

INSTRUCTION

When solving this exercise keep in mind that apart from the correct solution, we would also like to see a clean and well-structured code that will be easily readable, maintainable, and extendable.

In case you failed with the downloading task, feel free to download the file manually to complete parsing tasks.

Just try to explain what issues you had with notes in codes.

Send back the zipped solution as an attachment in reply.

Good luck!

TASK

Create a new console application using an IDE of your choice (i.e., Visual Studio). The application should be capable of downloading a file, opening it, extracting data from inside and saving it back to a different file with different structure. All details are in the points below.

1. The application should go to this page:
<https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia>
2. Parse this page in a way of your choice and find the **URL** under the '**Latest release**' section and download the content of that. Keep in mind that this link is not static, it will change every time the source releases new data.

Labour Force, Australia

Future releases

Labour Force, Australia, September 2023 Release date 19/10/2023 11:30am AEDT

Labour Force, Australia, October 2023 Release date 16/11/2023 11:30am AEDT

Labour Force, Australia, November 2023 Release date 14/12/2023 11:30am AEDT

Labour Force, Australia, December 2023 Release date 18/01/2024 11:30am AEDT

Labour Force, Australia, January 2024 Release date 15/02/2024 11:30am AEDT

Labour Force, Australia, February 2024 Release date 21/03/2024 11:30am AEDT

Latest release

[Labour Force, Australia, August 2023](#) Latest release

3. In the content of that second page search for **URL** for the downloadable '**Table 1**' XLSX file. It's in the 2nd part of the page quite near to the very bottom. Download this **XLSX** file and save it under '**data.xlsx**' name. Store the file inside your project inside the folder called 'Downloads'.

Labour Force status

Table 1. Labour force status by Sex, Australia - Trend, Seasonally adjusted and Original

[Download XLSX](#)
[712.48 KB]

Table 4. Labour force status by Sex, New South Wales - Trend, Seasonally adjusted and Original

[Download XLSX](#)
[527.53 KB]

Table 5. Labour force status by Sex, Victoria - Trend, Seasonally adjusted and Original

[Download XLSX](#)
[527.14 KB]

Table 6. Labour force status by Sex, Queensland - Trend, Seasonally adjusted and Original

[Download XLSX](#)
[529.15 KB]

Table 7. Labour force status by Sex, South Australia - Trend, Seasonally adjusted and Original

[Download XLSX](#)
[523.09 KB]

Table 8. Labour force status by Sex, Western Australia - Trend, Seasonally adjusted and Original

[Download XLSX](#)
[526.54 KB]

4. In code, read one of the tables called '**Data1**' from the downloaded '**data.xlsx**' file using **ExcelDataReader** NuGet package and collect it in memory in chosen classes / variables.
5. Create a new **CSV** file and save the content we just read to that new file in a modified way. In the resulting **CSV** file, we would like to see the same data with those modifications:
 - In the downloaded **XLSX** file dates of values are in the 1st column – now we want to have them in the 1st row.
 - One of the rows in the **XLSX** file is marked as 'Series ID' – now we want to move the content of that row to the 1st column in the **CSV** file.
 - In other words, we want to take that **XLSX** file, take one table from it, cut some rows at the beginning of that table, transpose the content, and save it to a CSV file.
6. Just to help to understand the requirements find below a piece of the source file together with a screen of the expected result (**screens on the next page**).

Piece of the original file:

	A	B	C	D	E	F	G	H	I	J
1		Employed total ; Persons ;	Employed total ; Persons ;	Employed total ; Persons ;	Employed total ; > Males ;	Employed total ; > Males ;	Employed total ; > Males ;	Employed total ; > Females ;	Employed total ; > Females ;	Employed total ; > Females ;
2	Unit	000	000	000	000	000	000	000	000	000
3	Series Type	Trend	Seasonally Adjusted	Original	Trend	Seasonally Adjusted	Original	Trend	Seasonally Adjusted	Original
4	Data Type	STOCK	STOCK	STOCK	STOCK	STOCK	STOCK	STOCK	STOCK	STOCK
5	Frequency	Month	Month	Month	Month	Month	Month	Month	Month	Month
6	Collection Month	1	1	1	1	1	1	1	1	1
7	Series Start	Feb-1978	Feb-1978	Feb-1978	Feb-1978	Feb-1978	Feb-1978	Feb-1978	Feb-1978	Feb-1978
8	Series End	Aug-2023	Aug-2023	Aug-2023	Aug-2023	Aug-2023	Aug-2023	Aug-2023	Aug-2023	Aug-2023
9	No. Obs	547	547	547	547	547	547	547	547	547
10	Series ID	A84423127L	A84423043C	A84423085A	A84423113X	A84423029J	A84423071L	A84423141J	A84423057T	A84423099R
20	Nov-1978	6039.7	6028.1	6033.8	3880.3	3877.7	3863.5	2159.3	2150.4	2170.3
21	Dec-1978	6044.9	6053.1	6125.4	3886.1	3891.1	3936.0	2158.8	2162.0	2189.3
22	Jan-1979	6050.1	6051.5	5971.3	3892.2	3891.0	3884.1	2158.0	2160.6	2087.2
23	Feb-1979	6055.3	6063.5	6050.7	3898.0	3900.8	3907.8	2157.3	2162.7	2142.9
24	Mar-1979	6061.1	6055.6	6096.2	3904.0	3902.4	3919.2	2157.1	2153.2	2176.9
25	Apr-1979	6067.8	6064.5	6087.7	3910.5	3910.0	3920.4	2157.3	2154.5	2167.2
26	May-1979	6075.6	6070.3	6075.6	3917.4	3919.4	3922.3	2158.1	2150.9	2153.3
27	Jun-1979	6085.7	6099.4	6095.7	3924.7	3927.8	3928.0	2160.9	2171.6	2167.7
28	Jul-1979	6098.7	6097.5	6103.9	3932.2	3930.3	3927.8	2166.5	2167.2	2176.2
29	Aug-1979	6114.0	6114.8	6078.5	3939.3	3944.9	3921.1	2174.7	2169.9	2157.4

Piece of the expected result viewed in Excel:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Series ID	Feb-78	Mar-78	Apr-78	May-78	Jun-78	Jul-78	Aug-78	Sep-78	Oct-78	Nov-78	Dec-78	Jan-79	Feb-79	Mar-79	Apr-79	May-79	Jun-79	Jul-79	Aug-79
2	A84423127L	6007.9	6014.9	6021.4	6027.1	6031.2	6032.8	6032.7	6032.9	6035.1	6039.7	6044.9	6050.1	6055.3	6061.1	6067.8	6075.6	6085.7	6098.7	6114.0
3	A84423043C	5997.5	6002.9	6030.6	6033.1	6033.9	6030.5	6036.3	6030.9	6035.8	6028.1	6053.1	6051.5	6063.5	6055.6	6064.5	6070.3	6099.4	6097.5	6114.8
4	A84423085A	5985.7	6040.6	6054.2	6038.3	6031.3	6036.1	6005.4	6024.3	6045.9	6033.8	6125.4	5971.3	6050.7	6096.2	6087.7	6075.6	6095.7	6103.9	6078.5
5	A84423113X	3889.2	3887.4	3885.3	3882.9	3879.8	3876.3	3873.7	3873.4	3875.7	3880.3	3886.1	3892.2	3898	3904	3910.5	3917.4	3924.7	3932.2	3939.3
6	A84423029J	3881	3884.5	3888.4	3885.7	3882.7	3873	3872.5	3870.2	3875.7	3877.7	3891.1	3891	3900.8	3902.4	3910	3919.4	3927.8	3930.3	3944.9
7	A84423071L	3887.4	3900.6	3899.1	3888.6	3883.6	3869.9	3850.9	3860.4	3874.2	3863.5	3936	3884.1	3907.8	3919.2	3920.4	3922.3	3928	3927.8	3921.1
8	A84423141J	2118.7	2127.5	2136.1	2144.2	2151.4	2156.6	2159	2159.5	2159.4	2159.3	2158.8	2158	2157.3	2157.1	2157.3	2158.1	2160.9	2166.5	2174.7
9	A84423057T	2116.5	2118.4	2142.2	2147.4	2151.1	2157.5	2163.8	2160.7	2160.1	2150.4	2162	2160.6	2162.7	2153.2	2154.5	2150.9	2171.6	2167.2	2169.9
10	A84423099R	2098.3	2139.9	2155.1	2149.7	2147.8	2166.2	2154.4	2163.9	2171.6	2170.3	2189.3	2087.2	2142.9	2176.9	2167.2	2153.3	2167.7	2176.2	2157.4

Piece of the expected result viewed in Notepad:

File Edit Format View Help
Series ID, Feb-1978, Mar-1978, Apr-1978, May-1978, Jun-1978, Jul-1978, Aug-1978, Sep-1978, Oct-1978, Nov-1978, Dec-1978, Jan-1979, Feb-1979, Mar-1979, Apr-1979, May-1979, Jun-1979, Jul-1979, Aug-1979
A84423127L, 6007.9, 6014.9, 6021.4, 6027.1, 6031.2, 6032.8, 6032.7, 6032.9, 6035.1, 6039.7, 6044.9, 6050.1, 6055.3, 6061.1, 6067.8, 6075.6, 6085.7, 6098.7, 6114.0
A84423043C, 5997.5, 6002.9, 6030.6, 6033.1, 6033.9, 6030.5, 6036.3, 6030.9, 6035.8, 6028.1, 6053.1, 6051.5, 6063.5, 6055.6, 6064.5, 6070.3, 6099.4, 6097.5, 6114.8
A84423085A, 5985.7, 6040.6, 6054.2, 6038.3, 6031.3, 6036.1, 6005.4, 6024.3, 6045.9, 6033.8, 6125.4, 5971.3, 6050.7, 6096.2, 6087.7, 6075.6, 6095.7, 6103.9, 6078.5
A84423113X, 3889.2, 3887.4, 3885.3, 3882.9, 3879.8, 3876.3, 3873.7, 3873.4, 3875.7, 3880.3, 3886.1, 3892.2, 3898.0, 3904.0, 3910.5, 3917.4, 3924.7, 3932.2, 3939.3
A84423029J, 3881.0, 3884.5, 3888.4, 3885.7, 3882.7, 3873.0, 3872.5, 3870.2, 3875.7, 3877.7, 3891.1, 3891.0, 3900.8, 3902.4, 3910.0, 3919.4, 3927.8, 3930.3, 3944.9
A84423071L, 3887.4, 3900.6, 3899.1, 3888.6, 3883.6, 3869.9, 3850.9, 3860.4, 3874.2, 3863.5, 3936.0, 3884.1, 3907.8, 3919.2, 3920.4, 3922.3, 3928.0, 3927.8, 3921.1
A84423141J, 2118.7, 2127.5, 2136.1, 2144.2, 2151.4, 2156.6, 2159.0, 2159.5, 2159.4, 2159.3, 2158.8, 2158.0, 2157.3, 2157.1, 2157.3, 2158.1, 2160.9, 2166.5, 2174.7
A84423057T, 2116.5, 2118.4, 2142.2, 2147.4, 2151.1, 2157.5, 2163.8, 2160.7, 2160.1, 2150.4, 2162.0, 2160.6, 2162.7, 2153.2, 2154.5, 2150.9, 2171.6, 2167.2, 2169.9
A84423099R, 2098.3, 2139.9, 2155.1, 2149.7, 2147.8, 2166.2, 2154.4, 2163.9, 2171.6, 2170.3, 2189.3, 2087.2, 2142.9, 2176.9, 2167.2, 2153.3, 2167.7, 2176.2, 2157.4