**GLOBAL COVID-19 DASHBOARD - CODE EXPLANATION**

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**Introduction**

This project is a flexdashboard built in R, designed to provide interactive visualizations and real-time insights into global COVID-19 cases. The dashboard integrates multiple R packages, including shiny, plotly, ggplot2, leaflet, and DT, to create an interactive and visually appealing display.

The dashboard consists of:

a. A world map visualizing COVID-19 cases

b. An interactive table displaying case details

c. A bar chart summarizing COVID-19 data by WHO regions

d. A bar chart showing the distribution of confirmed, deaths, recovered, and active cases

**DASHBOARD SETUP**

**Header and Metadata**

i. This defines the title, author, and date dynamically using Sys.Date().

ii. I used the flex dashboard package to create the dashboard layout.

iii. The theme is "journal" for a clean and professional appearance.

iv. The runtime: Shiny allows interactivity in the dashboard.

**CSS STYLING FOR THE DASHBOARD**

a. This custom CSS ensures that dashboard columns fill 50% of the viewport height.

b. overflow-y: auto allows scrolling within columns if the content exceeds available space.

**LOADING REQUIRED PACKAGES**

a. This block automatically installs and loads required R packages.

b. options(repos = c(CRAN = "...")) sets the CRAN repository for package installation.

**LOADING AND PREPARING COVID-19 DATA**

• The COVID-19 dataset is loaded from a CSV file.

• The Date column is converted into a proper date format using **lubridate:: parse\_date \_ time().**

• I also ensures that latitude and longitude are numeric for map visualization

**CALCULATING KEY COVID-19 METRICS**

• I tried to compute total confirmed, deaths, recovered, and active cases.

• I also tried to identify the latest date in the dataset.

**PREPARING DATA FOR VISUALIZATIONS**

Time-Series Data for Line Chart

a. I aggregated daily confirmed cases for bar chart visualization.

b. I summarized cases by WHO region.

c. I converted the data into a long format for easy visualization.

d. I filtered the top 10 countries with the highest confirmed cases on the latest date.

**CREATING PLOTS**

**Bar Chart - Daily Confirmed Cases**

a. I Used ggplot2 to create a time-series line chart.

b. I created a stacked bar chart for different metrics by WHO region.

c. I displayed a bubble map with circle markers representing COVID-19 cases.

**RENDERING DASHBOARD COMPONENTS**

a. I converted ggplot charts into interactive Plotly visualizations.

b. I Used DT to display an interactive data table.

**THE USE OF AI**

At first, I used AI to generate the codes visa viz the design of the global COVID-19 dashboard I had in mind. This exercise exposed me to special training in R called R in 3 months which I paid for. Along the line, I understood what type of visualization I wanted, and I how wanted my data to be arranged. With special training in coding and also AI prompting I was able to come up with this final dashboard.

**CHALLENGES**

The major challenges I encountered was trying to use Crosstalk to link my chart with the global COVID-19 map. It worked. I seriously encountered problems and I sought the effort of AI and senior colleagues in programming, however, the output didn’t come out well.

**CONCLUSION**

This flexdashboard provides a comprehensive global COVID-19 visualization using R, integrating Shiny, Leaflet, Plotly, and ggplot2 for an interactive experience.