# Transcript: C950 with Jim Ashe and DeNece Meyer

*The following transcript is a verbatim account of the video or audio file accompanying this transcript.*

Speaker #1 (Narrator):

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Speaker #2 (DeNece Meyer):

Hello all, my name is DeNece Meyer and I'm a Program Manager in the computer science program and I'm here today with Jim Ashe, who is a course instructor for the data structures and algorithms courses. Jim is here today to talk a little bit about the C950, the second part of the data structures. I have a few questions, Jim, are you out there?

Speaker #3 (Jim Ashe):

Yes, I am. It's great to talk to you again DeNece.

Speaker #2 (DeNece Meyer):

Great. Well, I have a few questions that students are asking and I wanted to know if I could have a few minutes of your time just to talk about a few things.

Speaker #3 (Jim Ashe):

Let's go.

Speaker #2 (DeNece Meyer):

Well, C950 is the second data structures course in the program and students ask a lot of time, is this task done in Python?

Speaker #3 (Jim Ashe):

Yes, and it has to be done in Python. C950 has a single performance assessment where you write this delivery application which simulates the delivery of packages and you try to improve the mileage. Just like in 949 Part 1 though, Python as a tool that we use, it's not a Python course. While you are required to write the project in Python, they don't assess things like coding style. They don't put any specifics on the structures that are used, that isn't assessed, that they just assess what it does. Why Python? I get asked that a lot. Why not Java or C? Well, what if we did C something, then the Java people would be like, well, hey, why not Java? But Python is widely used in computer science and mathematics. It has a lot of great libraries for computer science applications, particularly for data analytics and machine learning so it's a really good thing for computer science major to be familiar with. It might be very helpful on the Capstone Project, which requires you to use machine learning, but good to get introduced to it now, it's also one of the easier languages to learn, which is nice if it's your first language and it's also nice if you're coming from one of the other languages. Typically students familiar with one of those Java's or C's, they come into this, they pick it up quickly. There's going to be an adjustment that Python has its own way of doing things, its own syntax and nuances. But the core things about programming that makes someone a programmer are the same. Look, a computer science major is more than a fancy C or Java programming. You're supposed to be a problem-solver and ability to learn things and leverage those new things should set you apart and so this is a good skill to have. Furthermore, it's going to look good on your resume, you get to add another thing, you got to have a nice Python project, to highlight,.

Speaker #2 (DeNece Meyer):

Great, Well that's some really good information. Another question that's asked of us all the time is what's the best approach for students in this course?

Speaker #3 (Jim Ashe):

That's a great question. There's a lot of new stuff coming at you maybe right. You've got Python maybe learning that for the first time you got this iBooks learning resource that goes over a lot of different stuff and then you have this project that you actually need to do. I think Step 1 might be taught to your course's structure it can certainly help put you on the right path. But the most important thing to do is first understand the project. Understand what problem you're trying to solve before you get to solving it that's always important. We have a lot of great resources in addition to your course instructor to help with this, students often thought off in the wrong direction and maybe overinterpret the requirements, end up doing a lot of things and a lot of extra work or getting bogged down in things that don't really necessarily have to apply the project. Do you need a GUI? Will know, do it all from console. Do I need to find the optimal solution as the language and attached directions might suggest, no, this is just problems NP-Hard, we wouldn't really know it if you had it, so knowing really what those rubric requirements mean and what you actually have to do is important to understand the problem you're trying to solve. So you've got an idea of what you're trying to do then if you take a Software 1 and 2, which you probably should, you should go ahead and start coding. This is a programming project and you are tasked with lot first learning Python if it's new to you, and then you've got to implement this data structure and then an algorithm to help solve the problem. First, start by getting something running. Python is really nice in that you can type up one file and just run it by itself. It's dynamically typed and interpreted and it allows for experimentation so you can really learn it as you go get something running and then learn that specific skill you need to do this specific thing you want and get that running, make sure it runs like you expect. You get it running and by this, I mean, you can simulate the delivery, the packages maybe just deliver them in order 1-10, 1-40. Don't worry about the optimization, worry about the optimization last, worry about getting it running first. It'll be a lot easier to then come back later and implement your algorithm for improving the delivery if you've got running code, you're going to be running a lot, checking your code a lot, don't wait 1,000 lines into the code to find that little logic error you didn't know was there use the debugger. This is a more sophisticated project in a sense, we don't give you the last structure you have to follow. You are trying to just do a job. So you use the debugger to track your mistakes. Often I see students who aren't using the debugger and well, that leaves all kinds of problems that makes it a lot more difficult. You do that, you've got something running, you can deliver, you can simulate the delivery of the packages 1-10 and that just means you're keeping up with the data. You've imported the data, got plays a store and you can keep up with the data, keep track of mileage and the time, et cetera. You can do that. Step 3 with that you come down and do it smart. You've got that code running don't change something, see if it works see if it does it a little better. Go have running code, there'll be able to progressively make that algorithm more complex until it's good enough. Your mileage needs to be under 140, be acceptable and you need to meet all the requirements they throw at you. A certain packages needs to be delivered at a certain time and things like that. If you have running code, you can just run it, make some adjustments, see if it works, see if it's good enough and keep going until you've got something that's good enough.

Speaker #2 (DeNece Meyer):

Great information. I really like all that and you probably have already touched on one of the other popular questions that students ask me. I am a huge advocate for students get into their course instructors as soon as possible. The quicker that I can get them there with their questions, the better they do in each task or each objective assessment. With that being said, when is the best time for students to reach out to their course instructors?

Speaker #3 (Jim Ashe):

Always my go-to answer whenever you want, whenever you have a question, so that's why we're here literally to help you and to be available to answer those questions. I think at Step 1, you've looked at some of the materials. We've got some great videos and things for this. But you've looked at that and you've got some follow-up questions. What am I really trying to do here with this approach would be acceptable, before you invest a lot of time doing way too much or invest a lot of time going the wrong direction. Make sure that it's right the direction, so that'd be a great time to talk. Or maybe at Step 2 at some point you started and you got some things running, you're halfway, but you're not sure what the next steps should be. You're not quite sure how you're going to meet this requirement. They talk about self-adjusting algorithms and data structures and you're not sure what exactly what that means, any clarification and at those points would be a great time to talk to us. When you're stuck, and if anytime you're stuck at code, we can help you work on your code. Now keep in mind, this is not a Python course, is data structures and algorithm course. I'm a mathematician we have other people or Python people, other people that are Java people, they're familiar with the programming. We're happy to help with the debugging, but it's not the point of the course so be professional about it. No, send info about code errors be able to reproduce the error. If you want to review code, send it ahead of time, put it in a Dropbox link and this link and that'll be a lot more productive. Every student does it different ways, and we see a lot of different code, be professional and about your presentation or your questions and trying to get help debugging in your code so we can efficiently help you do that.

Speaker #2 (DeNece Meyer):

Great information, Jim, I really like that about the email and then reaching out when they get really struggling with the code, trying to get it and I really liked that tip about the 140 miles because they definitely always ask me is there a certain thing I'm looking at to get it under? The other thing that they're always looking at, I'm hesitate and send them to the course instructor for this particular question. But are there additional resources good at what assist them or is it better to stay focused on the zyBooks learning resource?

Speaker #3 (Jim Ashe):

Yes. To your first question emphatically, depends on the second one so let me get to the first part. We have a lot of additional resources. First, we have an alternative set of task directions and rubrics. What it's done is taken what's on the course homepage and it's refined. It added information within that document. It's a live document we have a lot of resources linked and also videos linked there. I always send students to that first. It's been a lot more helpful, a lot more clear planning what students need to go do in order to pass. Within there, but also you're going to contact your course instructor, we have a videos or webinars. We have a good video series where we explain the problem, what it is an intro to the course. I'm not really going to allow those details here because we have resources and videos for that already and then we have other videos to start you looking at how to set up your code and we have a great video series where we discussed the code and give examples of part of the project and how you might do it. When we talk about the concepts, but give examples as they're talking about the concepts with Python. Those are really good too, because you talk about the concept, you talk about projects, and they show the code and so it's been a good resource for learning Python there as well. Of course, your course instructor, probably the best resource you have. As far as the zyBooks, I would look at that maybe as a reference tool that you can use includes a lot of coding exercises. Some of those are decent, if you do those, use PyCharm or whatever your preferred IDE is, use that to do the coding exercises. The built-in editor is clunky, the grader's too picky. There's no style points in the code. They look at what it does and so if you can do the exercise and PyCharm to do what you want it to do that's good enough. You understand how to program. Don't worry too much about whether the little greater decided is correct or not. Does iBooks is a good reference source and it covers a lot of stuff that maybe you don't need for the performance assessment or the projects. You might look through that, but do keep in mind that what you're assessed on is the project.

Speaker #2 (DeNece Meyer):

Good. Well, one quick question as we wrap this podcast up, when they do finish their Python task, is this something that they could put in a portfolio for potential employers?

Speaker #3 (Jim Ashe):

Good question. Yeah, of course I think so. I think it's a nice thing to have in your portfolio. Don't put out a public link on GitHub. Assessment, won't like that, but we don't know the traveling salesperson problem you put a lot of work in this project. You want to be able to showcase it. Some private way that you can handle someone to look at would be the way to do it. But it's a nice piece to highlight, I think, because even if you take the very simplest approach and getting that done, There's still a lot you had to do there, a lot of steps, you learned Python, you've got a running app. It sounds cool, you import data and you've got to figure out how to deliver these packages and so you developed a delivery app package program. It's a pretty cool project I think, to put on your resume so I'd encourage you to.

Speaker #2 (DeNece Meyer):

Well, great. Jim. I appreciate that and thank you so much for your time today. I know we're coming at the end of this podcast and I really appreciate all these answers to the questions.

Speaker #3 (Jim Ashe):

Well, thanks for asking them. Were of course instructors, we love to get questions from any students and always love the questions from you DeNece.

Speaker #2 (DeNece Meyer):

Thank you. Have a great week.

Speaker #3 (Jim Ashe):

You too. Bye bye.

Speaker #1 (Narrator):

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