* Hey, did anyone else get a message from the professor saying the class was ongoing?

14:03

* Please join. Yeah, I just got that.

14:06

* But I think he's in the wrong one. Where am I? Where are we? Joining me, I also just got that.

14:19

* But we all like the one for like today's date, I assume, right?

14:23

* Yeah, I tried to. And those aren't working either.

14:29

* Oh, fabulous. Great. So where is he?

14:34

* I don't know. He must have known. The code is the same every time. Right?

14:39

* Yeah, it should be the same. Meaning he must be in the wrong class.

14:42

* Is somebody going to message him back? Yeah, I just don't know.

14:55

* Okay, cool. Because I kind of hope he'd figure that all of us didn't just totally not show up.

14:58

* Yeah. Maybe we should copy and paste the meeting idea and just send it to him.

15:09

* Yeah. That's not a bad idea. Let's wait a third zoom.

15:23

* No, he said go to the left hand side and.

15:27

* Yeah. I've been joined in meetings the same way for the past three other classes.

15:35

* Yeah, just. Oh, he does have a cell phone.

15:40

* If anybody wants to call. I tried to tab the tab in canvas, and it just takes me right back.

15:48

* You. Yeah. And I tried to join one for like next week or whatever.

16:34

* It's all the same meeting, so. In the calendar link is the same.

16:39

* I just tried it. Yeah, I tried it all to.

17:31

* He must joined like the wrong class or something. It didn't respond to my message.

17:36

* I sent them to actually. Do we know how many people are supposed to be in this class?

17:50

* I would assume, like high teens. I think there's 11 if you go into canvas and check the people who are trying to join.

18:14

* Oh, right. So 34.

18:24

* But the trouble is, we go. Okay.

18:29

* So. I'm really sorry for the trouble.

18:33

* So I was explaining to Dean before.

18:39

* I'm in Washington, D.C., for a meeting with the D.O.D.

18:44

* I realized yesterday late evening that most of the content on campus didn't work well, so I had to replace the entire content and some of the links.

18:49

* Uh, it's kind of evident the not working fine, so my apologies.

19:07

* So apart from zoom, that is the link to the check your knowledge.

19:15

* That is not working. So again, my apologies.

19:24

* My train was 725 this morning and I couldn't stay up the night to fix it.

19:28

* So my apologies. Next week, uh, everything will be fixed, I promise, but.

19:36

* Again, apologies. So we were just starting on the other room and, uh, we were surprised that no one was there.

19:44

* So I send he left saying, Where are you?

19:58

* So it's nice to see your faces.

20:03

* Okay. So brief introduction to myself.

20:07

* My name is currently pizza, the full time faculty and students at the School of Systems and Enterprises.

20:13

* I'm also the program director for Engineering Management, Graduate Programmer and Systems Analytics,

20:24

* Director for the Center for Complex Systems and Enterprises.

20:33

* Uh, I teach data science, machine learning.

20:37

* An LP to about between 150 and 200 students each academic year.

20:43

* I manage research projects for primarily for the D.O.D., but not all for D.O.D. the same field.

20:54

* So. So a machine learning, natural language processing.

21:03

* Uh, before that, I joined Academy, uh, six years ago, pretty much before that.

21:08

* My academic background is in math. I am a master in math from the University of La Sapienza in Rome, Italy,

21:20

* then an executive MBA from Amba in Switzerland, and then age of 50 and change.

21:32

* I went back to Academy, got my Ph.D. in system engineering at Stevens, and then I started this sort of a second career.

21:42

* So that's basically my story.

21:54

* I was mentioning to Dean on the other room that when I joined Academy and this second career began,

22:00

* the goal was to work on social media and find ways to analyze the social media.

22:12

* I mean, it was at this point more than ten years ago and that social media was becoming as popular as it is today, but was not there yet.

22:21

* My idea was not to use not to code because I was coding medium years ago,

22:33

* coding with the quarter and COBOL language and that now I know that non-active even if several places that a C

22:39

* user I didn't want to code again and then I realized that if you want to work with data you really need to code.

22:52

* There is no other way in that. Working with data, it's really essential for pretty much everything we do.

23:03

* One of the issues that I have in several classes in that in 624, so 624, it's pretty much hundred and 20,

23:13

* roughly between hundred and 20 under the 50 students each year when I teach in particular to professionals.

23:29

* So one of the strongest reaction that they have, the negative strongest reaction that they have is I don't want to code.

23:40

* The code is not essential for me. I'm so sorry that coding is a required I mean, it's a core code.

23:53

* Sam 624 for the engineering management program and I wish I wouldn't have to.

24:06

* I mean that. I mean, on 100 and 2050, it's probably five or six people doing that.

24:17

* And I don't know. What is your opinion on that?

24:28

* And I will open the floor for your opinion.

24:32

* But quoting again, that is an essential part of working with data.

24:37

* Whatever we do today, somehow we need to deal with data or we should deal with data to have more leverage on what we are doing.

24:46

* Also, as an engineering manager, we are exposed to people coding in our company, in our division,

24:59

* in our team and that point knowing how to code, not just because you read the table of content or the book or coding,

25:12

* but because you really send the code that is really essential to better understand the problems that the coding people may

25:23

* have and eventually even the potential that coding can have for you and push eventually the coding team to do something more.

25:35

* So very briefly, let me ask you, is there anyone strongly against the coding?

25:49

* I mean, there is no judgment there. I'm not against it.

26:03

* I just don't know anything about it. Okay. Any other comment on that?

26:07

* I do it for a living. It's not my bread and butter, but it's, you know, it's okay.

26:15

* Okay. All right. So and then another question or a concern that they have from several students.

26:21

* So we're up five seats in the first group in the segment.

26:31

* The second group, probably it's a good 20%, even 30% of my students that I have zero experience, including I'm scared of the I think I will fail.

26:35

* I mean, even 624 is one of the most popular courses we offer at the School of Systems and Enterprises.

26:50

* So this semester I'm teaching two classes over 620 for this class.

26:59

* In this modality with the core approach is a small one.

27:08

* The other class that is online is about 60 people, and that's a normal size on my glasses.

27:15

* Most of the people have no experience, including some of them we are from.

27:25

* Completely different background. The example that they generally use a couple of years ago.

27:33

* A student of mine, she was working at CDO Montclair as a clerk at the city of Montclair, and she said, I have a bachelor in Arts.

27:40

* I know nothing about coding, but I'm afraid that I will fail.

27:57

* So we started the again very low with just installing, installing Python, copying code, adding little bits.

28:04

* By the end of the course, you will be able to write scripts that are a few hundred slides, so with a certain level of complexity.

28:19

* So that student ended up getting a job as data scientist in a technology company.

28:29

* So she left the city of Montclair to get a job initially as a developer in Python and then became a data scientist.

28:40

* So I mean, obviously everyone is different, but this is just to say that even if you have zero knowledge,

28:54

* it doesn't mean that you are at risk of failure in the codes.

29:04

* One thing that is very essential is don't fall behind.

29:11

* So the course is very gradual. Initially, assignments may be easy if you kind of skip overlook the first two or three assignments.

29:17

* Catching up, it's really complicated. So another issue that we have in this course is cheating.

29:32

* Speeding means using external sources or working with other students so that the most popular form of cheating that I experienced so far.

29:43

* Now we have a chat group and cheating will be completely different from now on.

29:56

* But sharing, doing the same assignment.

30:03

* It's something that. Happen?

30:10

* Probably. Each course large classes.

30:14

* I have a four or five that are cheating at least once when I have an students doing the same assignment.

30:18

* But let's assume that the assignment that what the hundred each one that we get a hundred divided by eight and there is no second chance.

30:31

* I mean that you did it, that you will get a fraction of the points.

30:44

* When you do more than once, you are losing quite a lot of points and there are chances that you will train the courts.

30:52

* So you definitely want to avoid that. If you cheat the cheat.

31:02

* Well, cheating well is complicated.

31:08

* So the most common form of cheating, it's kind of maybe arranging the statements, changing the names or the variables.

31:13

* I mean, that's a low key cheating and it's very easy to be detected.

31:25

* So you are paying for an education.

31:33

* You are not paying only for a degree. That's a chance to get an education or something that you may not know but may be useful in the future.

31:39

* So cheating, you're not doing a good job to yourself.

31:53

* Obviously, it's your choice and you can do whatever you want to do.

31:58

* But keep in mind that those are the rules.

32:05

* In theory, we should report the cheating to the ethical committee once the issue is at that level.

32:09

* There are chances that the student will be expelled by the university.

32:20

* If this is happening, then you will have issues getting another admission.

32:28

* You may have student loan that could be more difficult to repay.

32:37

* So we don't want to go there. But again, because that is something that is happening, not say frequently,

32:43

* but is happening to a degree, I mean, and to some extent on a significant portion of students in class.

32:51

* I want just to tell you to be sure that you will avoid it.

33:01

* All right. So let me start sharing this screen and let me go.

33:07

* Here. So again, we will start on Tuesday 630.

33:18

* My office is a Bible of his number of five or seven on the fifth floor.

33:28

* That is the floor when we are most of the SCC faculties are.

33:34

* We do have a DEA integrator. They are working on both the classes.

33:39

* I wouldn't have either a DEA integrator or a class that is as small as ours.

33:47

* But the combination of the two classes is more.

33:54

* It's about 70 students. We will use Python.

33:58

* So there are several versions of Python.

34:04

* One of the advantages of Python is the library is that you can integrate in your code.

34:08

* Not all the libraries are compatible with all the versions.

34:19

* So the most recent version may not be compatible with some of the packages that we will use.

34:24

* So up to 3.7, 3.8, eventually 3.9 is working.

34:31

* If you do, three point then may not work. We do have a virtual office out.

34:36

* It is better if you check with me sending me a message, an email, if you want to meet me during the office hours or at any other time.

34:45

* Um. Assignments do they eat? Generally speaking, I present the solution the following week.

34:58

* So if I give you an assignment for this week, I will present the solution.

35:07

* Next Tuesday, 630. Meaning, at that point, I cannot be sure that the submission.

35:14

* I mean, your solution will not use what I presented.

35:23

* So the deadline is 6 p.m. the Tuesday following the assignment.

35:30

* So by next Tuesday at 6 p.m., that will be the deadline for the assignment that you will start this week.

35:41

* You have a video with the introduction. You have a syllabus.

35:54

* So the syllabus is pretty straightforward with not saying that much.

36:00

* There is a formal structure with the outcomes.

36:05

* And I mean, those are just details.

36:12

* No deadlines on. So again that are labor assignments deadlines I mean 6 p.m. on the following week deadline.

36:22

* If you go. I mean, if you submit after that time, there would be some penalties.

36:37

* Then obviously there are exceptions.

36:48

* Life is life and the things can happen. If you know that, you will be late.

36:54

* There's not a big deal. But you need to let me know. And me and.

37:01

* And she knew that you would be late.

37:06

* And y you are going to have a late submission.

37:09

* I mention the. The issues with the cheating death, the distribution of content.

37:18

* Let's say that pretty much up to the midterm.

37:30

* You have a basic python and some general information on data exploration and a kind of introduction to software engineering,

37:38

* because, again, it's something that may be useful down the road.

37:53

* After that is more on the application.

37:59

* So if on the other side you already have experience in coding, then at that point,

38:02

* for the first part of the course, you will not be that much engaged because you already knew that.

38:10

* But after that you definitely would be more engaged with natural language processing or web mining and some other machine learning a little bit.

38:19

* And then I will present some of that projects there to give you an idea on how to use it,

38:35

* how to use Python to do things that may be relevant for what we do or what you could do.

38:43

* Course material. Back in time, I had the textbooks and then I realized that students do not really read books anymore.

38:51

* So the slides that they will present, the material that we are providing should be in.

39:02

* There are sort of textbooks that are available on canvas as PDF.

39:10

* Use them as a sort of a reference.

39:17

* There are quizzes. I'm never a big fan of quizzes, but I'm in there.

39:22

* Useful to fix some points, let's say.

39:32

* And. That's a general distribution of points.

39:36

* We do have I mean, we have students to participate to be in the synchronous classes.

39:46

* Uh. Midterm is an open book so you can use all the sources you want.

39:59

* The final is a project that you will do.

40:08

* You will have a few days and I will give you some options on I mean, that it will be centered on a data exploration.

40:16

* I will give you a dataset and the problem more than one and you will pick the one that is resonating the most with you on into this.

40:29

* Apart from that, there is not much to say.

40:44

* But we don't use Latin bloodaxe and I really don't like it.

40:49

* So word is doing a good job. There's the distribution of crates and that's again the cheating part.

40:54

* And that's basically. So we are in the live session.

41:07

* So does the pre work. So I hope you had the opportunity to go through the material again.

41:14

* I'm sorry if this link is broken. I will fix it.

41:22

* This one on a complete check your knowledge quiz.

41:26

* We are the two most relevant questions are are you familiar with the coding in general in a scale at 0 to 10 zero nothing then professional level.

41:31

* And the second question is, are you familiar with coding in Python saying that 0 to 10.

41:48

* Um. And that's it.

41:55

* So what we are going to do is basically just go through some of the rules of the game and then I

41:59

* will use some slides just as a base for the compensation and then I will post this lights online.

42:11

* Let me go back here for a moment.

42:22

* The philosophy of this type, of course, is again that at the School of Systems and Enterprises, we offer courses in different modalities.

42:27

* The different modalities are on campus.

42:43

* Obviously online we offer all the courses we have at the school, all systems and enterprises online.

42:49

* We also offer courses to corporate.

43:01

* So the corporate education is a good portion of our business in in India in a broader sense.

43:07

* And then we offer up the format of online that you are taking now.

43:17

* So this format, the online in theory will become the only formal online that we have.

43:22

* We partnered with a consulting company working in education and we devised the entire program.

43:30

* So within the School of Systems and Enterprises, we have only one programmer that is available in this modality and is engineering management.

43:42

* This modality has a pretty much the same content as the older version of online that we call the webcam.

43:52

* So it's not. But there are some differences.

44:05

* There are more videos, quizzes.

44:10

* Most of the material is posted upfront.

44:15

* Um. Why? I like the idea of being a fully transparent,

44:20

* but the transparency sometimes is working against the gradual approach to learning that when you learn a language, it's really essential.

44:28

* So jumping from class one to Class ten would not serve you that much.

44:44

* Well, so I'm posting one class in advance, meaning you have module one and you also have access to module two.

44:52

* So there is no need to go to a module to.

45:07

* Before next week. But if you want that, you can go through that and you can read the material, eventually do the quizzes and so on.

45:14

* If for any reason you need to go more down the road, meaning more than one class in advance, let me know and I will make it available.

45:31

* Okay. So let me stop shedding. And let me check with you.

45:50

* There are questions. Issues.

45:56

* Nope. All right? Yeah.

46:06

* Great. Sorry. I have a question. Hey, I.

46:10

* I'm not sure if everyone else is having issues. I'm having issues finding, like, 3.7, 3.8 version of Python.

46:13

* It looks like it was decommissioned or not available. Well, I think 3.8 should be still available if not go with the 3.9.

46:21

* Okay. I mean, the main difference in Python was between the two point something and three point something that was a major change.

46:35

* Uh, after that, that the differences were more on the performance side than on the syntactic side.

46:50

* So don't go with 3.10.

46:59

* But apart from that, whatever is available, that's absolutely fine.

47:03

* The one I'm using is I don't remember if I use in 3.9 or 3.3 you in the moment.

47:09

* I'm using 3.9. All right.

47:20

* Okay. So let me go now.

47:25

* Let me share the screen again. And let me go to this presentation.

47:30

* It's not many lights, but I really want to go through.

47:42

* Here we go. Some of the points so builders use.

47:51

* We are sometimes users, sometimes builders of technology.

47:58

* So we use the television, but we may not be able to build our own television or repair the television.

48:04

* We are using computers, but we, most of us cannot building computer.

48:12

* So but then we use it.

48:18

* We build some we may build some of the components of those technologies.

48:22

* So sometimes we are moving somehow, somewhere in this continuum between being a user and being a builder.

48:28

* When you are on the code inside the build that are programmers or coders,

48:37

* developers or whatever you want to call it, so you basically write code to do something and.

48:45

* You are building a tool that somehow will help you doing things in a more efficient way.

48:54

* In a faster way. Whatever is the reason. Writing code.

49:05

* That means writing instructions for your computer.

49:11

* Then you can use different languages because different languages will be interpreted somehow by or a filter by that language.

49:17

* That is a piece of software. Taking whatever you write and transforming it into action for your computer.

49:30

* Computer. It's I told you, we started from the very beginning.

49:39

* You have input, output devices, whatever they are.

49:45

* You have the processing part of the computer that is a central processing unit and the memory that is used to store the information and to.

49:50

* I mean, they handle the information while they are processed.

50:08

* And then eventually you have memory that is outside of the I mean, the core computer.

50:12

* You have devices that can be hard drive, can be thumb drives and things like that.

50:21

* So that's basically the basic schema of a computer.

50:29

* Now nowadays for processing most of the computers we have, they are processing through two different units.

50:38

* One is called the Central Processing Unit, and the other one is called a graphics processing unit.

50:53

* And so the GPU,

51:00

* the graphics processing unit that was originally developed to work on on the pixels that are on display because the peak sets up in a mattress.

51:01

* The way the computer is dealing with the Mavericks is in a parallel way,

51:16

* meaning the GPU is giving the computer the possibility to work in a parallel processing that is way faster.

51:21

* So the development or GPUs started with computer games with Nvidia being the largest provider of those GPU,

51:31

* but then they've been used in machine learning because most of the machine learning

51:50

* algorithms are based on neural networks that are based on operations between matrixes,

51:58

* meaning a lot of the potential parallel processing.

52:08

* Some of the most recent computer architectures, like the most recent Macs with the Apple, Silicon M1 and two.

52:12

* Uh, they have no.

52:25

* I mean, the architecture of the operating system is done in a way that there is no separation between CPU and GPU,

52:29

* meaning the computer is actually allocating the resources.

52:40

* So the best way possible that makes the computer faster.

52:47

* But then if you have a particular software that is addressing either the GPU you or the CPU, then that particular software would not work.

52:52

* That seems to be a trivial problem,

53:04

* but one of the libraries that is working this way is TensorFlow that is the most commonly used library for machine learning.

53:06

* And TensorFlow, developed by Google,

53:17

* is not working on Macs unless you have a sort of intermediate piece of software that is unfortunately slowing down the process.

53:19

* So it's kind of defeating the bugs. So we were talking about machine learning.

53:31

* So machine learning is one of the buzzword so that it's going on since a few years.

53:36

* Machines do not learn. There is no artificial intelligence because we don't know what national intelligence is.

53:46

* That seems to be I mean, raining on the parade, but that's the way it is.

53:55

* So I'm writing a book on the society, the application of a and machine learning.

54:03

* Uh, I started working in AEI in 1986, so not saying that I'm against either machine learning or artificial intelligence,

54:11

* but we should I mean, give the words the proper value.

54:24

* So what is normally called the machine learning is basically.

54:33

* A way to use systems that can leverage on data and have different behaviors based on different data.

54:40

* Pretty much discovering patterns on that large amount of data and matching those partners with your request.

54:53

* So what is the pattern now that is the closest to the one that the machine has and then that will be the answer that you will get.

55:07

* Seems to be like not a big deal.

55:17

* But when you have I mean, right now, one of the largest models based on this approach that we have is called the GPT three.

55:20

* GPT three is a based on deep learning that is a pretty large neural network, meaning the algorithm itself is complex,

55:32

* but then the data that is using is pretty much all the data that is available on open source there is out there.

55:48

* So machine learning has two components.

55:57

* One is the data and one is the algorithm, a complex machine learning system like GPT three that is based on that GPT too.

55:59

* So an earlier version can really run only on systems that are huge system computers that are huge,

56:10

* but they are so big that for training that GPT they needed as much energy, that the energy to run a few thousand C medium size CDs for a week.

56:20

* So that's how much energy is required for running those things.

56:41

* GPT two is based on roughly half a billion, a quarter of a billion parameters,

56:48

* meaning those things that are inside of the neural network in GPT three four that will be announced shortly.

56:59

* It's several billion parameters. So those are huge models that based the on machine.

57:11

* Again, machine learning is basically a system based on data and algorithms.

57:18

* The algorithms, what they do is to find patterns in the data and match the pattern with your request.

57:26

* You have different data or you have better data.

57:36

* Then there are more partners that will be discovered, meaning the system will be smarter,

57:41

* whereas this madness is just the ability to match those patterns.

57:52

* So when we talk about machine learning or artificial intelligence in general,

58:00

* we talk a bunch of different competencies that you need to have at work on machine learning, or it can be involved in machine learning.

58:06

* You have a little bit of cognitive science, unique skills, more on that side.

58:17

* We will go back to those things you need to know how to do all the work with those algorithms.

58:23

* So I mentioned neural networks in one and there are adults and then there are a few other disciplines.

58:31

* Getting some context. So A is a in a broader sense a part of automation.

58:40

* So not all the organization as an intelligent behavior, it should consider a machine doing only one job typing.

58:49

* Uh, I don't know. Bolsa is not exactly intelligent but is an automation because instead of doing manually you have a machine doing it.

58:58

* The. There are robots, some that, like the one who was mentioning before that are an example of organization,

59:10

* but they may not be intelligent then that artificial intelligence is in the real world of automation and may or may not be related to autonomy.

59:20

* So a self-driving vehicle is an example of a robot of organization and of artificial intelligence.

59:33

* Artificial intelligence is a broader discipline containing machine learning.

59:46

* So there are two ways of dealing with artificial intelligence.

59:53

* One is called symbolic, meaning you have symbols representing the knowledge that can be.

59:58

* If you do this, then you do better.

1:00:06

* Those are statements that can represent a knowledge.

1:00:11

* You can have what is called taxonomies, like the classification of the animal kingdom.

1:00:16

* So you want to see how close the two animals are.

1:00:23

* You have mammals, not mammals. And then you have, I don't know, birds.

1:00:27

* You have cows on the outside and so on.

1:00:33

* And then you expand those trees and then you may want to know how similar to animals are.

1:00:37

* And you basically measure how far they are up from a common parent in this sort of thing.

1:00:47

* So that's an example of a symbol.

1:00:57

* So if the males are one example, other example does taxonomy.

1:01:02

* So those are not part of machine learning, but they are part of artificial intelligence.

1:01:09

* Machine learning is the one based on data in the statistics on steroids, both the user, some data science.

1:01:18

* So in particular, machine learning. For preparing the data.

1:01:30

* Getting the algorithms. All of those are in the area of data science.

1:01:35

* We use Python. So why we use by them? We use Python because it's the most popular programing language.

1:01:42

* So. Obviously not all the programing languages have the same scope.

1:01:51

* So there are languages like Java, C++ that may have different rules.

1:02:01

* So C++ is faster, is using less memory, meaning if performance is essential for whatever you do,

1:02:12

* probably Python may not be the best solution, even if right now.

1:02:26

* I mean, our computers are fast enough to run even.

1:02:36

* Critical, but not super critical systems in Python.

1:02:41

* On the top writer. I will briefly talk in a moment about Stack Overflow.

1:02:52

* Stack Overflow. You have the link on canvas is a website with quite a lot of aura.

1:03:01

* That's a huge amount of questions announced.

1:03:12

* So it's related to coding. Coding in general, meaning all the languages.

1:03:16

* The number of items that are related to Python is the highest among all the languages.

1:03:24

* Then on the bottom right, the number of jobs mentioning Python.

1:03:38

* So again, you may not be interested in a job site in Python,

1:03:47

* not because you do not want to be a programmer, but that's an indication of how popular a language can be.

1:03:53

* There are several reasons why Python is so popular.

1:04:02

* Probably the main reason is the amount of libraries that you can use to add functionalities to the basic language.

1:04:08

* And then, I mean, it's relatively easy to understand.

1:04:20

* The syntax is relatively simple.

1:04:26

* Even the basic python lab is pretty powerful.

1:04:32

* When I started working in visual intelligence.

1:04:38

* So again, we are talking 1986 or around that.

1:04:42

* There was no python. So we wrote our assistants that we are based on what we now call artificial intelligence

1:04:48

* or the symbolic artificial intelligence of writing their names statements.

1:05:00

* So conditional statements in a broad sense and we use the languages that we are, I mean,

1:05:09

* just developed for that, but there was no library, meaning if you want to do an algorithm.

1:05:17

* So we will talk in a few classes about some of the algorithms in the data science.

1:05:26

* In a broad sense of one of those I, I just pick one is a decision trees.

1:05:35

* So now you call a library and you pass the parameter to the function within the library and you have your decision tree calculated.

1:05:42

* In 1986 we had to write the algorithm for the decision tree.

1:05:55

* So you basically start from the raw ingredients and you don't do the thing now.

1:06:03

* So meaning you are moving up the level of abstraction or complexity of what you doing.

1:06:10

* So in Python is the best example of up to a few years ago,

1:06:19

* Python and R we are kind of for second, second, fourth, but then I mean for several reasons.

1:06:24

* Some I cannot really explain. Python became the winner of this competition.

1:06:38

* So right now, definitely Python is the most popular language that we are using.

1:06:45

* There are two ways of dealing with coding or languages.

1:06:53

* One type of language is interpreted like Python,

1:07:01

* meaning you have the code and the language Python that is the software and most of the time is written in by the story you can.

1:07:05

* Analyze that each line starting from top to bottom, each line from left to right in real time.

1:07:24

* So. On the opposite side that you'll have a program set with the compiler, meaning you have your code up in whatever is the language.

1:07:35

* You have the compiler translating your source code into machine code, and then the machine code, the order, I mean,

1:07:49

* the code that will be executed that will be in detail,

1:08:03

* one in a machine language that will run on your computer and it will be faster because it's a detail one.

1:08:08

* The drawback is that if you have to debug it, then things will become complicated because you need to go back.

1:08:18

* You don't have a real point of failure.

1:08:30

* So debugging is more complicated. In the past, it was more important to have the compilation step up because computers were lower.

1:08:34

* Right now, the computers we have are pretty fast and there is really no need to do the compilation.

1:08:48

* Python is not from the snake, but is from Monty Python.

1:08:58

* That is a movie, a Broadway show from the late eighties.

1:09:04

* And Theodora was most likely a fan of those movies and named the language Alphabet.

1:09:14

* So that's the example of a how to download 3.7. 11 app.

1:09:26

* Obviously there are different. What else?

1:09:34

* For different versions. And let me go now to.

1:09:39

* To Pi. So we use the.

1:09:49

* What is called the Integrated Development Environment.

1:09:55

* So there are several of them.

1:10:00

* The idea that we are using is called by Sharma.

1:10:05

* You are the link on your canvas.

1:10:10

* You can download the either the free version or the academic version or the commercial version that is also available for academic use.

1:10:12

* And that's the one that I'm using now, by the way. It has a few more functionalities.

1:10:25

* So if you do not need to use a pie chart.

1:10:31

* Uh. In the past, I didn't use any I.D. I just used an editor, a text editor for grading the code, and then I ran it on on a terminal window.

1:10:39

* So that's kind of a coding, like a caveman has a lot of Alexa,

1:10:56

* so that IDs are giving you way more amendments and more options to do things in a faster way.

1:11:02

* But there are other options in the realm of what is called notebooks and in particular call out.

1:11:15

* But that is the version from Google.

1:11:28

* Uh, we will talk about that. Um, I encourage you not to use those solutions.

1:11:32

* I mean, if you don't know what I'm talking about, don't waste your time.

1:11:39

* We will. We will talk about that. If you know what I'm talking about.

1:11:45

* The meaning that you use the OR are using notebooks.

1:11:51

* Keep in mind that when you use a notebook, notebooks cannot be integrated in a process.

1:11:58

* So if you have some software doing some things, generating the file so that your software,

1:12:06

* your python code will do, and then you will generate other results that will be passed to the next module.

1:12:15

* So if you have this pipeline and your code is running on a on a notebook, you cannot really do the integration.

1:12:23

* So you really want to have a separate file until the python scripts have a suffix.

1:12:31

* Don't be why you want to have adobe WIP file to be integrated in your pipeline.

1:12:40

* Again, if you don't know what is a notebook.

1:12:49

* Just disregard what I said.

1:12:54

* That's fine. In Pi Sharma, like in that many other I.D., you have an area with your files up.

1:12:58

* So you will create a directory or a folder or whatever you call up the equivalent of a folder in your operating system,

1:13:12

* and you will point your python to your pi sharma to that folder.

1:13:24

* In this case, I created on these directories the M 624 and I have all those files and then you have right here and inibitori so is a text editor.

1:13:31

* You can write whatever you want to write on your program, on your script, and then you will save it.

1:13:49

* With the proper name, making sure that we go in the direction that you want then.

1:14:01

* And this one is the python console.

1:14:09

* So the python console is basically what you can use to do basic operations like 33, multiply by four, 333, whatever, and you have the result.

1:14:11

* You can assign variables a equal to oops.

1:14:31

* Meanwhile, to. And you have to.

1:14:39

* The six. And then you do A multiply by B.

1:14:45

* And you had the result, keeping in mind that.

1:14:55

* Python is a case sensitive meaning if instead of using more a is more be a user.

1:15:02

* Let's say you do a capital plus b.

1:15:13

* So. But be. I will go than ever.

1:15:20

* So because the COVID delay has not been defined.

1:15:26

* Only the small one. So I could continue doing.

1:15:30

* I don't know, whatever you want.

1:15:36

* Like six. And divided by a.

1:15:41

* 2.3. Then you will have the results.

1:15:51

* So you can do all the operations in the in the Python console.

1:15:56

* But obviously, you can write an entire program here.

1:16:03

* But then when you close this section, it will be lost.

1:16:08

* So that's why we want to do. We want to write scripts like this one.

1:16:13

* Few other things. On by Sharma.

1:16:23

* So, Impi Sharma, you have said things.

1:16:28

* And you have your project. I mean, this is a directorate.

1:16:34

* It's a this M6 24. Those are the libraries that are within this project.

1:16:39

* One of the nice things about biopharma is that you can have multiple interpretations,

1:16:54

* so you can have 3.9 for one projector at 3.8 and another one at 3.10 for another one.

1:17:03

* Then you can associate the. Different projects, two different versions of Python, even different packages, different alignments.

1:17:11

* So in this case, and a million libraries that are associated with this project using 3.9.

1:17:23

* Mm hmm. When you have these smaller row is telling you that I currently have, in this case, 3.1.1, but 3.1.2 is available.

1:17:32

* So if I want to update and just select whatever you want to update and then click on the arrow and I will upgrade.

1:17:45

* The reason why you can do something like that having multiple versions is because of Pi.

1:17:57

* Sharma is working on what is called a virtual environment, meaning each project as the directory.

1:18:04

* With all the packages associated to that particular project,

1:18:15

* you change project that you have another virtual environment and that in the sense is good

1:18:22

* because if you do something wrong it will stay in that particular virtual environment.

1:18:27

* So that's something that you may want to do.

1:18:35

* You can add packages. But you can also manage packages using Python packages here.

1:18:40

* So if I click on one, you will have here eventually a little bit of.

1:18:48

* Explanation should be right here. I don't know why it's not showing up, but that's basically the way it works.

1:19:00

* So you can install the new packages, you write the name of the package, and it will do in that you are a line that you set.

1:19:07

* That is the default anyway. That is the paid on or website.

1:19:20

* And you will then download the package that you want to download.

1:19:27

* You also have. The terminal window.

1:19:32

* So in the terminal window, if you're familiar,

1:19:39

* if you know where the doors are in the operational part of Windows, that's pretty much the same in Mexico.

1:19:42

* It's called just terminal. So you can interact with your computer directly already.

1:19:56

* This is not by bypassing by. So.

1:20:06

* Let me leave things here and let me jump back.

1:20:13

* On the presentation. So.

1:20:20

* We saw some of those. You can also do a printer and let me show you that before we blog.

1:20:27

* So we saw that you can do. Again, you can do like operations like that, but you can also do print.

1:20:36

* A Class B. And you will get the same result.

1:20:52

* So in Biden on a three point something, you need to write the parentheses on what you want to print.

1:21:00

* So you can print variables like in this case, you can print values, you can print nothing.

1:21:11

* Like if you do print. Nothing you will get just a blank line sometimes may be useful.

1:21:19

* If you want to bring the even stronger.

1:21:30

* You need to use either a single. Or.

1:21:37

* Double quotation. And for Biden is the same thing.

1:21:47

* All right. So. Again, we saw several of those examples.

1:22:00

* You can assign again. We saw that by the user to body of both variables.

1:22:12

* You can use any name, any combination of letters.

1:22:19

* Numbers underscore names are a case sensitive.

1:22:25

* Keep that in mind. You cannot use some of the what are called reserved words so you can not call the variable print because print is a result of what?

1:22:31

* When you name body of bolts, you may want to use names that are representing the content somehow.

1:22:47

* So if you want to calculate the body mass index, the body mass index has a weight and height as variables.

1:22:56

* So you can call those variables A and B and then do the operation, and the result would be the same.

1:23:06

* But next time you will read the script, assuming the script is larger, because otherwise you will remember it.

1:23:13

* You may not remember what A, B and C means.

1:23:25

* So calling them height, weight and BMI would be really helpful for maintaining the software down the road.

1:23:29

* So those are what is called the mnemonic naming of variables, meaning helping.

1:23:39

* Remember the role of the variable in your pronoun.

1:23:49

* Um, we worked a little bit with the interactive approach to meeting right.

1:23:56

* In the statements that actually in the pilot console and then.

1:24:04

* We mention that writing and using the text editor a sequence of statements is the best way if you want to keep up.

1:24:11

* The statements for later news. Okay.

1:24:24

* Let me stop here for a second. Questions.

1:24:32

* All good. Okay.

1:24:42

* So let's continue. Let me go back here and let me introduce the assignment.

1:24:47

* So the assignment is on installing a python and pie shop to do some of those operations on the python console.

1:25:02

* And then we added the except side zero that you will find the on your canvas.

1:25:17

* So for the time being, don't worry too much on the syntax of the program.

1:25:24

* I will go through the syntax, but again, we will go back to all all of those.

1:25:34

* So when you have this number sign up, that means that everything following the character will not be interpreted by Python.

1:25:41

* Meaning those are comments. There are other ways to add the comments.

1:25:52

* But that's a pretty straightforward way. So order is a comment that accepts a zero and so on.

1:25:58

* Those are all comments.

1:26:05

* So this wild group is what is called a loop.

1:26:11

* So one of the tricky part of Python is the use of indentation, meaning all of those statements.

1:26:16

* Are all part of the same loop. So they are indented the kind of creating a separation from the rest of the code,

1:26:29

* meaning everything on this indented portion will be executed the one through.

1:26:39

* So while true, it is a statement that will mean it's a loop that would be broken when there would be the break condition.

1:26:47

* So in this case, you are asking the user to input a number or a done to stop.

1:27:01

* If the user type done, you break meaning you go out of this loop, you go here and you will print that.

1:27:11

* Thanks for using this tool. If not meaning if else you are else.

1:27:21

* Now you are asking for a second number and then you do a calculation that is adding two

1:27:28

* numbers and you will continue indefinitely until you will type down and you will exit.

1:27:36

* So when you do loops like that, you want to be sure that there would be an exit condition because otherwise they would be infinite loops.

1:27:44

* So let me run it. To run it. There are several ways to do it.

1:27:56

* One of the ways it's right click on the tab.

1:28:05

* Run. But now he's running for center chair 20 to thank the juror for.

1:28:10

* And you have the sum of 22 plus 44 is equal.

1:28:22

* 66. Let's assume that they do then.

1:28:27

* I'm exiting the loop and I have.

1:28:33

* Thanks for using this tool and that's it. You would see those signs.

1:28:37

* So those are what are called special signs.

1:28:44

* So those special signs. Ah, with the backslash and then a character.

1:28:49

* And that means new line. So when Biden is reading it, that is keeping one line.

1:28:56

* Writing whatever is here and then is keeping another line.

1:29:05

* And that's why you have all this space here. So let me go here and.

1:29:08

* Let me recap what you are going to do for homework one.

1:29:21

* So you want to set up am6 24 folder.

1:29:27

* You want to obviously download the homework one and that will be the instructions.

1:29:34

* That's the link that is working at this.

1:29:40

* And then you will prepare the environment, meaning you will download the python you will solve by following the instructions.

1:29:43

* Then you do pretty much the same things that you did on the by the console here.

1:30:00

* So those are a sample of operations.

1:30:10

* You will take a screenshot and you will posted the.

1:30:17

* And then. So that's basically the detailed version of it that you will have the print run by your name that is missing here.

1:30:23

* I'm sorry. Then you will bring the.

1:30:40

* I mean, you would run. The code again.

1:30:44

* To run the code, the right click the prime.

1:30:50

* Or you can just the name of the script is here.

1:30:54

* You just click this run here or you can go here and run or just run and specify what you want to run.

1:31:00

* So there are many options. Them or just do this and we run again.

1:31:10

* But I mean. Again doing.

1:31:17

* Right click around. It will keep in mind that there is also a shortcut.

1:31:24

* So control. Shift control? Yeah.

1:31:34

* Shape control are our control option.

1:31:37

* Are we running? That's pretty much it.

1:31:41

* So let me stop sharing. And that's pretty much it.

1:31:48

* Oh, it's about 8:00. Some of the classes down the road may last a little bit longer.

1:31:56

* So, uh, normally it's 630, 8:00.

1:32:04

* I will do my best to say in the 8:00.

1:32:10

* But if there are would be questions, we can say a little bit longer.

1:32:15

* Generally speaking, the structure of the class would be we will start with comments on the material that was posted.

1:32:22

* And in particular, I would like to have your comments and then that start the discussion.

1:32:35

* After that, I will introduce the content of the week and I will use some.

1:32:43

* A PowerPoint to kind of highlight some of the key points that those power points that will be posted and

1:32:52

* then there will be some in-class exercises that can or cannot be four points but is for practicing.

1:33:03

* Then I will introduce the assignment for the following week.

1:33:17

* Comments. And that's the end of the class. So those are the normal components of a normal class.

1:33:22

* So again, comment on the material.

1:33:29

* New material presented in class. Exercise introduction of the new assignment.

1:33:34

* End of the class. There is not much that you can do today as an in-class exercise because we really just that.

1:33:42

* But from next week we would do it. So that's basically the end of the class.

1:33:53

* Uh, if you don't have questions.

1:34:02

* If you have questions, feel free to ask. I am happy to address it.