**Background:**

Referring physicians frequently encounter the task of consolidating a wide range of medical data into detailed patient reports. This data typically includes patient histories, symptoms, vital signs, lab test results, and notes from specialists.

Our goal is to develop an AI solution that automates the generation of personalized medical reports by intelligently integrating specific patient information with a standard "Reference Report".

The AI system will be designed to:

1. Precisely interpret individual patient data, encompassing symptoms, vital signs, laboratory and test results, among other relevant information.
2. Intelligently merge this patient-specific data with a predefined reference report that outlines standard medical observations and findings typically expected in a healthy individual.
3. Produce a final report that modifies the reference report based on the input data, ensuring that the report is comprehensive, including all necessary patient-specific details while maintaining clarity and structure.

**Problem Statement:**

Given an input text (that contains patient details) and a “Reference Report” , develop an AI solution to automate patient report generation for a referring physician. Our AI needs to intelligently merge patient-specific data with the predefined reference report.

For this assignment, Reference Report remains same for all examples and is as below :

*Reference Report :*

*General health status is normal. No reported symptoms of acute illness.*

*Vital signs within normal ranges.*

*Allergies: None reported.*

*Immunizations up to date.*

*Recent laboratory tests (if any) fall within normal parameters.*

*No remarkable findings in the cardiovascular and respiratory system examination.*

*Gastrointestinal and neurological examinations show no abnormalities.*

Example 1:

Input Text

45 year old male ; complains of intermittent chest pain and shortness of breath. BP reads 140/90 ; cholesterol levels are high ; Slight irregularities are noted in ECG. Cardiologist suggests stress test, Chest Xray and recommends dietary changes.

Output Report

45-year-old male presenting with intermittent chest pain and shortness of breath.

Vital signs: Blood pressure slightly elevated at 140/90.

Allergies: None reported.

Immunizations up to date.

Laboratory tests indicate high cholesterol levels. ECG shows slight irregularities.

No remarkable findings in the cardiovascular and respiratory system examination.

Gastrointestinal and neurological examinations show no abnormalities.

Cardiologist suggests a stress test, Chest Xray and recommends dietary changes.

See how the input text is seamlessly integrated into the Reference Report to generate the output report.

The excel file (train.xlsx) contains few more training examples of input text and output report. “Reference Report” remains the same for all the examples. Your goal is to read train.xlsx and develop an AI to generate output report from input text.

You are free to use any available Machine Learning model/API/package to solve this problem. Feel free to make any assumptions if something is not clear. Your AI model will be tested against a hidden test set of input text for new patients.

Best of Luck !!