**Execution Steps for AI-Based Personalized Learning Platform**

**Step 1: Setup Development Environment**

1. Install Python (3.x version) and necessary libraries:

pip install pandas numpy scikit-learn flask

1. Install a database (SQLite or MongoDB) for storing user and course data.
2. Set up an IDE like VS Code or PyCharm.

**Step 2: Collect and Prepare Dataset**

1. Download or create a dataset with user interactions, course details, and ratings.
2. Store the dataset as a CSV file (e.g., courses.csv).
3. Perform data cleaning:
   * Handle missing values.
   * Normalize text descriptions.

**Step 3: Build the Machine Learning Model**

1. Import necessary libraries:
2. import pandas as pd
3. import numpy as np
4. from sklearn.feature\_extraction.text import TfidfVectorizer

from sklearn.metrics.pairwise import cosine\_similarity

1. Load the dataset:

courses = pd.read\_csv("courses.csv")

1. Convert course descriptions into numerical format:
2. tfidf = TfidfVectorizer(stop\_words='english')

tfidf\_matrix = tfidf.fit\_transform(courses['description'])

1. Compute similarity scores:

cosine\_sim = cosine\_similarity(tfidf\_matrix)

**Step 4: Implement Recommendation Function**

1. Define a function to get recommendations:
2. def recommend(course\_title, num\_recommendations=5):
3. idx = courses[courses['title'] == course\_title].index[0]
4. scores = list(enumerate(cosine\_sim[idx]))
5. scores = sorted(scores, key=lambda x: x[1], reverse=True)
6. recommended\_indices = [i[0] for i in scores[1:num\_recommendations+1]]

return courses.iloc[recommended\_indices]

1. Test the function with sample inputs:

print(recommend("Python for Beginners"))

**Step 5: Develop Web Application using Flask**

1. Install Flask:

pip install flask

1. Create app.py with API endpoints:
2. from flask import Flask, request, jsonify
3. app = Flask(\_\_name\_\_)
4. @app.route('/recommend', methods=['GET'])
5. def get\_recommendations():
6. course\_title = request.args.get('title')
7. recommendations = recommend(course\_title).to\_dict(orient='records')
8. return jsonify(recommendations)
9. if \_\_name\_\_ == '\_\_main\_\_':

app.run(debug=True)

1. Run the Flask server:

python app.py

**Step 6: Test the API**

1. Open a browser or use Postman and send a request:

http://127.0.0.1:5000/recommend?title=Python%20for%20Beginners

1. Verify that the JSON response contains relevant recommendations.

**Step 7: Deploy the Application**

1. Choose a cloud platform (AWS, Heroku, or Google Cloud).
2. Set up a virtual environment:
3. python -m venv venv

source venv/bin/activate # On Windows use: venv\Scripts\activate

1. Install dependencies:

pip install -r requirements.txt

1. Deploy using GitHub and cloud services.

**Step 8: Evaluate System Performance**

1. Measure accuracy using Precision and Recall.
2. Optimize model parameters for better recommendations.
3. Conduct user feedback sessions to improve the system.

This document provides a detailed step-by-step execution process for developing and deploying the **AI-Based Personalized Learning Platform**. Let me know if you need any modifications!