

Lecturer 2

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Transcript

Viviane Rehor

Then for a status. I would like you to introduce yourself for the study, and maybe talk about like how long you've been teaching, and what what kind of students so like, how far in education they were.

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Okay, thanks. Good. So my name's Lecturer 2 and I'm at Glasgow University in the school of computing Science. I've been here for 13 years now. I mostly teach first year undergraduates who don't have any prior computing experience. So cs 0 students. We teach them what a course called computational thinking. And I've been Co. Teaching that with various colleagues, principally Quinton cuts, and last year, and Maria Kali, yeah. I also teach a fourth year course, which is our final year of undergraduate students, and that's in functional programming.

Commented [RV1]: What does he do?

The first year course is for Python. Well, that's the language we use on the fourth year course. We use high school as our implementation language. I've taught various of the course as well. There's the main programming ones 150.

Viviane Rehor

Okay, perfect. Good. Then I mean you. You've seen a bit of my application in the presentation. I've done like I don't know 2 months ago, but for now I you to try the application out, and then afterwards say what you think, and where you would put it in education, and well, that's pretty, whatever you say. I just look up the link, and then I send it in the chat, and it will be cool if you could share your screen.

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Bad Wolf. Okay, Very good, right. So i'm going to click on that, and i'm going to share

Viviane Rehor

if I just share. Oh, host, disabled Screen: yeah. Oh, yeah, this this always happens. I'm: always forgetting this. Okay. Now, now, it should be working

Viviane Rehor

perfect. Then. Yeah, basically this is just the introductory text, but it's not very important. We can just start straight away with one of the like. I thought you'd do. Maybe one of the easiest and one of the harder. Okay, I like that. So the easy one, please. Yes, yeah. So just whatever headline you like from the first fall. So they are all like kind of in the same level. So difficulty. Okay, I've clicked on this one. Yeah, okay. What do you think while you're doing it.

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Okay, as a penance of paper. Next to you, Don't, we've actually worked through the following steps. Read the problem statement: okay, yes, at least 2 or 3 times. Read everywhere. I think about a sales problem. You think about the what pieces or some of the patterns come to your mind, or any spoon from Drop them down in the paper. Do I really want a piece of paper? Do I to do this? So you can also tell me just what you okay, Good, right? So I always think I don't like actually reading detailed blocks of text. So I normally skip read those things. I didn't know. I did actually read those very, very carefully. But if I was actually doing this without you watching me, I'd probably meet them very quickly, and probably miss stuff out. But never mind. Here we go, replace false's, difficulty easy. Write a program that reads, and list of Booleans, and replaces all the occurrences of the value false by true. Okay, When reading the list true, true, false, you should end in the end. Print the list. True, true, right? Okay. So i'm thinking about strings because i'm probably going to be reading in my list as a string, am I from? I don't know a file or user input or something. And then i'm thinking about splitting to get the individual values out. And then i'm thinking about parting them to work out which ones are true and false, and if I see false, I'm just going to replace it with True.

But I don't know they already should be using strings, because these are Boolean. So when you say reading the list of Booleans, do you mean reading? Or do you think you just mean, input. is it just input, really? Is it just

Commented [RV2]: Usability: Students might not read the explanations

Viviane Rehor

Okay, Good. Good. So I I've got a function. Perhaps that has a parameter, which is a list of Boolean values. Is that right? Okay, Good. So I forget about strings now. Okay, good. So now i'm thinking about iterating over a list that's fine, and i'm going to have an if statement to see if the thing in my list is true or false, and then i'm going to have

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i'm gonna have a new list. I'm going to create a mix, and i'm going to append values onto my created list, which are either true or false. I think because I don't think I want to mutate the input list, or maybe I do. No, I don't know. No, I think I'm just going to. You are gonna make a new list, Probably if you read your that kind of first ideas you can click to the next. Hey, K: there's some some gold names you might need. Hmm. Reading list of Booleans. Okay, yeah, See whatever someone says, Red and i'm always thinking about strings from files and things. So I think that's a bit confusing. But never mind. Filter the list for false items. Yeah, okay. Print results

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run through. Yes. Room through a list of produce, an index. Yes, I did think about doing that good. So I call that iterating over the list. But that's fine. Okay, Print the results filter for full sight. Yeah, okay, okay, that's all right. Yeah. Yeah, good. If you kind of compared to your ideas with the ones that are there. You can go to the next step and do the actual false values with true values in the original list rather than making a new list with True, True, true. But we shall see. Okay, what do I do? How exciting Build a solution by drag. I don't like your colors. By the way, I think your colors are really nasty at these official Glasgow University covers or something. It's this: greens disgusting isn't it. It's like a muddy green color. It's horrible. So I definitely don't like your colors build a solution by rang all the piece from left to right together. Oh, this is the past as possible that might need to merge sub goals.

Tricky might need to merge sub goals by splitting them up. I Don't understand what that means. Merge them by splitting them. No emerging is the opposite of splitting isn't it. Oh, well, then, run your solution to get hidden input data. How excited about the evaluate current solution? It's important to use all the pieces. Okay, good. I need to say, don't you these tips again.

Commented [RV3]: Different ideas for pattern labels

Commented [RV4]: Usability: Does not like the colors of the University

Commented [RV5]: Usability: Step 3 explanation text confusing

Viviane Rehor

And then do I just cross that

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right? Read and list of Booleans? Yes, I think I need to that first. Okay. And at the end I think I probably want to print my, so you can put that on the end and use. Oh, no! So it is our good to. They are string. So I do I do type in? Okay. So well they confuse now. So the things with the red around them, they the high level goals and the things in the jigsaw puzzles that on in red. They're actually the low level bits of code that implement those goals. I didn't understand that. Okay, Sorry. Sorry. So print result, for example, that's like print. Boolean, is it? I didn't get that? Oh, no, sorry, right? Right? Okay. So what am I sticking together the red bits of the bits that aren't in red.

Commented [RV6]: Usability: Did understand what books and pattern labels were for even with no very detailed reading

Commented [RV7]: Usability: id not read step 3 introduction carefully. Did not know how or where to use pattern labels in the final solution.

Viviane Rehor

the bits that I don't read the records. Actually, don't have these like small puzzle edges on the Oh, so do I just need to sort of use them as annotations for what's going on the orientation of of of the other bits. So the other bits are always like a place underneath their sub goal, like their purpose.

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Okay, right? Okay, okay. Yeah. Hmm. And confused about my inactive loop. If not

okay. good set in next to 00, so this is fine! This is the this is the run through the list of Boolean. It's good. each item Boolean and list of Boolean. Yes. Oh, it's making a noise. It meant to make it. It's making

Commented [RV8]: Blockly: Inactive loop confusing at first

it. It's making nice. Yeah set in. Next unit was one good set available with value false to true in list. Set right? Okay. So it isn't in place Update: okay, okay. yes, interesting. Yeah, he said. This was easy. Good.

Commented [RV9]: Design: The noise is nice

Both I, if not Boolean. So that if not Boolean thing is that in case my list of Booleans doesn't have Boolean things in it. Is it that that. Hmm. Or is it is it not true to change that? If not Boolean right? Is that checking a type, or should it be checking your value?

Viviane Rehor

So there. There is a variable called cooling later in the list. So

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right? Okay, Good. Good. Okay, right. I see. So Boolean is actually the name of the variable. Oh, yes, for each I to boolean it. Boot. Yeah, it's okay. Good. I see that right? Okay.

making great progress now. Good. So and so I don't attach these red things to any of the ...

Commented [RV10]: Pattern label placement: Later asking about where to place labels.

Viviane Rehor

I would recommend to place them on the left side, like on the level of where you place the the corresponding bits on the right side. So that's just. I mean, I don't need them for the solution good.

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So reading list of Booleans. So that's going to be here, maybe set Booleans to type in list of Booleans. So do I assume that my booleans are automatically coerced from strings to Boolean values. A list of Boolean values. So good assumption

Viviane Rehor

you can I like, for, like your screen is level like zoomed in. Then I normally have it. But if you go down like on the whole page like like? And then under the whole workspace thing, maybe you can scroll like with the outer. Yeah, you can click. How how does your puzzle look in code right now that's cliff.

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That's clever.

Commented [RV11]: Code translation: Liked python translation

Viviane Rehor

You get it with the small arrow there, and then you can see how the python. The corresponding Python code looks like, Where do I see that? Did you? No, no, no, no, you click the small I. But if you there it is

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input type and list of Booleans print Booleans. Oh, no! So it doesn't so dear. It's in the it's in the order. You have it at the moment turn them into is this.

Viviane Rehor

I think. Yeah, it's good, it s, it's, it's it's it's it's it's, it's it's it's it's, it's, it's, it's, it's, it's it's it's, it's, it's, it's,
it's, it's, it's, it's, it's it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's, it's
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right, okay, cool right, i'm, going to carry on I seem to have lost my code now.

Oh, no, it's still there Still, that's fine. Okay, Good. So here we go. Type in this to build it right? Okay.

Nick. Okay. each item Boolean in Lesbian. Right? I need to set an index to 0 somewhere as well. Don't I send it to 0. That's what They're good. I see that, said Good.

Okay. And they'll be reading a list of Booleans. That's me filtering and then down the bottom. There's be printing. Hmm. Oh, here we go. Run through the list of Boolean with an index. Do not there set there with value false to true. I think i'm doing that. Hmm.

Viviane Rehor

Yeah, Thank you, Ray. You can evaluate.

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I'm going to look at the Python code again. Going to see your python code. Is this: is it? Now? Yeah. You' to the order. Sorry it changes If you change the order of your pieces in the Yeah, it does. That's nice. Okay? Oh, help, how do I disengage that bit. Now I think I have to take that off first. It's always the top left thing that you can grab. You got you okay, cool, so brilliant equals input type in list of Booleans. Yeah, I'm really not sure about that, because I really think that is strings. Never mind. Index equals 0 in Booleans. if not Boolean. Yes. billions int index the index isn't it. It's an index already an int. I don't know equals true index. He was next possible on print booty, and i'm not convinced it works. I'm really not convinced it works. Do you think it works? I don't think it does. It's you clicking that you a it runs the code. Where's it found in the back? And oh, it never works. I don't believe it. I'm getting really invited myself and say it don't see a way. Sure it doesn't work, is it really?

Commented [RV12]: Code translation: Liked the automatically update of the python code translation

Commented [RV13]: Confusion about if the code really works.

Viviane Rehor

It runs it so.

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Hmm. Type in list of Booleans True folks both. Yes, of course it runs it because you can do not on strings currently. That's what it is that's what it is. Yeah, yeah. So this code isn't doing what I wanted it to do. Yeah. Because not of a non-empty streaming is true. Yeah, okay, okay, so I think the code isn't doing

what I want wouldn't it then. Just not change anything because it says, but it does change the bad variables.

Viviane Rehor

The test case has a list with a false click in it.

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Where? Where's the test case? And I see it. You can, if you.

Viviane Rehor

if you just do something wrong, just like switch any of the lines, because if if you did one, the evaluation tells you what the test cases are just like. I don't know which some of the lines around. No, that's very interesting. That's very interesting. I really do think there's something missing there in terms of you. Convince me I will try it after what's in like, just in console or something. That's right. So here we go. Here we go back. That's exactly what I did share screen with terminal. I you just did it.

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Yeah.

Viviane Rehor

and it doesn't change the list.

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whereas I think your input, function is a more clever.

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Oh, never mind. Okay, that's fine. I need to go back to the other screen. Now, Sorry. Yeah, maybe we try another. Okay. So I like that. I was a bit confused about what to do with the red things, and I thought maybe they should have somehow popped into the the the the jigsaw puzzle pieces when they don't do that. But that's okay. That's okay, so I I see. Yeah. I I see how to sort of make a a program. And I think I see how to relate the high level goals with the sort of low, level kind of fragments the blocks, the blocks. That's the way for the blocks. Yeah, One thing I can't quite see is this second block here. Can you see my mouse? It run through good list of buildings with index? Really, that's all of this. Isn't it? So I don't see how to make that relate to the whole of the the big block. And then this thing here only relates to the if statement there. Yeah. So and somehow these don't want to be sequence. These want to be nested to

Commented [RV14]: Pattern label: placement confusing

somehow. Yeah, that's true. That's why you you're not supposed to like. It's not necessary to bring them in order. All that is, it's it's just the blocks. You can put the headlines wherever you want to. It wouldn't matter. No, no, no fair enough. Okay, thanks. That's good. So I wonder how I get out of this. Now, do I click on? Okay, Good. So it gave me nice feedback. It told me that it was right and stuff. And yeah, that was good. Okay. So what shall I do next?

Commented [RV15]: Pattern label: placement, want it to be nested.

Commented [RV16]: Feedback: Liked the feedback

Viviane Rehor

One of the

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Yeah. They They are harder ones. You can. You can do one medium, one hard one. It's it's in the second group. It's like in the whole change to group B button. I do. That changed, and you can easy. Yeah, I'll see you. Medium advance. Still, help on the rainfall from that's classic. Yes, yes, that's good. Find the longest I can I get for the rainfall problem?

Let's imagine you have list Now the nice thing is, it went straight down here and it skipped all this stuff here which is good. So there we go. Let's imagine you have a list that contains amounts of rainfall for each day. Good! Collected by meteorologists. Whoo, Huh! Oh, very nice, very nice! Her rain gathering equipment occasionally makes a mistake. and reports in negative about that day. We have to ignore those or that's good filter. Now. Yes, we need to write a program to a calculate, a total rainfall by adding all the positive integers, and only the positive Integers B. Count the number of positive inches we will count with 1.0.

Oh, I see to floating point numbers yet, and see. Print out the average rainfall at the end, only from the average. If there's some rainfall, otherwise print no rain good. So do you want to tell you what i'm thinking.

Viviane Rehor

Yeah.

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okay, cool. I'm thinking that I need to look at each item. I'm going to get a list, I think of measurements.

And i'm going to look at each item, and i'm going to do a conditional test on it to check it's greater than 0. It doesn't even matter, as you can see, it's great and 0. I'm going to add it to a running total which is initialized to 0 before I start going through the list. and then i'm also going to have a count of my positive values as well. So i'm going to increment that by one.

Every time I do add something to my list, and at the end i'm just gonna do some divide by count to get my average and print it out. But if count is 0, i'm gonna print out. No rain

Viviane Rehor

sounds good. Then I I feel like this floating. Go to step 2 here. I feel like somehow it's not easy to

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to find that I always feel like i'd want to here at the bottom, right? But maybe that's just me. I don't know it's it's top right at the moment. Oh, yeah, I wonder whether it should go bottom right? Because i'm reading down here, you see. And then I sort of look right. But yeah, okay, go to step 2. But here we are. Let's imagine what to do. I have some sub-gal names, right? Okay. Break down from a similar piece a counter. Yes, I wanted a counter print Result: I never said that filter list. Yeah, reading list yet. Calculate some. Yeah, okay. So I was thinking about calculating the sum I was thinking about counter. Yeah.

I was thinking about doing the division at the end. I suppose that's just part of printing the result. Isn't it unfiltering the least. Yeah, okay, okay, I was thinking about those things. Yeah. Good. So now i'm going to go to step 3. Okay, Step 30, and lots of blocks here. Give you lots of luck to help right? Okay. So Oh, I think I've just realized. I think I've just realized that the red thing is linked to the block that's immediately underneath it. I hadn't realized that in the last one that's very clever. Okay, okay, that's good. So i'm going to start with the red one that says reading list, because I think that the first thing to do read in the least set rain 2 prompt for text, message, type and list of numbers.

Okay, good. And again, I think we'll have this terrible problem with Input: but i'm going to let you off because it seems like You've worked out a way round it. Okay. So now I need to iterate over my list.

Can you see any iterations anywhere? Oh, yes, here it is my counter thing here. So i'm going to set count to 0, and I have this. This is only just happened to me, but I have this a version of about picking things together until i'm sure that they they're actually there's nothing to come in between. So I leave. I think it's separate and just click it all together at the end. Maybe I don't. If that's a standard way to do these things that i'm doing so set come to 0. Yeah, okay. I need to set the sum to 0 as well. Don't I? Oh, there's some. They good good. So I think i'll do that up here. I think i'll do that with the hair. Actually, if that's okay. Good. Set some range 0 for each day in the Rain List set count to countless 10, no, I need to do some conditional stuff first.

If yes, so set count to count for one, and set some rain to some rain for equals day. But where's my if test he's. I want to check, to see if rain is great in 0 donor. I would do that feel to this. Oh, day, I see so the day right right that confuse me, because normally, when I write a list I give my list of plural day. Even then you see the the the the list. But you said day for the singer right? I got you that's here. If day that's good, that's good. We're getting in now, if day is greater than 0. Yeah, that's fine. Then I want to bump the count and increment rain. Yes, okay. And then at the end I want to print out the results.

Good. If the count's great in to 00, good! So that's to check to make sure i'm not doing a division by 0 average equals. I haven't. How do I calculate my average? Oh, there is that good good cut, the average

Commented [RV17]: Usability: Next button placement rather at the bottom right

Commented [RV18]: Step 2 worked better with the second problem, comparing ideas with given pattern labels worked

Commented [RV19]: Blockly: Problem with pattern labels and corresponding blocks not looking as a unit.

Commented [RV20]: Strategy of an expert, iteration, conditional stuff, rest

Commented [RV21]: Usability: Plural name for lists

Good. I didn't see that. so I probably only want to do that division, if I know the count is greater than 0. So that's there. I don't seem to have a little red box for calculating the average, do I? Oh, well, that's not okay. So now i'm going to put that there. and that there think about it.

You know. Normally, I wouldn't think this carefully about programs, but because you're watching, i'm thinking really carefully rather than just clicking evaluate solution, which is what I normally do. Normally, i'd program. I try and ever just click evaluate solution hundreds of times. But because I don't want to embarrass myself with the wrong solution. I'm actually being care about this.

Set rain to title list of numbers. Yes, that's okay. Set out to 0 at some range 0. Yes, that's fine for each item day in list. Rain. Yes, okay. If day's great and 0. That means we've had some rainfall today. Then we incurred the count. We add the days

rain amount to the some rain. Yes, and then at the end of the list we check see the Counts great 0, and if it is, we're gonna calculate average average to some rain to out of account. Yes, and then we print the average. Otherwise we print no rain. I'm happy with that. I'm going to click, evaluate code solution.

Oh, yay, thank you very much. Good. Okay? Oh, do you know I didn't? Do. I never looked at the Python code? Can I go back and look at the python code.

Viviane Rehor

I don't too like that. It's it's it's it's it's it's it's unordered. Then I would I should have I should have. So I need to actually look at the I can go before I evaluate the solution, really. Oh, how disappointing!

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Let's have a look at the No, no, it's jumbled up, but it's all the pieces you need. Okay, very nice. Thank you. That's good. Okay. And I get out. Can I go back to the main that I get that.

Viviane Rehor

So so yeah, what would you say? What students do you think could use those, or at the correct level to be able to use those. Or

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Yes, I think it's certainly the correct level for people who are on a beginner course. and who want to increase their their sort of confidence with manipulating code. I think the drag and drop thing is really nice. I think the fact that you've given them rather than just the the primitive you've given them sort of pre what you say prefabricated the larger scale blocks. I think that's very nice, because they don't get lost in the the details of the calculations. It's more like the I think it feels more like they're trying to get the right control flow structure for their program. And then Don't seem to worrying quite so much about the sort of mathematical calculating details. So I quite like that. Yeah, that's good. It's definitely high level program construction. and we have more so than a a basic parsons puzzle, I think, where the lines just feel too arbitrary a kind of a mechanism. For you know, granularity for dividing up the program. Yeah, I do like yours is very nice. Yeah. I still think the red things are bit confusing. I don't know if there's any way to when you drag. This is a bit tricky when you drag the the blocks across. Could the red things somehow follow it along. I don't know that's probably the on the scope of blockly. Yeah, I think it is, but it's also the problem with the red things. As as you mentioned this, you can't bring them in an order.

Commented [RV22]: Solving strategy:Admitted that normally more trial and error would be used (if not being observed). That is a limitation to my study!

Commented [RV23]: When to use? Beginners.

Commented [RV24]: Design is really nice

Commented [RV25]: Problem solving strategy: Focus is on structural level not primitive blocks

Commented [RV26]: Comparing PPs: Abstract and more high level view on programming construction compared to PPs

Commented [RV27]: Pattern labels: Placement of pattern labels is confusing

Viviane Rehor

They have to be some. Sometimes they have to be nested, and especially like the the inactive loop pieces the white ones. They've been just there, because, like a it does need a loop. So it would be incomplete without it

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that I feel like those artifacts might be bit confusing to some novices who are very confident. But I don't know what you can do about that. Yeah, yeah, it's not your fault. It's kind of the library, isn't it. Yeah, it's kind of like. The whole application is supposed to be

Commented [RV28]: Same as above especially for novices.

Viviane Rehor

the best when someone did.

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I don't know like 5, 10 puzzles, because then they they get used to that. Yeah, that's true. That's true. That's a good point. Actually. Yeah, okay, really, see, the code is the same for every filter list. Good. Good. Okay. So I like your code. Yes, very nice. Thank you. I like that. You can see the Python code that's generated. Yeah. Is it possible to make changes to the python codes and have those reflected back into blockly?

Viviane Rehor

Yeah, actually, actually, I did change the input thing, because before it had a different input method and it looked really confusing. When you looked at the Python code and you normally use the input thing compared to like an extra method to read it. Yeah, I really want to check it back with the reading thing and how the input goes with the with the true and false, because you kind of see that it wouldn't work.

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I think it's the same with your numbers as well, because they'll be read in as streams. I think so You'd have to watch out for that, and then you have to do an int brackets around them all when you. But yeah, I don't know it's it. That's just a a small thing. It's not not a major complaint on my part. I think you've done really nice work, and it's a very attractive apart from the colors. I don't like the colors.

Viviane Rehor

I think it's not the no, no, the block colors are nice. Yeah, yeah, very good. Maria said. It might be too confusing, because it's for a Cs 0 students, because they just learning python. And then it's like a second language to I see. I see what you mean. Yeah. And I think we did have this discussion when you presented it in the the Ccse seminar. Yeah.

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yeah, I think there are some syntactic differences between the block language and python which you might be able to might be able to work round like in the block language. True's got a lowercase T. And in python's got a capital T, and that kind of thing, and but other things are very similar the while, and the the for loops, and so on. I don't know whether it' be be able to make a box of equal signs and stuff. But yeah, yeah.

Commented [RV29]: Where in education: Doesn't really think it would be too complicated in CS0

Commented [RV30R29]: He thinks it is very similar, might be able to work round that

Viviane Rehor

But do you do? You don't think it would be a like major problem, or or you don't know?

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Well, one thing that Quintin encourages our Cs 0 students to do is to try and read programs in. He calls it Cs. Speak. Have you heard about that? Cs speak, and it's like you're using technical terminology to describe. So if you see something like I don't know X equals a square brackets 3. Then you would say the variable X is set to the value of the fourth item in the list a right, and that's kind of like the high level description that your blocks give you. So it's almost. If we could align what the blocks say with the the Cs. Speak vocabulary that Quintin wants them to use them. That would be ideal, because, although it is a second language. A second representation is representation that Quintin wants them to become familiar with. And do you? So that'd be a good thing. I think. Yeah, yeah, that does make sense. And it is in general possible to to okay, so that Us: that's fine. Yeah, Good.

Commented [RV31]: Variant: Change block language to CS Speak which is already used in CS0 so it wouldn't be too complicated for the students.

Hmm. Well done. Anything else you want to ask me.

Viviane Rehor

I actually think that once it yeah.

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Yeah, thank you very much. Well, this is well done. You've done really nice work, and it's it's very. It's a nice product, and I think it could be really useful. Is this something you're going to leave up so we can point students to in future, or will the the site? Will the bad wolf site disappear

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there? You see.

Viviane Rehor

I wouldn't. I mean I won't. Take it down very you in the future, because my my professor in Munich has to check it all for the and needs to look at the quote. But in general I

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don't think I would put it down anytime soon. So yes, thanks. Very nice. Yeah. Good.

Viviane Rehor

Well done. Well, it was good fun playing with it. So thanks, yeah, Thank you for helping this first day. Yeah. Good. Okay. Thank you. Good. Do you have to write up a report about this or a dissertation or something yeah, like a master for this

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cool, a little bit smaller than my dissertation. But yeah, we'll then will people in Glasgow be able to see that? Or is that just internal to your I wouldn't know why. Not so Well, if you're able to share, i'd be interested to look at it when it's all finished. Yeah. Yeah. Thanks. Thank you.

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Thanks. Vivian.

Viviane Rehor

Yeah, Thank you. Have a nice day.