```
In [ ]:
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```
import tkinter as tk
from tkinter import messagebox
import pandas as pd
from sklearn.linear_model import LinearRegression
# Define the correct admin password
admin_password = "0000"
def predict grades(features):
    # Load the dataset into a Pandas DataFrame
    data = pd.read csv('StudentsPerformance.csv') # Replace 'your dataset.csv' with the actual fi.
    # Remove trailing whitespaces from column names
   data.columns = data.columns.str.strip()
    # Select the relevant columns for training and prediction
   selected_features = ['Attendance (%)', 'Gender', 'Race/Ethnicity', 'Parental level of education
   target_variables = ['Mathematics', 'English', 'Biology', 'Physics', 'Chemistry', 'ICT']
    # Convert categorical variables into numerical representations (one-hot encoding)
   data_encoded = pd.get_dummies(data[selected_features])
    # Create a linear regression model and fit it to the entire dataset
   model = LinearRegression()
   model.fit(data_encoded, data[target_variables])
    # Prepare input data for prediction
    input data = pd.DataFrame([features], columns=selected features)
    input_data_encoded = pd.get_dummies(input_data)
    # Check for missing columns in input_data_encoded
   missing_cols = set(data_encoded.columns) - set(input_data_encoded.columns)
    for col in missing_cols:
        input data encoded[col] = 0
    # Reorder columns to match the order in the trained model
    input_data_encoded = input_data_encoded[data_encoded.columns]
    # Make predictions
   predictions = model.predict(input data encoded)
   return dict(zip(target variables, predictions[0]))
def login button click():
    entered_username = entry_username.get()
   entered_password = entry_password.get()
    if entered password == admin password:
        # Clear the password entry field
        entry password.delete(0, tk.END)
        # Hide the login page
        frame_login.pack_forget()
        # Show the prediction page
       frame_prediction.pack()
       messagebox.showerror("Error", "Incorrect password. Access denied.")
def predict button click():
    features = {
        'Attendance (%)': float(entry attendance.get()),
        'Gender': entry_gender.get(),
        'Race/Ethnicity': entry_race.get(),
        'Parental level of education': entry_education.get(),
        'Lunch Type': entry_lunch.get(),
        'Test Preparation Course': entry_prep.get()
   }
   try:
```

```
predicted_grades = predict_grades(features)
        formatted grades = {subject: int(round(grade)) for subject, grade in predicted grades.items
        result_text.set("Predicted Grades:\n" + str(formatted_grades))
    except Exception as e:
        result_text.set("Error: " + str(e))
# Create the UI window
window = tk.Tk()
window.title("Grade Prediction")
window.geometry("400x400")
# Create the login page
frame_login = tk.Frame(window)
label_username = tk.Label(frame_login, text="Enter Username:", font=("Arial", 14))
label username.pack()
entry username = tk.Entry(frame login, font=("Arial", 14))
entry username.pack()
label password = tk.Label(frame login, text="Enter Password:", font=("Arial", 14))
label_password.pack()
entry password = tk.Entry(frame login, show="*", font=("Arial", 14))
entry_password.pack()
button login = tk.Button(frame login, text="Login", command=login button click, font=("Arial", 14)
button login.pack()
frame login.pack()
# Create the prediction page (initially hidden)
frame_prediction = tk.Frame(window)
label attendance = tk.Label(frame prediction, text="Attendance (%)", font=("Arial", 14))
label attendance.pack()
entry_attendance = tk.Entry(frame_prediction, font=("Arial", 14))
entry attendance.pack()
label gender = tk.Label(frame prediction, text="Gender", font=("Arial", 14))
label gender.pack()
entry_gender = tk.Entry(frame_prediction, font=("Arial", 14))
entry gender.pack()
label race = tk.Label(frame prediction, text="Race/Ethnicity", font=("Arial", 14))
label race.pack()
entry race = tk.Entry(frame prediction, font=("Arial", 14))
entry_race.pack()
label_education = tk.Label(frame_prediction, text="Parental Level of Education", font=("Arial", 14
label education.pack()
entry education = tk.Entry(frame prediction, font=("Arial", 14))
entry education.pack()
label lunch = tk.Label(frame prediction, text="Lunch Type", font=("Arial", 14))
label lunch.pack()
entry_lunch = tk.Entry(frame_prediction, font=("Arial", 14))
entry_lunch.pack()
label prep = tk.Label(frame prediction, text="Test Preparation Course", font=("Arial", 14))
label prep.pack()
entry_prep = tk.Entry(frame_prediction, font=("Arial", 14))
entry prep.pack()
button_predict = tk.Button(frame_prediction, text="Predict", command=predict_button_click, font=("A
button predict.pack()
result text = tk.StringVar()
result label = tk.Label(frame prediction, textvariable=result text, font=("Arial", 14), justify='ce
result_label.pack()
# Run the UI
window.mainloop()
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   target_variables = ['Mathematics', 'English', 'Biology', 'Physics', 'Chemistry', 'ICT']
    # Convert categorical variables into numerical representations (one-hot encoding)
   data_encoded = pd.get_dummies(data[selected_features])
    # Create a linear regression model and fit it to the entire dataset
   model = LinearRegression()
   model.fit(data_encoded, data[target_variables])
    # Prepare input data for prediction
    input data = pd.DataFrame([features], columns=selected features)
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    # Check for missing columns in input_data_encoded
   missing_cols = set(data_encoded.columns) - set(input_data_encoded.columns)
    for col in missing_cols:
        input data encoded[col] = 0
    # Reorder columns to match the order in the trained model
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    # Make predictions
   predictions = model.predict(input data encoded)
   return dict(zip(target variables, predictions[0]))
def login button click():
    entered_username = entry_username.get()
   entered_password = entry_password.get()
    if entered password == admin password:
        # Clear the password entry field
        entry password.delete(0, tk.END)
        # Hide the login page
        frame_login.pack_forget()
        # Show the prediction page
       frame_prediction.pack()
       messagebox.showerror("Error", "Incorrect password. Access denied.")
def predict button click():
    features = {
        'Attendance (%)': float(entry attendance.get()),
        'Gender': entry_gender.get(),
        'Race/Ethnicity': entry_race.get(),
        'Parental level of education': entry_education.get(),
        'Lunch Type': entry_lunch.get(),
        'Test Preparation Course': entry_prep.get()
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predicted_grades = predict_grades(features)
        formatted grades = {subject: int(round(grade)) for subject, grade in predicted grades.items
        result_text.set("Predicted Grades:\n" + str(formatted_grades))
    except Exception as e:
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# Create the UI window
window = tk.Tk()
window.title("Grade Prediction")
window.geometry("400x400")
# Create the login page
frame_login = tk.Frame(window)
label_username = tk.Label(frame_login, text="Enter Username:", font=("Arial", 14))
label username.pack()
entry username = tk.Entry(frame login, font=("Arial", 14))
entry username.pack()
label password = tk.Label(frame login, text="Enter Password:", font=("Arial", 14))
label_password.pack()
entry password = tk.Entry(frame login, show="*", font=("Arial", 14))
entry_password.pack()
button login = tk.Button(frame login, text="Login", command=login button click, font=("Arial", 14)
button login.pack()
frame login.pack()
# Create the prediction page (initially hidden)
frame_prediction = tk.Frame(window)
label_attendance = tk.Label(frame_prediction, text="Attendance (%)", font=("Arial", 14))
label attendance.pack()
entry_attendance = tk.Entry(frame_prediction, font=("Arial", 14))
entry attendance.pack(pady=10)
label gender = tk.Label(frame prediction, text="Gender", font=("Arial", 14))
label gender.pack()
entry_gender = tk.Entry(frame_prediction, font=("Arial", 14))
entry gender.pack(pady=10)
label race = tk.Label(frame prediction, text="Race/Ethnicity", font=("Arial", 14))
label race.pack()
entry race = tk.Entry(frame prediction, font=("Arial", 14))
entry_race.pack(pady=10)
label_education = tk.Label(frame_prediction, text="Parental Level of Education", font=("Arial", 14
label education.pack()
entry education = tk.Entry(frame prediction, font=("Arial", 14))
entry education.pack(pady=10)
label lunch = tk.Label(frame prediction, text="Lunch Type", font=("Arial", 14))
label_lunch.pack()
entry_lunch = tk.Entry(frame_prediction, font=("Arial", 14))
entry_lunch.pack(pady=10)
label prep = tk.Label(frame prediction, text="Test Preparation Course", font=("Arial", 14))
label prep.pack()
entry_prep = tk.Entry(frame_prediction, font=("Arial", 14))
entry prep.pack(pady=10)
button_predict = tk.Button(frame_prediction, text="Predict", command=predict_button_click, font=("A
button predict.pack()
result text = tk.StringVar()
result label = tk.Label(frame prediction, textvariable=result text, font=("Arial", 14), justify='ce
result label.pack()
# Run the UI
window.mainloop()
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    # Select the relevant columns for training and prediction
   selected_features = ['Attendance (%)', 'Gender', 'Race/Ethnicity', 'Parental level of education
   target_variables = ['Mathematics', 'English', 'Biology', 'Physics', 'Chemistry', 'ICT']
    # Convert categorical variables into numerical representations (one-hot encoding)
   data_encoded = pd.get_dummies(data[selected_features])
    # Create a linear regression model and fit it to the entire dataset
   model = LinearRegression()
   model.fit(data_encoded, data[target_variables])
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    input data = pd.DataFrame([features], columns=selected features)
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   missing_cols = set(data_encoded.columns) - set(input_data_encoded.columns)
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   predictions = model.predict(input data encoded)
   return dict(zip(target variables, predictions[0]))
def login button click():
    entered_username = entry_username.get()
   entered_password = entry_password.get()
    if entered password == admin password:
        # Clear the password entry field
        entry password.delete(0, tk.END)
        # Hide the login page
        frame_login.pack_forget()
        # Show the prediction page
       frame_prediction.pack()
       messagebox.showerror("Error", "Incorrect password. Access denied.")
def predict button click():
    features = {
        'Attendance (%)': float(entry attendance.get()),
        'Gender': entry_gender.get(),
        'Race/Ethnicity': entry_race.get(),
        'Parental level of education': entry_education.get(),
        'Lunch Type': entry_lunch.get(),
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   }
   try:
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```
predicted_grades = predict_grades(features)
              formatted grades = {subject: int(round(grade)) for subject, grade in predicted grades.items
              result_text.set("Predicted Grades:\n" + str(formatted_grades))
       except Exception as e:
              result_text.set("Error: " + str(e))
# Create the UI window
window = tk.Tk()
window.title("Grade Prediction")
window.geometry("550x550")
# Create the login page
frame_login = tk.Frame(window)
label_username = tk.Label(frame_login, text="Enter Username:", font=("Arial", 14))
label username.pack()
entry username = tk.Entry(frame login, font=("Arial", 14))
entry username.pack()
label password = tk.Label(frame login, text="Enter Password:", font=("Arial", 14))
label_password.pack()
entry password = tk.Entry(frame login, show="*", font=("Arial", 14))
entry_password.pack()
button login = tk.Button(frame login, text="Login", command=login button click, font=("Arial", 14)
button login.pack()
frame login.pack()
# Create the prediction page (initially hidden)
frame prediction = tk.Frame(window)
frame prediction.configure(bg="#1e3c72")
label attendance = tk.Label(frame prediction, text="Attendance (%)", font=("Arial", 14), bg="#1e3c
label attendance.pack()
entry attendance = tk.Entry(frame prediction, font=("Arial", 14))
entry_attendance.pack(pady=10)
label_gender = tk.Label(frame_prediction, text="Gender", font=("Arial", 14), bg="#1e3c72", fg="whiteleft")
label gender.pack()
entry gender = tk.Entry(frame prediction, font=("Arial", 14))
entry_gender.pack(pady=10)
label_race = tk.Label(frame_prediction, text="Race/Ethnicity", font=("Arial", 14), bg="#1e3c72", font=("Aria
label race.pack()
entry_race = tk.Entry(frame_prediction, font=("Arial", 14))
entry race.pack(pady=10)
label education = tk.Label(frame prediction, text="Parental Level of Education", font=("Arial", 14
label education.pack()
entry education = tk.Entry(frame prediction, font=("Arial", 14))
entry_education.pack(pady=10)
label_lunch = tk.Label(frame_prediction, text="Lunch Type", font=("Arial", 14), bg="#1e3c72", fg="v
label lunch.pack()
entry_lunch = tk.Entry(frame_prediction, font=("Arial", 14))
entry lunch.pack(pady=10)
label prep = tk.Label(frame prediction, text="Test Preparation Course", font=("Arial", 14), bg="#16"
label_prep.pack()
entry prep = tk.Entry(frame prediction, font=("Arial", 14))
entry_prep.pack(pady=10)
button_predict = tk.Button(frame_prediction, text="Predict", command=predict_button_click, font=("A
button predict.pack()
result text = tk.StringVar()
result_label = tk.Label(frame_prediction, textvariable=result_text, font=("Arial", 14), justify='ce
result label.pack()
# Run the UI
window.mainloop()
```

Dawn Mukonde Grade Prediction System - Jupyter Notebook			

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from tkinter import messagebox
import pandas as pd
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    # Load the dataset into a Pandas DataFrame
    data = pd.read csv('StudentsPerformance.csv') # Replace 'your dataset.csv' with the actual fi.
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   data.columns = data.columns.str.strip()
    # Select the relevant columns for training and prediction
   selected_features = ['Attendance (%)', 'Gender', 'Race/Ethnicity', 'Parental level of education
   target_variables = ['Mathematics', 'English', 'Biology', 'Physics', 'Chemistry', 'ICT']
    # Convert categorical variables into numerical representations (one-hot encoding)
   data_encoded = pd.get_dummies(data[selected_features])
    # Create a linear regression model and fit it to the entire dataset
   model = LinearRegression()
   model.fit(data_encoded, data[target_variables])
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    input data = pd.DataFrame([features], columns=selected features)
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   missing_cols = set(data_encoded.columns) - set(input_data_encoded.columns)
    for col in missing_cols:
        input data encoded[col] = 0
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   predictions = model.predict(input data encoded)
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def login button click():
    entered_username = entry_username.get()
   entered_password = entry_password.get()
    if entered password == admin password:
        # Clear the password entry field
        entry password.delete(0, tk.END)
        # Hide the login page
        frame_login.pack_forget()
        # Show the prediction page
       frame_prediction.pack()
       messagebox.showerror("Error", "Incorrect password. Access denied.")
def predict button click():
    features = {
        'Attendance (%)': float(entry attendance.get()),
        'Gender': entry_gender.get(),
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   }
   try:
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```
predicted_grades = predict_grades(features)
        formatted grades = "\n".join([f"{subject}: {int(round(grade))}" for subject, grade in pred:
        result_text.set("Predicted Grades:\n" + formatted_grades)
    except Exception as e:
        result_text.set("Error: " + str(e))
# Create the UI window
window = tk.Tk()
window.title("Grade Prediction")
window.geometry("600x600")
# Create the login page
frame_login = tk.Frame(window, bg="#1e3c72")
label_username = tk.Label(frame_login, text="Enter Username:", font=("Arial", 14), bg="#1e3c72")
label username.pack()
entry username = tk.Entry(frame login, font=("Arial", 14))
entry username.pack()
label password = tk.Label(frame login, text="Enter Password:", font=("Arial", 14), bg="#1e3c72")
label_password.pack()
entry password = tk.Entry(frame login, show="*", font=("Arial", 14))
entry_password.pack()
button login = tk.Button(frame login, text="Login", command=login button click, font=("Arial", 14)
button login.pack()
frame login.pack(fill="both", expand=True)
# Create the prediction page (initially hidden)
frame_prediction = tk.Frame(window, bg="#1e3c72")
label_attendance = tk.Label(frame_prediction, text="Attendance (%)", font=("Arial", 14), bg="#1e3c
label attendance.pack()
entry_attendance = tk.Entry(frame_prediction, font=("Arial", 14))
entry attendance.pack(pady=10)
label gender = tk.Label(frame prediction, text="Gender", font=("Arial", 14), bg="#1e3c72")
label gender.pack()
entry_gender = tk.Entry(frame_prediction, font=("Arial", 14))
entry gender.pack(pady=10)
label race = tk.Label(frame prediction, text="Race/Ethnicity", font=("Arial", 14), bg="#1e3c72")
label race.pack()
entry race = tk.Entry(frame prediction, font=("Arial", 14))
entry_race.pack(pady=10)
label education = tk.Label(frame prediction, text="Parental Level of Education", font=("Arial", 14
label education.pack()
entry education = tk.Entry(frame prediction, font=("Arial", 14))
entry education.pack(pady=10)
label lunch = tk.Label(frame prediction, text="Lunch Type", font=("Arial", 14), bg="#1e3c72")
label lunch.pack()
entry_lunch = tk.Entry(frame_prediction, font=("Arial", 14))
entry_lunch.pack(pady=10)
label prep = tk.Label(frame prediction, text="Test Preparation Course", font=("Arial", 14), bg="#16"
label prep.pack()
entry_prep = tk.Entry(frame_prediction, font=("Arial", 14))
entry prep.pack(pady=10)
button_predict = tk.Button(frame_prediction, text="Predict", command=predict_button_click, font=("A
button predict.pack()
result text = tk.StringVar()
result label = tk.Label(frame prediction, textvariable=result text, font=("Arial", 14), justify='le
result label.pack(pady=10)
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window.mainloop()
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    except Exception as e:
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label attendance.pack()
entry attendance = tk.Entry(frame prediction, font=("Arial", 14))
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label_gender.pack()
entry gender = tk.Entry(frame prediction, font=("Arial", 14))
entry_gender.pack(pady=10)
label race = tk.Label(frame prediction, text="Race/Ethnicity", font=("Arial", 14), bg="#1e3c72")
label race.pack()
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label education.pack()
entry_education = tk.Entry(frame_prediction, font=("Arial", 14))
entry education.pack(pady=10)
label lunch = tk.Label(frame prediction, text="Lunch Type", font=("Arial", 14), bg="#1e3c72")
label lunch.pack()
entry lunch = tk.Entry(frame prediction, font=("Arial", 14))
entry_lunch.pack(pady=10)
label_prep = tk.Label(frame_prediction, text="Test Preparation Course", font=("Arial", 14), bg="#16"
label prep.pack()
entry prep = tk.Entry(frame prediction, font=("Arial", 14))
entry prep.pack(pady=10)
button predict = tk.Button(frame prediction, text="Predict", command=predict button click, font=("
button_predict.pack()
result_text = tk.StringVar()
result label = tk.Label(frame prediction, textvariable=result text, font=("Arial", 14), justify='le
result label.pack(pady=10)
# Run the UI
frame login.pack(fill="both", expand=True)
window.mainloop()
```

In [ ]: