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**OOP Python Programming – Project Proposal Assignment**

# Staff Attendance and Productivity Tracking System Using Python

## Problem Statement

Management and Human Resource (HR) offices often face challenges in accurately tracking staff attendance to duty. In many institutions, especially local governments, attendance is recorded manually through an arrival book where staff sign in upon arrival. However, few offices maintain a corresponding departure book. Even when such books exist, staff often record incorrect arrival times, or sign in and leave without engaging in actual work or producing any measurable output.  
  
As a result, employees who merely sign in daily; without necessarily being present or productive, are still counted as having attended all working days in a month and consequently receive full monthly salaries. This manual and unreliable system hinders effective performance monitoring, accountability, and fair assessment of staff contribution to institutional goals.

## Relevance

Globally, organizations employ various mechanisms to improve employee attendance and performance, such as biometric time-tracking systems and digital attendance management tools. However, ensuring attendance alone does not necessarily translate to higher productivity or commitment.  
  
This project will go beyond attendance monitoring by integrating additional performance variables; such as arrival and departure times, and number of outputs produced, providing a more realistic measure of staff engagement and productivity. The system can easily be replicated across other local governments, ministries, departments and agencies to promote transparency, efficiency, and evidence-based human resource management.

## Scope of the Project

The project will focus on 10 core Bugiri District staff attendance and productivity over a one-month period, from October 27 to November 21. The study will capture attendance data, punctuality trends, and individual staff performance outputs. The model will demonstrate how Python can be used to automate and visualize staff attendance and performance for improved decision-making.

## Methodology

The project will utilize Python to design a simple, data-driven attendance and performance tracking tool.  
Key components include:

* **NumPy:** to handle and process numerical data on attendance days.
* **Pandas:** for data analysis, aggregation, and summarization.
* **Datetime library:** to capture average arrival and departure times.
* **Matplotlib:** to generate scatter plots and other visualizations illustrating attendance patterns and performance correlations.

Data will include the number of days each employee attended duty, average reporting and departure times, and the number of outputs produced in relation to agreed monthly targets.

## Expected Outcomes / Deliverables

* Automated records of staff attendance and punctuality.
* Computation of average arrival and departure times per employee.
* Scatter plots and visualizations showing the relationship between attendance, punctuality, and output.
* A summarized analytical report highlighting staff performance trends and recommendations for improved efficiency.