BASIC OF DATA

Data is very important. The amount of data is growing exponentially. Today. Our best estimates suggest that at least 2.5 quintillion bytes of data is produced every day. Computer language that gives orders or instructions to the database. If you want to create a database, store data update for delete data, there are different commands known as SQL. It's extremely manageable and simple to learn. The language as clear, as flexible as it works in the information. His frameworks from Oracle, IBM, Microsoft and so forth. Take an example of Facebook, while making a Facebook account you see a registration form that you have to fill so that after clicking on the submit button, all the information filled by you has been stored in a database. So in a database management system, all works are accomplished with the assistance of SQL. Now let's see today's agenda. We'll start with introduction to database. Then we'll learn how to install SQL and how to create a new user. Then we'll see SQL Server command types. Four will also learn SSMS and DDL statements. Drift will learn aggregate, function, indexes and encapsulation. Six, we'll see SQL application. 7th we'll learn how to become a SQL developer, and finally we'll wrap up with SQL Interview questions and answers. So without wasting anytime, let's get into the. We live in a world which is surrounded by data, right? So what is data? Uh, in my opinion, data can be considered as the facts which are basically related to any object which we are talking about. South, you know, data can be age. Well, age is a data, you know, you can put that in numerics, you can put that in a form. There are people can take note or take note out of it and. And sort of it because, you know, age can be anything from zero point to one all the way to 100 and much more as well, right? So age is the numeric in which we can create something and get something out of. And then if you're thinking about the other forms of data, again, you have video data as well, right? So video. Is what we call as unstructured data. But then if you do not know what unstructured mean, do not worry. At this point. You need to know that at this point you need to know that pretty much you know, video is a form of data as well and then there are other datas as well. When you think about all the data we generate by, you know, leaving messages to each other on WhatsApp or leaving tweets on Twitter, sharing photos on Instagram. All of them putting some updates on our timelines on Facebook. So all these stuff and lots and lots more is what we call as data guys. So this brings us to the question, what is a database? You might have heard of data, so if you've heard of database guys, head to the comments section and put down the comments as usual. We all love and interactive session so and you guys are very good at it as well. Guys right to the comment section and put your opinions down. So what is the database? Well, a database is basically nothing but a very systematic collection of data in the most simplest terms. So why would we go about needing the system Matic you know, collection of data? Well, it's pretty much to you know support some sort of storage where we can hold the data maintain the data and eventually we can you know we have to have the ability to manipulate the data in in in a in a very easy way to be honest. So to give you examples of what databases are actually are if you guys remember when we were you know couple of years ago. Need to get these telephone directories where they should be all the numbers, it's called Yellow Pages and a couple of countries as well. So that is a very good example of a hard copy of the database. And the contacts option on your mobile phone right now is also a database. Well then coming to power generation, power generation, you might not know has a huge database of you know what? While it is being consumed by what house and whatnot, because again, at the end of the day you get billed for the power you use and this data goes to your local electricity power supply board. And again, this forms a very big database as well because pretty much they need to know what the power they're generating versus what's being used and many, many other details as well guys. And then coming to social media as I. I just told you uploading images, uploading statuses, you know, uploading stories, whatnot. So all of these are stored in a database. Insecure data centers, what we call especially when it comes to social media and privacy things. So pretty much you know all of these are stored in the database and it is stored securely guys. So basically this brings us to the question, why would we ever go about needing a database? Well, I've pretty much tried to keep the session very simple. Uh, and this is these are the reasons that I could pretty much think of of you know why pretty much we would need a database. The first thing in my opinion is that we need a database because managing large amounts of data is a hassle. Because. You might see, you know what, I can store data in a in a spreadsheet and it's gonna be fine. But then when you think about very very large amounts of data, large chunks of data, and throw it all into one sheet and make it work, it might not work, or it might be extremely difficult even if it works right. So you know, let's say the size of the data increases from a couple of. 10s of hundreds of records to thousands and millions of records. So when this happens, you know it'll create a huge problem of using spreadsheets to maintain this data. And at the end of the day it is gonna hurt with respect to efficiency, time and whatnot as well, right? So this is the first point of why you why you should need a database, and the second thing is the accuracy of the data. Because when you think about it. Data entry pretty much into a spreadsheet sounds very easy, but then it becomes extremely difficult to pretty much track how accurate the data is you know on the spreadsheet because at the end of the day, if you cannot have a method where you can validate the spreadsheet to find out if your data is accurate or not, it doesn't make sense. And again, think about this. Manual validation of thousands and millions of entries and verification of the same are pretty much near impossible. And even if they were possible, pretty much it brings the efficiency right down to zero, right? In my opinion. So. This brings us to the third reason of pretty much why would we would need a database guys. So in my opinion again it's the ease of data uploading. Because with the database you have very good amount of flexibility to pretty much, you know, update the, update the data present, manipulated, play around with it, create it, delete it, whatever you want at your convenience. So you do not have to wait for the person who created the spreadsheet go through millions of entries and do all of that. So again you know the best advantage of our database is that multiple people can edit the data at the same time. Be this brings up the efficiency and pulls it from zero to 100, you know, almost 100 in my opinion guys. So what do you think about the efficiency? When it comes to the database technologies of today, head to the comments section and to let me know. So on that note, this brings us to the next reason why you should consider the database. That is pretty much because of data security, because, you know, we do have passwords for spreadsheets and whatnot, but then the data is considered to be less secure. And it makes it gullible because, you know, everyone can pretty much get access to all of these files. They can do some changes, remove whatever they want. Or, you know, add whatever unnecessary stuff and it hurts the data the end of the day. But then with databases, pretty much you can have something called as security groups, privilege accesses and so much more. So at the end of the day here you can pretty much, you know, restrict access to a certain number of people, certain people with the privileged to access the data, manipulate the data and whatnot. So your data will be in good hands at the end of the day. So what does that mean? Well, adding on to that, this brings us to the next point, which is data integrity. Data integrity is one of the big questions today when we're storing data in spreadsheets as well as databases, because again, we've already spoken about how data can be colorable, we put it in spreadsheets. But then when you put it in a database, you know you are assured of accuracy. Number one thing, it is extremely efficient #2 and #3. Your data is consistent because databases many multiple database service providers today pretty much you know, go about giving you very good integrity checks, very good access controls, privilege accesses, member accesses. And so much more. So this brings us to something you know, you might have heard of, or you might have used some college, or you might not know as well. It's called as DBMS. Well, DBMS pretty much means database management system guys. So what does DBMS when? BMS in the most simplest terms is basically just a collection of programs which enables the user, whoever is using this particular DBMS softwares, to go about accessing the database, creating a database, manipulating the data, uh, you know, deleting the data. So basically this gives the user an interface where he can he or she. Can you not talk to the database and pretty much work with the database and the database the database and do whatever the person wishes to if he has the right access and this basically gives the person you know, very good interface case so. I want three facts for you all with respect to the database management systems. And the first thing is that DBMS is not a new concept. It was first implemented pretty much in 1960. So that is how old a database management system is. And then you can think about it. The person who pretty much gave us the first DBMS system pretty much is called as Charles Buckman. And his IDs is considered to be the first TBM. SIDS is basically integrated data store is what Mr Charles chose to cause all his first DBMS machine guys. And then third important fact is that today we know that the database technologies have evolved so much and all of the functionalities have been given and these functionalities increase every quarter, every year, every month. And then the database systems today are so powerful it drives, you know, millions and millions of gigabytes of data every single day. Yes, millions and millions every single day, guys. I can say millions of millions as well, because the world, you know, the entire world is basically a big data problem. So. Having a place where we can handle all of these, store all of these, and manipulate all of these is always a blessing, guys. So this brings us quickly to the introduction to SQL. Well, So what is SQL? Well, SQL is one of the standard languages we use when we go on about dealing with relational databases, which can be used to create, read, update and delete database records guys. So these are some of the operations we can perform. So what does SQL stands for? Well, SQL is simple. It stands for structured query language case. Are you gonna find out why we call it the query language in just a moment. But then you read the term relational databases. So what is a relational database? Well, a relational database is basically just a type of database that stores. And provides access to all the data points which are related to one another. Well, how are these data related to one another guys? So basically when we call it a relational database, there has to be some relation to the data using SQL and the, you know, all the DBMS. We called the RDBMS because it's relational database management systems. Here we have the, uh, the data organized in tables, which you'll see in just a second. And then we map the data so that the database knows what's important and what's not. And we do this using something called as keys. Well, keys such as primary keys, candidate keys, secondary keys. All of these provide relation between one column of the data to the other column of the data. As you'll see all of this in a couple of moments, but then coming to a little bit more about, you know, relational databases. Well, relational databases are pretty much based on what we call as a relational model where we pretty much map one concept to another, the other concept is mapped to another and we have this interdependency inter relationships which are built throughout the data. And then this makes it very intuitive and extremely straightforward. Uh, you know, pretty much it gives us a very straightforward way of representing the data in the form of tables as I just mentioned. And then the other good thing about the relational database as as I already told you, is that each row has something called as a record, and there is some unique ID called ski as well again. Gonna check all of these in the upcoming slides. And then we have something called as columns which any data table will have. And then these columns basically hold all of the data and each record on this column basically is mapped onto unique thing. And then you know we go on about establishing something called as interdependency relationships and much more among all of the data present guys. And if you're wondering how SQL is pronounced, it is pronounced as either SQL or it's called sequel guys. Pretty much you will find developers, enthusiasts and many others either calling it SQL or SQL. So whenever you heard of the term, you know whenever you hear the term SQL, uh, make sure to map it into SQL guys. It's it's pretty much simple and straight forward. alright so first what we do let's let me just show you how you can start the installation so here please