

>> So now let's take a look at the example program, `ReverseLinesReadFromFile`. This program reads in lines from a text file and then prints the lines in reverse order. Now here's our strategy. We're gonna read a filename in from the user. Then we use a loop to read the lines in from the file, and we'll store these lines in an `ArrayList`.

Remember each line coming in is just a string, and this will be an `ArrayList` of strings. And we'll print the `ArrayList`, then we'll use a loop to print the elements of the `ArrayList` in order. So this will just list the lines in the order they came in. And then we use a loop to print the elements of the array list in reverse order.

So this will actually reverse the lines that we read in. So let's take a look at the program itself. So up at the top we're importing scanner of `ArrayList` and then `java.io.file` and `java.io.file not found exception` as we mentioned earlier. Then we have our class, most of this is just documentation, more or less what we said before.

And so here's our main program, we declare a scanner on `system.in` and then we're gonna ask the user for a filename. We'll read that filename in and then this is where we open the scanner on that file we read in. If it finds the file, we're good to go.

If it doesn't find the file, it throws that file not found exception and we end. But it's gonna find our file. And then we create an array list of string and assign that to an input list. We declare that right here. Here's an array list of string on input list.

And then this is where we assign it, right here. And then we enter the loop. We just say `file scan`, that's the name of the scanner on that file. While `filescan.hasNext`, then we're going to, do `filescan.nextLine`, so reading the whole next line there. And then we're adding that in this same line of code here to the array list.

Our array list is input list. So we just say `inputlist.add`, and then what we're adding is `filescan.nextLine`. And then you loop back, and we just keep doing that until we've read the entire file. When we don't have anything left in the file, we go to the next line, which is `file scan dot close`, closes that file.



And then we print out the array list, and that's using the array list to string, so that'll just be a long line with the lines all showing up, sort of horizontally there. And then we want to print the lines in order. One per line, so to speak. And so here we say `index = 0`.

And while `index` is less than `inputList.size`, how many ever lines we had there, we say `System.out.println`. And what we're printing is `inputList.get` what's at that index. And then we add a space to the end there, but we're printing the whole line. We incremented `x` and go back and get the next one.

And so this will print all the lines out in the order we read them in, and then to print them out in reverse order, we skip a line here, and just say, `index=input list.size-1`. So recall if there's 10 lines, then the lines are, numbered 0 through 9, and so we would wanna start with 9, so `b size- 1`, anyway go back, go down to 0.

So our file loop says, as long as `index` is greater than, or equal to 0, we go through this. And here we're printing out, the line, at `input.get index`. and then we decrement the index, and then continue through the loop. So let's run this. Here's a data file, we're just in the examples folder for this module.

And down here at the bottom you see some data files for various programs, we're going to use test, `test1.dat`. Here it is. This says this is a test of reading from a file and printing out the lines in reverse order. You see we have four lines there and so that's what we're gonna read in.

Let's go back to our program and, let's just run it. And we'll see all of that happen. Once a file name `test1.dat` there. And there they all are, I'll move this up so we can sort of see what happened there. Here it is right here, `test1.dat`. And, we read it in.

And then this is printing out the array list. You'll see it's just each line separated by a comma. And then in that second loop, or rather the first loop where we printed them out in order after reading them in with a loop. Here they out in order. And then here they are in reverse order.

Okay? Now I'm gonna clear this. And we'll run this in the in the canvas. And we'll just see sort of the, some of the things come in there. So here, here's scan on just `System.in`. So it's waiting for a filename down here. Let's give it our filename. And then we'll step.



And, you can see there's the, well, one that's actually testone. You're seeing the end of it there, we can scroll it over and you can see it there. There it is. Okay, and then let's step some more. We're creating the array list. You can see the array list being created right here.

And there it is. Notice nothing is in it yet no data no, size and now we're gonna enter our loop where we readd things in. So this is we're just doing fileScan.nextLine and then adding that to our array list called inputList each iteration. And so here's the first one, and we see input lists, this is the array list.

And notice here, I've just pulled this out, this is element data, I've pulled it out so we can see it over here. This is inside the array list, so to speak, and this is the array list looking at it as a collection, element view. If we actually look at these we'll see the viewer set to collection elements.

And that just shows sort of what's inside the list directly. But, these are the same array list objective if you will. So, in the loop we scan down here here's the next one going in. And so on. Now, eventually, we're going to close the file, we've read them all in now.

And so next, we're gonna print out an input list, which is that array list, so we should see that print down here at the bottom. And there it is. And move that up a little. So, we can see it there it is across the bottom. And then we're gonna print the array list out in order so to speak.

So, this would see the aligns coming in out in the order we random in from 0 up to the less than size. And here they come. We get ' all out. That oughta be the last one. We jump, we're gonna skip a line, move that up a little bit there.

We'll skip a line and then print them out beginning at size minus one for the array list. And so this will get the last one. Now this over here in the In the viewer here, X is on the last, it size -1, size was 4 so, it's at size -1, and we'll see it as it goes through the loop, it'll, it'll move there.



Moving all the way up, and we're printing the lines in reverse order. And that's the way that works. OK, all right, I'm gonna close this. And let's look at one more. This is a read items from a file. The name of this is yes, `ReadItemsFromFile`. And the difference is the file we're gonna read.

This is the file we're gonna read in. Or 12, 23.5 Atlanta, 13, 56.7 New York, and 14, 30., 34.556 Washington. And notice each line has three items in it. And these are probably an int, a double and a string, and just to look at this, we won't go through this in detail.

It's essentially the same as, as the other file, except when we read the file in, we set the file up on test, `items.that`. Here, instead of reading next slide, we're gonna actually do `inFile`. We call this when `inFile`, `inFile.nextInt` that pulls off that integer. And then `inFile.nextDouble`. I gets next double.

And notice this reads the rest of the line. The rest of the line had, had the the text in it there. And we could've had whatever text we wanted out here, that next one would read it all and, and put it in there. Now, one little caveat, if you're mixing up next int, or next or next L, and so on and next line.

When you get to the end here, after I've read, say next double, if it was at the end of the line, it actually didn't read the rest of the line. You'd have to do a next line to read past that line. And when you say next double, it goes looking for the next double.

So, just keep that in mind that if this were, if you had a number at the end of a line, and you got it with next double. The next time you do a next line, it would actually just read the rest of that line, which is gonna be the line feed, if you will.

And so you'd have to do another next line to actually get the real next line. But here we mixed ends and doubles and next line and so on. And this prints the this is printing things out in order and and so on. Then in reverse as well. Okay, we'll go to one more example.