Sunraj Sharma - Projects

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SOFTWARE DEVELOPMENT

Transport Management System — **Oct 2021 - Dec 2021**

https://vimeo.com/745878235 — **C#, .NET Framework, WPF, MySQL, XAML, SCRUM**

- **Assessed**, **researched**, and **analyzed business** and **system requirements** to design and develop Transport Management System project using **C#(.Net) with SCRUM and Agile methodologies** and **MySql**.
- Designed and documented the system using **Class Diagram**, **Sequence diagram**, **Use Case diagram** and **Schema diagrams**.
- Conducted **unit testing** following **test-driven development (TDD) methodology**.

Windows Service TCP/IP HiLo Guessing Game — **Dec 2021**

https://github.com/Sunraj751/A07-Game-as-a-service — **C#, XAML, Azure, WPF**

- Developed a **multi-threaded C# server as a Windows Service**, using **TCP/IP protocol**, to **host a WPF guessing game application on Azure Virtual Machine**.
- Implemented a **backend system** to **enable communication** between **multiple clients and 1 remote server** using **TCP/IP protocol**.
- Designed and developed a **user-friendly client interface** with text boxes and buttons to **allow the user to connect to the server by entering name, port number, and IP address**.
- Built the application with **WPF, C#, Azure VM, and Windows services** to ensure **high performance and stability**.
- Configured **port number** and **installation of server** using **Visual Studio** and Command line.

Notepad — **Oct 2021**

https://github.com/Sunraj751/Notepad — **C#, XAML, WPF**

- Developed a standalone **text editor** using **WPF** and **C#** (**.NET MVC**), **replicating** the features of **Microsoft's Notepad**.
- Implemented the backend functionality to **support reading**, **writing**, and **saving text files** with **input validation**.
- Included a **live character counter** in the UI that updates **in real time** as characters are added or removed.
- Allowed users to **open and modify existing text files**, **create new files**, and **save files at desired locations** on their computer.
- Implemented an exit prompt to remind users to save any unsaved changes before closing the program.

Pizza Shop — **Oct 2021**

https://github.com/Sunraj751/SET_pizza_shop — **C#, ASP.NET, JSON, jQuery, AJAX**

- Developed a fully functional **ASP.NET** web application for a mock pizza store, featuring a custom pizza topping feature with **JSON**, **jQuery**, and **AJAX integration**.
- Implemented a live pizza topping price calculator using **jQuery and AJAX**, allowing for **dynamic price updates** upon user selection and deselection.
- Designed and implemented a user-friendly interface with name prompt and **real-time error checking**, utilizing **Regular Expression Validator** and **Required Field Validator** for input validation and data accuracy.
- Collaborated effectively with team members to ensure successful project completion, utilizing **Visual Studio** and support for **C#** and **ASP.NET** to develop the project.

Weather app — **May 2022**

https://github.com/Sunraj751/Weather_app — **JavaScript, JSON**

- Utilized **JavaScript** to perform an **API call** to retrieve the latest weather data from a trusted source.
- Converted the fetched data into **JSON** format to making it easier to parse and **extract the required information**.
- Integrated **geolocation technology** to automatically **detect the user's location**, ensuring accurate and relevant weather data is displayed.
- Programmed a **clickable** degree **symbol** that **toggles between Celsius and Fahrenheit temperature formats**, **enhancing the user's experience** and allowing them to **personalize the displayed information**.
- Link to live website => ***https://sunraj751.github.io/Weather_app/***

CYBER SECURITY

Penetration Test Report - 3 in 1 report — **March 2022**

https://bit.ly/PenTestReport — **Kali Linux, Python, VirtualBox**

- The report provides a **detailed info about** the **vulnerabilities** identified **for three machines hosted on a virtual box treated as a separate system**, **including** a **news service's main server**, a **Linux-based computer**, and a **WordPress site.** Report **also includes recommended steps for addressing the issues**.
- Used various tools and techniques to **identify security weaknesses and vulnerabilities that were exploited by us as a remote attackers**.
- Tools and techniques included **vulnerability scanners**, **network sniffers**, and **password cracking tools**.
- **Results** of the assessment **are documented in** the **pen test report** and **includes all the findings**.

Intrusion and Enumeration Lab Report - 2 **March 2022**

https://sunraj751.github.io/Sunraj_Portfolio/Files/lab2.pdf **Kali Linux, NMap, enum4linux , Metasploitable3, VirtualBox**

- 3 projects targeting **intrusion detection & prevention using Suricate** and **Enumeration using nMap & enum4linux**.
- Using **NMap** to enumerate the system information, and successfully retrieved IP address of **Metasploitable3 machine** to further investigate vulnerabilities with the machine and how could they be exploited
- Used **enum4linux** tool against the **Metasploitable3 machine** to extract valuable information and assessed how it can be used to exploit different types of vulnerabilities.
- **Analyzed the difference** in the information received by **NMap and enum4linux**, to choose a tool that's better for finding vulnerabilities.

Password and Network Exploit Lab Report - 3 **March 2022**

https://sunraj751.github.io/Sunraj_Portfolio/Files/lab3.pdf **Kali Linux Legion,Metasploitable3, Metasploitable2, VirtualBox**

- 3 projects targeting **password cracking using John tool, SecList, wordlister,** and **network penetration testing** using **Legion**.
- Using **SecList** to **create a customized list of passwords**, that are further used in **Wordlist to modify those passwords and using password cracking techniques conduct attacks**.
- Initiated **offline password hash cracking using John tool**, in order to **find passwords to a Metasploitable2 Virtual machine** within a **password file**, **built from previous project**.
- Conducted **network Penetration testing using Legion** in conjunction **with Metasploit Console** to **search for possible attacks** on a **Metasploitable3 virtual machine** .
- After analyzing the finding, **configured and attacked** a **vulnerable area** in the **Metasploitable3 virtual machine**.

DATA ANALYSIS

Covid 19 Global Impact Analysis **Dec 2022**

https://bit.ly/Covid19_Impact_Analysis **SQL Server, SQL, MS Excel, Tableau**

- Performed **extensive COVID-19 data analysis** for **big data** of about **150+ countries**, covering **cases**, **deaths**, and **infection rates** from **year 2019 to December 2022**. **Extracted**, **organized**, and **summarized massive dataset** to draw meaningful insights.
- Utilized functions like **CTE's and Temp Tables in SQL Server** to **clean** and **organize the data**, resulting in an organized dataset.
- Analyzed the data using **SQL queries**, and presented the **summarized data** using **Tableau** with various maps and graphs.

Data cleaning - Housing Data **Dec 2022**

Housing dataset - Data Cleaning .sql **SQLServer, MS Excel**

- Conducted **data cleaning** on a **housing dataset** for Nashville's housing project, where **scenario for this project was to clean the data for future use**.
- Utilized a range of functions, including **ISNULL(), JOIN, SUBSTRING, PARSENAME**, and **CASE statement**, to effectively clean and manipulate the dataset.
- Implemented **Common Table Expressions (CTE)** to create temporary named result sets that allowed for easier manipulation of the data.
- Partitioned the dataset using the **PARTITION BY function**, allowing for the data to be grouped and analyzed based on specific criteria.
- Successfully cleaned the housing dataset, ensuring that the data was ready for future use in the Nashville project

Data Creation - Amazon **Dec 2022**

Data Creation - Amazon Web Scraping **Python, Jupyter Notebooks, MS Excel**

- Developed a **robust and reliable dataset that provides valuable insights into the price fluctuations of a single product over time, allowing for informed decision-making and strategic planning**.
- Created a **dataset to track the fluctuation in price of a single product over time**, using **python's library** and **utilizing web scraping techniques**.
- Incorporated the **time and date-time libraries** to **automate the process of running the script on a daily basis**, ensuring that the **dataset remains up-to-date and accurate**
- Created a script to store the retrieved data, including the Name, Price, and Date that the script ran, into an excel file for further analysis.
- Utilized the **Excel and pandas libraries** to store and **manipulate the data in a convenient and user-friendly format**.

FINANCIAL ANALYSIS

Financial Analysis and Risk Management **Nov 2022 - Dec 2022**

https://bit.ly/Financial_Analysis_and_Risk_Management **Python, Jupyter Notebooks**

- **Automated financial analysis notebook** for **comprehensive stock analysis**, **risk assessments**, and **future stock price prediction**.
- Utilized **Python's** yfinance and pandas libraries to **extract** and **explore the data.** Generated line and candlestick charts for **trend analysis**
- Utilized **risk management techniques** such as **percent change calculations**, **standard deviation measurement**, and **year-over-year standard deviation** analysis to **predict stocks to avoid**.
- Created **visualizations** like **Simple Moving Average**, **Golden Cross**, and **Bollinger Band Plots** to **evaluate investment opportunities** based on volatility and market calmness.

Movies Revenue Analysis **Oct 2022**

https://bit.ly/Movies_Revenue_Analysis **Python, Jupyter Notebooks**

- Conducted an in-depth analysis of **big data** of **7000 movies** from **year 1980 to 2016** to **identify key factors impacting gross revenue**.
- Performed **data cleaning** and **modifications** to the dataset, **using Python** in Jupyter Notebooks.
- Generated **visualizations** like **scatter and regression plots** for **testing hypotheses** using **Python's** Matplotlib and Seaborn **libraries**.
- Utilized **Python's Pandas and NumPy** libraries to perform **complex data manipulations and analysis**.
- Developed a **comprehensive report highlighting key findings**, **insights**, **and recommendations** based on the analysis.

Airbnb visualization **Dec 2022**

https://tabsoft.co/3G0WU9Q **Tableau, MS Excel**

- Project aims to provide a **comprehensive understanding** of the **AirBnB market in Toronto**, providing valuable **insights into** the **best localities** and **variables for maximizing profits in the industry**
- Data analyzed to determine the **best locality in Toronto for buying a property for AirBnB rentals** to **maximize profits, utilizing advanced visualization techniques**.
- Utilized a range of visualizations, including **scatter plots, heat maps, and line graphs**, to effectively **analyze the relationship between different variables** and the **profitability of different localities**.
- Created a **detailed dashboard using Tableau** to showcase the findings of the data analysis project, **highlighting the key insights** and **trends**.
- Utilized **advanced analytical techniques** to identify **correlations between different variables**, including the **number of bedrooms and the profitability of different localities over different months**