Subject: Entirely Null series is drawn as a random constant line
Posted by Maginor on Wed, 27 Jan 2021 13:12:54 GMT
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Hi,

If you plot a series consisting of only Null values, it draws a constant line from x = -inf to inf at a random constant y value.
I am using AddSeries(double *, double *, size_t)

Since the data I plot is user-controlled, I would like it to just not plot anything in this case (but probably still have it in the legend).
I could pre-check for it myself, but I think it would be good to have this behaviour corrected in the library.

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by koldo on Thu, 28 Jan 2021 08:23:48 GMT
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Hi Maginor

I have to recognize that a data series with only Nulls is a extreme case.
I couldn't reproduce the behaviour you say. However some changes have been done to improve the robustness to stand this case.

Please check it and tell us your feedback.
Thank you for inform us about this.

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by Maginor on Fri, 29 Jan 2021 12:53:04 GMT
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That particular problem seems to have been fixed, but I have a new one:

When I draw lines and there are holes (Nulls) in the series, the holes are now filled with a line. I rely on the behaviour that this had before, where no lines are drawn between two values if there is a Null in between.

It also gets weirder, because if there is a hole at some point, values at later points where there are no holes sometimes also get janky.

I think this problem was not introduced now, but earlier last year (I have not updated upp since maybe January 2019) because another person who attempted to build my application with the upp distribution from some time in the autumn of 2020 reported this problem.

Examples:

Correct behaviour from the old version:

New behaviour on the same time series as above:

Correct behaviour from the old version:

New behaviour on the same time series as above:

Edit:
I right clicked and looked at Scatter Data to confirm that the actual background data is the same in both versions, so the problem is with the plotting.

Edit:
I don't really understand the jankyness that is displayed in the second example. It may not be related to the hole issue at all. It seems like it begins happening at a random point in the time series. Some times that is at the beginning of the time series, other times it starts in the middle somewhere. However it seems like that if two series have the same set of X values, the jankiness tends to begin at the same X value for both.
What I call the "jankyness" here is that it puts two y values for each X value (which is not how the data are), and it skips points in between.

Note that I use pretty high X values (they are number of seconds since a reference date, and the series can go over many years). So if values are somehow rounded to float or something like that, maybe that could be an issue, but that is just random guessing.

These are all added using
AddSeries(double *, double *, int);

Note that I use
SetFastViewX(true);
SetSequentialXAll(true);

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by koldo on Sun, 31 Jan 2021 08:52:55 GMT
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Hello Maginor

I am not sure what is the best behaviour, if joining broken lines or not, although I think it may be

40/60 in favour to the second option.
About the weird plot, I would ask you to send me the data to try to reproduce that result.

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by Maginor on Sun, 31 Jan 2021 13:37:07 GMT
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If you don't settle on having gaps in the line as a default, it would be very good to have it as an option. As I said, I rely on that in my application.

I have attached the data as a csv. Note that it is around 10'000 lines, and only the last 2/3 of the indexes have y-data in them. The ones that don't have any y-data should be given a y value of Null when you parse them.

You can parse it using something like the below (Sorry for not being upp idiomatic)

```
std::vector<double> xs, ys;

std::ifstream infile("data.csv");

std::string line;

std::getline(infile, line); //ignore first line

while (std::getline(infile, line))
{
    std::istringstream iss(line);
    double x, y;
    char c;
    if (iss >> x)
    { xs.push_back(x); }
    else break;
    iss >> c;   //eat the semicolon
    if(iss >> y)
    { ys.push_back(y); }
    else ys.push_back(Null);
}
infile.close();

Plot.AddSeries(xs.data(), ys.data(), xs.size());
```

File Attachments

1) data.csv, downloaded 230 times

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by koldo on Mon, 01 Feb 2021 10:21:36 GMT
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Hello Maginor

I have uploaded the changes. The Null, NaN, Inf values are not plotted so the scatter area with them is empty, although you have to consider these cases:
- SetFastViewX(false) (default), if either X or Y are Null, the area between adjacent points will not be plotted
- SetFastViewX(true), as it requires, for being faster, that X values are valid:
-- if Y is Null, the area between adjacent points will not be plotted
-- if X is Null, adjacent valid points will be joined

A demo about this is included in ScatterDraw_demo.

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by Maginor on Tue, 02 Feb 2021 09:29:05 GMT
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Hi,

Thank you for that! The gaps in the line are correct now.

The other problem (where it draws 2 Y values for one X value, then skips 9 points and does the same thing again) still happens on the series I sent you.
When I right click the series to see the underlying data, the data is correct.

Only Y values can be Null, all X values are valid.

It only happens with SetFastViewX(true). The skipping of points for fast view is correct when it is zoomed out, but it still happens when I zoom in, and it skips multiple pixels.

The plotting tends to be fast enough with fast view off, so I can just do that for now.

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by koldo on Tue, 02 Feb 2021 17:15:28 GMT
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Dear Maginor

I couldn't reproduce your results using your data in ScatterDraw. However reading you I suppose the problem is in ScatterCtrl.

Because of this especially in this special cases it is very important to include full code samples.

I will try to reproduce this problem with ScatterCtrl.

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by koldo on Tue, 02 Feb 2021 18:12:51 GMT
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Dear Maginor

I couldn't reproduce your behaviour with ScatterCtrl. However I have fixed an error in CArray class.
Please check it again

File Attachments
1) Basic Test.jpg, downloaded 626 times

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by Maginor on Wed, 03 Feb 2021 10:02:20 GMT
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Hi, sorry. I did not want to post my main code here since it is pretty entangled. I did not have time to produce a separate bug reproduction before now:

The styling on the line is not essential.
Compiled using Clang64 on Windows.
Using the 2021-02-02 nightly build.

The image is what it looks like when you zoom in using the mouse wheel.

ScatterCtrlTest.lay:

```
LAYOUT(ScatterCtrlTestLayout, 916, 488)
 ITEM(Upp::ScatterCtrl, Plot, HSizePosZ(4, 4).VSizePosZ(4, 4))
END_LAYOUT
```

ScatterCtrlTest.h:

```
#ifndef _ScatterCtrlTest_ScatterCtrlTest_h
#define _ScatterCtrlTest_ScatterCtrlTest_h
```

```
#include <CtrlLib/CtrlLib.h>
#include <ScatterCtrl/ScatterCtrl.h>

using namespace Upp;

#define LAYOUTFILE <ScatterCtrlTest/ScatterCtrlTest.lay>
#include <CtrlCore/lay.h>

class ScatterCtrlTest : public WithScatterCtrlTestLayout<TopWindow> {
public:
 ScatterCtrlTest();

 std::vector<double> xs, ys;
};

#endif
```

ScatterCtrlTest.cpp:

```
#include "ScatterCtrlTest.h"

#include <fstream>

ScatterCtrlTest::ScatterCtrlTest()
{
 CtrlLayout(*this, "Window title");


 Plot.SetFastViewX(true);
 Plot.SetSequentialXAll(true);


 std::ifstream infile("data.csv");

 if(!infile) PromptOK("Failed opening file");

 std::string line;

 std::getline(infile, line); //ignore first line

 while (std::getline(infile, line))
 {
    std::istringstream iss(line);
    double x, y;
    char c;
    if (iss >> x)
    { xs.push_back(x); }
```

```
    else break;
    iss >> c;   //eat the semicolon
    if(iss >> y)
    { ys.push_back(y); }
    else ys.push_back(Null);
 }
 infile.close();

 Color GraphColor(0, 130, 200);
 Plot.AddSeries(xs.data(), ys.data(), xs.size()).NoMark().Stroke(1.5, GraphColor).Dash("");
 Plot.ZoomToFit();
 Plot.Refresh();
}

GUI_APP_MAIN
{
 ScatterCtrlTest().Run();
}
```

File Attachments

1) bug_report.png, downloaded 581 times

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by koldo on Wed, 03 Feb 2021 11:41:24 GMT
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Thank you Maginor for the test. It has been key to detect the problem. Hopefully fixed.

Subject: Re: Entirely Null series is drawn as a random constant line
Posted by Maginor on Mon, 15 Feb 2021 09:10:35 GMT
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By the way, you left some code in the examples related to testing this... :)

https://github.com/ultimatepp/ultimatepp/blob/master/examples/ScatterCtrl_Demo/tab14_UserEquation.cpp

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Subject: Re: Entirely Null series is drawn as a random constant line
Posted by koldo on Mon, 15 Feb 2021 17:04:51 GMT
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Thank you for finding this error in the text message. However this is > 1 year older.