ANALYTICS AND BUSINESS INTELLIGENCE (QH0539)

STUDENT PERSONAL LEARNING RECORD

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Introduction/abstracts:

Business and data analysts work with data. The difference is what you do with it. Business analysts use the data to make strategic business decisions while Data analysts collect and manipulate data, identify useful information from it, and translate the results into digestible insights. However, analysing the data is their main goal. (Talend - A Leader in Data Integration & Data Integrity, n.d.)

According to (01 January 2013, Ee-Peng Lim et.) The growth of technologies, systems, practices, and applications to analyze critical business data to gain new insights about business and markets is known as business intelligence. The new insights can be used to improve products and services, boost operational efficiency, and strengthen customer relationships. One of the key benefits of business intelligence is Data mining the increasing amount of data in many firms makes manual data analysis cost-effective and nearly impossible. Data mining techniques are used in business to manage the volume and variety of data as well as to aid in proactive knowledge-driven decision-making and generally improve corporate intelligence.

Business Intelligence Analysts are becoming increasingly valuable to companies as the amount of data they collect grows. Business Intelligence Analysts are expected to be in high demand in the future to meet the needs of companies and the data they hold. According to the total jobs (ID**:** 98379017) search engine, business intelligence Analyst earn the range of £55k to 65k per annum

What is the Objective of this Report?

This article will explain how to analyze data and explain how businesses utilize it to make choices. Furthermore, the process of acquiring crucial information to direct business choices. With the use of evaluation tools like Excel, Colad, Python, and Tableau, you may decide the most effective course of action for a project or process by converting numerical data into understandable information. You may develop your decision-making abilities at work by being proficient in data collection and analysis.

Report Method:

This project was designed with an Agile sprint methodology based on a time-box period of weekly personal learning Records. Every week learning is allocated with a personal learning Record (PLR) These tasks were performed using various tools like Excel, Colad, Python, Tableau and a dataset from Pima_india's diabetes (See appendix A)

Week 1 PLR

Data science is interconnected with data mining, machine learning, and big data. In the US, data scientists hold some of the top positions. You'll need a combination of technical abilities, business acumen, and education to become a data scientist. Working as a data scientist according to (Coursera • Updated on Jul 28, 2022) demands interacting with a wide range of software applications, programming languages, individuals, and data types. Data scientists continuously need to be able to choose the most effective methods for processing, analysing, and communicating the results to target markets.

According to (01 January 2013,Ee-Peng Lim et.)The growth of technologies, systems, practices, and applications to analyse critical business data in order to gain new insights about business and markets is known as business intelligence. The new insights can be used to

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Week 2 PLR Organizations:

An organisation is a group of people who work together as a social unit to fulfil a need or achieve a common objective. There are three Categories of organisation

1. Public
2. Private
3. Non-profit organization

Each organisation has a structures

1. Tall /hierarchy
2. flat structure

Tall Structure

- Tall follows a pyramid layout
- Subordinated to a high structure

Pros of a tall structure

- Defines the level of leadership is recognized
- level of responsibility is clear
- encourages specialism

Cons

- lack of specific boss or leader for direction
- encourages generalists more than specialists

Flat Structure:

Few or no tiers of intermediate management between the leaders and the frontline employees.

Pros

- Reducing unnecessary layers of administration speeds up cooperation and communication.
- Quick organisational decision-making lowers organisational expenses

Cons

- The lack of a clear boss or another authority figure, which may result in a lack of direction, favours generalists over specialists.
- Usually not ideal for large organizations due to the potential for unclear job functions

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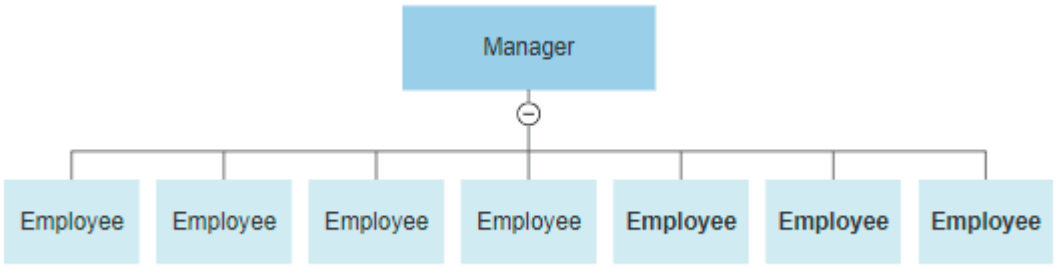


I used the web and online resources to help me comprehend the below organizations and classify them based on the industries and services they give. I looked at these industries according to the services they provide.

NAME OR ORGANISATION	INDUSTRY	SERVICES
Birmingham Dental Hospital	Health care	Birmingham Dental Hospital is a referral-only service. It is one of only ten dental hospitals in England, it is the home to the University of dental research in Birmingham.
National Health Service	Health care	Health and Social Care in England, Scotland ,Wales and Northern Ireland
Southampton General Hospital	Health care	Southampton General is an outpatient clinics, diagnostic and treatment work, surgery, research, education, and training, as well as providing day beds and longer stay wards
HSBC plc	Financial industry	universal bank and holding company for financial services
European Space Agency	Space industry	launch and operate unmanned exploration missions to other planets and the Moon are also included in the European Space Agency's space flight program.
Rightmove	Information industry	The leading internet real estate portal and property website in the UK, it is maintained by Rightmove plc, a firm established in the UK.
Zoopla	Information industry	Zoopla is the UK real estate website, they give their users all the information, they might possibly need to make wise decisions.
Google Map	Information industry	It provides street maps, aerial photographs, and satellite information.
OpenStreetMap Foundation	Information industry	is a non-profit organization whose mission is to encourage and facilitate the creation of freely distributable geospatial data?
Next Plc	Product retailers	British international retailer of apparel, shoes, and home goods industry,
Instagram	Information industry	Instagram is a social media platform for sharing pictures and videos.
Barclay bank Plc	Financial industry	British retail banking operations, consumer credit card business, wealth management business, and corporate banking for small, medium, and large businesses.
Twitter	Information industry	Twitter is a social networking and microblogging service where users post and interact with messages known as "tweets."
John Lewis	Departmental	John Lewis is a department store chain in the United

Week 3: Data: ANALYSIS IN EXCEL

Utilizing excel data analytic tools I explored the basic statistic: Min, Max, Range, Mean deviation, Variance, and Sequence, Using my selected dataset

Min, Max, range, and Average

- Min is the lowest number
- Max is the Highest Number
- Range is the max minus the Min
- Average is the sum over count

data			
98			
10	MIN		7
99	MAX		99
43	RANGE		92
33			
21	AVERAGE		52.27273
7			
65			
87			
45			
67			

Mean deviation

I calculated the mean deviation by measuring the average deviation from the mean value of my dataset

Step 1: Determine the mean value for the provided data points.

Step 2: Subtract the mean value from each of the provided data values (Note: ignore the minus symbol)

Step 3: Calculate the average of the data acquired in step 2.

	data		deviation	deviation (asbolute value)	
		3	-6	6	
		6	-3	3	
		6	-3	3	
		7	-2	2	
		8	-1	1	
		11	2	2	
		15	6	6	
		16	7	7	
	avearge	9		**3.75**	mean deviation

Variance

I used variance to measure the spread between my datasets

Formula

1. Calculate the mean of the data.
2. Find each data point's difference from the mean value.
3. Square each of these values.

4. Add up all the squared values.
5. Divide this sum of squares by x – 1 (for a sample) or x (for the population).

	data	diff	squared diff		
	600	206	42436		
	470	76	5776		
	170	-224	50176		
	430	36	1296		
	300	-94	8836		
mean	394		21704	147.3228	
		variance with formula	27130		

Sequence

A sequence is a list of numbers (or elements) that exhibits a particular pattern. The pattern can ascend or descend

If the elements of the sequence are in increasing order, then the order of the sequence is ascending. If the elements of the sequence are in decreasing order, then the order of the sequence is descending.

n	X_n	a_n step 1	a_n step 2	a_n	powers of two
1	3	-1	-1	-1	2
2	5	-0.5	0.25	0.25	4
3	7	-0.3333333	-0.037037037	-0.03704	8
4	9	-0.25	0.00390625	0.003906	16
5	11	-0.2	-0.00032	-0.00032	32
6	13	-0.1666667	2.14335E-05	2.14E-05	64
7	15	-0.1428571	-1.21427E-06	-1.2E-06	128
8	17	-0.125	5.96046E-08	5.96E-08	256
9	19	-0.1111111	-2.58117E-09	-2.6E-09	512
10	21	-0.1	1E-10	1E-10	1024
50	101				
200	401				

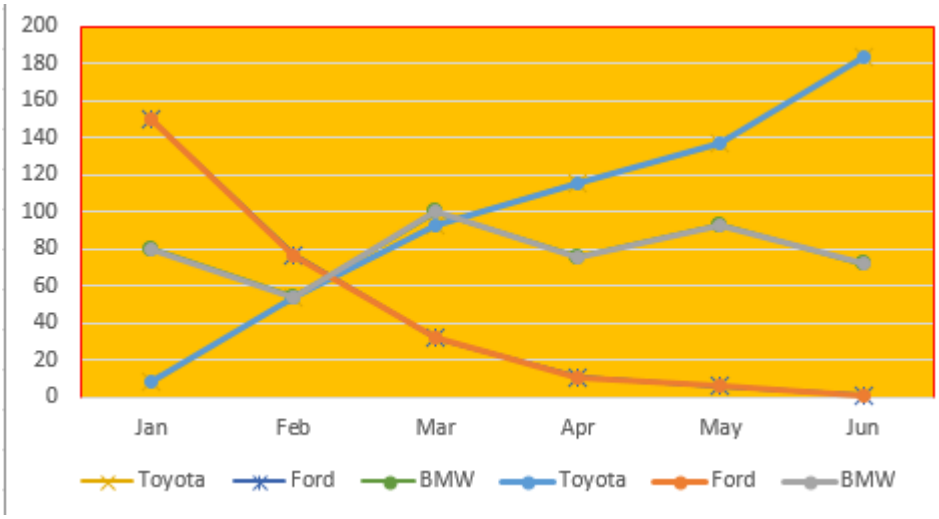
WEEK4: VISUALIZATION IN EXCEL

Utilizing excel data analytic tools I explored the virtualization tool using line-chart, Colum-chart, column-chart Switch and pie chart

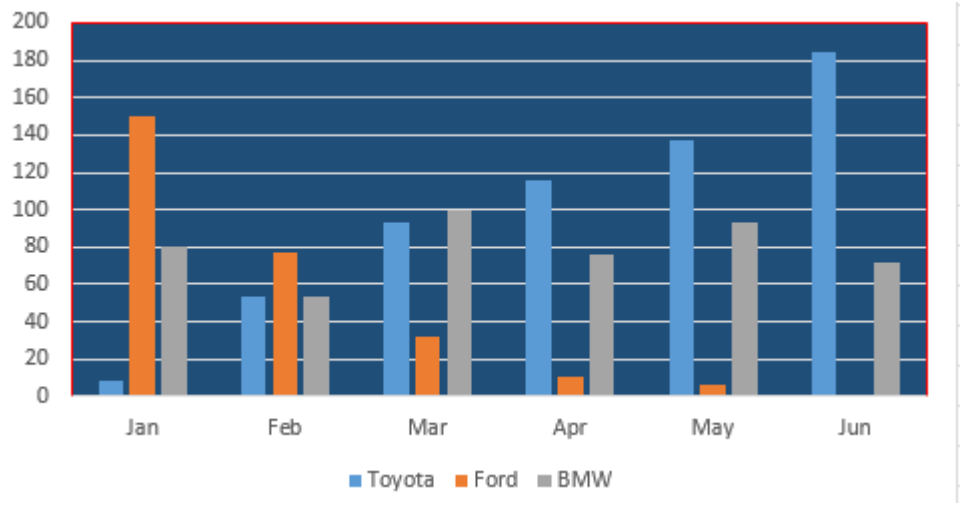
Car population Dataset

Month	Toyota	Ford	BMW
Jan	8	150	80
Feb	54	77	54
Mar	93	32	100
Apr	116	11	76
May	137	6	93
Jun	184	1	72

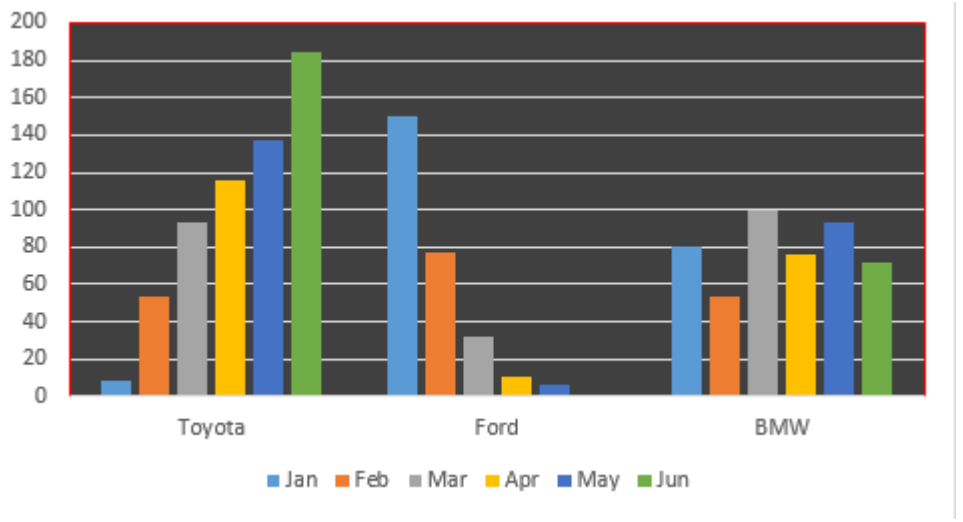
Line-chart



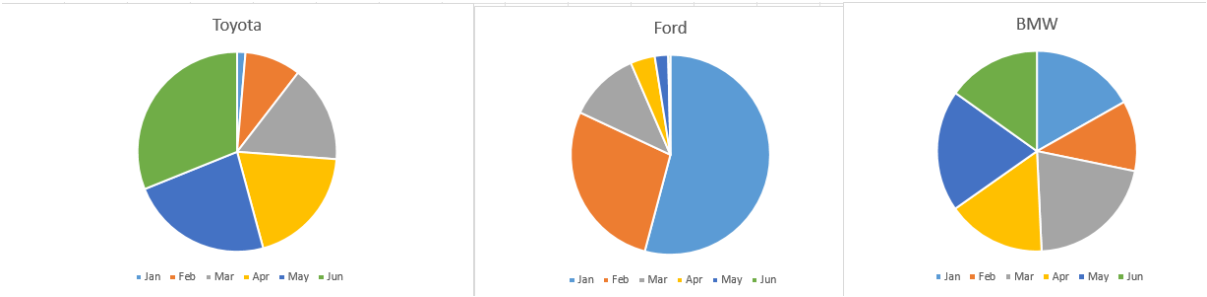
Column- chart



Column chart Switch



Pie Chart



IF with AND, OR and NOT functions

The IF function allows you to make a logical comparison between a value and what you expect by testing for a condition and returning a result if that condition is True or False. When you combine the AND, OR and NOT, each one of them with an IF statement, they read like this:

- AND – =IF (AND (Something is True, something else is True), Value if True, Value if False)
- OR – =IF (OR (Something is True, something else is True), Value if True, Value if False)
- NOT – =IF (NOT (Something is True), Value if True, Value if False)

(If) condition is true

First	Second
10	7
First is bigger	
First and Second are not equal	

(AND) both condition Is true

Values		
50		
100		
AND examples		**OR EXAMPLES**
TRUE		TRUE
TRUE		FALSE
both values are positive numbers		

(AND, OR) Either condition is true

X	Y	AND(X, Y)	OR(X, Y)
TRUE	TRUE	**TRUE**	TRUE
TRUE	FALSE	FALSE	TRUE
FALSE	TRUE	FALSE	TRUE
FALSE	FALSE	FALSE	**FALSE**

Grading table if grade is greater 40 = pass else Fail if less than 40

Mark	Pass or Fail	A Grade	B Grade	C Grade	D Grade	F Grade
55	PASS			C		
60	PASS		B			
38	FAIL					F
25	FAIL					F
93	PASS	A				
68	PASS		B			
51	PASS			C		
35	FAIL					F
45	PASS				D	

(Not)

X	NOT(X)
TRUE	FALSE
FALSE	TRUE

Additionally, I applied the pima_indians_diabetes to explore some functions like Sum, Oldest, Youngest, Round of 2 if age is greater than 30 and count if age is greater than 30

1	test	mass	pedi	age	class	num preg	oldest	Youngest	avarage	younger 30	Count if
2	0	33.6	0.627	50	1	2953	81	21	33.24089	1	417
3	0	26.6	0.351	31	0			Round	33.24	1	
4	0	23.3	0.672	32	1					1	
5	94	28.1	0.167	21	0					0	
6	168	43.1	2.288	33	1					1	
7	0	25.6	0.201	30	0					1	
8	88	31	0.248	26	1					0	
9	0	35.3	0.134	29	0					0	
10	543	30.5	0.158	53	1					1	
11	0	0	0.232	54	1					1	
12	0	37.6	0.191	30	0					1	
13	0	38	0.537	34	1					1	
14	0	27.1	1.441	57	0					1	
15	846	30.1	0.398	59	1					1	
16	175	25.8	0.587	51	1					1	
17	0	30	0.484	32	1					1	
18	230	45.8	0.551	31	1					1	
19	0	29.6	0.254	31	1					1	
20	83	43.3	0.183	33	0					1	
21	96	34.6	0.529	32	1					1	
22	235	39.3	0.704	27	0					0	
23	0	35.4	0.388	50	0					1	
24	0	39.8	0.451	41	1					1	
25	0	29	0.263	29	1					0	
26	146	36.6	0.254	51	1					1	
27	115	31.1	0.205	41	1					1	

pima indians diabetes (1)

Week 5 Analysing with Python

In this model we used the robust Python analysis application Colad, this application enables me to build and run Python programs in the browser. Colab can input an image dataset, and train and test an image classifier on it. I imported my dataset

To import a dataset into Colab, I utilized panda as a dictionary, as demonstrated below

```
[1]  import pandas as pd
```

```
[3]  df = pd.read_csv("pima_indians_diabetes (2).csv")
```

```
df.head()
```

	preg	plas	pres	skin	test	mass	pedi	age	class
0	6	148	72	35	0	33.6	0.627	50	1
1	1	85	66	29	0	26.6	0.351	31	0
2	8	183	64	0	0	23.3	0.672	32	1
3	1	89	66	23	94	28.1	0.167	21	0
4	0	137	40	35	168	43.1	2.288	33	1

REFERENCE

Talend - A Leader in Data Integration & Data Integrity. (n.d.). *Business Analytics vs. Data Analytics: Which is Better for Your Business?* [online] Available at: https://www.talend.com/resources/business-analytics-vs-data-analytics/#:~:text=Business%20analysts%20and%20data%20analysts.

Written by Coursera • Updated on Jul 28, 2022:How to Become a Data Scientist | Coursera

01 January 2013,Ee-Peng Lim et.

ACM Transactions on Management Information SystemsVolume 3Issue 4January 2013 Article No.: 17pp 1–10https://doi.org/10.1145/2407740.2407741

Totaljobs UK Contact: Charlie Lansdale **Reference:** Totaljobs/BI Analyst **Job ID:** 98379017

https://careerfoundry.com/en/blog/data-analytics/what-is-quantitative-data/

APPENDICES :

Appendix A: 
pima_indians_diabetes (1).xlsx