



NATIONAL SKILL TRAINING INSTITUTE

NIRANJANPUR, DEHRADUN - 248171

PROJECT REPORT



**Integrated framework for Analysis & Visualization of Student activity
in alignment with the Skills Build Courses & attendance.**



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Acknowledgement:

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Beside we would like to express our special thanks of gratitude towards the kindness shown by Mr. Alok Negi Sir (Master Trainer) who inspired us with his valuable suggestions and provides us a strong academic atmosphere by ensuring discipline to do the project work with utmost concentration and dedication, resulting in successful completion of the project.

Finally, we like to thank all the fellow mates who have somehow helped in our project completion at various point of time as without their help it could have been an uphill task.

Abstract:

In an organization there are various data which may or may not be in use from a long time, although it is important to keep a record of such data in an easy-to-use manner. However it is practically impossible to have an accurate look at each of the data in an Individual manner. And thus creating a dashboard for the visualization of such data helps the user to accumulate detailed information in a very concise manner.

The major objective behind creating this framework is to analyze all the information related to trainees of NSTI Dehradun taking online course at Skills Build platform and visualizing it to derive meaningful outcomes from it.

The dataset we used covers the course completion of students' at Skills Build platform from March 2020 to December 2020.

Also this dataset includes the no. of hours a particular candidate have invested on completing the courses offered to him.

This Project has four analysis parts, which specifically deals with various section of analysis.

In the first part we are trying to find out the actual number of courses a candidate has completed in a designated time allocated to him.

In second part, we are looking for the hours he/she has spent in completing the course. And how much the time differs from actual time Allocation, so that any outliers in the dataset can be found and we get to know the reason behind such skewness in the dataset.

In the third part, we are looking at the number of courses offered and completed by individual students.

And finally in the last part, we are trying to visualize the presence of student during the whole duration of online session.

Thus making it effective to find the activeness of a candidate and his commitment towards the course offered to him along with the number of session he or she has attended.

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Introduction:

This project is continuation of the modules of our two year Advance Diploma in IT networking and Cloud Computing. In this module we have created a project on analysis of data with the help of recent Business Analytic tools.

We have used the concept of Business Intelligence tools which include key features such as data visualization, visual analytics, and interactive dashboard. Additionally, they enable users to utilize automated reporting and predictive analytics features based on self-service.

The tools we are using is a BI tools offered by Microsoft named MS-Excel, along with Python.

This project is based on the Student's Performance so we have the data set from the Edunet Foundation and by using this dataset we have designed a dashboard.

This Project enables us to find performance of student based on the courses offered to him and the number of course completion.

Thus making it possible to find out performance report and then generalizing it to enhance the quality of education as well as have a quick view on the student activity.

Statement of problems:

While working on the project the following are the problems that agitated us, which leads to development of this framework, these are as follows:-

1. There is a need for a model that will help an individual to analyze data collectively at a place in one go.
2. Record of Individual trainee, about the status of his/her course completion.
3. Record of all the trainees at one place, so that it can be helpful in comparison of data too.
4. Attendance status of individual as well as all the trainees of NSTI Dehradun, from March 2020 to December 2020.
5. Finding if there is any irrelevant or mis-interpreted data is present in the dataset.
6. To find out if there is any outliers present in the dataset which make it skewed towards an irrelevant criteria.

Objectives:

While creating this project following are the major objectives that we have kept in mind and trying to resolve it:

1. Number of courses offered to each student from March 2020 to December 2020.
2. Number of courses completed by each student during the given duration.
3. To find how much time a student has invested in completing each courses.
4. To find if there is any irrelevant data is present in the given dataset due to which the dataset tends to be skewed or bulged.
5. Creating a dashboard of student all round performance along with his present or absent days in a graphical form.
6. Detailed analysis of various aspects and its visualization through python.

OS & Tools specification:

Platform – WINDOWS OS

Analytical Tools – MS Excel & Python

Methodology of Analysis and its sample procedures:

Sample procedure for the project are as follows:

1. This project is based on “**Descriptive methodology**” of data analysis.
2. **Project Objective** – We want to make a model which will help us compare data of different trainees of NSTI Dehradun, as well as knowing the irrelevant data in the dataset.
3. **Data Aggregation** – We have irrigated data from various sources and cumulated it to form a meaningful dataset.

We have collected Skills Build course report from “Mr. Chandan Kumar Thakur (Master Trainer, NSTI Dehradun)”, and for attendance report of all the trainees we have obtained it with our Class representative “Miss Rupanjali Sharma”, however we have cross-checked about the authentication of data from our master trainer Mr. Chandan Kumar.

4. **Cleaning of irrelevant and misleading data** – Cleaning is a process involved in almost every data analyzation. In our project we have use various functionalities of data cleaning which are as follows:

Filtering

From the dataset of Skills Build course completion of all NSTI's trainees which we have collected from Chandan Sir, we have Applied the process to filter out all the trainees of NSTI Dehradun only.

Duplicate Data

From the original dataset, using Data tool we have remove duplicate data from the dataset, so that our data should not appeared to be misleading. Syntax: selecting (cell range) and applying “remove duplicate” command form the data tools form the data tab.

Removing irrelevant columns

In our dataset there are some irrelevant fields like “Learner Cnum” which needs to be terminated as it doesn’t contribute to the analysis of our data.

Trimming

Using this function of MS Excel, we want to omit additional spaces which may be present in different field of the dataset.

Syntax: =trim (cell range).

5. **Analytical Method** – For analyzing our data in an easy-to-use way we have integrated some popular Business analytical tools like MS-Excel & Python in this project to make it effective and at the same time making it cost-efficient and reliable source of data analysis.

Since Excel is the elementary tools for business analysis but it is still an effective tool for data analysis, as it provide a platform to aggregate data in a particular manner and thus

Making it possible to represent it in a graphical form using some functionalities like Graphs (Bar & Columns), Charts (line & Pie-charts) and Pivot tables, when we can filter data as well as use it an associative manner.

Although we have also associated some libraries of **Python** too, to make the data look more feasible and also making it suitable for data visualization over the browser.

6. **Data Evaluation and manipulation** – We have evaluated the data source from various aspect like number of courses assigned with respect to months, number of minutes spent by each trainee on IBM Skills Build platform, number of courses done by respective trainees, etc.
7. **Visualization of data** – “Picture Speaks Thousands words! “, though it is old saying, but it is still relevant to current scenario. After the evaluation we have visualized the data in forms of graphical representation with the help of various charts, and created the dashboard which will help us to get overview, and empowered to readdress any issues which require immediate action.

Snapshots of the Project:

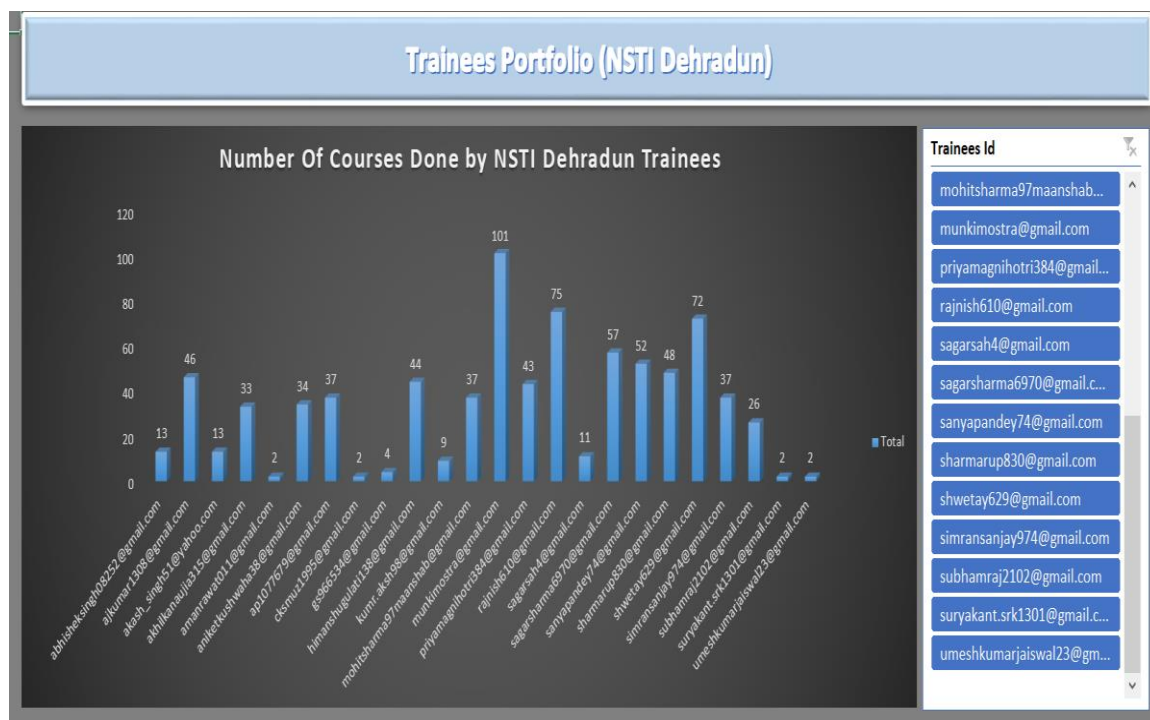
	A	B	C	D	E	F	G
1	learningActivityTitle	duration	learnerCom	learnerCNUM	learnerIntranetID	NSTI Name	
2	Data Analysis Funda	0	12/5/2020	002629REG	mintupandey199@	Howrah Junior	
3	Summary and mini q	5	12/5/2020	002629REG	mintupandey199@	Howrah Junior	
4	Being a data analyst	10	12/5/2020	002629REG	mintupandey199@	Howrah Junior	
5	Visualizing data (Data	10	12/5/2020	002629REG	mintupandey199@	Howrah Junior	
6	Analyzing data (Data	15	12/5/2020	002629REG	mintupandey199@	Howrah Junior	
7	Organizing and mana	15	12/5/2020	002629REG	mintupandey199@	Howrah Junior	
8	What is data analysis	5	12/5/2020	002629REG	mintupandey199@	Howrah Junior	
9	Predictive Modeling:	41.05	12/5/2020	002629REG	mintupandey199@	Howrah Junior	
10	Selecting in jQuery an	66.3	11/27/2020	002629REG	mintupandey199@	Howrah Junior	
11	MySQL as a Datastor	46.15	11/20/2020	002629REG	mintupandey199@	Howrah Junior	
12	Java Programming: A	65.6	11/12/2020	002629REG	mintupandey199@	Howrah Junior	
13	Java SE 11 Program	76.8	11/11/2020	002629REG	mintupandey199@	Howrah Junior	
14	Functions in Python:	123.917	9/10/2020	002629REG	mintupandey199@	Howrah Junior	
15	Reaching Efficient So	23.7667	9/10/2020	002629REG	mintupandey199@	Howrah Junior	
16	SkillsBuild Reignite Pr	60	8/3/2020	002629REG	mintupandey199@	Howrah Junior	
17	SkillsBuild Reignite Pr	56	8/3/2020	002629REG	mintupandey199@	Howrah Junior	
18	Mobile security	8	8/2/2020	002629REG	mintupandey199@	Howrah Junior	
19	Python: Getting Start	65.55	8/2/2020	002629REG	mintupandey199@	Howrah Junior	
20	Sites, Font Weights, &	44.9	8/2/2020	002629REG	mintupandey199@	Howrah Junior	
21	Creating Styles & Styl	74.25	8/2/2020	002629REG	mintupandey199@	Howrah Junior	
22	MongoDB with Pytho	62.55	8/2/2020	002629REG	mintupandey199@	Howrah Junior	
23	HTML5 with JavaScrip	67.3667	8/2/2020	002629REG	mintupandey199@	Howrah Junior	
24	Getting Started with	90.25	7/28/2020	002629REG	mintupandey199@	Howrah Junior	
25	Structuring a problem	8	7/27/2020	002629REG	mintupandey199@	Howrah Junior	
26	The fundamentals of	16	7/27/2020	002629REG	mintupandey199@	Howrah Junior	

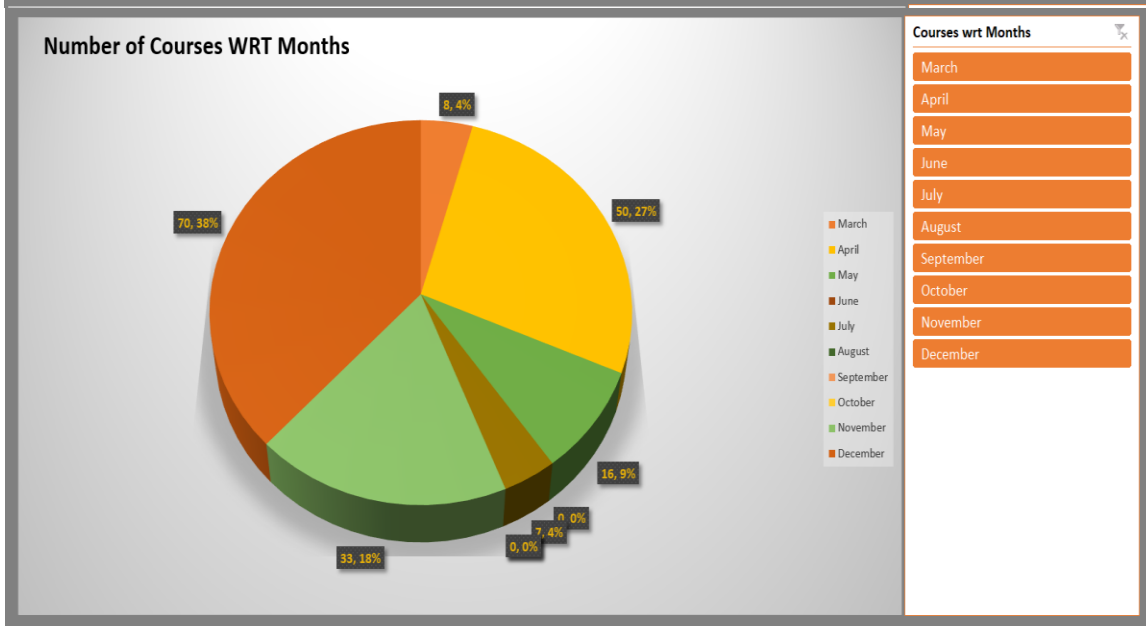
	C	D	E
	Number of Courses Offered	184	

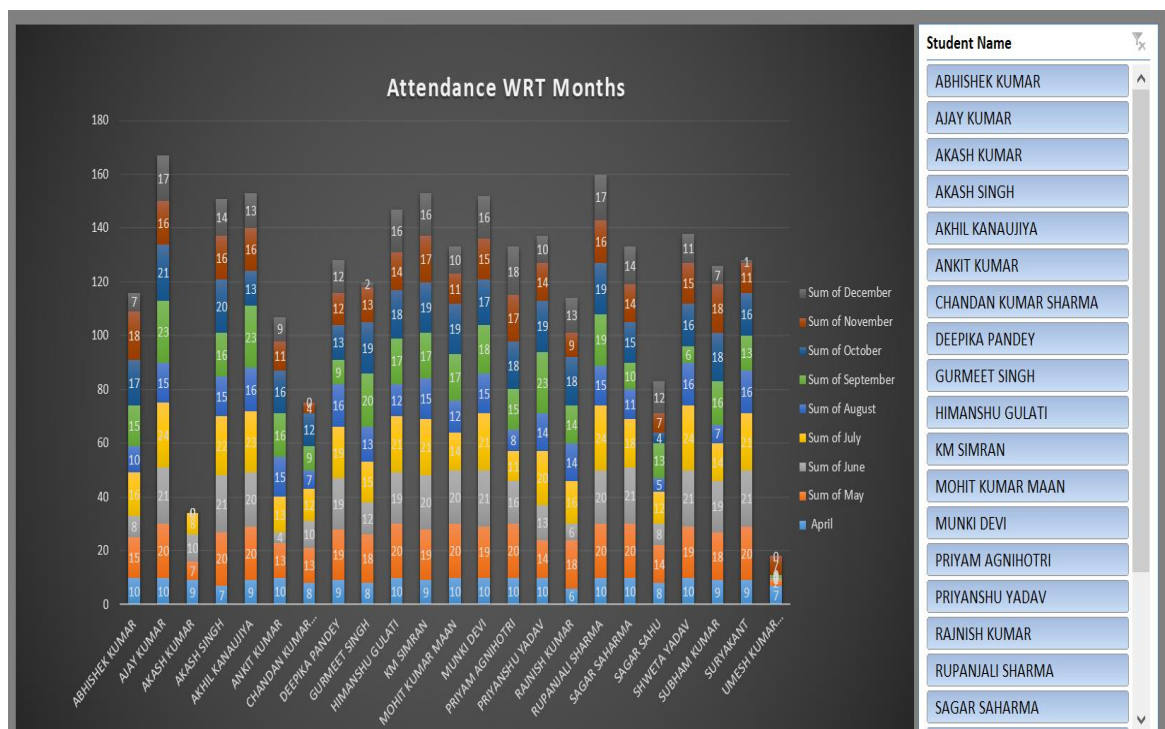
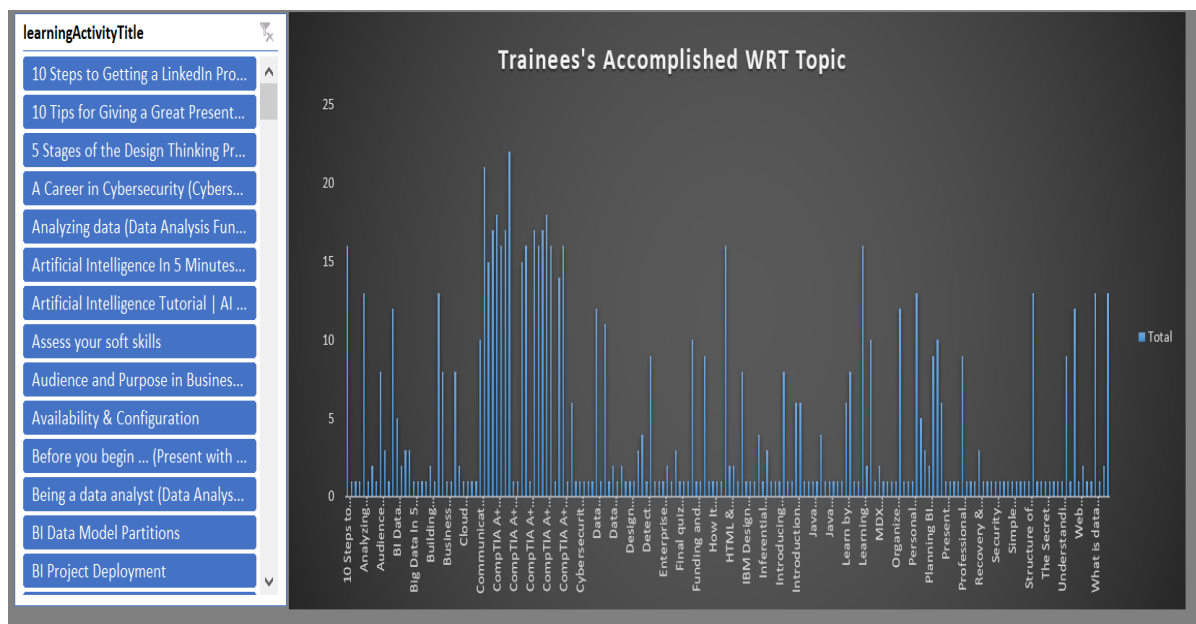
	A	GD	GE	GF
1	learnerIntranetID		Number of course Done	Percentage of Completion till Dec_2020
2	simransanjay974@gmail.com		37	20.11%
3	kumr.aksh98@gmail.com		9	4.89%
4	priyamagnihotri384@gmail.com		43	23.37%
5	gs966534@gmail.com		4	2.17%
6	shwetay629@gmail.com		72	39.13%
7	rajnish610@gmail.com		75	40.76%
8	sagarsharma6970@gmail.com		57	30.98%
9	himanshugulati138@gmail.com		44	23.91%
10	amanrawat011@gmail.com		2	1.09%
11	abhisheksingh08252@gmail.com		13	7.07%
12	cksmuz1995@gmail.com		2	1.09%
13	ap1077679@gmail.com		37	20.11%
14	sagarsah4@gmail.com		11	5.98%
15	subhamraj2102@gmail.com		26	14.13%
16	mohitsharma97maanshab@gmail.com		37	20.11%
17	suryakant.srk1301@gmail.com		2	1.09%
18	munkimostra@gmail.com		101	54.89%
19	akash_singh51@yahoo.com		13	7.07%
20	ajkumar1308@gmail.com		46	25.00%
21	aniketkushwaha38@gmail.com		34	18.48%
22	akhilkanaujia315@gmail.com		33	17.93%
23	umeshkumarjaiswal23@gmail.com		2	1.09%
24	sanyapandey74@gmail.com		52	28.26%
25	sharmarup830@gmail.com		48	26.09%
26				

	AB	AC	AD	AE	AF
1	Mean	Median	Mode	Result	Comment
2	9	3	3	Positively Skewed	ajkumar1308@gmail.com, munkimostra@gmail.com has taken more time
3	10	10	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
4	3	3	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
5	0	0	#N/A	Raw Data Error	Received zero value in raw data set
6	15	15	15	Symmetrical Distribution	Mean=Median=Mode
7	5	5	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
8	99	99	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
9	80	80	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
10	19	19	18.8	Symmetrical Distribution	Mean=Median=Mode
11	81	81	81.05	Symmetrical Distribution	Mean=Median=Mode
12	10	10	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
13	10	10	10	Symmetrical Distribution	Mean=Median=Mode
14	36	36	36.33	Symmetrical Distribution	Mean=Median=Mode
15	72	72	71.95	Symmetrical Distribution	Mean=Median=Mode
16	49	49	49.3	Symmetrical Distribution	Mean=Median=Mode
17	83	83	83.16	Symmetrical Distribution	Mean=Median=Mode
18	5	5	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
19	15	15	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
20	80	80	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
21	77	77	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
22	419	419	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
23	80	80	#N/A	Symmetric & Error due to less number of observation	Symmetrical Distribution & Error in Mode is due to less number of observation
24	43	43	43.25	Symmetrical Distribution	Mean=Median=Mode
25	49	49	48.75	Symmetrical Distribution	Mean=Median=Mode

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	Student Name	4/17/2020	4/18/2020	4/19/2020	4/20/2020	4/21/2020	4/22/2020	4/23/2020	4/24/2020	4/25/2020	4/26/2020	4/27/2020	4/28/2020	4/29/2020	4/30/2020	5/1/2020	5/2/2020
2	PRIYAM AGNIHOTRI	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
3	SAGAR SAHU	A	WD	WD	P	P	P	P	P	WD	WD	P	A	P	P	P	W
4	AKHIL KANAUIYA	A	WD	WD	P	P	P	P	P	WD	WD	P	P	P	A	P	W
5	MOHIT KUMAR MAAN	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
6	DEEPIKA PANDEY	P	WD	WD	P	P	A	P	P	WD	WD	P	P	P	P	P	W
7	SAGAR SAHARMA	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
8	UMESH KUMAR JAISAWAL	A	WD	WD	P	P	A	P	P	WD	WD	P	P	A	P	P	W
9	AJAY KUMAR	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
10	RAJNISH KUMAR	A	WD	WD	P	A	A	P	P	WD	WD	P	P	A	P	P	W
11	AKASH KUMAR	P	WD	WD	P	P	P	P	P	WD	WD	P	A	P	P	P	W
12	PRIYANSHU YADAV	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
13	ABHISHEK KUMAR	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
14	AKASH SINGH	A	WD	WD	P	P	P	P	P	WD	WD	P	A	P	A	P	W
15	RUPANJALI SHARMA	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
16	ANKIT KUMAR	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
17	MUNKI DEVI	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
18	HIMANSHU GULATI	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
19	KM SIMRAN	A	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
20	SUBHAM KUMAR	A	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
21	SURYAKANT	A	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
22	CHANDAN KUMAR SHARMA	P	WD	WD	P	P	P	P	P	WD	WD	A	P	P	A	P	W
23	GURMEET SINGH	A	WD	WD	P	P	A	P	P	WD	WD	P	P	P	P	P	W
24	SHWETA YADAV	P	WD	WD	P	P	P	P	P	WD	WD	P	P	P	P	P	W
25																	
26																	







jupyter Skills_Build_EDA Last Checkpoint: 22 minutes ago (unsaved changes) Logout

File Edit View Insert Cell Kernel Widgets Help Trusted Python 3

Run

1st Step: Importing Required Libraries as required.

```
In [1]: import numpy as np #It is fast, relatively uses less memory to store data. Mathematical functions to operate on arrays.
import pandas as pd #Data Processing, Importing CSV Files
from pandas_profiling import ProfileReport #Built in EDA
# Python uses Pyplot, a submodule of the Matplotlib library to visualize the diagram on the screen.
# Matplotlib is a low level graph plotting library in python
import matplotlib.pyplot as plt
import os # accessing directory structure
```

2nd Step: Changing default directory to desired one.

```
In [2]: os.chdir("C:/Users/Himanshu Gulati/HG Program Data/module_5_class_project")
print(os.getcwd())

C:\Users\Himanshu Gulati\HG Program Data\module_5_class_project
```

3rd Step: Analyzing DataFrames.

```
In [3]: # Reading csv files
df_sb=pd.read_csv(r"jup_an.csv")
df_ncd=pd.read_csv(r"num_course_done.csv")
df_sncd=pd.read_csv(r"specific_num_course_done.csv")
df_ncgmb=pd.read_csv(r"num_of_course_given_month_basis.csv")
df_nmset=pd.read_csv(r"num_min_spent_each_trainees.csv")
df_att=pd.read_csv(r"att.csv")

In [4]: df_sb
```

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Run

```
In [6]: # It gives statistical summary of data frame.
df_sb.describe()
```

```
Out[6]:
```

	duration
count	800.000000
mean	51.298750
std	104.376602
min	0.000000
25%	15.000000
50%	36.000000
75%	69.000000
max	1800.000000

4th Step: Data Cleaning Process.

```
In [7]: #Counting number of missing or null values
df_sb.isnull().sum()
```

```
Out[7]: learningActivityTitle    0
duration                      0
learnerCom                    0
learnerCNUM                   0
learnerIntranetID             0
dtype: int64
```

```
In [8]: # No Null Value found
# Shape shows the number of element in each dimension
```

```
# There is no change in dimension, it means no duplicates entry in data set.
```

Out[14]: (800, 4)

5th Step: Data Analysis Process.

```
In [15]: # It is used to calculate relationship between each column in our data set.
df_sb.corr()
# But it does't seem any benefit because we have only 1 column 'duration' has only int data type & rest others are object dataty
```

Out[15]:

	duration
duration	1.0

Total Number of course given by Skills Build

```
In [16]: nocsb=len(pd.unique(df_sb['LearningActivityTitle']))
print("Total Number of Courses given by Skills Build:", nocsb)
```

Total Number of Courses given by Skills Build: 184

Filtering unique value of 'LearningActivityTitle'

```
In [17]: nocsbb=pd.unique(df_sb['LearningActivityTitle'])
print(nocsbb)
```

```
['Working with Data for Effective Decision Making'
'Personal Skills for Effective Business Analysis'
'Business Analysis Overview'
'Using Active Listening in Workplace Situations']
```

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File Edit View Insert Cell Kernel Widgets Help Trusted Python 3

Run Code

6th Step: Data Visualization

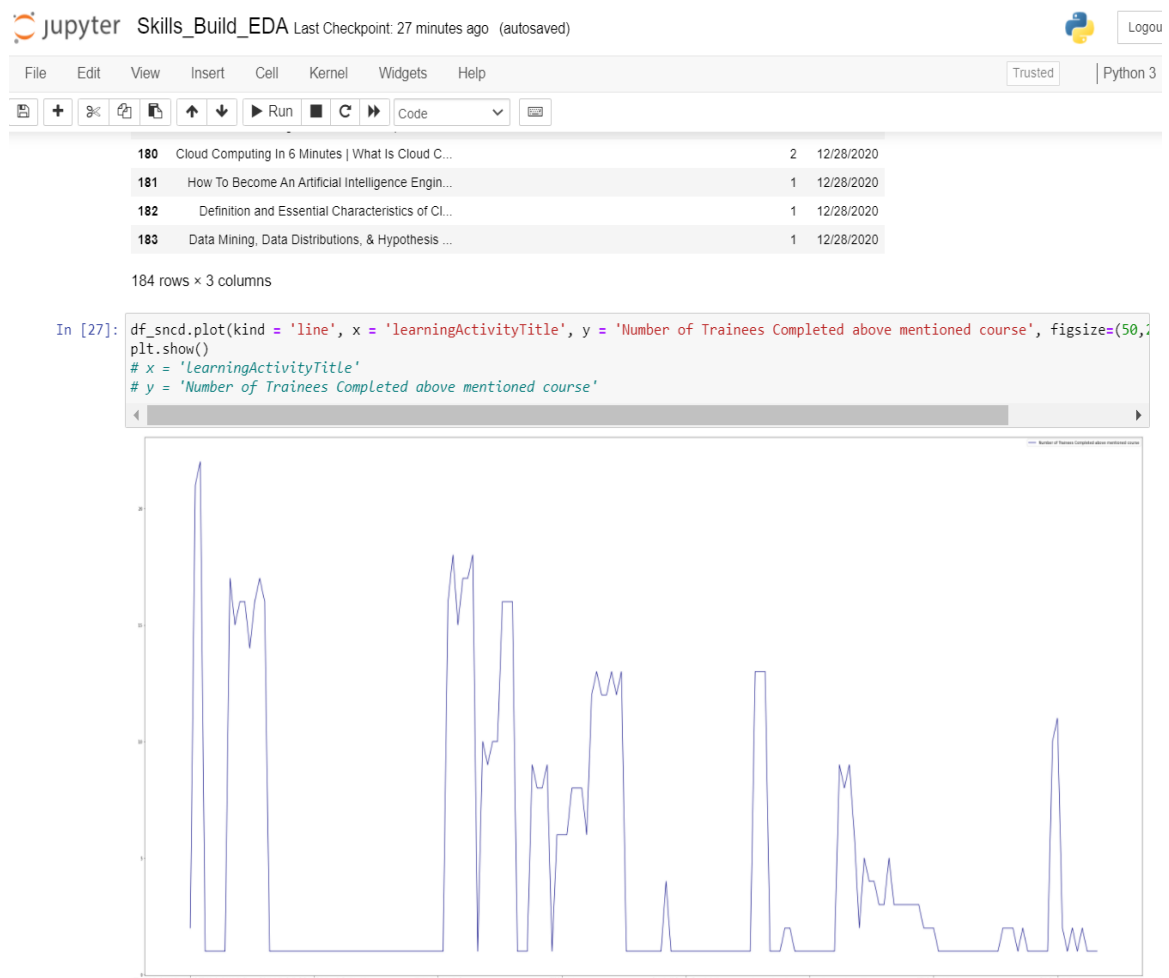
Number of course done by each trainee of NSTI Dehradun

```
In [24]: df_ncd
```

```
Out[24]:
```

	learnerIntranetID	Number of course Done
0	simransanjay974@gmail.com	37
1	kumr.aksh98@gmail.com	9
2	priyamagnihotri384@gmail.com	43
3	gs966534@gmail.com	4
4	shwetay629@gmail.com	72
5	rajnish610@gmail.com	75
6	sagarsharma6970@gmail.com	57
7	himanshugulati138@gmail.com	44
8	amanrawati011@gmail.com	2
9	abhisheksingh08252@gmail.com	13
10	cksmuz1995@gmail.com	2
11	ap1077679@gmail.com	37
12	sagarsah4@gmail.com	11
13	subhamraj2102@gmail.com	26
14	mohitsharma97maanshab@gmail.com	37





Limitations:

Since we have adopted descriptive method for data analysis, certain limitation came into existence with these kind of analysis, these are as follows;

1. The limitation of this model is that the findings indicates norms, and not standards, i.e. we have found about what is being done, not what could be done or should be done.
2. The majority of descriptive studies are not 'repeatable' due to their observational nature.
3. We are very much focused on evaluating the facts of a small section, in this case NSTI Dehradun.
4. The evaluation may suffers in some cases, if there are less number of observations. Which results in lack of generalization of data over the whole dataset.

Conclusion:

Our project is an elementary model to satisfy all needs of the user. The objective of this project is to provide a frame work that enables the user to make reasonable estimates made within a limited time frame.

At the end it is concluded that we have made effort on following points...

- A description of the background and context of the project and its relation to work already done in the area.
- Made statement of the aims and objectives of the project.
- The description of Purpose, Scope, and applicability.
- We describe the requirement Specifications of the system and the actions that can be done on these things.
- We understand the problem domain and produce a model of the system, which describes operations that can be performed on the system.
- We included features and operations in detail, including screen layouts.
- We designed user interface and security issues related to system.
- Finally the system is implemented and tested according to condition provided.

References for the Project:

1. Skills Build
2. Edunet Foundation Lab Manual – 5
3. W3Schools
4. Pydata
5. GeeksforGeeks
6. Matplotlib
7. Kaggle
8. Guru99

Thank You