Transcript: Formatting Examples

>> Now let's consider two programs that use the, decimal format class. Notice up at the top, we're importing Java.text.DecimalFormat. And then we've got our, class decimal formal examples. And then we've got, our main method. First example here, we're gonna set x equal to 12345.678, and we'll use a pattern that, puts it in, what we call scientific notation using, the exponent.

And we'll do a couple of those and then we'll get back into the patterns that we talked about that are more popular. So let's run this in debug mode. So I'm just going to step, and you see our number over here in the, debug tab. And we've created the format class, and now we're gonna print out that number with that pattern.

So down at the bottom, you can see the pattern we used. Three decimal places and, and an exponent there. You do need to have a zero. You can have more than one zero after the e, but at least one. And that printed the number 12345.6789 as 1.235 since the 4 got rounded up to 5 with an exponent of 4.

So in the next example, just a little larger number. There the pattern we're using has a two zeros after the e. And that's gonna print out that long number you see there as, again, 1.235 with an exponent of, of 8. And, but we printed 08 because of that extra 0 there.

So now let's, we're gonna use, some more common, formats, so this pattern is, just sharp, decimal place, zero sharp sharp or hash. So we're printing the number 4 point, 123 up to 9 there, is just 4.123. This was essentially, an example from the slide. And then this is the, the next one here, FMT 4, you can call these anything by the way.

I just, named them this cuz we had, several of them. This says we're gonna print a dollar amount. And if we have any negative values, we wanna print it in parentheses. This is essentially what the currency, instance from, the currency format class would do for us. But again, we can do all of this with decimal format which is why we're concentrating on it.

And so, we're gonna print this long negative number here out, and you'll see, see how it comes out with the format. So this long negative number just printed out as, in this case, 112,344,7 678 and 12 cents there. So it was a dollar amount, but in parentheses because it was negative.

OK, in the next one, we're gonna add a few asterisks in front of the amount. We're gonna have dollar sign asterisk. You see this on checks sometimes. Again, a fairly large number. And you see there, we printed, just two asterisks in front of it. It was a positive number.

And then next, we're going to, print out 11, see how that prints. So here we've got 0 point, and it says we always want something here. But, on the other side of the decimal place, we only had, the, hashes as in no zero which says we don't require anything there like we did with the dollar amounts, we always wanted two decimal places there.

So in this case, we just print out 11. Since it's 11.0, the format patterns say we didn't have to have anything the other side of the decimal if there wasn't anything. But we could have up to three, decimal digits there. So we just print 11 there. And here's another one where we've, taken the zero off of the pattern.

In the previous one, we had 0 point hash, hash, hash. Here we just got hash point and the, the three hashes. So we'll see how that works. So here, we printed 0.5 and it prints it as 0.5 since, since we had something there. The next one, however, notice we're gonna not put the, the hash on the right side of the, or the left side of the decimal rather.

In this case, 0.5 is just gonna print as 0.5. Since we didn't have, a zero right here had we had, or we didn't, yeah, if we add a 0 here, we've got 0.5 out of course. And here is a, here's another pattern, let's look at that. So this is gonna print, notice we have nothing to the, left of the decimal place, but three digits to the right.

So we get our three digits out, but always if there is something to the left, it will get printed. The, zero or hashes there just indicates, the zero says always print a zero but we'll always print something if, if there's a value there. Then this next one is a percentage.

Notice we've got, this was from the examples, I think on the slides. Here we've got, 0.123456, and we're gonna print this as a percentage. So this is gonna be 12% and change, is the way we'd like to, print that. So I'm just gonna step. And out here at the bottom, we see that all this prints is 12.35%.

We just move the decimal place over, if you will. And then we had to round up to, the, 3.35 there because of the 56. And finally, let's consider, printing a, an integer using decimal format. Notice the integer is just one, two, three, 123. But the pattern we're gonna use is, is five zeroes.

And so, this suggests recall zeros mean we always want to see something there, even though there's not anything significant. And so when we print this, down at the bottom we can, instead of 123, we get 00123. So we said in our pattern, right here, of five zeros that we wanna see five digits there regardless.

And so even though there's only three, it got the leading zeros, okay? So one more click and this finishes. So now let's look at, CylinderVolume.java. And it's just a, sort of a quick thing. We're gonna compute the volume of cylinder as Pi r squared times h where h is the height there.

And we're gonna let the user enter a radius, a height, and and then we'll do the volume. And notice that we're using, the cost of pi from the math class, so math.pi times pi.pow, radius raised to the second power there, times height. So this, that's where, the calculation is done.

Remember back to our math methods. This is just exponentiation. But we do wanna use, math.pi. So I'm gonna run this in debug mode. It's asking us for a radius. I'm gonna give it 34 and then for height, 12. And then it's ready to, it stopped at the break point, finally got to the break point.

So now I'm just gonna step. And it's computed volume over here. You see volume in the debug tab, it's kinda gory looking, lot's of decimal places, but we're gonna print this out, to only looks like four decimal places. So let's step and, we've created our decimal format, and now we're going to print it out.

We're gonna call our decimal format .format with volume. And there's the pattern we're printing. We are gonna, have, groups of three on the left there of digits, in the traditional way. And we're gonna print at least one digit to the, right and up 24. And so you see, we're gonna have, more than four over here.

And so let's go ahead and print that and we see what we've got there. So there's the raw value at the top, printed, and then down below is, is our formatted value. And if we wanted to print something, larger, we could do that. Let's try that. Let's run this, one more time.

Transcript: Formatting Examples

One more step and it ends and so I'll run it again. We'll just run it this time and so let's give it a radius of, 1234 maybe, and a height of 12345. That's pretty tall. And there we get a pretty big number. And now notice that, that the raw number automatically ended up in, in scientific notation because it was too large.

Recall there's only about 15 significant digits. And, and there they are, it's 5.9 and a bunch of digits, raised to the 10th power. But this is the, formatted version. So we ended up with, let's see thousands, millions, this looks like trillions, billions, and, and and so on there.

But still just the, four digits to the, right of a decimal place. So that completes the two examples and, just, just use these, as you like. There is some pretty standard ones we looked at, in the decimal format for, for dollars and, and, and things like that in the pattern of, grouping three, but, pretty straightforward.