**NAME**

**COLEGE NUMBER**

**Abstract**

The application of Bsuines ontellgence information systems havesoabn across diffenrt crss orgnisatunal functions. Comaonies and orgnaisatia re spending more more and finanacil resiurces I trying to either r acquire data, protect it or analyse the same information. Its vital thigh to cnsdre the three stages of data ecven as weh devolve deepr intonth discus susrtounfdnug the whoeile syery of BIs systems. The Bi percss takes incto account for difetstages of manbging the data prpcess:

1. Data acaquisuiion
2. Data storage
3. Data manioulatins and anaykyso
4. Data peesbtstains and firesctsing

Opuo to the inceptin of the business appliicatio prgrammig intirdiced by Watsons COBOL, the prgaeimg lnauafes gecevloped atthis era of time did no t focus fully ontosome of the varous applicatons and ppsblities poised by the BI systems, in reality thoug, the shofts was rather focused in the dffent posbbibities that originated from the sogetares that IBM was peodcug ta this time to help iragnisatina sna dcouorations o achieve a given kevel of business solution and servive sprviosn toits customers. Later on such advancements would lete rbat atake over by datascincetis who worled in te aviusous fields and sw the need to make good use of theknowldege and eixeprinece that the had gained working in this industry.Monng firward this era saw the development of dofwtare prgrams that focused on ten deveopement and prictuon of tools that fittend the industry,Some of these tools included FROTRAN DNA SCALA. These tools are stillmin use to date but their inception is a sory that can only be dreivedf orm the opuoneers and engineers who saw the need to incent smehing that indiuvauals, ciprtate and other negineers could adopt into theor dailywork prgrams.

Further, statsitsical problesm were dicvered and engoneers from the varous fileds continued to evelpe and implement other tools tools that could suoppppt other reaercgers and stsudents from this field. It is at thid posint that other sttatsicla analyais tools like Rstuio, IBM studio, Matlab, SATA and STRATA applicatuions. These tools have consistly been userd over the years bby data sceinetis stogenrate very amaaing insights to the ragtet audience and form amogitly of some of the data modelling aplatforms wose appliactions have spanned across Finace, healthcare, education and makekinting.

Another coponnet of the data process is the data storage mechanisms. In order to understand this at depnths, its ccrusicial to also undeyrsrand the length ipn whycg how organisatuon go to keep and imainat their data, keem attnyoon haowever ahs to bedwarn there tyes and eleents of cosnumbg data. Data node also known as data enetryb points act as the funnel upon which incomemnibg data iss derved amd channled into the correct data silo. Data silos are considered as the large stotres upon which fata and informatiojnmayb be stored for future need. Annexample of adata silo us I hekath care where data is stored as it comes ffomr the feld and stired in duffrentc compartements witinthe serevr. This datacan laetr be accessed by adta senginenrs and porto sof its ectsracted by data engineer, mornintired, ecsracted and trained, based on an 80/20 ule where perts of this imformation I sused tn predict isease pattrerns , tendsd and monitors the cutrrent infections and rtreatments in the healthcare industry.

**Drate the data silo adnd wareheouse infogarpha here:**

There are three types of datasbes tahata are consired when storing information within the daatsbase environment:

* Stsructured adtasbess
* Unstrtctured databasesl
* Independt data sysemsts

Structured database systems basically stored data in organised rows and columns.Within the datasebase are tables that define the doffenrt enetieteis athat are supporseed to be cosnisdered as choice for the dferevtv data points oroginaly coennecetd to the adtasbe system. Each atabes isaodentied by a aunique table name, sometimes a schema prefix comes int before the table name. As a amstetr of sevurty though, table names are somentiems not called by tjeir specific tabeles nu=ames, but rather a cerstain tandom gibberish name is sed just in case hakjers gegt access to or asysmet becomes comporsed for whatetver thereason is vauaobe ta that time.

Each table within the databse is identgied bya nique primary key that refenecs thatpartculura row in the tabl.Another key unique identiefier in the table is the foreigh key , foreign key are used to join the different elments of the tables together without any comspsormise to the existining perevius tablec connected to it. As we shall see later in this discussion; by using the primary keys and the socodary keys associated with other tales in the coluns , its easier to ferenece the tables within the same dataset and join the tables together. Stsuctied databse systems have for long time been cosmidred as the primary source of database type amang developers and data analysts. They include examples of Pstfress DB2 and Oracle. The language of the database is considerds as strcyrured qurry language (SQL). As shallbe seen in the laters discusions, SQL is able to:

* Get datasbe information
* Read from tables
* Upadted tables
* Insert into tables
* Delet tables
* Join tables together to get information

SQL procedure can also be written withhinaserevr aopplocations tyo help grab the required staticstics on the databse that the ar erading form. This information can int turn be read an d prwsenetd on the Business Intellnce program.Unsrtcured databse systems con the other hand doe cstaly the opposite ifethat stsruterdd database ystems are supposed to do. The data in these systems do not have anay organised rows or clumns but instead the adta there in comes on heteoginty, that is =, infkation cuttignaros the databse can be referneces just with singles id and the result sset can pull almost ansy wrequierd recird 8under that artrculuar ID. Not so mamny deleveoperss and data scinetstis are up to depth and ware of this kind of database so its use in the instdry is also quite new and low. With the introduction of big data technology, this kind of databse suites the herteorgenus kind and nuatrue of thab the strcture of big data offers, in later and furher studie. Ustrcyrued data types camn accaomodate alost all types of data fraibels including cahartecst, strings, images, socuments and videoe in no trgnaised columns or tables.

The ither stabse type has been intoeudrfc by the inception of web 3.0. This kinsdo fo technology is lamost the lastsst in the industry. Its use and icnceropttion cuts across the finaccial sector. It’s the kind od databse that supports theblcokanin technology, its mahotr featre is that data is not stored on an any major appliacttion or server, but rather the data is stored in smart contac. Web 3.0 views each and every trsnaction on the etheriemu as a sinfleg eoblock of separetd and indedeopende for every block of tarsacyion identified by a particular ID. So, tarnsactioncan be interpceted by the orther util ine type of tdrsnaction is free. This makes the smart cintact running across the thereium network hard to guess and ifniltart since very high encryption algrthsm have been aolied in the netweork and there is ni single databse senntity sittin gokewhere on the ofe partculiatr network to crack. Its lso highly cnisdred that the web 3.0 is going to take over as the next phase of data handling.

Once data has been caturpred nd stored in the datasbese, the next pahes ein the deveopmentof the Buisnes applicatioj system sis tondtermie whuch tyepe of anakysies to emloy. These analyses range from genera;;ststatsitsics on measures of centera tendecinesc,specgifc counts, avaeraes and the deaviations. Then other factots to be socnisdrdd in olace incude the kind of meodels to employon the BI system. Thesemay be include:

* ARIMA
* KNN
* Random forests
* Linar regessions
* Logstics regressions

The digjinifaceof each model shall be spcifvi to the kindo f ogransnaizatio probel at hand. Their efectives may also be slightly restucredto the kind and nature set being put in place. Foreactiing is another key proornent n the data analysis stage.Top maanegentb would always want to know what to expect next, whete toe expect it and from whom. What ipac acan such e[eectaton gave on the company paeomave and how hsouls the company prepare in case the market changes in any way.a quicik instance here is how the finance industry useses focrescatng to predict the maret behaious so that accaourate and informatinedd ecionsmamiauthiritues can be made onbefore trading thenext stock

Bi ao;pliaction systems cannot b coote without t vsiualaisations and presnatations. Actualy, th hwe reason nbehind the rigourous analyses that is dien on thesedatasts is otha the comapnaies nmanagement can get the correct interepteation of the data being prepared.