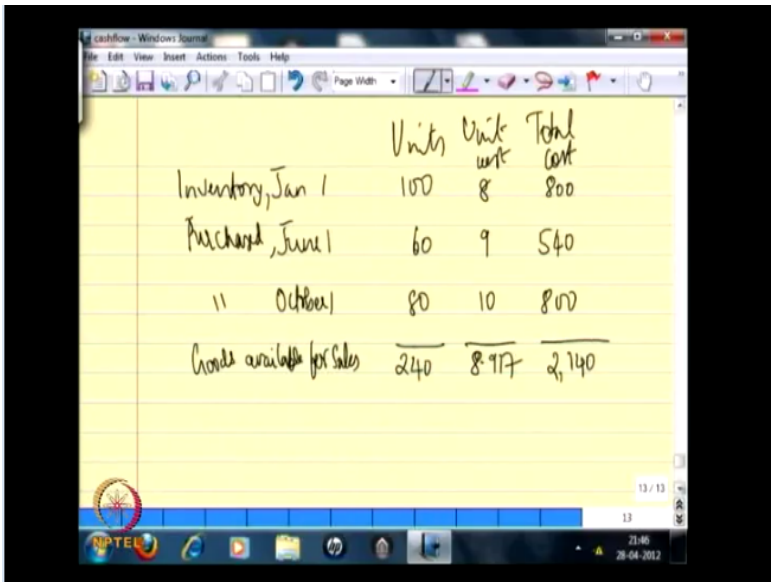

The first thing the first example is specific identification method. Now before get into the methods I will give you an illustration an example that we will use to understand the 4 different methods. Let us say the beginning inventory on January 1 was 100 units and this 100 units I purchased that a cost of rupees 8 per units. So, that my total cost is 800 right, then I purchase some more inventory later and purchased 60 units which cost 9 rupees per unit, so the total cost is 540.

And again during October 1, I purchase additional 80 units at the cost of 10 per unit making the total cost 800. So, the goods available for sale is 240, the average unit cost is, total cost is 2,140. And I am just giving you a illustrative example conserving this entity to be a merchandising entry. But the principle remains is same if you do it for manufacturing firm also it is the same principle that needs to be followed.

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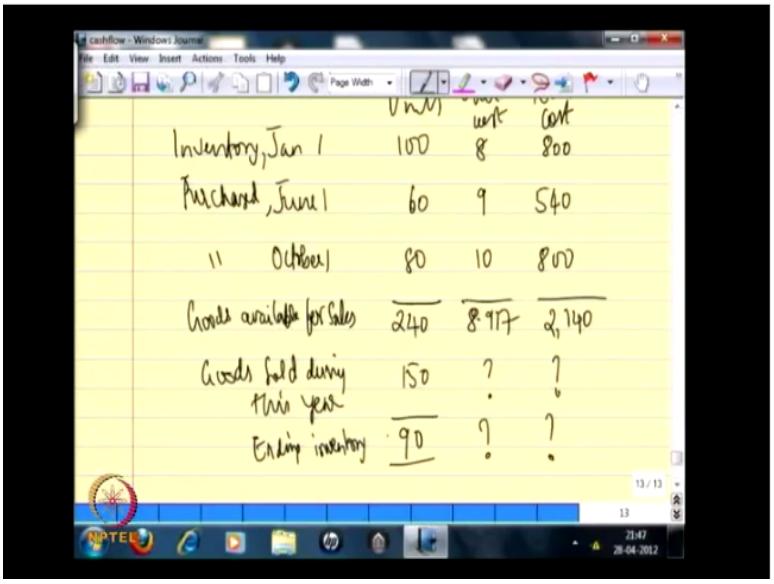

Let us say during this period goods sold during this year, suppose I sell 150 units which means my ending inventory is 90. Now the question is what is the value of the cost of goods sold and what is the value of the ending inventory. Let us say this is the question that needs to be answer. And this is what I have been telling you that the moment sale happen the cost of goods it is available for sale gets captured in 2 forms one as cost of goods sold and then the ending inventory.

And it is not the quantity that we are keen to know, because in your balance sheet you do not record it as 150 kgs of finish good, 90 kgs of goods sold what is the value is what gets recorded in your balance sheet as an inventory item and in the income statement as your cost of goods sold and that value that we need to record correctly. How we how do we record the correct values.

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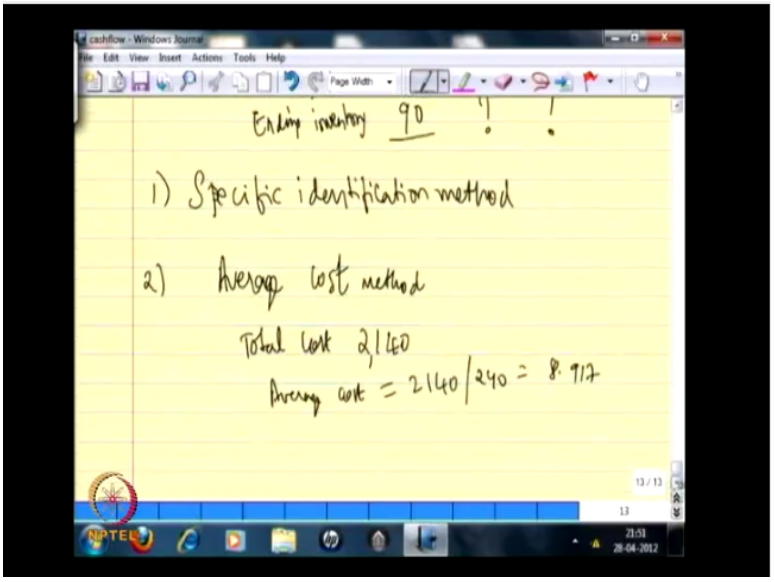

The first thing let us say is the specific identification method as a name suggest this is more of identifying the cost of item as an when it is purchased and as an when it gets consumed also identifying the relevant inventory as an when it is **c**onsumed how do we do this there are number of ways today in detailing companies, bar coding each of the inventory that they purchase and then record the cost of purchase the bar code gives you that information the cost of acquisition.

The moment it gets consumed again you are able to track that information till the last mile that is possible if the quantum of inventory that you are handling is very limited not voluminous or if the inventory that you are handling is very expensive especially the jewellery industries is very expensive inventory it is better it gets bar-coded and then the cost of acquisition once it is consumed gets into cost of goods sold.

So, the this method relays on the fact that you are able to capture the value of the inventory at the acquisition stage and you are able to capture this for all the material that you acquire and the moment it gets process and sold your again also able to capture this information to that specific extend. Now if it is very voluminous the way in which you are handling the inventory is very voluminous you are not able to do this. This is a good method but in practical sense in reality it is it will difficult to do that if you are handling voluminous inventory.

Then what you do another method that could be adopted is the average cost. Now what we do an average cost, now let us say this example says that I have sold 150 units during this accounting period. Now the average cost method you know that the total cost is 2,140, so the average cost per unit is 2140/240 is 8.917. Now this average cost if I am go to adopt this for the calculating my cost of goods sold and the value of the finish god inventory.

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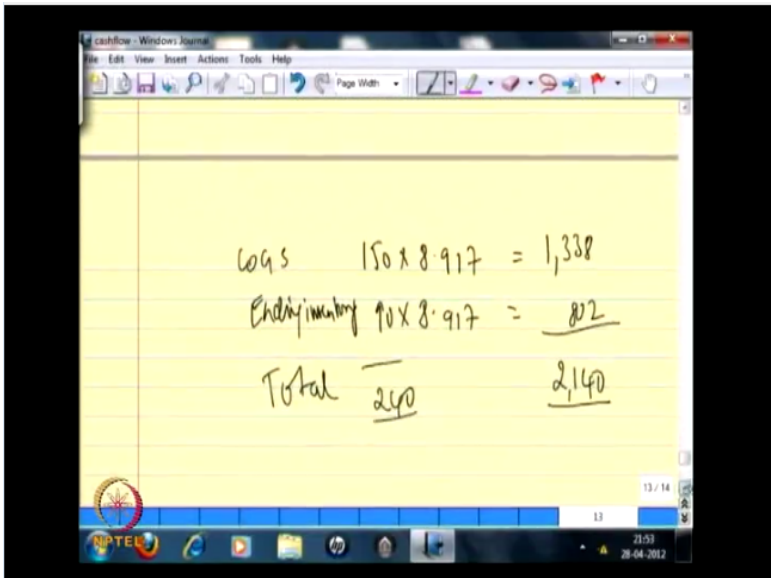

Then the cost of goods sold will be 150 times this 8.917 it will be equal to 1,338 and the ending inventory that we saw 90 times 8.917, so the total, this case total does not alter because again we have working backwards we are calculating the per unit cost and then adopting this per unit cost to the 150 units that get sold and the 150 that says that finished good inventory. The method is important that we are not specifically identifying each of the unit as an when it got purchase and as an when it got consumed.

We just broadly assume that the cost is calculated based on averages and that 2140 units of inventory was purchased sorry 2140 worth of inventory was purchased and it was around much was the inventory 240 units purchase for 2,140. So, the average cost per unit is 8.917 and if I sell 150 units the cost of goods sold is 150 times. If I sell 120 the cost of goods sold is 120 times this then the remaining value is, in this case if it is 90 units that it is remaining 90 times this.

So, this settles the issue what is the value and whether this is the right value I would say yes why because I adopted in my opinion very fair method of using the average cost for unit to calculate the cost of goods sold or the ending inventory value. Now let us say again that I am convened with these 2 methods, neither is **is** this specific identification method practical nor is this average cost method acceptable.

Both will have their inherent limitation, because it does not capture in the average cost method the true value of the inventory, it is just average. And the specific identification method it is practical and I do not have the resources to calculate the value of the inventory and the cost of goods sold till the last mine.

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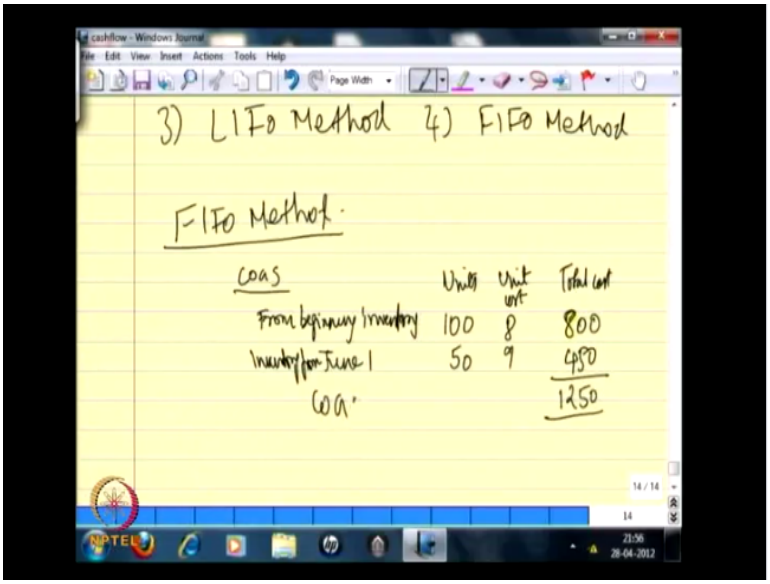

Then are there better methods to do this yes there are the LIFO method and the FIFO method the name suggest LIFO is your last in first out, FIFO is your first in first out method. Now the FIFO method assumes that the inventory that was purchased or the oldest inventory gets sold first, first in as inventory gets sold first out as against the LIFO method which assumes that the most recently purchase inventory is what that gets sold first last in first out method.

And this is as simple as it is explained that in FIFO method it was inventory that came in first to the entity that got processed and sold out first. As against in a LIFO method it is the inventory that came in last that got processed and sold first. And this is the qualitative explanation that is

required it is just simple to understand, but then you are not interested in the qualitative explanation.

Now how this is FIFO method and LIFO method used to capture the correct cost of goods sold and the value of the ending inventory is the real question that we are interested in. Now let us say I take the FIFO method first, the FIFO method says that I have to assume that the inventory that I purchase the oldest gets processed and sold first, so under that assumption for the same example that I am going to sell 150 units.

Let us see how cost of goods sold is calculated, which means from the beginning inventory I consume, I am totally selling 150 units right. So, from the beginning inventory I already have 100, then from the June 1 inventory, inventory from June 1 purchase I consume 150 right. Now what was the cost of purchase it was 8 and 9, so the total cost is 800 and 450, so this is my cost of goods sold.

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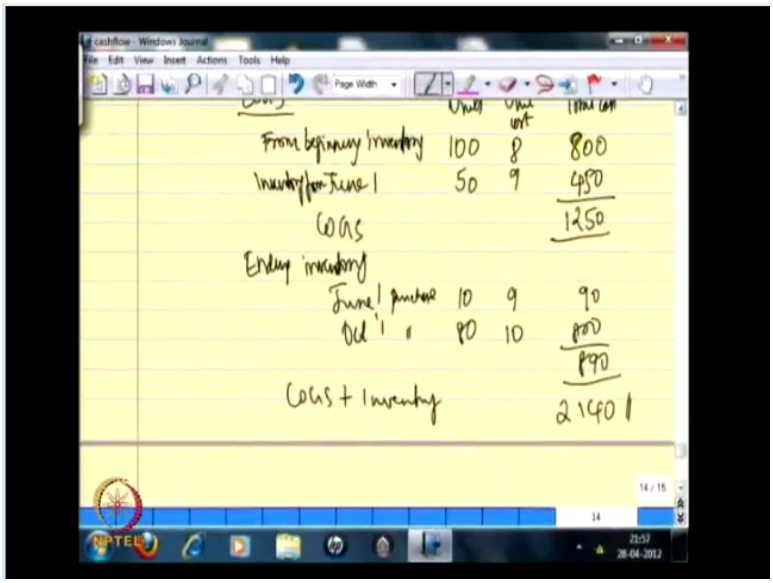

So, what will have ending inventory I have 10 units balance from the inventory that I purchased in June 1. So, ending inventory from June 1 purchase I still have 10 units from October 1 purchase you know I purchase is 80 units. Now this still is a value 9 this is 10, this is 90, 800, 890. So, what is cost of goods sold+inventory is still 2140, this does not alter the 2140 that we saw in the previous 2 cases also.

But in this case the cost of gods sold that gets recorded is 1250 and the value of the ending inventory is 890. Suppose I would have used average cost method then the cost of goods sold that gets recorded is 1338, this says it is 802 as in this case it is 1250 and 890. So, it is only the way in which I recorded the value of the cost of goods sold and inventory that changed. And hence in both the examples that we saw the average cost and in the FIFO you find different values for cost of goods sold and ending inventory.

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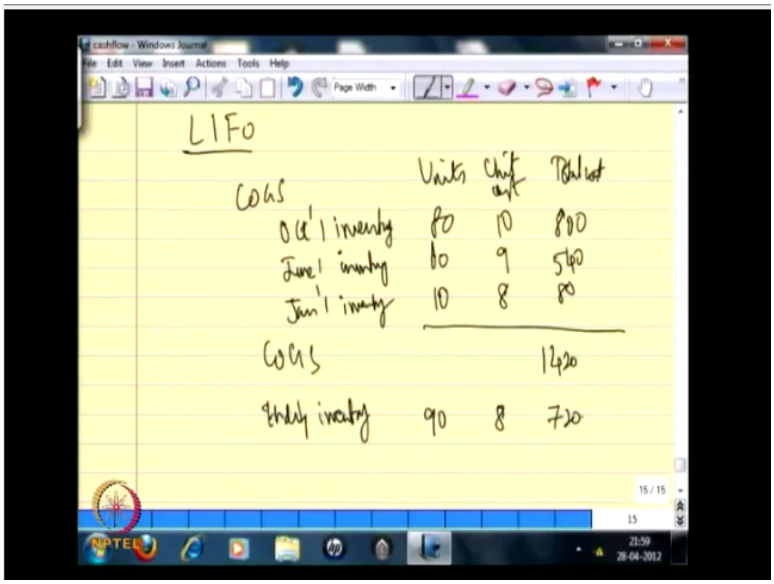

Let us again do a similar calculation if I assume that I am going to adopt the last in first out method to do this. So, to calculate cost of goods sold same thing the last in first out means that what I purchased most recent now gets used first which means the October first inventory all the 80 units gets consumed then June 1 inventory how many units did I purchase 60. So, all the 60 units gets consumed.

Then what I had initially January 1 inventory the same 150 units and hence I need only 10 units from there. So, the unit cost is 10 here, 9 here, 8 unit cost, units, total cost, so 800, 540, 80. So, the total cost of goods sold is 1420. Now what remains as ending inventory is the balance 90 units that I had in January when I began the transaction 8, 720.

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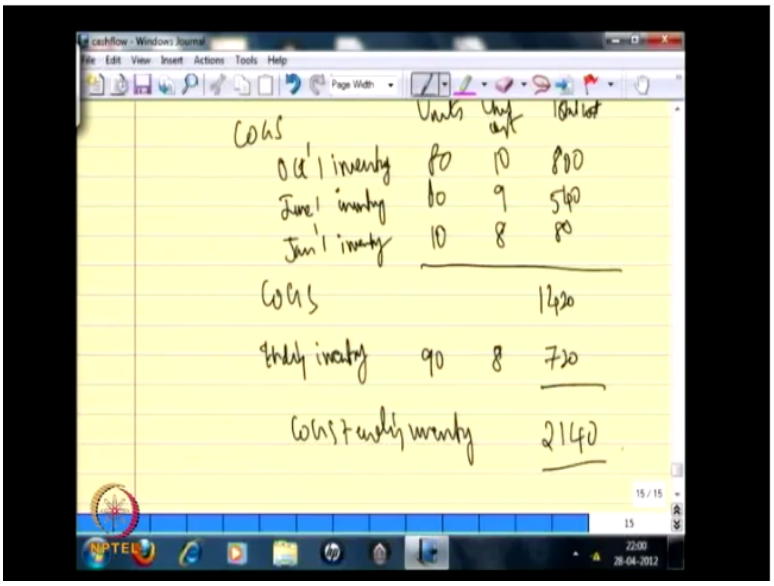

So, what is my cost of goods sold+ending inventory is the same as a 2140 here yes, but it is same as the cost of goods sold and inventory that I got when I calculated using the FIFO method no it was 1250 and 8190 here. But in this case it is 1420 and 720 here. So, now you can understand that leaving this specific identification method which is the most exact that gives you the exact value of the inventory and cost of goods sold, but a little impractical.

Among these 3 methods the average cost, the LIFO or the FIFO, the total cost did not change. The total cost of goods that was available for sale did not change, but what change between these 3 methods is the value of the cost of goods sold and the inventory for the same transaction in which 150 units per sold. So, that 150 units that got sold the cost of those 150 units that got sold differed in this 3 methods.

And also the value of the ending inventory the 90 units also differed in this 3 methods and what cost difference is the method that we adopted to record the value of the cost of goods sold and the value of the inventory why this difference because the cost of acquisition of the inventory itself changed during the accounting period. If the cost of acquisition of the inventory had been same throughout this accounting period then that is no scope for any of these different values.

So, time becomes immaterial whether you are going to consume the inventory that was what first or what during the I mean what during the middle or during the ending it does not make a

difference, because the cost of acquiring that inventory is same. But it is very unlikely that they will happen since the cost of acquisition of inventory changes and since we are more interested in calculating the exact value of the cost of goods sold and the ending inventory.

We have to have some fair method that captures this exact value and these 3 methods and actually people use the first in first out that the most popular method. Now what is the logic behind using this why not last in first out, last in first out is also accepted it also has it is own strong reason just to why that should be the accepted method.

So, next class we will begin with just giving you I will just give you some arguments favouring first in first out. Some that favours last in first out then we will see a little bit about depreciation, so we will see next class, thank you.