Instituto Politécnico de Tomar

Escola Superior de Tecnologia de Tomar

Corporate Data Analysis and Integrated Visualization

Internship Project

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Master's in Business Intelligence and Analytics

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Internship Report presented to the Polytechnic Institute of Tomar to fulfill the necessary requirements for obtaining the Master's degree in Business Intelligence and Analytics.

I dedicate this work to my boyfriend, Jack Craig.
"Everything is theoretically impossible until it is done."
Robert A. Heinlein

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Resumo

O estágio teve como objetivo complementar o meu percurso académico no Mestrado em Analítica e Inteligência Organizacional. O projeto foi cuidadosamente concebido para fornecer os recursos necessários para atingir os objetivos do estágio e expandir a minha experiência na área de analítica e inteligência organizacional.

O meu foco foi realizar um estudo aprofundado para a empresa onde atualmente trabalho como Coordenadora de Eventos e Relações Corporativas. O principal objetivo era compreender o impacto dos grupos corporativos nas operações do nosso negócio. Isso envolveu a recolha e a fusão de dados coletados através de dois softwares distintos (ResDiary – sistema de reservas e EPOS – sistema de Terminal Ponto de Venda), seguida de um minucioso processo de limpeza de dados. Essa fusão permitiu uma exploração mais aprofundada do nosso panorama empresarial, revelando padrões de gastos em reservas corporativas, identificando os melhores clientes e compreendendo a frequência e timing das suas interações com o nosso negócio.

Para atingir este objetivo, foi desenvolvido um dashboard diretamente ligado a um website. Esta ferramenta foi crucial para analisar os dados recolhidos, com o objetivo específico de identificar áreas que poderiam beneficiar de estratégias e soluções de marketing mais direcionadas.

O projeto exigiu a utilização de três diferentes linguagens de programação, incluindo Python, HTML e JavaScript, juntamente com a utilização de tecnologias como Pandas DataFrame e Flask.

Palavras-chave: Análise de Dados, Python, Pandas, Data Frames, Dashboard, Desempenho Empresarial.

Abstract

The internship was aimed at complementing my academic journey in the Business Intelligence and Analytics Master's Degree. The project was carefully crafted to provide the necessary resources for meeting the internship goals and expanding my expertise in the field of business intelligence and analytics.

My focus was on conducting an in-depth study for the company I currently work for as an Events & Corporate Relationship Coordinator. The primary objective was to understand the impact of corporate groups on our business operations. This involved gathering and merging data from two different software sources, followed by a thorough data cleansing process. This amalgamation allowed for a more insightful exploration of our business landscape, revealing spending patterns in corporate bookings, identifying top spenders, and understanding the timing and frequency of their interactions with our business.

To achieve this objective, a dashboard directly linked to a website was developed. This tool served as a critical resource for analyzing the collected data, with the specific goal of pinpointing areas that could benefit from more targeted marketing strategies and solutions.

The project required the use of various programming languages, including Python ,HTML and JavaScript along with the utilization of technologies such as Pandas, DataFrame and Flask and Microsoft Power BI.

Keywords: Data Analytics, Phyton, Pandas, Data Frames, Microsoft Power BI, Dashboards, Business Performance.

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1. Introduction

1.1 Context

In today's ever-evolving business landscape, the importance of data technologies across industries and enterprises is increasingly acknowledged. Modern data analytics tools have opened up a world of possibilities, allowing businesses to gain a competitive edge, make informed decisions, and foster innovation. From operational streamlining to understanding customer behavior, utilizing data presents immense benefits.

During my role as Events & Corporate Relationship Coordinator at Loyola Group, I noticed a significant issue within our corporate database. The lack of integration between our reservation systems (Resdiary) and POS systems (EPOS) poses a substantial challenge in understanding corporate group expenditures. This absence of cohesion requires manual assessment, resulting in imprecise estimations and a loss of valuable information.

1.2 Project Aim

Realizing the untapped potential, It was decided to address this issue by merging data from both systems. Following the merging and cleaning of the data, then it was developed a dashboard to better understand spending patterns and other crucial insights.

This process of data integration and analysis allowed me to uncover concealed trends within our business relationships, enabling us to make more strategic decisions. This not only strengthens our enterprise but positions us as forward-thinkers in our industry, embracing the vast opportunities presented in this data-driven era.

1.3 Overview Approach

Upon gathering data from two distinct software systems, namely Resdiary—a reservation system providing customer and company details—and the EPOS-PO System, which offered expenditure information for different groups, data processing was executed using Panda data frames. The objective was to enable analytical capabilities by merging and cleansing data based on three shared columns: date, table numbers and time. This process facilitated the identification and differentiation of values associated with various groups within the datasets.

Post data amalgamation, Microsoft Power BI software was utilized not only to further clean the data but also to generate graphical representations, enabling a more interactive visualization of the analytical outcomes.

Subsequently, the decision was made to enhance the professional presentation of the dashboard by creating a website. This facilitated easy access for various departments where the information held relevance, such as Finance, Marketing, and executive leadership. Additionally, it paved the way for potential future development and collaborative work. To achieve this, Flask, an HTML interpreter connecting Python language with HTML, was utilized to seamlessly display the merged dataset on the website. The development process also involved the incorporation of CSS and JavaScript for enhanced visual and interactive features.

1.4 Methodology

The development of the work included in the Internship object of this report involved different phases, from the collection and integration of existing data in different repositories, its pre-processing, analysis and construction of an integrated visualization system, which was intended to be easy to interpret, enabling a rapid extraction of knowledge about the evolution of the organizational sector in which it operates.

Data Processing with Pandas

Used Pandas data frames to clean, merge, and structure data from Resdiary (reservation system) and the EPOS-PO System. This included identifying values related to various groups using shared data columns (date, table numbers, time).

Microsoft Power BI for Data Cleaning and Visualization

Employed Power BI software to further refine data and generate visual representations for more interactive data analysis.

Creation of a Professional Dashboard Website

Developed a website to showcase the dashboard professionally. This involved using Flask, a Python-to-HTML interpreter, to display the merged dataset seamlessly. CSS and JavaScript were integrated for enhanced visual and interactive features on the website, ensuring a user-friendly interface for data interaction.

1.5 Document Organization

To develop this project work, we aimed to adopt a straightforward and well-founded writing style using the most relevant references in the field of Data Intelligence and Analytics. Thus, this document is structured into seven chapters:

Chapter 1 - Introduction provides a general characterization of the study, encompassing contextualization, the research question, and an overview of the work's structure. It also outlines the objectives and presents the methodology.

Chapter 2 - Host Organization: A concise overview of the company where I completed my Internship Project.

Chapter 3 - Literature review covers the main theoretical aspects related to the subject's context.

Chapter 4 - Presents the procedures, techniques, and data collection instruments.

Chapter 5 - System Design and Specifications outlines the technical blueprint of the project. It covers design principles, system architecture, and specifications, including functional and non-functional requirements, data specifications, user interface design, and integration points.

Chapter 6 - Conducts the analysis of the results, presenting the main conclusions considering the research objectives and the existing theoretical framework.

Chapter 7 - Presents the main conclusions of this study, the encountered limitations, and provides recommendations for future work.

2. Host Organization – Loyola Group

Loyola Group, established in 2008 by Eion O'Malley, his brother Brian O'Malley, and their friend Stephen Cooney, operates in the hospitality sector. The company focuses on managing venues known for their high-quality food, beverages, and exceptional customer service. They have operations in two distinct regions: Ireland and Portugal.

2.1 Ireland Venues

Figure 1- Loyola Group Logo

Base Pizza

Founded by Shane Crilly in 2008, Base Wood Fired Pizza collaborated with Loyola Group to establish their second outlet in Ballsbridge. Together, they've expanded to operate seven venues across Dublin, recognized for their artisan-style, made-to-order pizzas catering to local communities.

Figure 2- Base Pizza

Figure 3 - Base Pizza Shop

The Bath Pub

Serving as the inaugural venue for Loyola Group in 2012, The Bath Pub swiftly became a community favorite known for its local events and homemade sourdough pizzas. Situated near the Aviva Stadium, it commemorated its 10th anniversary in 2022 under the leadership of General Manager Brendan Waldron.

Very well known for the Rugby matches days and the corporate parties for big companies around the area like Google, LinkedIn, Accenture, PWC, Arup, Matheson.

Figure 5- The Bath Pub Logo

Figure 4- The Bath Pub

The Old Spot

Managed by experienced professionals, The Old Spot is esteemed as one of only two Gastropubs consistently recommended in the Michelin "Eating out in Pubs" Guide since 2016. Known for its exceptional cuisine, knowledgeable staff, and renowned Sunday Roast, it remains a cherished spot for both locals and visitors. Very well known for the Sunday Roast.

Figure 6- The Old Spot Logo

Figure 7 - The Old Spot

The Leopardstown Inn

Long established in the Leopardstown area, Loyola Group collaborated with The Leopardstown Inn in 2015, building upon their 40 years of community involvement. Very well known for the horses' races and Christmas parties.

Figure 9- The Leopardstonw In

Figure 8- The Leopardstonw In - Horses

Bakers Corner

Integrated into Loyola Group in September 2018, Bakers Corner is valued by the local community for its vibrant atmosphere during events and family-friendly gatherings.

Figure 10- Bakers Corner Logo

Figure 11 - Bakers Corner

The Landmark

Positioned at the intersection of Wexford and Kevin Street, The Landmark embodies the spirited community of Camden Street. Recognized as a post-Croke Park event favorite, it offers live music, quality beverages, and traditional Irish Food, appealing to both locals and tourists.

Figure 13 - The Landmark Logo

Figure 12- The Landmark Pub

The Greedy Eagle

Found in the heart of Glasthule, The Greedy Eagle underwent significant renovations before its opening in November 2022. With a fresh team and inviting ambiance, the venue offers delectable food choices in a cozy environment suitable for relaxing with family and friends.

Figure 15- The Greedy Eagle Logo

Figure 14- The Greedy Eagle - Conservatory

2.2 Portugal Venues

The Cheeky Pup

On St. Patrick's Day in 2017, Loyola Group ventured into Portugal by inaugurating The Cheeky Pup, their first establishment in the country. Since then, they've developed a dedicated team to manage their expanding portfolio of four remarkable venues. They've established strong connections within the Quinta Do Lago community, a preferred destination for Irish holiday-makers. Loyola Group also provides opportunities for young staff to work and gain experience in Portugal, enriching their understanding in a new cultural environment during the summer season.

Figure 17 - The Cheeky Pup Logo

Figure 16- The Cheeky Pup - Terrace

The Bold Octopus

Introduced in May 2021, The Bold Octopus stands as an anticipated venue by Loyola Group. Situated in the heart of the Ria Formosa Natural Park, it is a beachfront restaurant and bar offering unparalleled views of Quinta do Lago, the Ria Formosa, and the Atlantic Ocean from its rooftop bar.

Figure 18 - Bold Octopus - Panoramic View

Tony's

Following the success of The Bold Octopus, Tony's Restaurant was inaugurated. Located adjacent to Loyola Group's first Portuguese venue, The Cheeky Pup, Tony's offers traditional Italian cuisine in a relaxed setting, ideal for gatherings with family and friends.

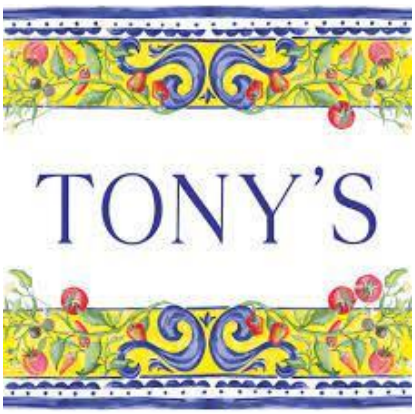

Figure 19 - Tony's Logo

Figure 20- Tony's Restaurant

Botânico

Launched in June 2022 by Loyola Group and led by Head Chef Joshua Plunkett, Botânico is a wood-fired grill restaurant focusing on local suppliers and produce.

Figure 22- Botanico Logo

Figure 21 - Botanico Terrace

3. Literature Review

In this section of the report, we present a condensed overview of the research conducted during the project development phase. This encompasses a thorough understanding of the problem addressed by the project, an examination of existing solutions, a review of prior research in the relevant domain, and an exploration of potential tools that could be seamlessly integrated into the project.

3.1 Technologies Overview

In the development of this work, several technologies were used in an integrated manner, considered cutting-edge in the area in which it operates.

Python and Data Processing

Python, recognized for its versatility, has evolved into a fundamental programming language for data processing and manipulation. As articulated by Géron (2017), "Pandas provides an extensive set of tools for data analysis and manipulation, enabling users to efficiently work with structured data".

Flask: Web Framework for Python

Flask, identified as a lightweight and user-friendly web framework for Python, presents a flexible and dynamic environment for the development of web applications. Grinberg (2018) underscores Flask's capabilities, stating, "Flask provides routing, rendering templates, and handling requests, serving as a foundational tool for web-based applications, including those involving data processing and visualization".

Power BI for Data Visualization

Squire (2020) underscores the capabilities of Power BI, noting, "Power BI enables data connection, transformation, visualization, and real-time analytics. Its user-friendly interface and vast array of visualization options have made it a popular choice for creating visually compelling and easily understandable data dashboards.

Integration of Python, Pandas, Flask, and Power BI

Smith et al. (2019) illustrate the successful integration of Python, Pandas, Flask, and Power BI, stating, "Our studies show a seamless data pipeline from data processing to web-based visualization. This amalgamation facilitates the creation of interactive and user-friendly data dashboard applications".

3.2 Related Work and Case Studies

In a practical application, CompanyX (2021) constructed a real-time financial data dashboard. They utilized Python for data processing, Flask for web development, and Power BI for data visualization, addressing their specific financial analysis requirements.

To sum up, the literature review emphasizes the essential role played by Python, Pandas, Flask, and Power BI in the development of impactful web-based data dashboards. These tools collectively play a crucial part in data processing, web development, and data visualization, providing a comprehensive solution for the creation of dynamic and user-friendly data dashboard applications.

4. Data Collection, Data Amalgamation, leaning and Visualization

4.1 Technologies

This project was a result of integrating various technologies to handle and showcase important data for informed decision-making in a corporate setting. The utilization of different tools and platforms was crucial at different project stages, from collecting and organizing data to displaying it on a website. Each technology had a key role in contributing to the project's success.

4.1.1 Extraction and Integration of Data

The process began by extracting CSV and Excel reports from two pivotal systems - ResDiary and EPOS Manager. These reports held crucial information regarding reservations and point-of-sale transactions. The subsequent step involved merging and cleaning the data using Python's Pandas library, chosen for its powerful data manipulation capabilities.

The code implemented in Python using Pandas involved combining the data from ResDiary and EPOS systems. It included procedures to align and format timestamps, handle table associations, and merge relevant data based on date and time parameters. This amalgamation aimed to create a cohesive dataset for further analysis and interpretation.

4.1.2 Flask Framework

The Flask framework, a lightweight and versatile web application framework in Python, was employed to facilitate the communication and transfer of processed data to a website. Flask's simplicity and flexibility enabled the construction of an interface, bridging the gap between the back-end data processing and the front-end presentation.

4.1.3 HTML for Front-End

HTML, the fundamental language for creating web pages, formed the basis for the website's front-end. Its structure and markup capabilities were utilized to present the data-driven insights in an accessible and user-friendly format.

4.1.4 Microsoft Power BI

Microsoft Power BI, a robust business analytics tool, was instrumental in crafting visual representations and dashboards. Leveraging its capabilities, visualizations were created to offer a clear and comprehensive view of the analyzed data. Power BI's data cleaning functionalities were also employed to ensure the integrity and quality of the presented information.

4.1.5 Power BI REST API

The Power BI REST API facilitated the connection between the data visualization dashboards created in Power BI and the HTML-based website. This connection allowed the seamless integration of the analyzed data visualizations into the website, ensuring a cohesive and interactive user experience.

4.1.6 CSS and JavaScript

Supplementary to HTML, CSS was utilized for styling and presentation enhancements, while JavaScript contributed to dynamic and interactive elements on the website. These technologies augmented the overall user experience and interactivity of the platform.

This amalgamation of technologies offered a comprehensive and sophisticated ecosystem, allowing for the extraction, integration, analysis, visualization, and presentation of data, contributing significantly to the strategic decision-making process within the corporate framework.

5. System Design and Specifications

This part of the report outlines how the system was designed. It covers the step-by-step process of collecting, cleaning, displaying, and analyzing data. We also discuss the tools used in development and explain why specific programming languages were chosen.

Figure 23- System Process

5.1 Data Collection – Extracting Reports from ResDiary and Access EPOS

To understand how much corporate groups spent with the company, we needed data from two key systems: ResDiary and Access EPOS (Electronic Point of Sale). We decided to export reports covering the period from January 1, 2019, to October 10, 2023.

For the ResDiary Report, we applied specific filters to capture the necessary details:

- Visit Date
- Visit Time
- Covers
- Customer Company
- Customer name
- Customer email
- Mobile number
- Area booked in
- Table numbers
- Booking Channel
- Stay duration
- Time in
- Time off
- Export CSV

The extracted data was then exported in CSV format for further analysis.

In the case of Access EPOS, we applied the following filters to ensure accurate data retrieval:

- Date
- Table numbers
- Times
- Amount Spend

This dual-extraction method from ResDiary and Access EPOS provides a comprehensive dataset, allowing us to delve into detailed analysis and gain insights into the spending patterns of corporate groups during the specified timeframe.

5.2 Data Merging and Cleaning: Python: Pandas Data Frames

In the realm of data analysis, simplicity and efficiency are paramount. This section delves into the art of merging and cleaning data using Python's Pandas library, specifically harnessing the power of DataFrames. Why Python? Why DataFrames? Python's readability and versatility, coupled with Pandas' simplicity in handling tabular data, make them the go-to tools for this endeavor.

5.2.1 Benefits of Python and Pandas

The use of the Python programming language and the data analysis and manipulation tool, has several advantages, including:

- **Readability and Versatility**: Python's human-readable syntax ensures that the code is accessible and easy to understand. Its versatility allows for seamless integration into various data analysis tasks.

- **Pandas DataFrames for Data Manipulation:** Pandas simplifies the complexity of data operations through its DataFrames—a structured way to represent and manipulate tabular data. Efficient for tasks like merging, filtering, and adding columns, DataFrames provide a robust foundation for this analysis.

5.2.2 The Script in Action

Next, and for a better understanding of the work carried out, a step-by-step description of the script developed is presented.

- **Importing Necessary Libraries**

Using import pandas as pd to make data manipulation easier

```
import pandas as pd
```

Figure 24 - Importing Pandas library for efficient data manipulation

- **Reading Data**

Loading data from 'ResDiary.csv' and 'EPOS.xlsx' into Pandas DataFrames (res_diary_df and table_receipts).

```
res_diary_df = pd.read_csv('C:/Users/dell/PycharmProjects/Internship/landmark/ResDi
table_receipts = pd.read_excel('C:/Users/dell/PycharmProjects/Internship/landmark/E
```

Figure 25- Loading data into Pandas DataFrames for analysis

- **Adding Necessary Columns**

Creating columns for visit start time, visit end time, and table splitting in the ResDiary DataFrame, while handling missing values and introducing a payment date and time column in the Access EPOS DataFrame.

```
# For ResDiary DataFrame
res_diary_df['visit starttime'] = pd.to_datetime(res_diary_df['Visit Date'] + ' ' +
res_diary_df['visit endtime'] = res_diary_df['visit starttime'] + pd.to_timedelta(rd
res_diary_df['Table'] = res_diary_df['Tables'].str.split(',')

# For Receipts DataFrame
table_receipts = table_receipts[table_receipts.Date.notnull() & table_receipts['Time
table_receipts['paymentDateTime'] = pd.to_datetime(table_receipts["Date"].astype(str
table_receipts['Table'] = table_receipts['Table'].astype(str)
```

Figure 26- Enhancing data utility by adding crucial columns for analysis

- **Data Merging and Filtering**

Iterating through unique dates in ResDiary, a business time window is created for each date, and reservations are matched with corresponding receipts based on temporal constraints, resulting in the creation of a new DataFrame named combinedDataFrame for further analysis.

```
combinedDataFrame = pd.DataFrame()
for date_str in set(res_diary_df['Visit Date']):
    # ...
```

Figure 26- Iterating through dates to merge reservations and receipts based on temporal constraints.

- **Saving Results**

After creating the combinedDataFrame, it is exported to an Excel file named 'result.xlsx', and a print statement is executed, displaying 'done' to indicate the completion of the script.

```
combinedDataFrame.to_excel('C:/Users/dell/PycharmProjects/Internship/landmark/result.xlsx')
print('done')
```

Figure 27- Exporting merged data

In summary, the selected columns in the code are essential for merging and analysing data effectively. They enable a detailed examination of reservations, handling missing values, and creating a comprehensive dataset for a deeper understanding of corporate expenditures. The choice of Python and Pandas is driven by their readability, versatility, and widespread use in the field of data analysis.

5.3 Detecting Outliers – Power BI

In the process of identifying outliers within our dataset using Power BI, several data transformations were applied. For instance, duplicate entries of client names were addressed, and details lacking a company designation were categorized as private events, distinguishing them from corporate engagements.

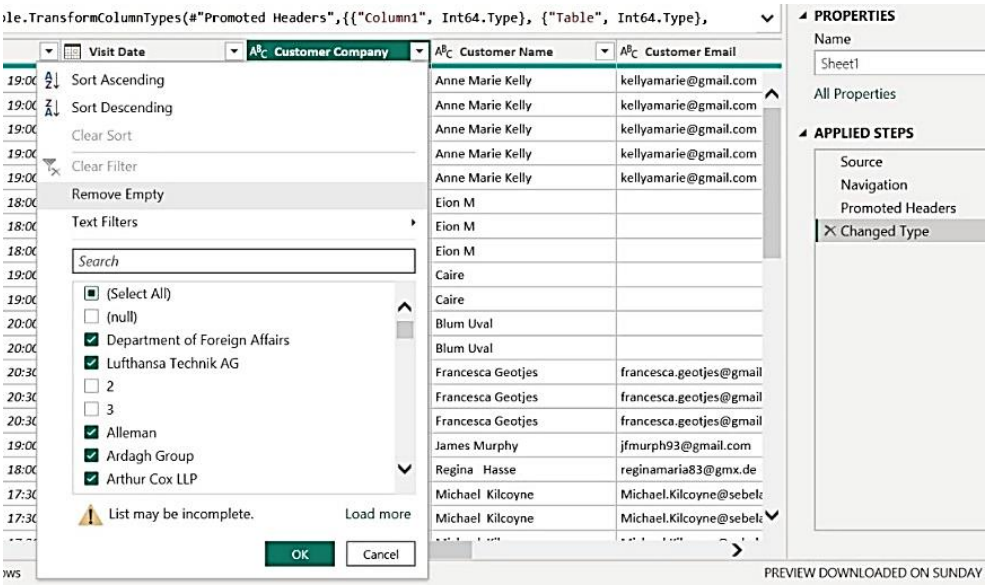

Figure 28 - Detection and removal of outliers in the transformed data section on Power BI

To gain a nuanced understanding of potential outliers, a scatter plot was generated, specifically focusing on expenditure. This approach allowed us to discern spending patterns that might not align with the broader group, enabling us to refine the dataset and enhance its accuracy.

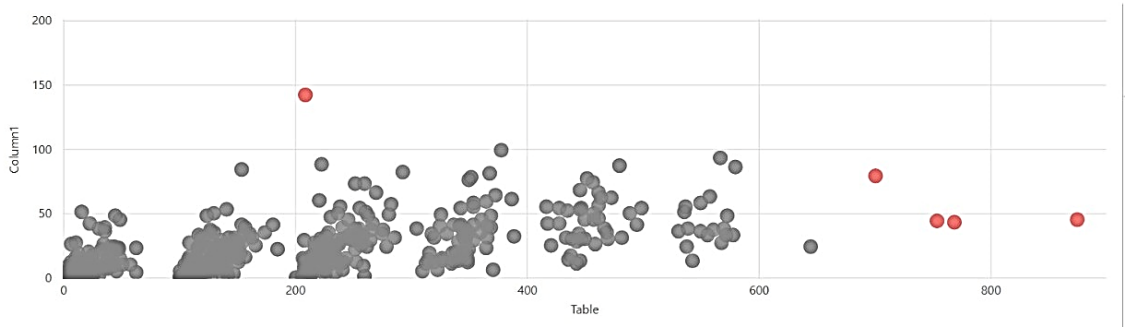

Figure 29- Sales Outliers Detection

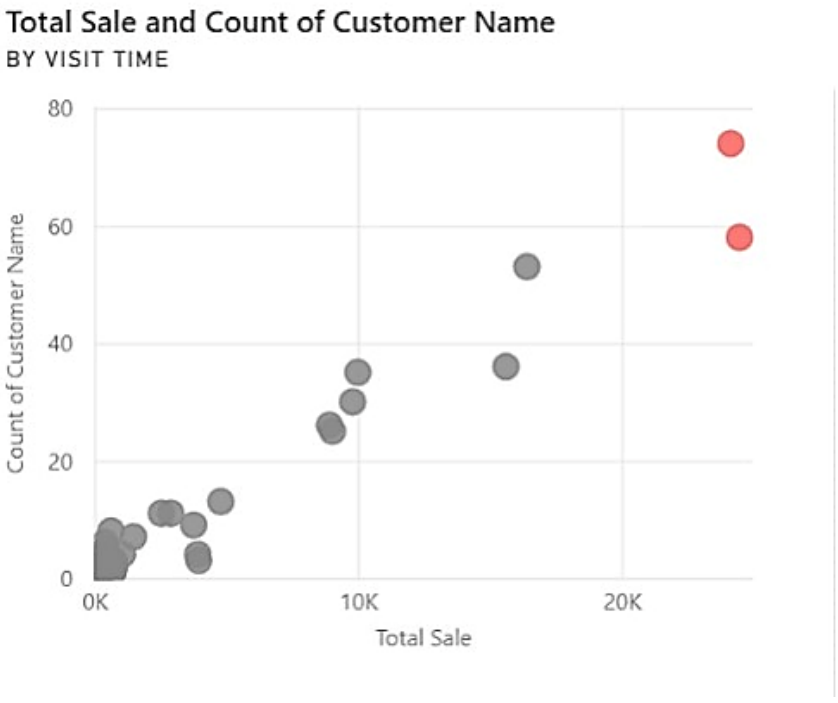

Figure 30- Sales Customer Name By sales Outliers Detection

5.4 Dashboard Development

In selecting a platform for dashboard development, Power BI was chosen due to its reputation as one of the leading, user-friendly, and interactive tools available. Two distinct dashboards were created: one for Landmark corporate data and another for Bath Pub corporate data. Each dashboard is segmented into three sections, presenting data from 2022, 2023, and quarterly information for 2022 and 2023, respectively.

5.4.1 Interpreting Data with Different Graphics and Formulas Power BI:

This section explores the use of Power BI to interpret collected and merged data. The focus is on selecting suitable graphics, such as charts and tables, for effective data communication.

- **Types of Graphics in Power BI**

In the realm of Power BI, various graphic representations facilitate the interpretation of collected and merged data. These visualizations play a pivotal role in conveying information effectively. Here are some common types of graphics utilized in Power BI, each characterized by distinct features:

Bar Chart

Displaying data through horizontal or vertical bars, bar charts excel in comparing values across categories, supporting both stacked and clustered configurations.

Column Chart

Similar to bar charts, column charts employ vertical columns, making them ideal for visualizing data distribution and comparisons.

Line Chart

Depicting data points with lines, line charts are effective for illustrating trends over time or continuous data.

Pie Chart

Representing data as slices of a pie, this visualization is useful for indicating the proportion of parts to a whole.

Doughnut Chart:

A variant of the pie chart, the doughnut chart features a central hole, emphasizing the part-to-whole relationship.

Area Chart

Similar to a line chart but with filled areas below the line, area charts effectively show cumulative values over time.

Scatter Plot

Representing individual data points on a two-dimensional axis, scatter plots aid in identifying relationships between variables.

Map

Visualizing geographical data, maps in Power BI support various layers and customizations.

Table

Displaying data in a tabular format, tables are well-suited for presenting detailed information.

Matrix

Resembling a table but accommodating hierarchies and subtotals, matrices are useful for exploring data with multiple dimensions.

Card

Showcasing a single value, cards in Power BI are effective for highlighting key metrics or Key Performance Indicators (KPIs).

Gauge

Representing data using a gauge or speedometer-like visual, gauges are useful for showing progress towards a specific goal.

KPI

Dedicated to displaying Key Performance Indicators, this visualization includes indicators such as status icons and trend arrows.

These graphical representations offer a diverse toolkit for data interpretation within Power BI, allowing for a nuanced and comprehensive analysis of datasets. The choice of visualization depends on the nature of the data and the specific insights that need to be communicated.

- **Dynamic Interconnected Graphics**

Illustration of Power BI's feature where selecting a field in one graphic influences related information in others.

Practical example: When interacting with a clustered bar chart for Google bookings, the interconnected nature of Power BI ensures relevant information is displayed in all other dashboard graphics.

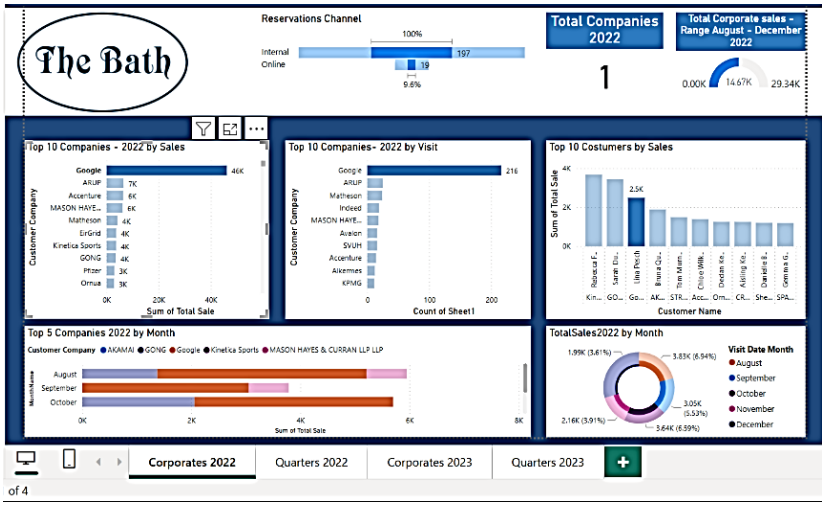

Figure 31 - Dynamic Interconnected Graphics - Power BI - Google Corporate

- **Formulas and Calculations:**

In the context of Power BI, the utilization of formulas and calculations plays a critical role in elevating the interpretation of data. This section focuses on harnessing the power of Data Analysis Expressions (DAX) to unlock advanced insights, exploring specific DAX functions tailored for meaningful interpretations.

Moving beyond theoretical concepts, the section delves into the creation of custom measures and calculations. Demonstrations highlight the process of tailoring these analytical tools to the unique requirements of the research context. Practical examples illustrate how these customized calculations contribute significantly to a profound understanding of the dataset.

Shifting gears, the section extends into the practical realm with real-world case studies. These examples showcase the application of various graphics and formulas within Power BI, emphasizing their impact on decision-making processes within the chosen technological framework.

Acknowledging the challenges inherent in data interpretation within Power BI, the section addresses these obstacles head-on. Practical solutions and best practices are offered to navigate and enhance interpretive accuracy, ensuring a robust analytical process.

In conclusion, this section emphasizes the pivotal role of effective data interpretation facilitated by the seamless interplay of graphics and formulas in Power BI. The significance of DAX in deriving meaningful insights is underscored, providing a comprehensive understanding of the topic's importance.

5.5 Flask interpreter to HTML

Flask is a web framework for Python that allows you to build web applications. It doesn't directly work as a Python interpreter to HTML, but rather it helps you create web applications by providing tools and features for handling HTTP requests, managing routes, and rendering HTML templates.

5.5.1 Setting Up Routes:

In the development process facilitated by Flask, a Python web framework, routes are established to dictate the handling of distinct URLs. Each route is linked to a specific Python function, referred to as a view function. Consequently, when a user accesses a designated URL, Flask invokes the corresponding view function to manage the request.

```
from flask import Flask

app = Flask(__name__)

@app.route('/')
def home():
    return 'Hello, World!'
```

Figure 32- Setting Up Routes - Flask

5.5.2 Rendering HTML Templates:

The incorporation of Flask involves the utilization of the Jinja2 templating engine for the rendering of HTML templates. These templates, housed within the "templates" directory, are designed with placeholders. The dynamic injection of data into these placeholders is executed by Flask, enabling the generation of personalized HTML content.

```
from flask import Flask, render_template

app = Flask(__name__)

@app.route('/')
def home():
```

Figure 33 - Rendering HTML Templates - Flask

5.5.3 Handling Forms and Requests:

Flask extends its functionality to encompass the management of form submissions and various HTTP requests. Within view functions, developers gain access to form data, cookies, and other pertinent request information.

```
from flask import Flask, render_template, request

app = Flask(__name__)

@app.route('/submit', methods=['POST'])
def submit_form():
    username = request.form.get('username')
    return f'Thank you, {username}!'
```

Figure 34- Handling forms and Requests

5.5.4 Running The Development Server:

Execution of the Flask development server is imperative for local testing of the application.

```
if __name__ == '__main__':
    app.run(debug=True)
```

Figure 35- Running The Development Server - Flask

The development process of the website involved a systematic series of steps utilizing Flask, a Python web framework. Routes were established to govern the handling of distinct URLs, employing Python functions known as view functions. These functions, executed upon user access to specific URLs, dictated the server's response.

The integration of Flask also encompassed the use of the Jinja2 templating engine for dynamic HTML content generation. HTML templates, equipped with placeholders, were rendered with personalized data. This mechanism facilitated the creation of a responsive and engaging user interface.

In addition, Flask provided tools for the effective handling of form submissions and diverse HTTP requests. View functions were empowered to access and manage form data, cookies, and other pertinent request details.

The development server, an integral component of Flask, was executed for local testing of the application. This iterative process culminated in a website that seamlessly integrates Python functionalities, particularly those derived from Pandas DataFrames scripts, into a dynamic and user-friendly web interface.

5.6 Data Visualization

In response to the increasing demand for efficient data representation and analytics, the Corporate Data Analytics Dashboard was conceived. The Flask framework was chosen for its simplicity and flexibility, enabling seamless integration with HTML to create an interactive and visually appealing user interface.

5.6.1 Index Page (index.html):

The index page serves as the main hub for the dashboard, providing users with a central point of navigation. The page design is characterized by a clean and intuitive layout, featuring a company logo and a title - "Corporate Data Analytics Dashboard." Two buttons are prominently displayed, offering users the option to explore specific sections of interest: "The Bath Pub" and "The Landmark."

A JavaScript function, navigateTo(), is employed to dynamically redirect users to the respective pages upon button click. This function enhances the user experience by facilitating smooth and responsive navigation between different sections of the dashboard.

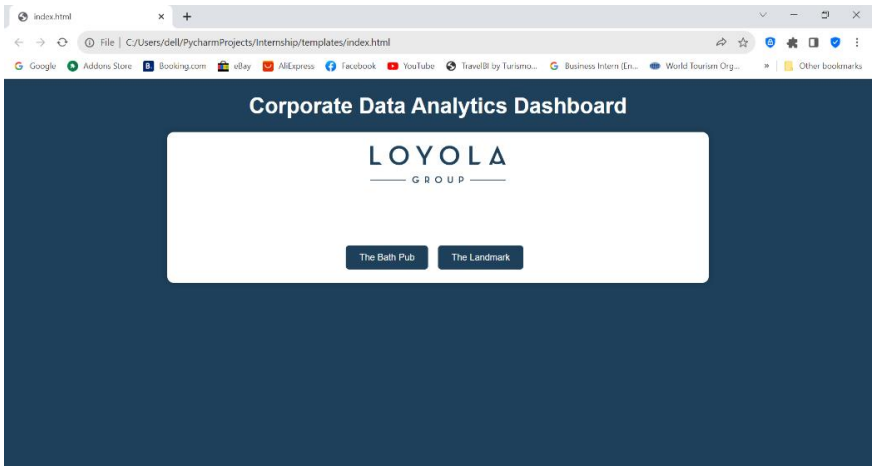

Figure 36 - Website - Main Page

5.6.2 The Bath Pub Page (bathPubPage.html):

This page is dedicated to The Bath Pub and its associated analytics. The layout mirrors the design principles of the index page, maintaining consistency throughout the dashboard. A specific feature of this page is the inclusion of an embedded Power BI visualization through an iframe element.

The JavaScript function showDashboard() is implemented to toggle the visibility of different dashboards, allowing users to focus on specific aspects, such as corporate bookings. Additionally, a 'Home' button is provided for easy navigation back to the index page.

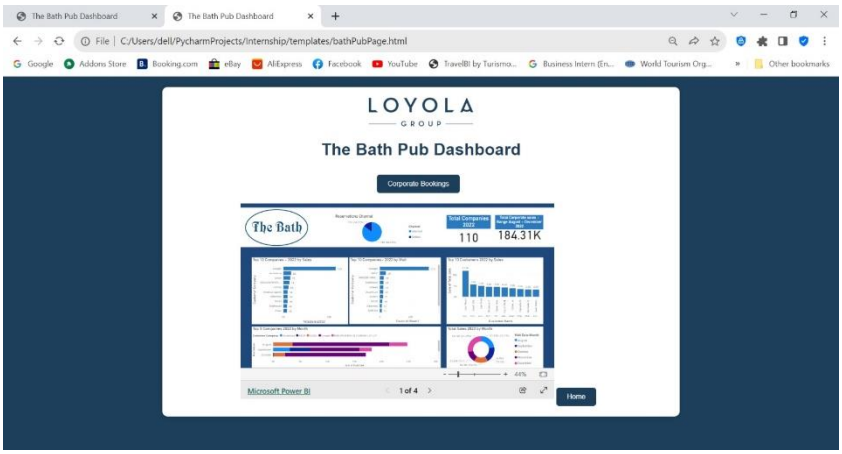

Figure 37 - The Bath Pub Dashboard Webpage

5.6.3 The Landmark Page (theLandmarkPage.html):

Similar to The Bath Pub page, The Landmark page follows a consistent design approach. It includes an embedded Power BI visualization focused on corporate bookings at The Landmark. The JavaScript functions for toggling dashboards and navigating back to the index page are replicated for consistency across the dashboard.

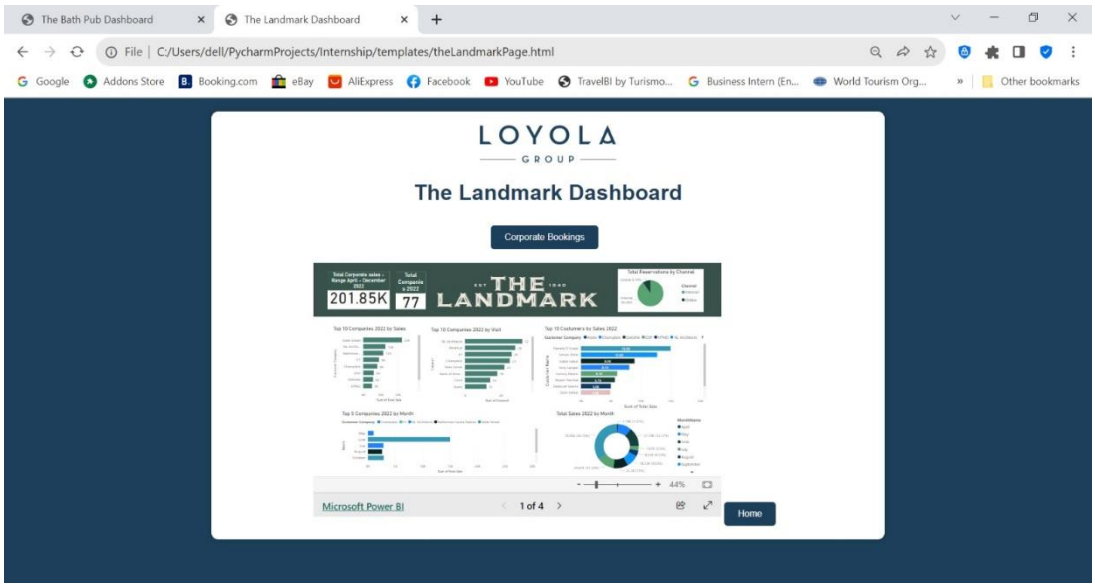

Figure 38- The Landmark Dashboard - Webpage

In summary, the development of the Corporate Data Analytics Dashboard showcases the effective use of Flask and HTML to create a responsive and visually appealing interface. The integration of Power BI visualizations enhances analytical capabilities, providing valuable insights into corporate bookings. Future work may involve expanding features, incorporating additional data sources, and optimizing the user interface.

This underscores the impact of web frameworks and front-end technologies in delivering practical data analytics solutions, contributing to improved decision-making processes in corporate settings.

6. Results

The data collected has been translated into a dashboard featuring diverse graphics, offering essential insights into corporate activities at both The Landmark and The Bath Pub venues. Dashboards serve as crucial tools for extracting business intelligence from historical data, aiding a deeper understanding of operations and facilitating more informed decision-making.

In corporate analysis, dashboards play a pivotal role, providing a visual representation of historical performance. They enable businesses to discern trends and patterns, empowering decision-makers with valuable information. As Nate Silver, a noted data scientist, highlights, "The goal is to turn data into information and information into insight."

Corporates, being complex entities, generate rich datasets. Effective analysis, as suggested by management expert Peter Drucker, allows organizations to better manage what is measured. The dashboard, with its visual aids, becomes a valuable resource for organizations to comprehend their operations, identify improvement areas, and refine their strategies.

6.1 The Bath Pub – Dashboard

In developing this dashboard, we examined corporate data from the years 2022 and 2023. However, due to the installation of tills in August 2022, our dataset for that year only spans from August to December. For 2023, the available data covers the period from January to October 8th.

The limited date range presents a challenge to conducting a comprehensive analysis. Our goal for the upcoming year is to gather complete datasets for both 2022 and 2023, enabling a more thorough examination and facilitating meaningful comparisons.

The dashboard is organized into different sections, each featuring graphics that convey corporate data for the years 2022 and 2023. Additionally, there are specific sections that delve into quarterly data for both years, providing insights into corporate trends over different time intervals.

6.1.1 Corporates 2022

- **Total Companies 2022**

This table This table indicates that there were 111 distinct companies making bookings with us during the period from August to December 2022.

Chart 1- Total Companies 2022

- **Total Sales Range August – December 2022**

This table illustrates the overall sales revenue generated by corporate groups..

Chart 2- Total Corporate Sales 2022

- **Reservations channel 2022**

In this Pie Chart, we can observe that the majority of bookings, totaling 85.25% were made internally via email or phone call. In contrast, 14,75% bookings were completed online through the website.

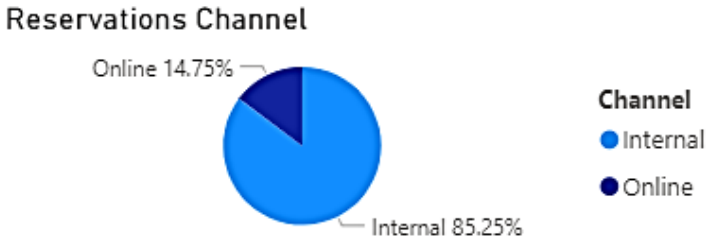

Chart 3- Reservations Channel 2022

- **Top 10 Companies 2022 by Sales**

This section provides insights into the top-spending companies at The Bath Pub between August and December. Notably, Google and its various groups emerged as major contributors, with a combined expenditure of 57 K from group tabs, excluding individual spends. Enhancing accuracy in assessing each company's overall business impact would involve consistently incorporating individual sales into the tables designated for respective guests. This refinement would yield more precise and comprehensive results.

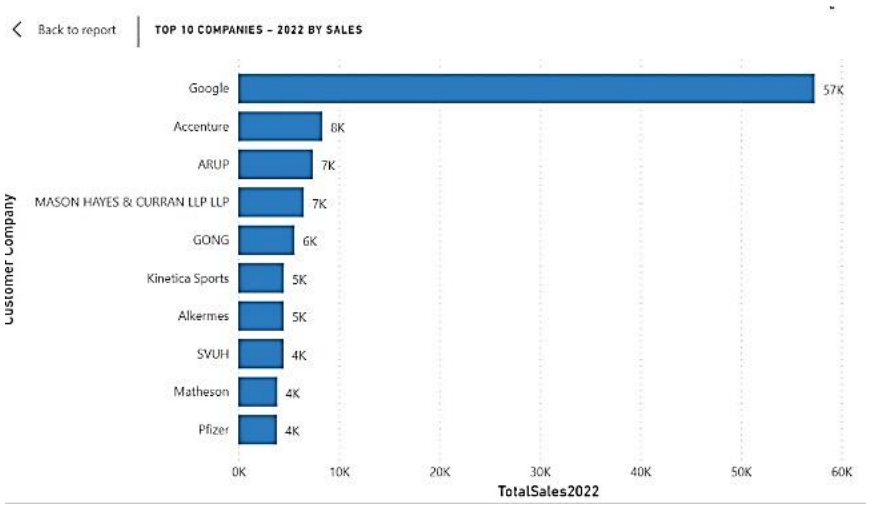

Chart 4 - Top 10 Companies 2022 by Sales

- **Top 10 Companies 2022 by Visit**

This clustered bar chart provides insights into the companies that frequented The Bath Pub the most in 2022. It reveals distinctions from the top sales companies, indicating that certain companies visit more frequently, even if they may not be the highest spenders.

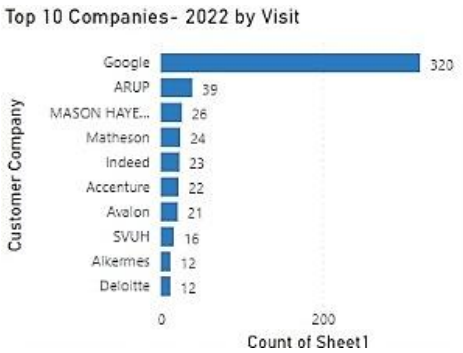

Chart 5- - Top 10 Companies by Visit

- **Top 10 Costumers 2022 by Sales**

We can observe in the stacked column chart that our best customer in 2022 was Lina Pesh from Google.

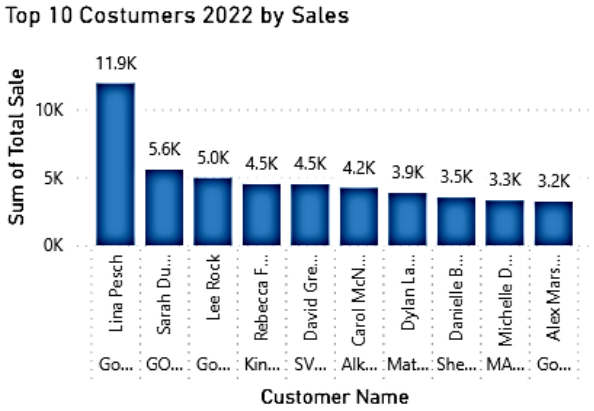

Chart 6- Top 10 Costumers 2022 by sales

- **Top 5 Companies Visits in 2022 by Month**

In this comprehensive stacked bar chart, we gain deeper insights into the months where our top 5 companies had a notable presence. The visual representation clearly shows that Google and ARUP maintained a consistent engagement throughout each month. Accenture demonstrated a preference for September and December, Gong's notable engagement months were August, September, and November, while Mason Hayes & Curran exhibited substantial activity in August, September, and November.

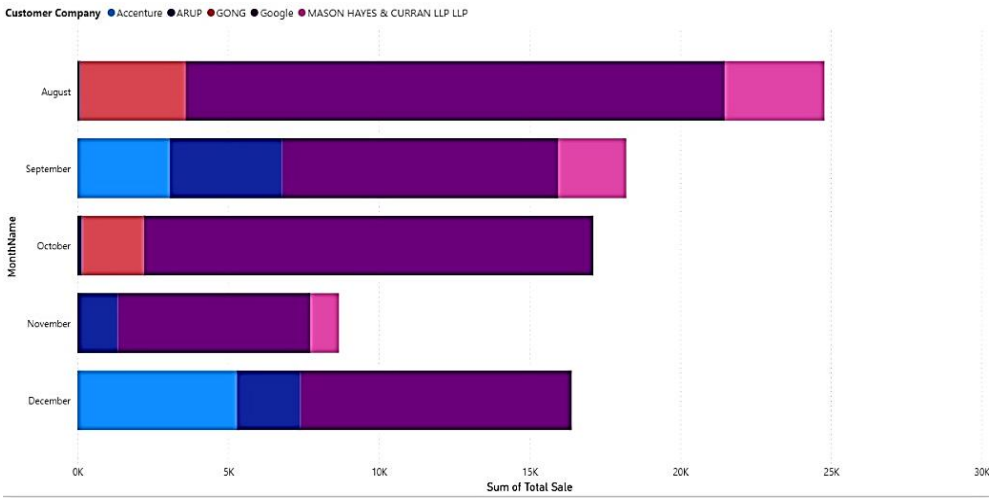

Chart 7- Top 5 Companies Visits in 2022 by Month

- **Total Sales 2022 by Month:**

In this Donut chart, we can observe that December recorded the highest sales at around 51K (27.63%), while November marked the lowest at 25.33K (13.69%)

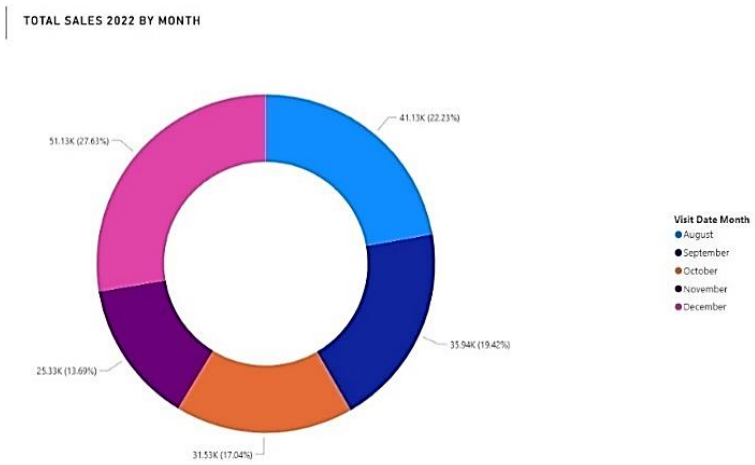

Chart 8- Total Corporate Covers 2022

6.1.2 Quarter 2022

- **Total Covers 2022**

Examining this treemap reveals that the months with the highest number of covers were September and December.

Chart 9- Total Sales 2022 by Month

- **Total Corporate Bookings 2022**

In this table, we can observe that we had a total of 981 corporate bookings from August to December in 2022.

Chart 10 - Total Corporate Bookings 2022

- **Total Sales 2022 by Month**

In this stacked column chart, it's evident that Quarter 4 outperformed Quarter 3, with a total corporate sales amounting to 108K compared to Quarter 3's 77K.

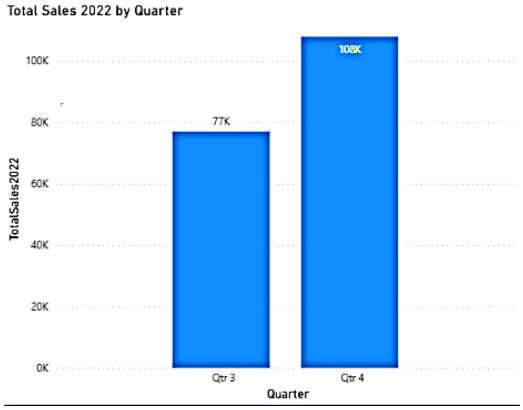

Chart 11 - Total Sales by Quarter

- **Top 10 Best Performing Staff in Sales 2022**

In this clustered bar chart, it is evident that Niamh was the top-performing staff in sales in 2022. However, it's important to note that this data may not be entirely accurate, as individuals may occasionally use others' numbers, and there are issues related to the use of the tills. To enhance the accuracy of this information, I recommend implementing comprehensive training on proper till usage. This approach would not only mitigate issues arising from shared numbers but also allow for internal sales competitions with incentives, fostering increased sales and improved performance.

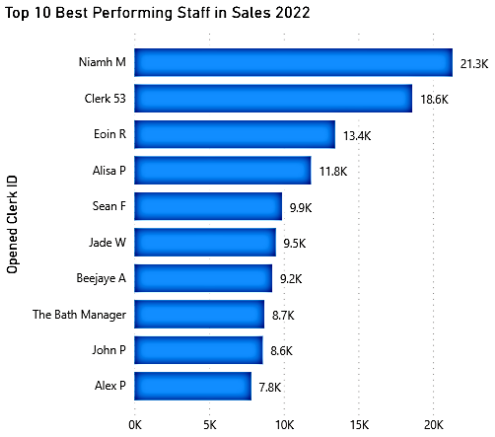

Chart 12 - Chart 12 - Top 10 Best Performing Staff in Sales 2022

6.1.3 Corporates 2023

In comparison to the corporate study for 2022, the corporate analysis for 2023 covers a different timeframe, specifically from January to October 16th. During this extended period, the number of companies has gone up, totaling 111 in 2022 and 166 in 2023 until October. This uptick makes sense, considering the difference in the time frame.

Looking at the top 10 companies by sales, the list remains mostly unchanged, except for Sherry Fitz, which has been replaced by Folk. In terms of top companies by visits, we see four new entries—Pfizer, Eirgrid, Folk, LinkedIn, and Loyola Group—replacing SVUH, Alkermes, Deloitte, and Avalon.

Comparing the top 10 customers with 2022, there's a complete shift, except for Lina Pesh from Google. Notably, total spending has gone up overall. This could be linked to significant changes within these large companies, including staff changes, role transitions, and new individuals overseeing events.

Analyzing the top 5 companies' sales by month in 2023, Pfizer and Matheson are now in the mix, replacing Folk and MHC. A notable observation is the increased frequency of visits from Accenture.

Turning to the Total Sales by month, a comparative view with 2022 shows that August was approximately €1000 better than last year, totaling around €42,000 (14.38%). September saw a €2,000 decrease compared to the previous year, reaching €32,000 (11.18%). The best month is still August, with a total of €42,000, and the least favorable month for corporates was July, totaling €12,000.

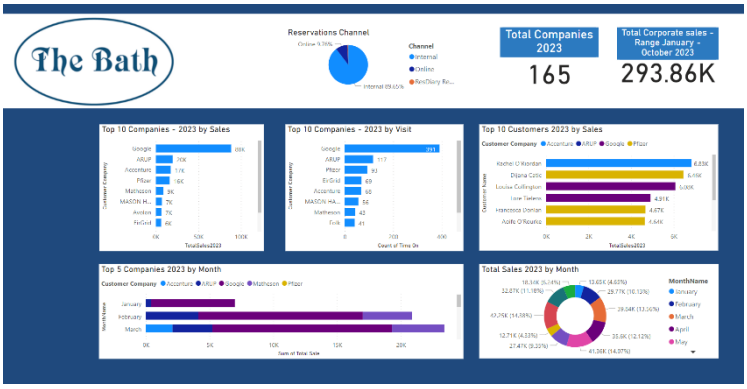

Chart 13- Corporates 2023 Dashboard

6.1.4 Quarters 2023

In comparison to previous quarters, sales for quarter 3 rose to 88k, surpassing last year's quarter 3 total of 77k. The standout quarter in terms of sales is quarter 2, reaching a total of 104k. September and December continue to be the favored months for bookings per cover. Importantly, there have been a total of 2088 corporate bookings in 2023.

Chart 14 - The Bath Pub- Quarters 2023

6.2 The Landmark – Dashboard

In crafting this dashboard, we delved into the organizational data spanning the years 2022 and 2023. However, a crucial consideration emerges—our dataset for 2022 is confined to the period from April to December, aligning with the installation of tills in April 2022. Likewise, for 2023, the available data extends from January to October 16th.

The restricted timeframe poses a notable challenge in executing a comprehensive analysis across both years. Looking ahead, our objective for the forthcoming year is to

procure comprehensive datasets for both 2023 and 2024. This endeavor will empower us to conduct a more exhaustive examination, facilitating meaningful comparisons between the two years.

The dashboard is meticulously structured, comprising distinct sections, each adorned with visuals conveying corporate data for 2022 and 2023. Moreover, specific segments are dedicated to dissecting quarterly data for both years, offering valuable insights into corporate trends over varying time intervals.

6.2.1 Comparison Corporates 2022 with Corporates 2023

In a comparative analysis between 2022 and 2023, State Street remains among the top 10 companies by sales in the latter year. EY and Champlain also retain their positions, while the companies from 2022—NL Architects, Rathmines Garda Station, Biomarin, DSP, Lpsen, Delloite, and KPMG—have been replaced by SOCIAL Welfare, Qualcom, RCSI, Irish Times AOL, LinkedIn, and AIB.

The top company by visits in 2022, NL Architects, with 32 visits, has been surpassed in 2023 by State Street, taking the lead with 39 visits.

Among the top 10 companies by sales, significant changes have occurred, except for Tony Langan from Champlain. State Street remains the top customer, but there's a shift in teams. Pamela O'Grady, the top customer in 2022, has been succeeded by Jacqueline Dunne, who now oversees events for State Street.

Examining the top 5 companies by sales throughout the months, State Street consistently ranks high, appearing almost every month, except for July and October. Other top 5 positions are now held by Irish Times, Qualcom, Social Welfare RCI. It's crucial to note that the data for October, November, and December is pending, and the top 5 companies by month may alter after this busy quarter.

In terms of total sales by month, December 2022 saw the highest at 74k in corporate bookings. For 2023, March leads with a total of 16.93k. The lowest sales month in 2022 was April with 6k, and in 2023, it was January with 3k. Notably, 2022 lacks January data.

The sales for corporates in 2022, spanning April to December, totaled 228.01k. In 2023, covering January to October 8th, the total stands at 107.06k. Anticipating a positive outlook, considering the best quarter is yet to come. There's also an observed increase in private events like birthdays and weddings compared to 2022. However, tracking

expenditures for events without a tab presents challenges, making this evaluation an approximation of revenue, not precise values.

The count of companies booking with us increased from 77 in 2022 to 114 in 2023.

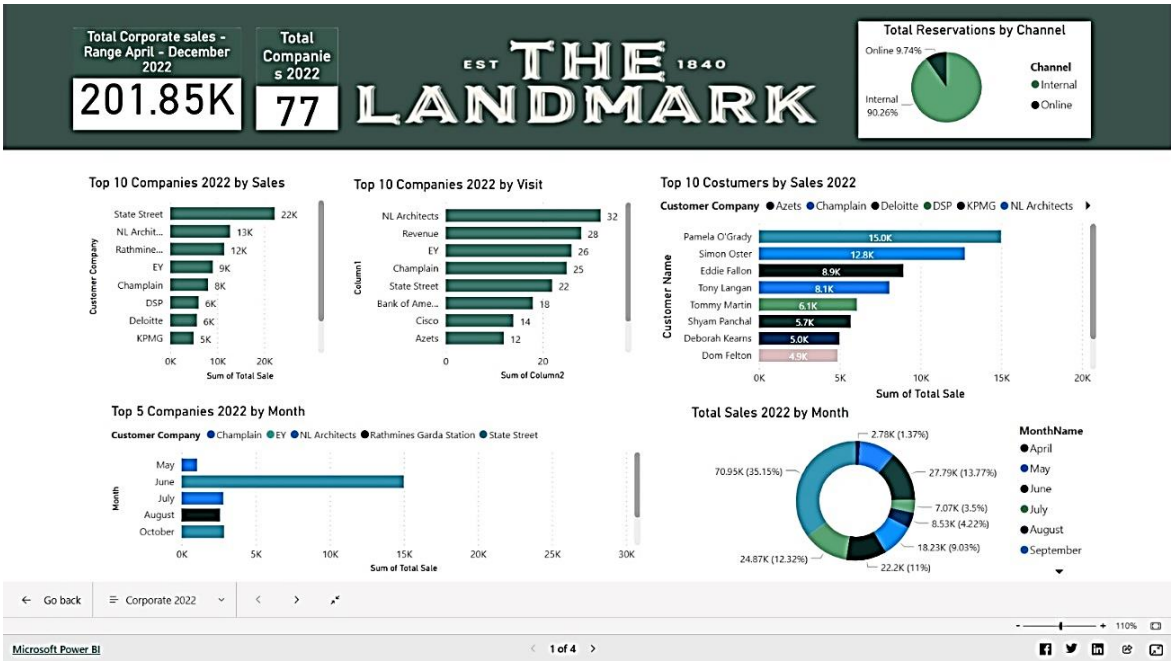

Chart 15- The Landmark - Corporates 2022 Dashboard

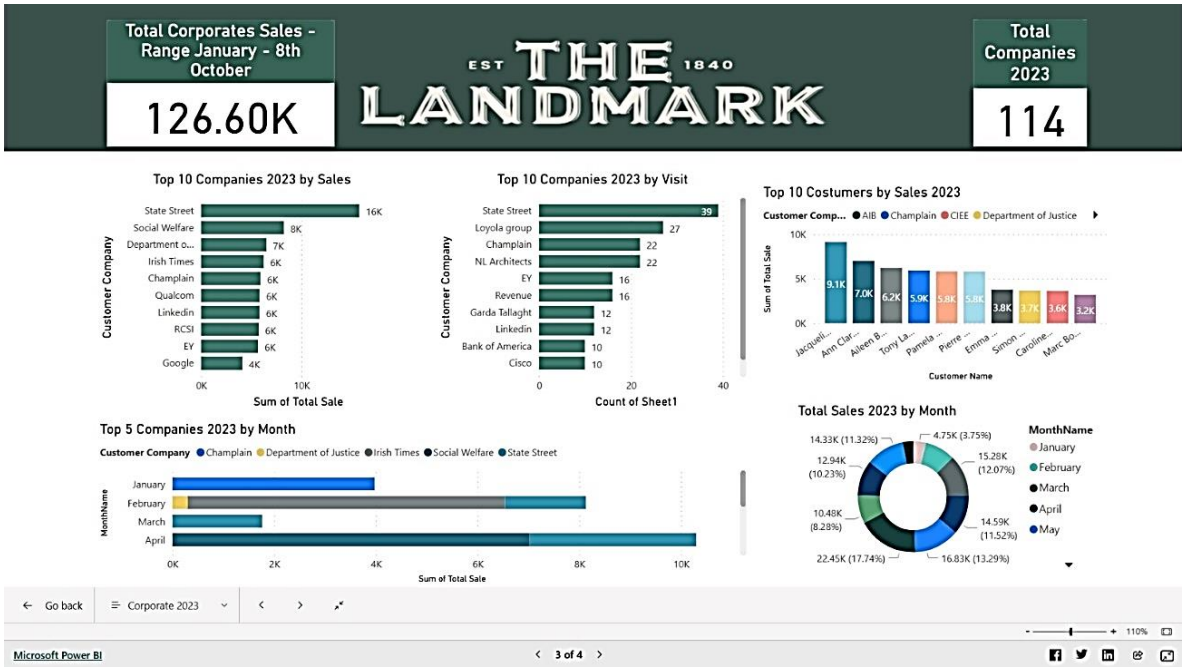

Chart 16 - The Landmark - Corporates 2023 Dashboard

6.2.2 Comparison Quarters 2022 with 2023:

When evaluating the sales performance between the years 2022 and 2023, a discernible upward trajectory is observed in each quarter, signifying a positive growth trend. Specifically, in the second quarter of 2022, sales amounted to 50,000 units, while in the corresponding period of 2023, a noteworthy escalation resulted in a total of 54,000 units. This represents a commendable year-over-year increase of 4,000 units, indicative of the company's resilience and effectiveness in enhancing its market presence.

Similarly, a comparable surge is witnessed in the third quarter, with sales figures ascending from 34,000 units in 2022 to 38,000 units in 2023. This consistent pattern of growth across consecutive years underscores the efficacy of the business strategies employed and the responsiveness of the market to the company's offerings.

The fourth-quarter figure for 2023 stands at 5k, but it is important to highlight that this data only includes information up to October 8th. The total sales for 2022, spanning from April to December, reached 228.01k. In contrast, the timeframe for 2023, covering January to October 8th, reflects sales of 107.06k. Anticipating the upcoming quarters, we expect a boost in sales.

Notably, the number of companies engaged with us has seen a significant increase, rising from 77 in 2022 to 114 in 2023.

These positive trends in sales not only reflect the organization's ability to adapt and thrive in dynamic market conditions but also position it favorably for sustained success in the future. The detailed analysis of these quarterly sales variations provides valuable insights for strategic planning and underscores the importance of continued efforts to capitalize on market opportunities.

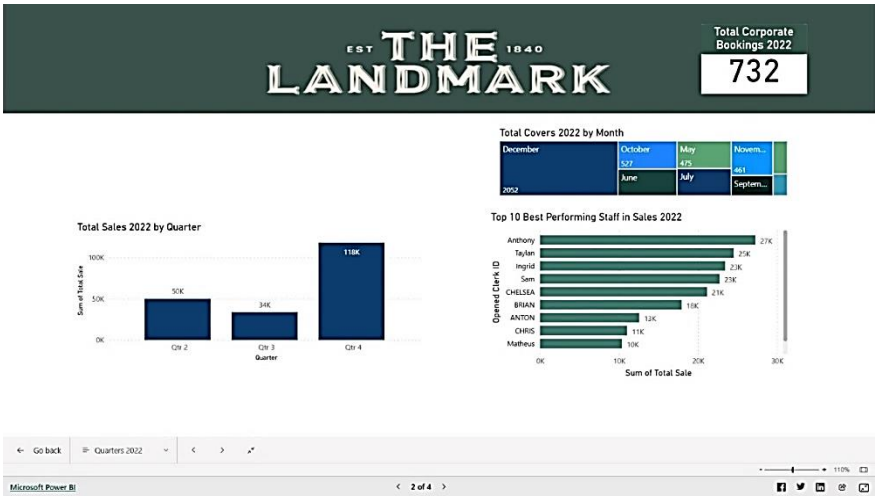

Chart 17- The Landmark - Quarters 2022

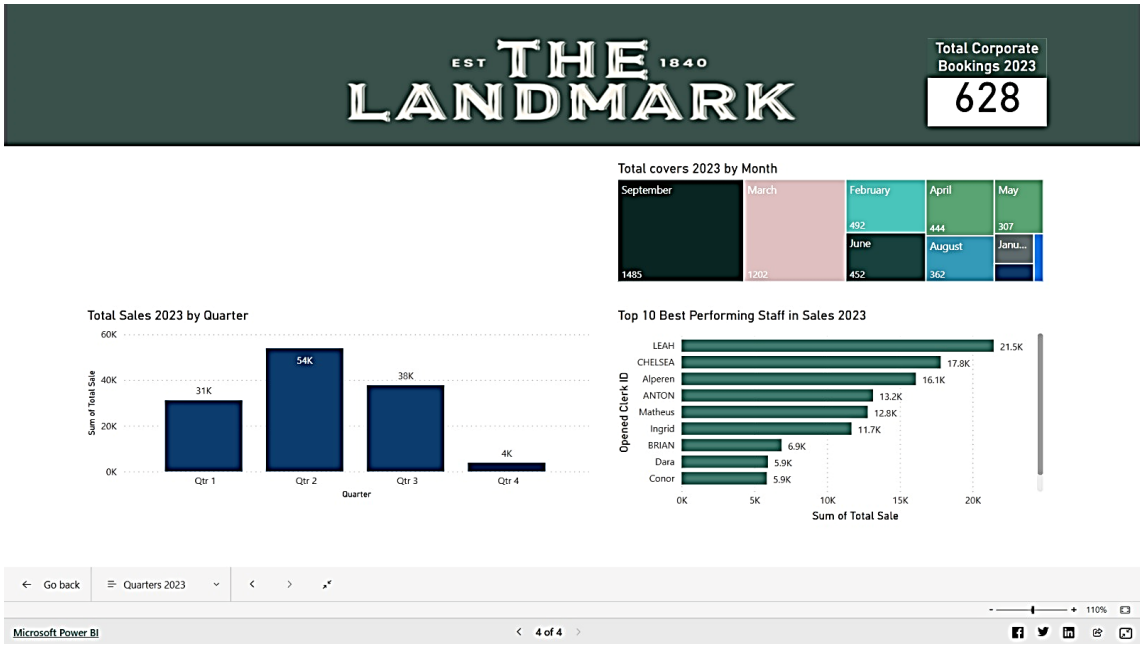

Chart 18- The Landmark - Quarters 2023

7. Conclusions and Further Work

Over the past years, our engagement with corporate groups has seen positive growth, reflecting an increased interest and involvement. However, we have identified challenges in obtaining accurate results for companies utilizing a pay-as-you-go model. The difficulty lies in tracking their spending accurately. To address this, we shifted our focus towards larger transactions and specific time frames.

To enhance the precision of this information in the future, I recommend implementing an integrated system. This system would store customer details directly on the tills, ensuring accurate tracking of expenditures. Additionally, for staff transactions, a practice of consistently charging them to allocated tables could be established. Training programs for staff on effective till and system usage are also crucial to improve accuracy.

An observation in our sales performance data revealed inaccuracies among the top 10 performing staff. The discrepancies arise from the use of different employee numbers not assigned to them. Instances of using outdated staff members' numbers, as seen with Ingrid, can distort historical records. To mitigate this, establishing rules related to employee numbers is essential. This would pave the way for fair internal competitions, where the best performer per month could be recognized with a prize, boosting sales and staff motivation.

Looking ahead, there is an opportunity to create a dedicated section on our website for the team. This section would import reports from Res Diary and ACCESS EPOS, allowing teams to retrieve insights for specific time frames. The collected data would then be processed through a Python script, with the results visualized on the previously developed dashboard. This integration aims to streamline data access and analysis for more informed decision-making.

In conclusion, addressing data accuracy concerns and implementing system improvements will contribute to more reliable insights. The proposed initiatives, such as staff training, rule-based employee number systems, and the website section for team reports, are designed to enhance our business intelligence capabilities and support strategic decision-making.

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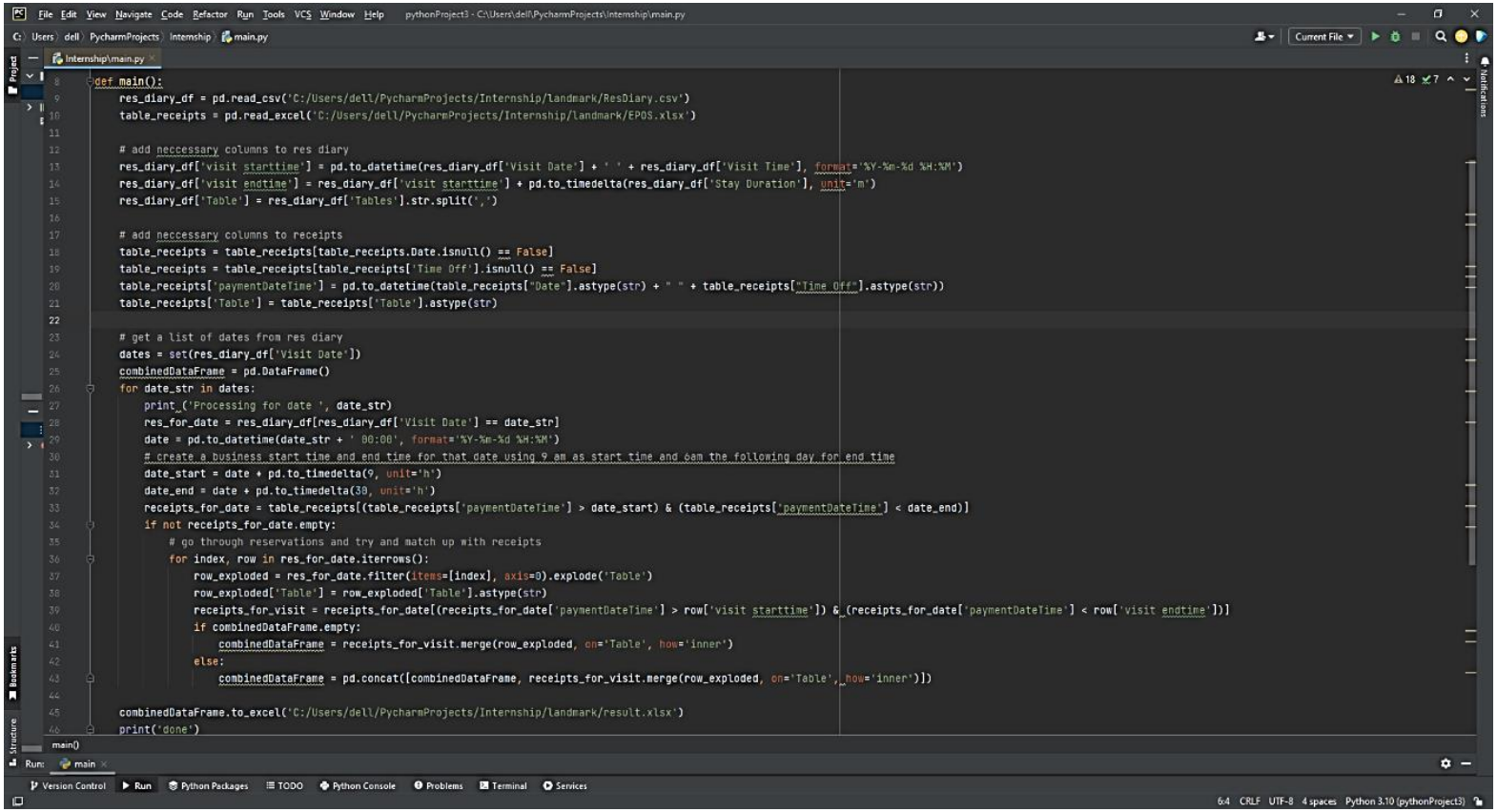
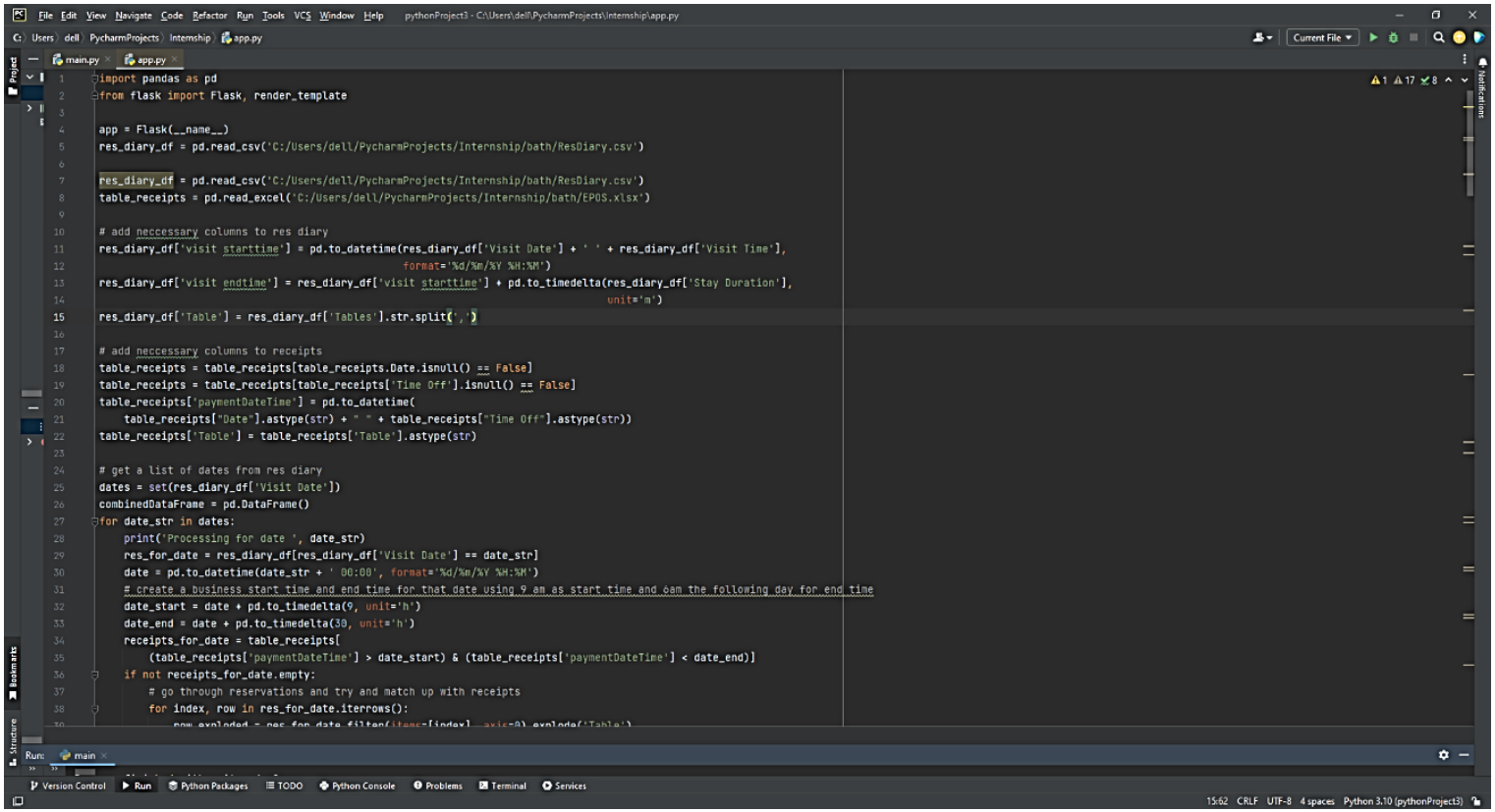
Appendices

Appendices I – Phyton Data Frames Script



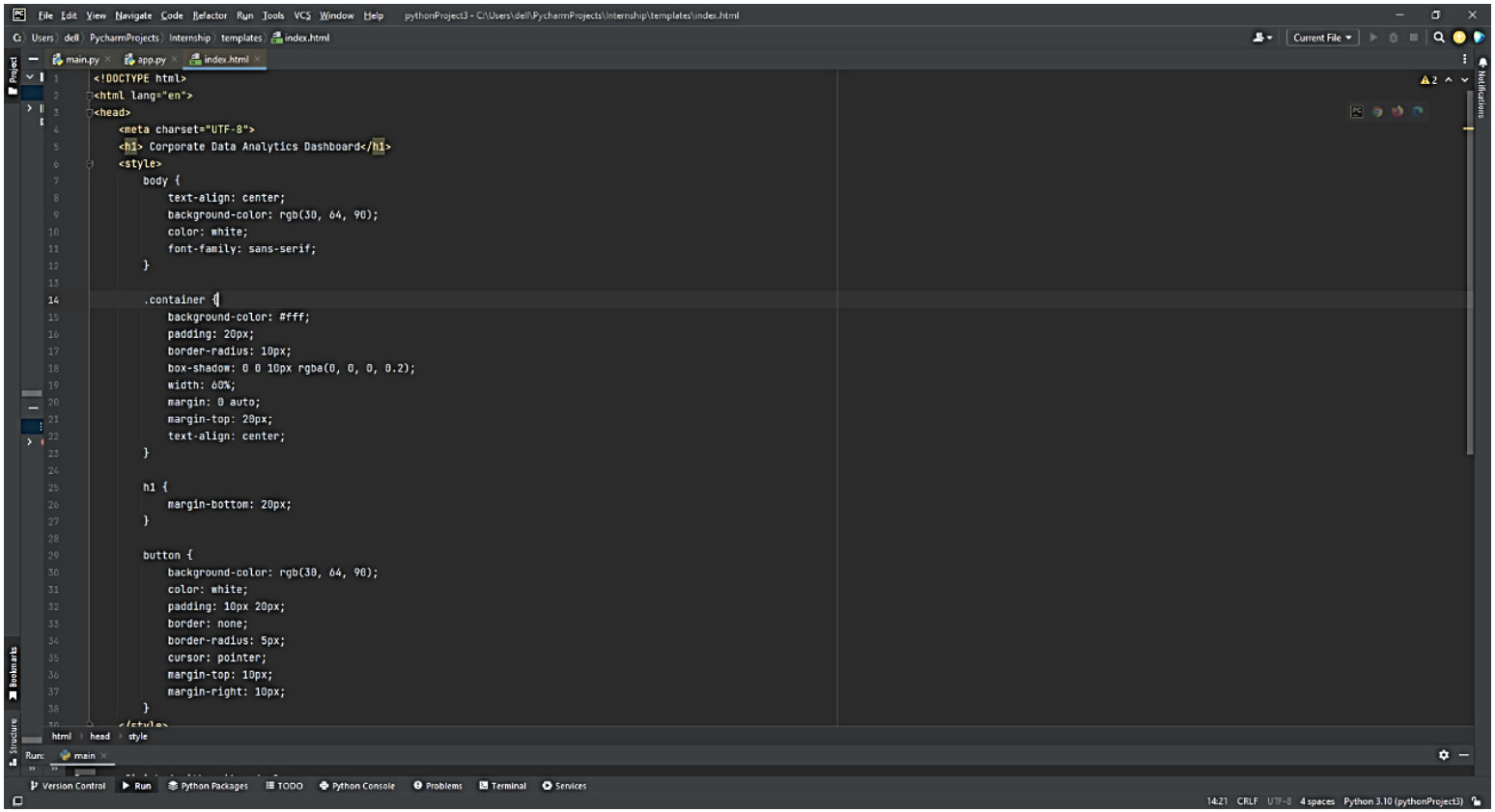
```python
def main():
    res_diary_df = pd.read_csv('C:/Users/dell/PycharmProjects/Internship/landmark/ResDiary.csv')
    table_receipts = pd.read_excel('C:/Users/dell/PycharmProjects/Internship/landmark/EPOS.xlsx')

    # add neccessary columns to res diary
    res_diary_df['visit starttime'] = pd.to_datetime(res_diary_df['Visit Date'] + ' ' + res_diary_df['Visit Time'], format='%Y-%m-%d %H:%M')
    res_diary_df['visit endtime'] = res_diary_df['visit starttime'] + pd.to_timedelta(res_diary_df['Stay Duration'], unit='m')
    res_diary_df['Table'] = res_diary_df['Tables'].str.split(',')

    # add neccessary columns to receipts
    table_receipts = table_receipts[table_receipts.Date.isnull() == False]
    table_receipts = table_receipts[table_receipts['Time Off'].isnull() == False]
    table_receipts['paymentDateTime'] = pd.to_datetime(table_receipts["Date"].astype(str) + " " + table_receipts["Time Off"].astype(str))
    table_receipts['Table'] = table_receipts['Table'].astype(str)

    # get a list of dates from res diary
    dates = set(res_diary_df['Visit Date'])
    combinedDataFrame = pd.DataFrame()
    for date_str in dates:
        print('Processing for date ', date_str)
        res_for_date = res_diary_df[res_diary_df['Visit Date'] == date_str]
        date = pd.to_datetime(date_str + ' 00:00', format='%Y-%m-%d %H:%M')
        # create a business start time and end time for that date using 9 am as start time and 6am the following day for end time
        date_start = date + pd.to_timedelta(9, unit='h')
        date_end = date + pd.to_timedelta(30, unit='h')
        receipts_for_date = table_receipts[(table_receipts['paymentDateTime'] > date_start) & (table_receipts['paymentDateTime'] < date_end)]
        if not receipts_for_date.empty:
            # go through reservations and try and match up with receipts
            for index, row in res_for_date.iterrows():
                row_exploded = res_for_date.filter(items=[index], axis=0).explode('Table')
                row_exploded['Table'] = row_exploded['Table'].astype(str)
                receipts_for_visit = receipts_for_date[(receipts_for_date['paymentDateTime'] > row['visit starttime']) & (receipts_for_date['paymentDateTime'] < row['visit endtime'])]
                if combinedDataFrame.empty:
                    combinedDataFrame = receipts_for_visit.merge(row_exploded, on='Table', how='inner')
                else:
                    combinedDataFrame = pd.concat([combinedDataFrame, receipts_for_visit.merge(row_exploded, on='Table', how='inner')])

    combinedDataFrame.to_excel('C:/Users/dell/PycharmProjects/Internship/landmark/result.xlsx')
    print('done')
```

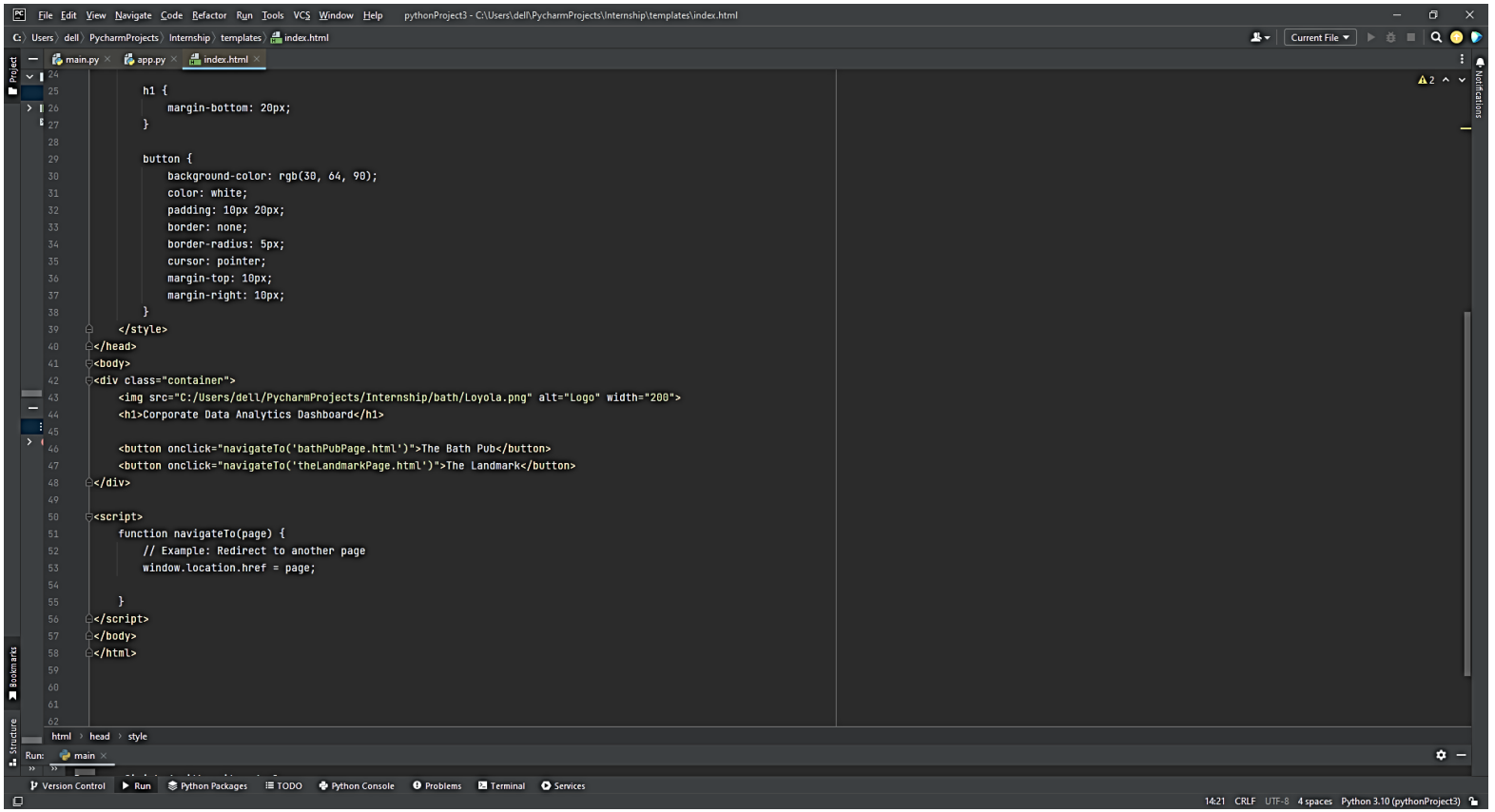
Appendices II – Flask APP



```python
import pandas as pd
from flask import Flask, render_template

app = Flask(__name__)
res_diary_df = pd.read_csv('C:/Users/dell/PycharmProjects/Internship/bath/ResDiary.csv')

res_diary_df = pd.read_csv('C:/Users/dell/PycharmProjects/Internship/bath/ResDiary.csv')
table_receipts = pd.read_excel('C:/Users/dell/PycharmProjects/Internship/bath/EPOS.xlsx')

# add neccessary columns to res diary
res_diary_df['visit starttime'] = pd.to_datetime(res_diary_df['Visit Date'] + ' ' + res_diary_df['Visit Time'],
                                                 format='%d/%m/%Y %H:%M')
res_diary_df['visit endtime'] = res_diary_df['visit starttime'] + pd.to_timedelta(res_diary_df['Stay Duration'],
                                                                                  unit='m')
res_diary_df['Table'] = res_diary_df['Tables'].str.split(',')

# add neccessary columns to receipts
table_receipts = table_receipts[table_receipts.Date.isnull() == False]
table_receipts = table_receipts[table_receipts['Time Off'].isnull() == False]
table_receipts['paymentDateTime'] = pd.to_datetime(
    table_receipts["Date"].astype(str) + " " + table_receipts["Time Off"].astype(str))
table_receipts['Table'] = table_receipts['Table'].astype(str)

# get a list of dates from res diary
dates = set(res_diary_df['Visit Date'])
combinedDataFrame = pd.DataFrame()
for date_str in dates:
    print('Processing for date ', date_str)
    res_for_date = res_diary_df[res_diary_df['Visit Date'] == date_str]
    date = pd.to_datetime(date_str + ' 00:00', format='%d/%m/%Y %H:%M')
    # create a business start time and end time for that date using 9 am as start time and 6am the following day for end time
    date_start = date + pd.to_timedelta(9, unit='h')
    date_end = date + pd.to_timedelta(30, unit='h')
    receipts_for_date = table_receipts[
        (table_receipts['paymentDateTime'] > date_start) & (table_receipts['paymentDateTime'] < date_end)]
    if not receipts_for_date.empty:
        # go through reservations and try and match up with receipts
        for index, row in res_for_date.iterrows():
```

Appendices III - Website Index Page

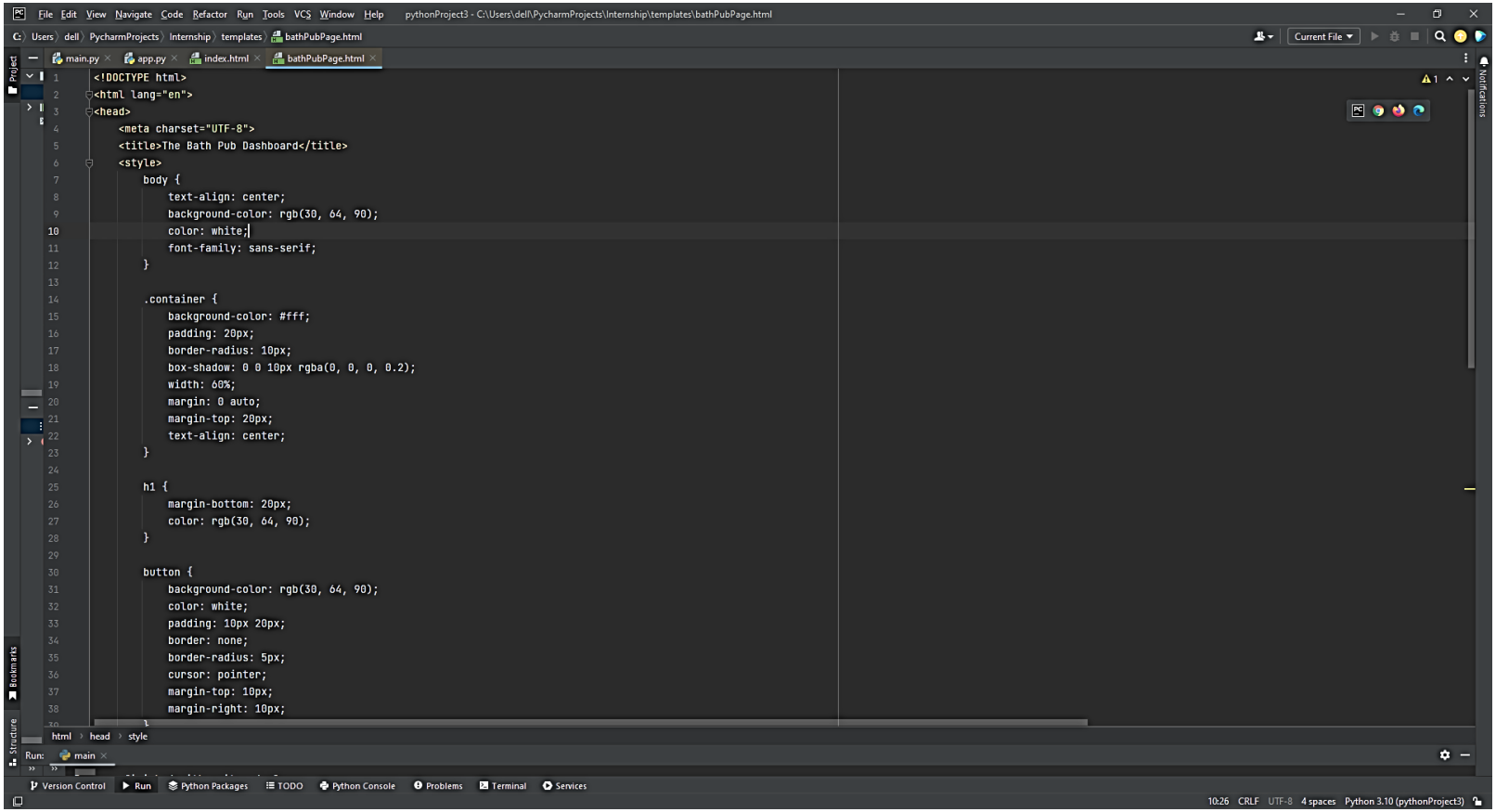


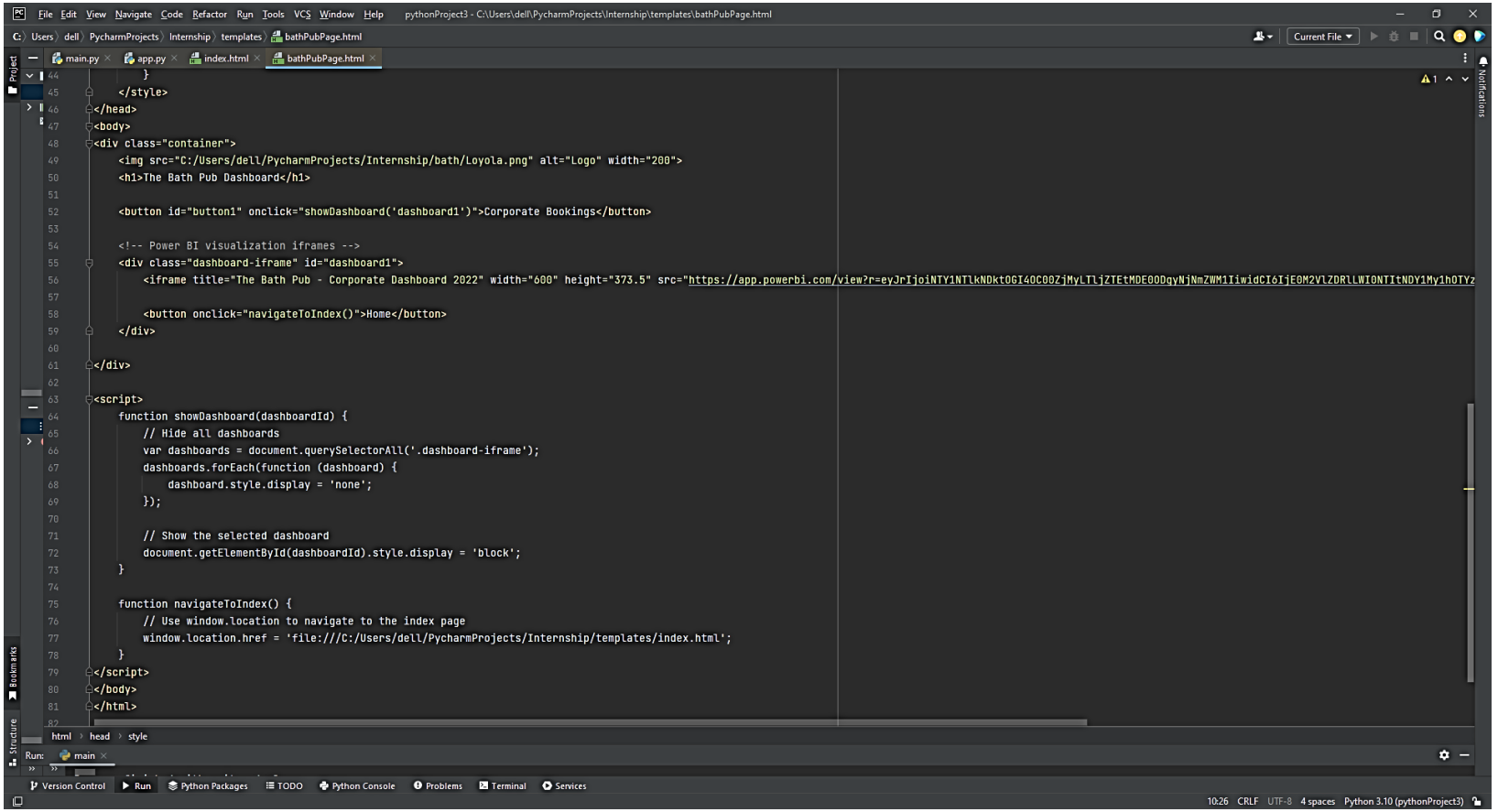

File Edit View Navigate Code Refactor Run Tools VCS Window Help
pythonProject3 - C:\Users\dell\PycharmProjects\Internship\templates\index.html
Users dell PycharmProjects Internship templates index.html
Current File
main.py
app.py
index.html
h1 {
margin-bottom: 20px;
}
button {
background-color: rgb(30, 64, 90);
color: white;
padding: 10px 20px;
border: none;
border-radius: 5px;
cursor: pointer;
margin-top: 10px;
margin-right: 10px;
}
</style>
</head>
<body>

<img src="C:/Users/dell/PycharmProjects/Internship/bath/Loyola.png" alt="Logo" width="200">
<h1>Corporate Data Analytics Dashboard</h1>
<button onclick="navigateTo('bathPubPage.html')">The Bath Pub</button>
<button onclick="navigateTo('theLandmarkPage.html')">The Landmark</button>

<script>
function navigateTo(page) {
// Example: Redirect to another page
window.location.href = page;
}
</script>
</body>
</html>
html head style
Run: main
Version Control Run Python Packages TODO Python Console Problems Terminal Services
14:21 CRLF UTF-8 4 spaces Python 3.10 (pythonProject3)

Appendices IV – Website The Bath Pub Page



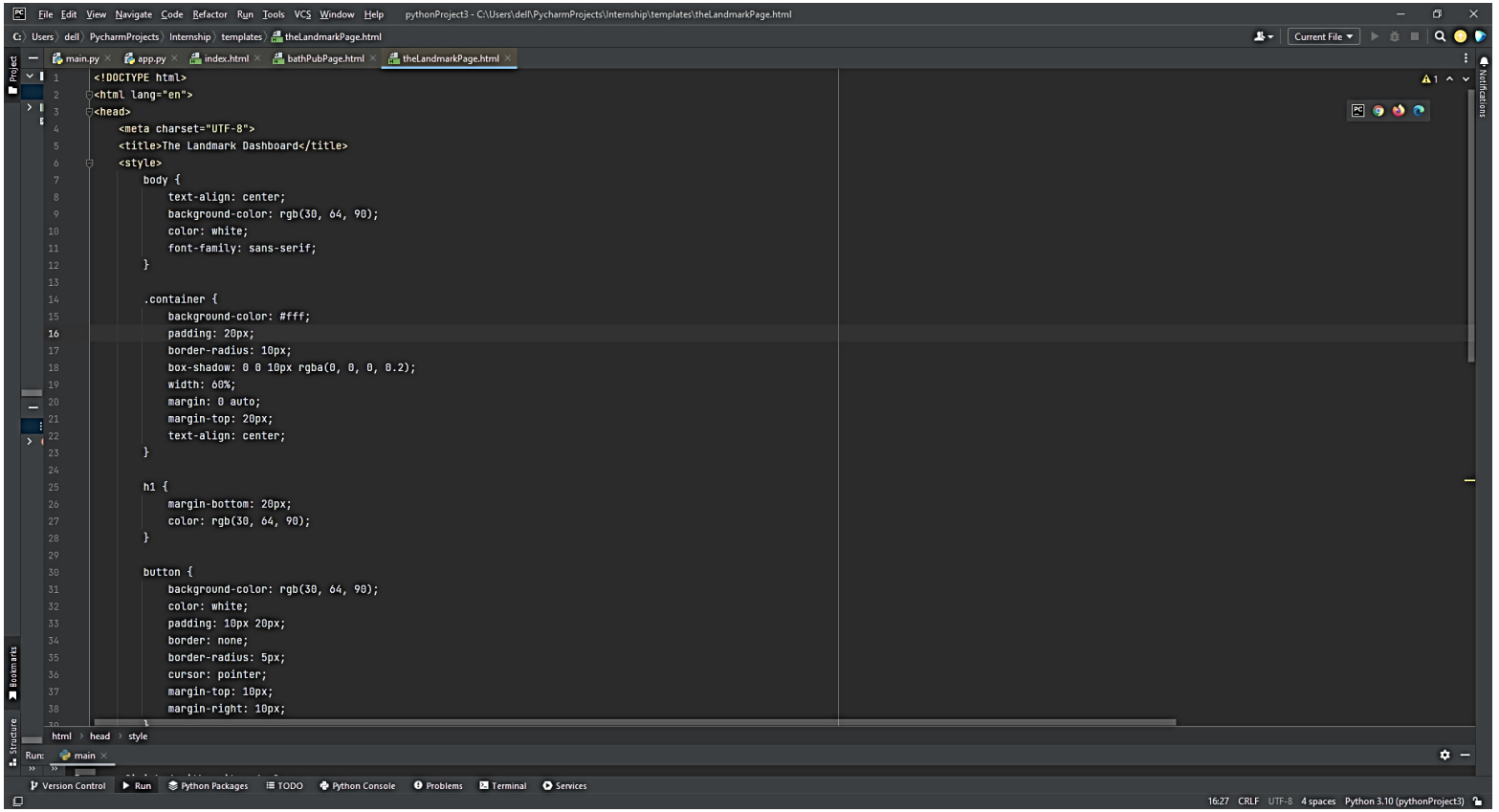

File Edit View Navigate Code Refactor Run Tools VCS Window Help
pythonProject3 - C:\Users\dell\PycharmProjects\Internship\templates\bathPubPage.html
main.py
app.py
index.html
bathPubPage.html
</style>
</head>
<body>

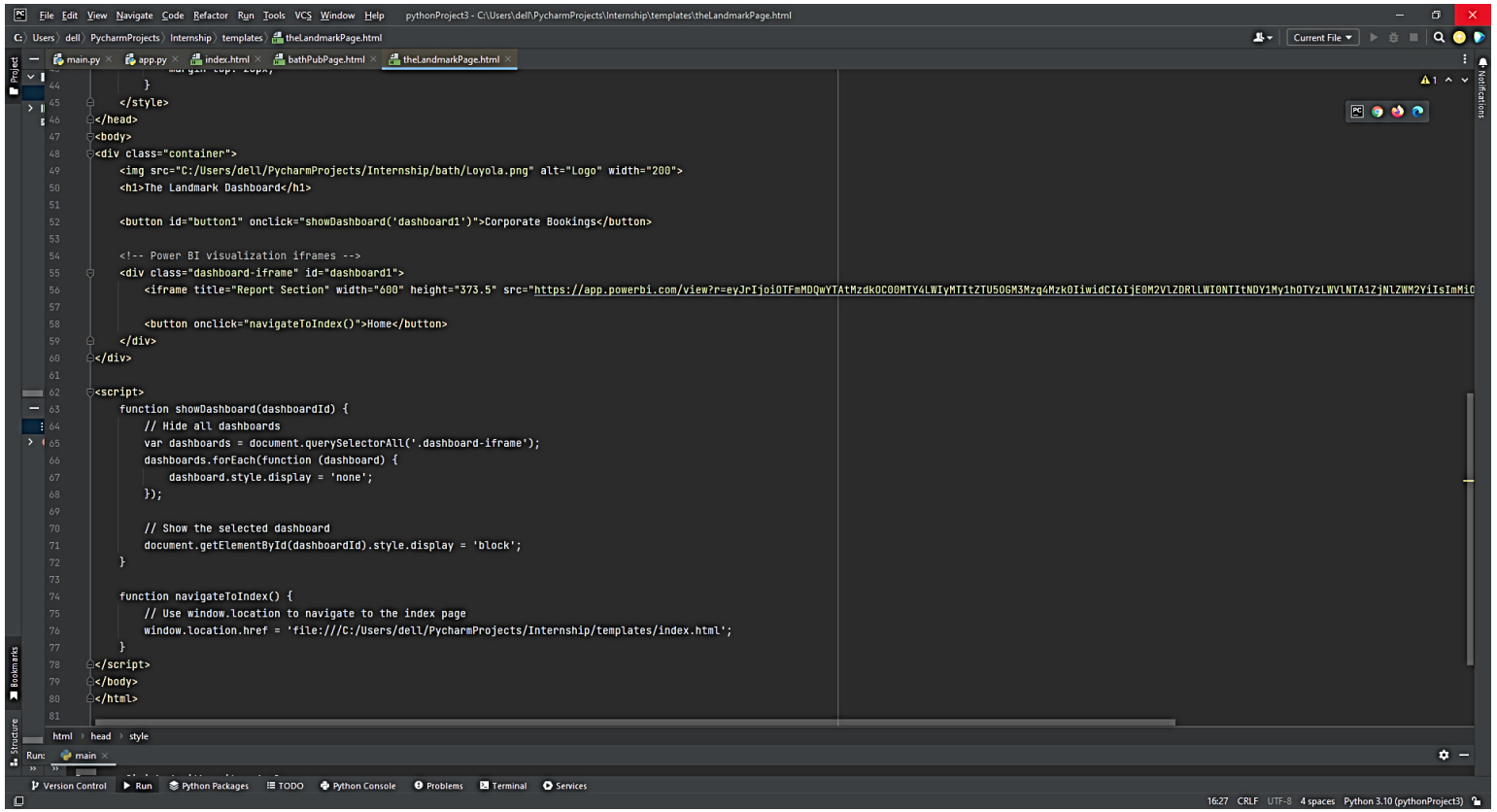
<img src="C:/Users/dell/PycharmProjects/Internship/bath/Loyola.png" alt="Logo" width="200">
<h1>The Bath Pub Dashboard</h1>
<button id="button1" onclick="showDashboard('dashboard1')">Corporate Bookings</button>
<!-- Power BI visualization iframes -->

<iframe title="The Bath Pub - Corporate Dashboard 2022" width="600" height="373.5" src="https://app.powerbi.com/view?r=eyJrIjoiNTY1NTlkNDktOGI4OC00ZjMyLTljZTEtMDE0ODQyNjNmZWM1IiwidCI6IjE0M2VlZDRlLWI0NTItNDY1My1hOTYz
<button onclick="navigateToIndex()">Home</button>

<script>
function showDashboard(dashboardId) {
// Hide all dashboards
var dashboards = document.querySelectorAll('.dashboard-iframe');
dashboards.forEach(function (dashboard) {
dashboard.style.display = 'none';
});
// Show the selected dashboard
document.getElementById(dashboardId).style.display = 'block';
}
function navigateToIndex() {
// Use window.location to navigate to the index page
window.location.href = 'file:///C:/Users/dell/PycharmProjects/Internship/templates/index.html';
}
</script>
</body>
</html>
html › head › style
Run: main
Version Control
Run
Python Packages
TODO
Python Console
Problems
Terminal
Services
10:26 CRLF UTF-8 4 spaces Python 3.10 (pythonProject3)

Appendices IV – Website The Landmark Page





```
        }
    </style>
</head>
<body>
<div class="container">
    <img src="C:/Users/dell/PycharmProjects/Internship/bath/Loyola.png" alt="Logo" width="200">
    <h1>The Landmark Dashboard</h1>

    <button id="button1" onclick="showDashboard('dashboard1')">Corporate Bookings</button>

    <!-- Power BI visualization iframes -->
    <div class="dashboard-iframe" id="dashboard1">
        <iframe title="Report Section" width="600" height="373.5" src="https://app.powerbi.com/view?r=eyJrIjoiOTFmMDQwYTAtMzdkOC00MTY4LWIyMTItZTU5OGM3Mzg4Mzk0IiwidCI6IjE0M2VlZDRlLWI0NTItNDY1My1hOTYzLWVlNTA1ZjNlZWM2YiIsImMiO

        <button onclick="navigateToIndex()">Home</button>
    </div>
</div>

<script>
    function showDashboard(dashboardId) {
        // Hide all dashboards
        var dashboards = document.querySelectorAll('.dashboard-iframe');
        dashboards.forEach(function (dashboard) {
            dashboard.style.display = 'none';
        });

        // Show the selected dashboard
        document.getElementById(dashboardId).style.display = 'block';
    }

    function navigateToIndex() {
        // Use window.location to navigate to the index page
        window.location.href = 'file:///C:/Users/dell/PycharmProjects/Internship/templates/index.html';
    }
</script>
</body>
</html>
```

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