E-Mails concerning the diagramm issue with prof:  
  
**ME TO PROF**

Good evening,

[…]

I completely finished the diagramm according to the document you put up *[into an internet platform for the course]* (Except for the zoom in, zoom out, reset and Autoscale buttons). I have placed the default zoom value in the frmEinstellungen and set it to 100, however.

Now the problem is that the graph doesn’t show dots *[Cillian: hope you know what is meant, “Punkte” means dots, “Linie” means line. One has the option to let the graph show the sinus curves with dots or as a line. The line builds up on the dots of course, as it basicly is a connection between them]*, and then of course, a line/lines are impossible to be shown anyways.

I would be extremely grateful if you could help me with this matter yet, because I do not know where the fault is. The attached screenshots are titled after the Forms, numbered in order.

[…]

Best Regards

Joshua Maier

**PROFS ANSWER**

Hello Mr. Maier,

in the Screen Shots of your programs I saw no abnormalities that would lead to a direct solution to your problem. I noticed, or recommendation of mine would be:

1) […]

2.) The frmStart lacks the supply of the variable timercount (timercount = timercount + 1 in front of the three differential equations to calculate acceleration, velocity and displacement. Perhaps it is helpful to program the measured-values program *[form]*; so it may be possible to identify which values ​​are calculated and should be translated into the diagram.

3.) In the frmDiagramm you should *[ausgeben/herausgeben; please translate both at dict.cc for example and see which possible word of them all makes most sense]* the zoom factor. Again, as in 2.), that might show, what is being calculated.

4.) If the program does not do, what it should do, debugging (with the use of breakpoints *[holding points?]* to check the state of the relevant variables, etc.) is a good help. Debugging can sometimes be quite bulky in handling, so I recommend to first try points 2.) and 3.).

Best Regards  
Rainer Heiligenstadt

Alright I think the mails sum up the problem with the diagram fairly well. About the measured-values form, it’s supposed to show acceleration, speed, amplitude and current zoom in %. So basically everything possible, if I missed something, please add. Really, his only comment, or direction, about that was the we should create a measured values form and that it would be our own task.  
Also I will send you a program of a classmate of mine, which is mostly working. His Sinus curves don’t scale to the graph and go through roof and ground, which is wrong of course, but it might give you an idea and maybe hints if you should need some and are able to extract something from all the German. Because as you said, you can read (and speak) math fluently.

Concerning the all of the zoom buttons: they still need doing as well, shouldn’t be a big problem though, I think.  
  
What also needs to be added are friction values (no friction, very little, little, moderate/normal, sort of strong, strong). Here is what he wrote about that:

* Combo box chkReibung (Reibung=friction) in frmEinstellungen
* Programming of friction values *[adding them to the code]*, defining a default value *[none]*; *[linear progression of 0.5]*
* Assigning values leading to reduction of acceleration accordingly;
* *[WinkelSpeed \* 0.1 \* Reibung is a hint that he gave us]*

**To-Do List:**

Important (main) tasks:

1. Create measured-values form. Values to be measured: Accel, speed, amplitude, time  
   Option to klick “Messwerte” (frmMesswerte) in Start form
2. Adding friction to the pendulum, with an option to choose a specific factor of friction (default should be 0) in the Einstellungen form

Secondary tasks:

-Cleaning up, making everything look good and as efficient as possible.

-Documentation of steps in some way if possible, so that they are easier to understand for me, as I have to write the documentation of how I programmed all of this and why I did it the way I did. Do keep in mind that I have had (up to this paper) zero experience in programming.

NOTE:   
  
­-> *“Good coding style: everything of the form “If var = true” can (and should) be rewritten as “If var”*

I’m going to see this as part of the cleanup process

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-> “*I also noticed that the 3D coordinate system checkbox doesn't rotate when (I assume) it should, but it seems like that might be a lost cause”*

The checkbox is not supposed to rotate; neither is the coordinate system. Only thing that should rotate is the cuboid itself, within a stiff coordinate system so that you can see the degree of rotation etc

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- *“I can probably add friction entirely in the morning, but I'll have to decipher the variable names first”*

That would be great. Just tell me which variables / names you need to have translated.

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*-> “Also, I think we should add a Panel or Chart or something to Diagramm, in which the data points would be drawn - it'd be easier to deal with things like resizing and offsets that way*

*and it allows for ease of adding axes*

*we could even refactor the stuff in frmStart as a DataSet with a BindingSource and let Chart do all the heavy lifting”*

These are great ideas. The problem is, that I have to document everything and my prof knows I’m not a coding pro. So he might get suspicious if you get too fancy, especially if there are discrepancies between the program and the documentation. If the program is doing the things required and is completely clean (free of nonsense, redundant code, everything in most efficient order etc), that would be as good as it can get for this paper. If the documentary would be equally good, it’d be an A+ (or whatever it is called at Uni in the US, here it’s a 1,0).  
I would love to let you play around with it more and make it really, really great, but if this surfaces, I will fail the course and all of the work would’ve been for nothing. He did unofficially say, that coding is usually teamwork and that we just should make sure you can’t see it in the final paper, but I don’t want to test these borders. Especially because I have asked him for help concerning the not working diagram and it would be a hell of a surprise if I, at first, wasn’t evenable to solve that on my own and then turned in a program with 150 extra functions.

But let me know what you think about this.

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*-> “I've separated the physics and graphics clocks, so displays will now update when changes are made, even if the pendulum simulation is paused”*

Which displays will update when which changes are made?