Analyzing Efficiency of Radisson Hotels With Data Visualization Techniques

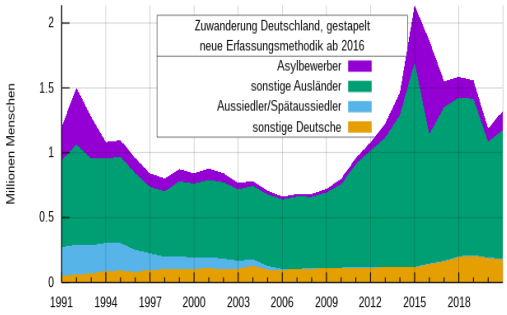
Dissertation submitted to the

DEPARTMENT OF PHYSICS

In partial fulfillment for the Naan Mudhalvan Course

DATA ANALYTICS WITH

TABLEAU



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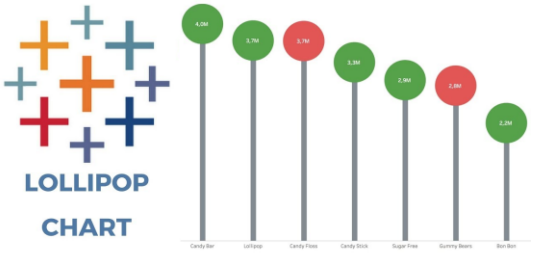

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CERTIFICATE

This is to certify that the dissertation entitled **"Analyzing Efficiency of Radisson Hotels With Data Visualization Techniques"** is a bonafide record of the **Naan Mudhalvan project work** carried out by **PAVITHRA.J** [R**eg no 222003595]** under my supervision and guidance at Meenakshi Ammal College of Arts and Science during the 2022-2023 academic year and that the dissertation represents the independent work of the candidate.

Signature of the FDP staff

Signature of the HOD

Signature of the Principal

INTRODUCTION

THE HOTEL INDUSTRY

The hotel industry is a broad category of businesses that provide lodging services for travellers and tourists. This can include a wide range of establishments, from luxury resorts to budget-friendly motels, as well as extended stay hotels, boutique hotels, and more. Hotels can be found in nearly every corner of the world, and are often a major component of the tourism and travel industry in a given area.

The hotel industry is a subdivision of the hospitality industry that specializes in providing customers with accommodation services. There are a variety of hotel types that typically can be categorized by size, function, service, and cost. Levels of service can usually be split into three options: limited-service, mid-range service, and full-service. However, some consumers may be more familiar with the star rating system, with one being the lowest rating and five being the highest. The function of some of the categories includes business, casino, spa, extended stay, bed & breakfast, and more. The hotel and resort industry market size worldwide saw growth up until the start of the coronavirus (COVID-19) pandemic in 2020 when the market size dropped considerably. The industry was forecast to grow to 950 billion U.S. dollars in 2021, however, this figure still was still not predicted to reach pre-pandemic levels.

Some of the key players in the hotel industry include Marriot International, Hilton Worldwide, Raddisons, the InterContinental Hotels Group, and the Wyndham Hotel Group. All of these companies house a variety of hotel brands in their portfolio’s, ranging

from limited-service to full-service establishments. When comparing the subsidiaries of these companies in a list of the leading global hotel brands by brand value, Hilton Worldwide's brand Hilton Hotels & Resorts took the top spot with a brand value of 7.61 billion U.S. dollars in 2021. Meanwhile, in a list of the leading hotel and resort companies worldwide by sales, Marriot International recorded sales amounting to 13.8 billion U.S. dollars during that same year. However, these are not the only figures that can be used to measure a hotel company's success. Wyndham Hotels & Resorts came top in a ranking of the hotels with the most properties worldwide with almost 8.9 thousand units. While Marriott International was the hotel company with the most guest rooms accounting for approximately 1.4 million rooms worldwide in 2021.

TABLEAU – DATA VISUALIZATION TOOL

Tableau is an excellent data visualization and business intelligence tool used for reporting and analyzing vast volumes of data. It is an American company that started in 2003—in June 2019, Salesforce acquired Tableau. It helps users create different charts, graphs, maps, dashboards, and stories for visualizing and analyzing data, to help in making business decisions.

Tableau has a lot of unique, exciting features that make it one of the most popular tools in business intelligence (BI). Tableau supports powerful data discovery and exploration that enables users to answer important questions in seconds. No prior programming knowledge is needed; users without relevant experience can start immediately with creating visualizations using Tableau.

It can connect to several data sources that other BI tools do not support. Tableau enables users to create reports by joining and blending different datasets. Tableau Server supports a centralized location to manage all published data sources within an organization. Tableau offers more than one options to connect to your data. After the dataset is loaded see the measures and dimensions associated with your data set on the data pane are seen on the left pane.

Measures are the numeric metrics or measurable quantities of the data, which can be analyzed by dimension table. Measures are stored in a table that contain foreign keys referring uniquely to the associated dimension tables. The table supports data storage at atomic level and thus, allows more number of records to be inserted at one time. For instance, a Sales table can have product key, customer key, promotion key, items sold, referring to a specific event. Dimensions are the descriptive attribute values for multiple dimensions of each attribute, defining multiple characteristics. A dimension table ,having reference of a product key form the table, can consist of product name, product type, size, color, description, etc.

In order to create visualizations, dimensions and measures are dragged and dropped onto different shelves. They are named areas to the left and top of the view. Views are build by placing fields onto the shelves. Some shelves are available only with certain mark types. The Pages shelf creates a tough and quick of pages, with a exclusive read on each page. Every read is based totally on a member of the world placed at the Pages shelf. The reader will delicately flip through the views and compare them on a typical axis, victimization the controls that are delivered to the read while a field is progressed.

LITERATURE SURVEY

RADDISON HOTELS

Radisson Hotels & Resorts is one of the leading, full-service global hotel companies. It has its business over 420 locations in 73 countries. They are passionate about "Yes I Can!" service philosophy which empowering the employees to make sure that they are entirely satisfied for the duration of the stay. This is a major international hotel company. The first Radisson hotel was founded on December 15th, 1909 in South Seventh Street in Minneapolis, Minnesota. It was specified named after 17th century French traveler Pierre-Esprit Radisson. In 1962 the establishment was bought by Curt Carlson (1914-1999) as it is still owned by Carlson. With the headquarters of the parent company Carlson; the companies is located on the suburbs of Minneapolis, Minnesota, the city where the first Radisson Hotel was built. The company started the business with around 250 staffs. Fifty feminine staff survived in the hotel as did some of the chefs. As the main internal stakeholder of hotel Radisson the owners are always concerned about the growth and profit the business establishment is making in a year. The managers are deeply concern about their performance and salary.

On the other hand as external stakeholder Shareholders play very important roles for hotel Radisson because they have contribution on the capital to the business and look ahead to share from the profit. Radisson needs the support of shareholders to make available funds to increase the business. Shareholders have a straight interest in considering the business develop into more productivity. Government and

regulatory also set a variety of technical and lawful necessities. Radisson must execute with strategy and rules put by the governments and hotel company scheme in the countries in which it activates. Customers always desire Radisson to make available high standard service at a sensible value. The Community also has a stake in the Radissons dealing as employer of neighboring people. Business activity does affect the local surroundings.

Radisson has focused on promotion policies that relate to customers at a individual level, because of this it has stay left from mass advertising and mass medium outlet, and has decided on an close communication approach in order to preserve a connection with consumers on a private level. Also, sale promotions such as coupon are sent using online mail list. Radisson at present has an conventional email list, where it update consumers on the subject of new product, promotion, and events happen. Radisson is pretty discerning in choose electronic Medias. It chooses the exact media for the promotion of advertisement, as a customer can understand. As an example Radisson uses newspaper Jakarta post demonstrating accurate media at foreign market booth and FM smart for radio.

Due to strategic moves from other competitors and ineffective decision-making in management, Radisson is losing its market share and revenue in the luxury/business hotels category. As a strategic move, the managing director of Radisson wanted to incorporate Business and Data Intelligence in order to regain their market share and revenue. Their thirst is to create an analytics dashboard & story to provide them insights to make better business decisions.

PROJECT METHODOLOGY

In user experience (UX) design, it's crucial to develop and refine skills to understand and address rapid changes in users' environments and behaviors. The world has become increasingly interconnected and complex. Cognitive scientist and Nobel Prize laureate Herbert A. Simon first mentioned design thinking in his 1969 book, 'The Sciences of the Artificial'. Of all design processes, design thinking is almost certainly the best for "thinking outside the box". With it, teams can do better UX research, prototyping and usability testing to uncover new ways to meet users' needs.

Design thinking's value as a world-improving, driving force in business matches its status as a popular subject at leading international universities.

FIVE STAGES OF DESIGN THINKING

Empathize: Empathy is the centerpiece of a human-centered design process. The Empathize mode is the work you do to understand people, within the context of your design challenge. It is your effort to understand the way they do things and why, their physical and emotional needs, how they think about world, and what is meaningful to them.

Define: The Define mode of the design process is all about bringing clarity and focus to the design space. It is your chance, and responsibility, as a design thinker to define the challenge you are taking on, based on what you have learned about your user and about the context.

Ideate: Ideate is the mode of the design process in which you concentrate on idea generation. Mentally it represents a process of "going wide" in terms of concepts and outcomes. Ideation provides both the fuel and also the source material for building prototypes and getting innovative solutions into the hands of users.

Prototype: The Prototype mode is the iterative generation of artifacts intended to answer questions that get you closer to your final solution. A prototype can be anything that a user can interact with – be it a wall of post-it notes, a gadget you put together, a role-playing activity, or even a storyboard. Ideally you bias toward something a user can experience.

Test: The Test mode is when you solicit feedback, about the prototypes you have created, from your users and have another opportunity to gain empathy for the people you are designing for. Testing is another opportunity to understand your user, but unlike your initial empathy mode, you have now likely done more framing of the problem and created prototypes to test.

TABLEAU – ARCHITECTURE AND WORKING

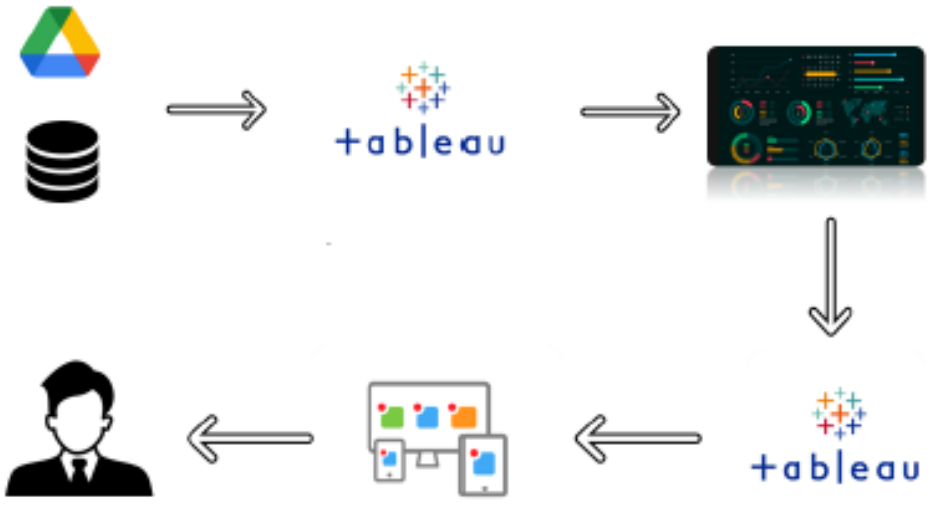


Tableau Architecture

Bar Chart : A bar chart can compare the data across different categories. The height of the bars represents the measured value of each category. It can be represented as vertical and horizontal type bar charts. The procedure to create a bar chart is given as follows.

Steps) Go to a new worksheet.

- Drag 'Category' into Column.
- Drag 'Profit' into Rows.
- It creates a bar chart by default.

Pie Chart: A pie chart can show the segment-wise data. It can show the contribution of measure over different members in a dimension. The angle of pie determines the measured value. Different colors can be assigned to pie to represent the members in a dimension. The procedure to create a pie chart is shown below.

Step 1) Go to a new Worksheet

- Select Segment and sales from the data pane.

Step 2) Click on the 'Show Me' button present in the top right corner of the worksheet.

- Select 'Pie Chart' from the list.

Line Chart: A Line Chart should be used to compare the data over the different periods. A line chart is created by the series of dots. These dots represent the measured value in each period. The procedure to create a line graph is shown below.

Steps) Go to a new Worksheet.

- Drag ‘Order Date’ into Columns.
- Drag ‘Sales’ into Rows.
- It creates a line chart by default.

Area Chart: Area charts can represent any quantitative (measure) data over different periods of time. It is basically a line graph where the area between line and axis is generally filled with color. The procedure to create an area chart is given below.

Step 1) Go to a new Worksheet.

- Hold the control key on the keyboard and select ‘Order Date’ and ‘Quantity’.

Step 2)

- Click on the ‘Show Me’ option present at the top right corner of the worksheet. Select the Area chart icon.
- It creates an Area chart.

Dual Axis Chart: Dual axis charts can be used to visualize two different measures in two different chart types. A date column and two measures are necessary to build a dual axis chart. The different scales used in the graph helps the user to understand both measures. The procedure to create a dual axis chart is shown below.

Step 1) Go to a new Worksheet.

- Hold the control key on the keyboard and select ‘Order Date’ ‘Sales’ and ‘Quantity’.

Step 2)

- Click on the ‘Show Me’ option present at the top right corner of the worksheet. Select ‘dual combination’ icon.
- It creates a dual axis chart.

Dashboard: A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data, and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

The procedure to create a dashboard is given below.

Steps) Create as many as graphs as required.

- Click on the ‘New Dashboard’ button.
- Copy and arrange your graphs in the dashboard.

Story: A data story is a way of presenting data and analysis in a narrative format, with the goal of making the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis in a logical and systematic way, and a conclusion that summarizes the key findings and highlights their implications.

DATA COLLECTION

All data were collected from Google Drive links provided by the SmartInternz team. The following tables are the data collected in a .csv format.

Radisson hotel log

property_id	check_in_date	room_category	essful_book	capacity
16559	01-May-22	RT1	25	30
19562	01-May-22	RT1	28	30
19563	01-May-22	RT1	23	30
17558	01-May-22	RT1	13	19
16558	01-May-22	RT1	18	19
17560	01-May-22	RT1	28	40
19558	01-May-22	RT1	25	40
19560	01-May-22	RT1	23	26
17561	01-May-22	RT1	22	26
16560	01-May-22	RT1	24	34
16561	01-May-22	RT1	16	18
16562	01-May-22	RT1	20	31
16563	01-May-22	RT1	36	41
17559	01-May-22	RT1	26	32
17562	01-May-22	RT1	12	20
17563	01-May-22	RT1	21	25
18558	01-May-22	RT1	11	15
18559	01-May-22	RT1	29	42
18561	01-May-22	RT1	31	33

property_id	property_name	category	city
16558	Radisson Grands	Luxury	Delhi
16559	Radisson Exotica	Luxury	Mumbai
16560	Radisson City	Business	Delhi
16561	Radisson Blu	Luxury	Delhi
16563	Radisson Palace	Business	Delhi
17558	Radisson Grands	Luxury	Mumbai
17559	Radisson Exotica	Luxury	Mumbai
17563	Radisson Palace	Business	Mumbai
18558	Radisson Grands	Luxury	Hyderabad
18559	Radisson Exotica	Luxury	Hyderabad
18560	Radisson City	Business	Hyderabad
19558	Radisson Grands	Luxury	Bangalore
19559	Radisson Exotica	Luxury	Bangalore

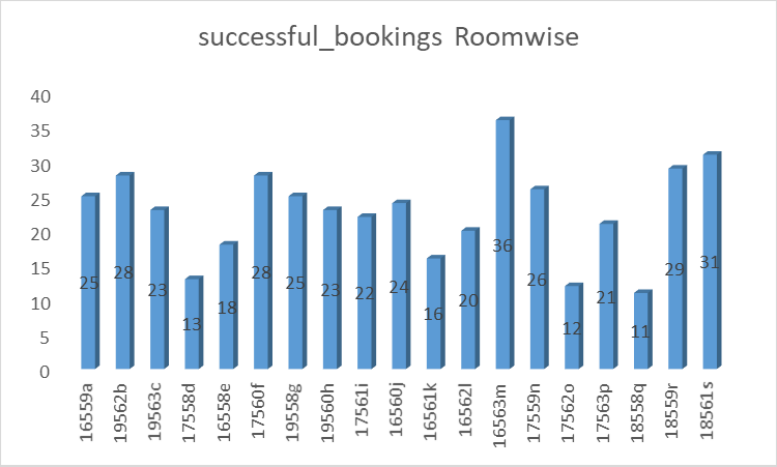
		Student Marks						
Student	**Maths**	**Physics**	**Chemistry**	**Bio / CS**	**Total**	**Percentage**	**Initials**	**Grade**
B. Barani	170	145	190	180	685	85.63	B. B	A
S. Vijayalakshmi	165	180	160	150	655	81.88	S. V	B
M. Deepalakshmi	178	195	145	115	633	79.13	M. D	B
J. Pavithra	143	155	130	170	598	74.75	J. P	B
M. Sumathi	135	165	144	186	630	78.75	M. S	B
B.J. Priya	190	180	150	165	685	85.63	B.J. P	A

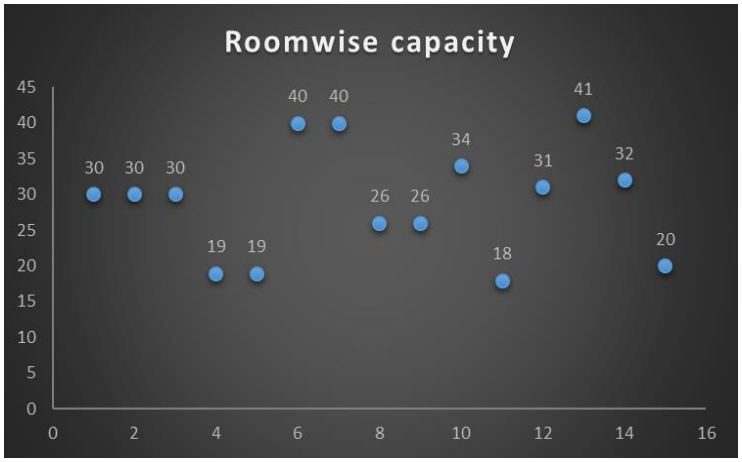
Class Marks

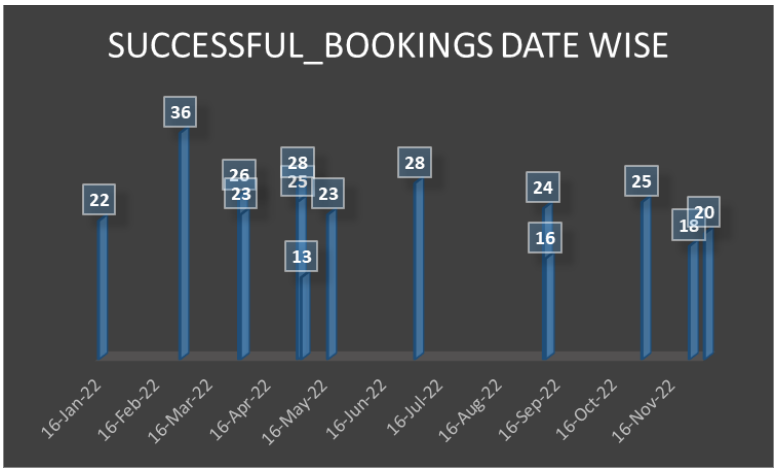
Student Name	Student ID No.	Assignment 1		Assignment 2		Midterm Exam		Final Exam		Final Mark	Percent	Grade
		Raw Mark	Percent	Raw Mark	Percent	Raw Mark	Percent	Raw Mark	Percent	Cumltv	Total	
Kingsley, Roderick	1682	17	85.0%	17	56.7%	56	56.0%	29	14.5%	119.0	34.00	B
Foswell, Frederic	2180		0.0%	30	100.0%	83	83.0%	55	27.5%	168.0	48.00	B
Pym, Henry	2323	15	75.0%	30	100.0%	55	55.0%	154	77.0%	254.0	72.57	B
Batroc, Georges	2586	16	80.0%	25	83.3%	45	45.0%	105	52.5%	191.0	54.57	B
Barton, Clinton Francis	2665		0.0%	30	100.0%	100	100.0%	44	22.0%	174.0	49.71	B
Jones, Angelica	3923	20	100.0%	15	50.0%	35	35.0%	55	27.5%	125.0	35.71	B
Astrovic, Vance	3956	20	100.0%	29	96.7%	95	95.0%	197	98.5%	341.0	97.43	A
Creed, Victor	3985	16	80.0%	24	80.0%	80	80.0%	160	80.0%	280.0	80.00	A
Cassidy, Sean	4362	20	100.0%	30	100.0%	60	60.0%	174	87.0%	284.0	81.14	A
Wilson, Wade	4438	9	45.0%	22	73.3%	80	80.0%	153	76.5%	264.0	75.43	B

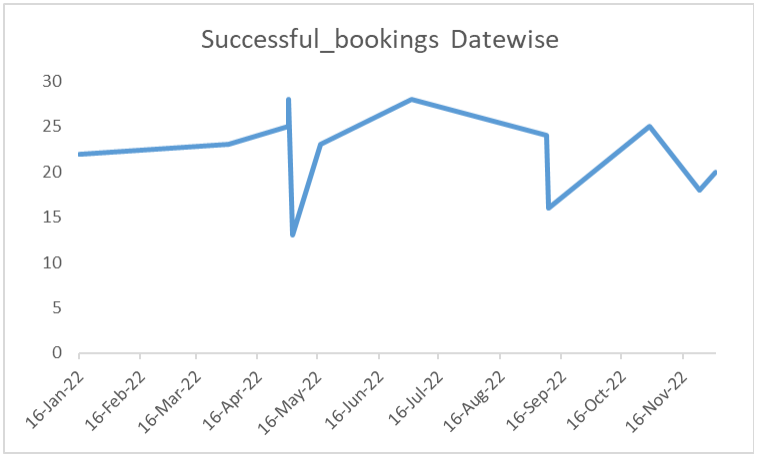
REPORT

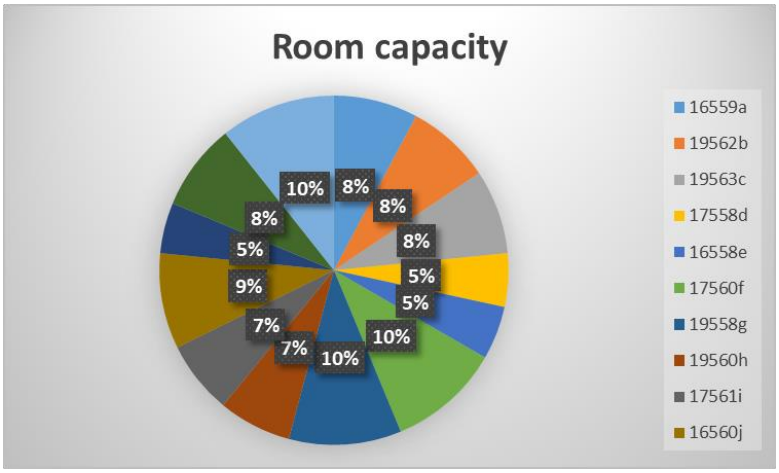
Raddisson Hotel Log



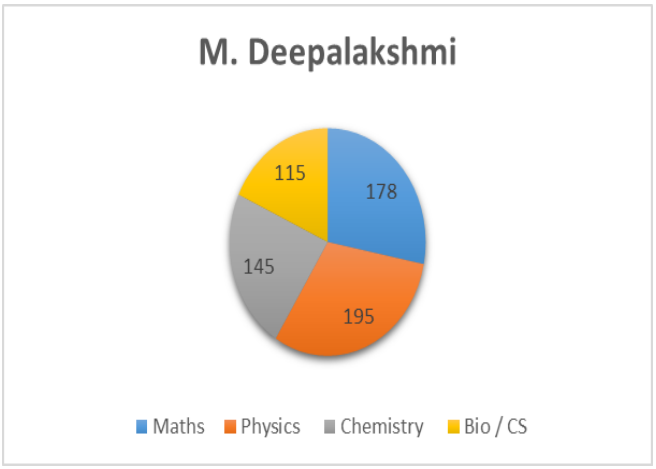


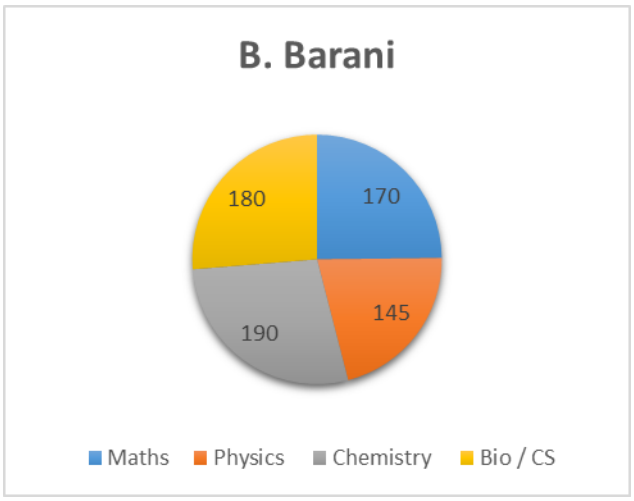


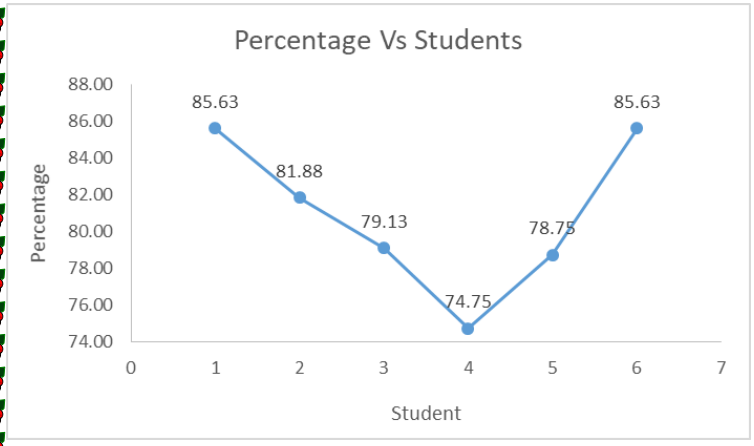


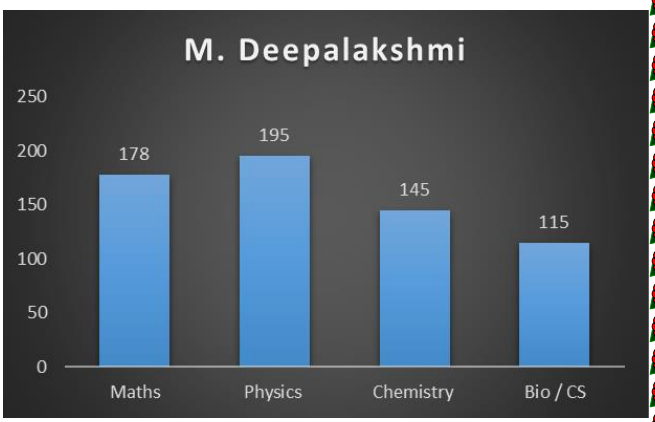


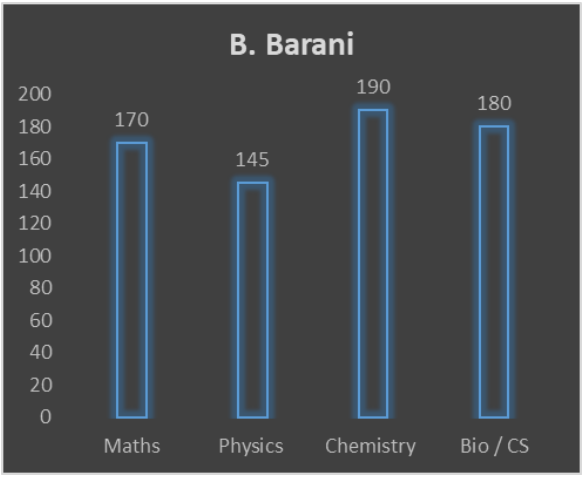
MY PROJECT

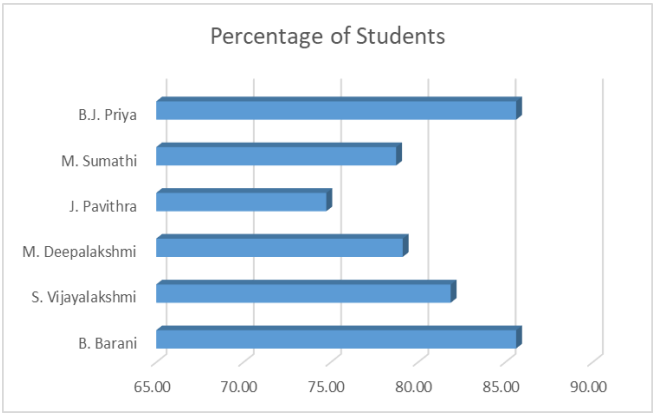












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