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DataGridView

Data grid view allows to display data as a table and allows the user to edit it. Data can be loaded from a file or database or filled by the user.

Data grid view can be thought of as a table (similar to excel table) with rows and columns. Data can be accessed by rows and columns. Indexes start with 0.

Example of reading row and column values:

	Name	Phone nr	Address	
	Jhon	12345	China	
✎	Mary	56789	USA	
✖				

```
dataGridView1.Rows[1].Cells[2].Value -> "USA"
```

```
dataGridView1.Rows[0].Cells[0].Value -> "Jhon"
```

```
dataGridView1.RowCount -> "3" (the last row is the empty row, this is very important!)
```

```
dataGridView1.ColumnCount -> "3"
```

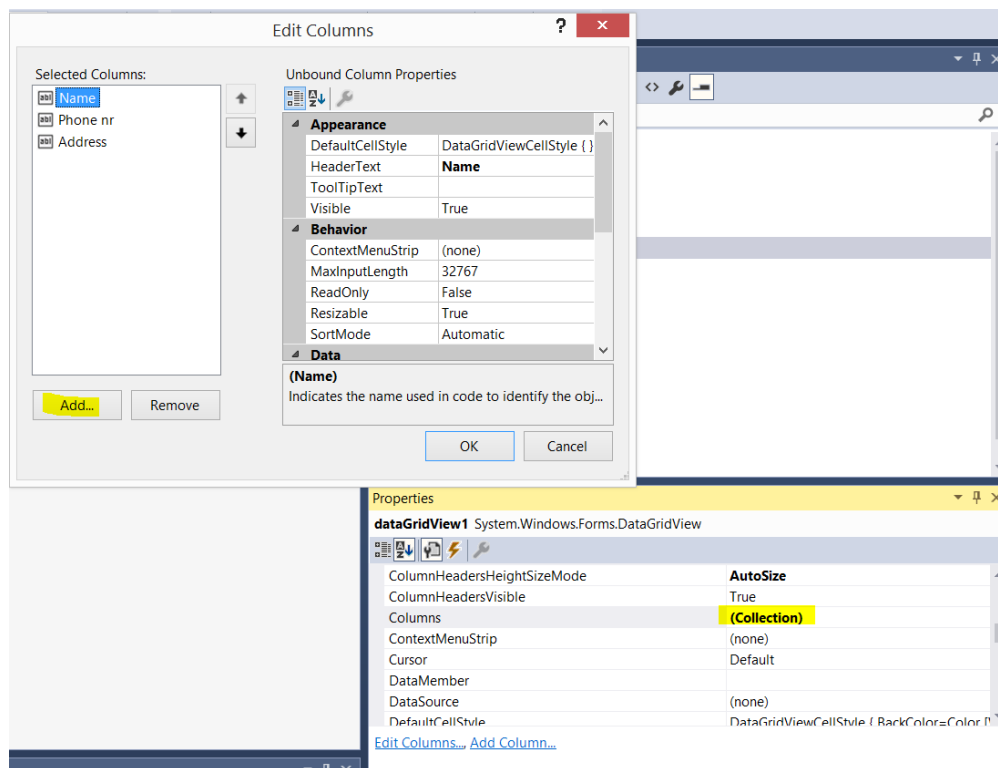
Exercise: Survey

Create a program where users can enter their answers to a set of questions and then save them to a .txt file. In the form there are questions about the books you read, option to fill out answers and to save them to a .txt. There is also a button for clearing the values. User can choose the folder and file name for saving.

1. **Create a form and add a data grid view there.** Add columns and set their types:

- Name – DataGridViewTextBoxColumn
- Would you recommend? – DataGridViewCheckBoxColumn
- Genre – DataGridViewComboBoxColumn; values are entered in the „Items“ section. You can add your own values there, possible values are: Sci-fi, Romance, Drama, Science

Data grid view columns can be set in the code or in the form design view in the „Columns“ property.



Column display name is in the „HeaderText“ field.

Column type can be changed in the „Column Type“ field.

Run your form and see if the result is as expected and you can fill the form.

	Name	Would you recommend?	Genre
▶	Test	<input type="checkbox"/>	▼
*		<input type="checkbox"/>	Sci-Fi Romance Drama Science

Expected result: you can fill values in the form.

2. Add 3 buttons, 2 labels and a text box:

- Button for saving
- Button for clearing the values
- Button for choosing the folder; opens folder dialog
- Text box for the file title
- Label saying '.txt' after the text box
- Label to display chosen file path (Hidden; Visible = false)

	Name	Would you recommend?	Genre
*		<input type="checkbox"/>	▼

Save as .txt

Choose folder labelPath

Clear values

Expected result: your form looks like the image above.

3. **Add logic for saving the file.** Lets do a simplified version of saving the values first: we dont add the file name logic and try saving it to debug folder under the file name „test“. Saving is done with „save as“ button click.

Reminder: For saving files: we need to add „using system.io“ in the top. Remember stream writer. If we do not specify file path and only add file name, then the file is placed in the debug folder of the solution.

```
new StreamWriter("test.txt")
```

We have to take data from all rows and all columns from dataGridView. Example of this is in the beginning of the document.

We have to iterate through all rows and columns and write them to file.

Example:

Row0 column0 Row0 Column1 Row0 Column2

Row1 column0 Row1 Column1 Row1 Column2

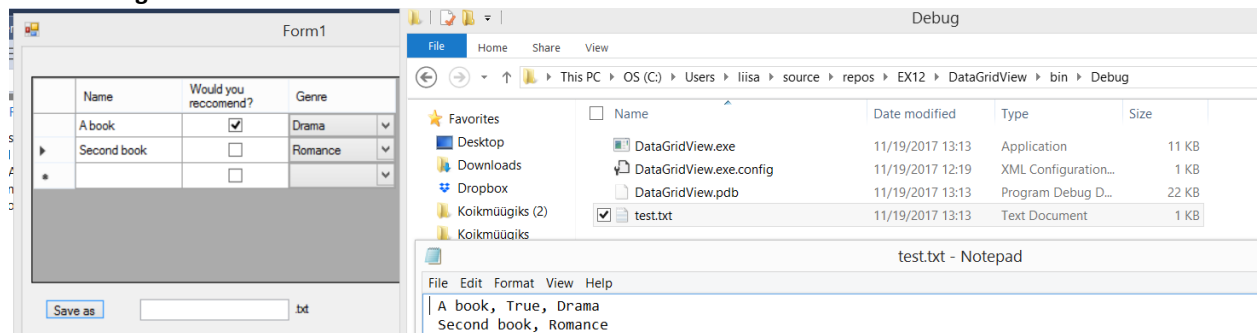
Row2 column0 Row2 Column1 Row2 Column2

NB! We can only get the value of the cells that are not empty. By default an empty row is added when insterting values so we have to check if the row has value before writing to file.

Example:

```
if(dataGridView1.Rows[0].Cells[0].Value!=null) {...}
```

Expected result: when clicking „save“ button then all values from data grid are written to a text file located in the debug folder.



Currently we see that header columns are missing in the file, add them too!

4. **Add option to choose file location and name!** If file already exists then ask weather to overwrite the file or not.

Read: <https://www.dotnetperls.com/folderbrowserdialog>

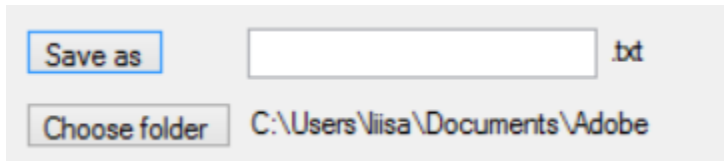
File path is chosen with button „Choose folder“; file name from textbox.

4.1 File path

„Choose folder“ button: opens folder browse dialog.

“folderBrowserDialog” control is located in the toolbox. Add it to the form.

File path is chosen with folder browser dialog.



Display the chosen file path in „labelPath“ label.

Filling out file path is not mandatory, if no file path is chosen then debug folder is used (no file path).

4.2 „Save as“ button click:

- If file name is empty, then alert is displayed „filling out file name is mandatory“ and nothing happens.

Read: <https://www.dotnetperls.com/messagebox-show>

Alert is displayed with message box, example:

```
string message = "Filling out file name is mandatory!";
string caption = "Please fill out file name!";
MessageBoxButtons buttons = MessageBoxButtons.OK;
DialogResult result;

// Displays the MessageBox.
result = MessageBox.Show(message, caption, buttons);
```

- If file name is filled and no file with the same name is present, then file is saved.
How to check if file exists: <https://www.dotnetperls.com/file-exists>
- If in the folder there is already a file with the same name, then a message box is displayed saying „There is already a file with the same name, do you want to overwrite it?“ with buttons ‘yes’ and ‘no’.
 - If yes is pressed, then the file is overwritten
 - If no is pressed, then the file is not overwritten.

Expected result: file is saved in the path the user chose.

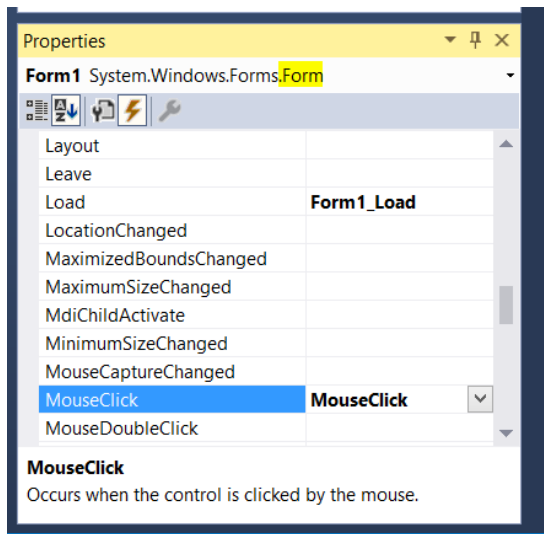
Advanced: save last file path and file name and display the values when re-opening the app.

c# Graphics

Read: http://www.techotopia.com/index.php/Drawing_Graphics_in_C_Sharp

Adding events to objects. Events are displayed under the „lightning“ logo in the properties section. After every event is the name of the method which is attached to the event.

To add a new event: type it in the event name box, press enter and then method is automatically created and added to the event.



Exercise: Resizing line (from lecture materials)

On button click create a horizontal line that is positioned 50 from top and 10 from each edge. When form is resized, the line should also resize and always remain 10 from each edge.

Check lecture materials.

1. Draw the line on button click.
2. Add add form Resize event and code there to resize the line.
3. Refactor the code so that drawing the line would be a separate method.

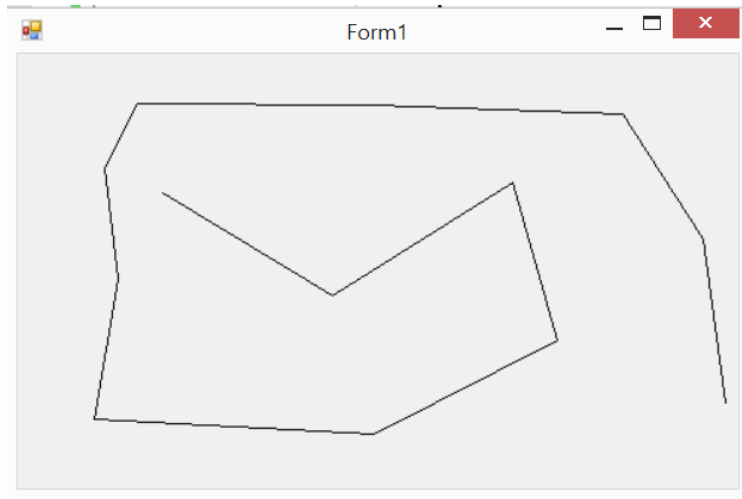
Exercise: drawing circle

Draw a circle so that the middle point of the circle is the forms middle point. The radius of the circle should be quarter of the forms height.

Read: [https://msdn.microsoft.com/en-us/library/wt06kxfd\(v=vs.110\).aspx](https://msdn.microsoft.com/en-us/library/wt06kxfd(v=vs.110).aspx)

Exercise: drawing lines

Whenever user clicks on the form with mouse then draw a line connecting previous point to the new point.



How to solve: Keep track of currentPoint and previousPoint and draw lines between them. With each mouse click one line is added.

How to find mouse click coordinates: when you create your MouseClick event method then in the method e.Y and e.X give the coordinates of the location where the mouse was clicked.

```
private void OnMouseClicked(object sender, MouseEventArgs e)
{
    //x coordinates of the click location:
    e.X;
    //y coordinates of the click location:
    e.Y;
```

With first mouse click nothing should be drawn! We can draw the first line with second mouse click: when we have at least 2 points.

Default value of a point is (0,0) (when you create a new point object). If point is empty or not can be checked with *pointA.IsEmpty()* method.