System Requirements Specification Index

For

Python Basics and NumPy, Pandas
Usecase No 6
1.0

IIHT Pvt. Ltd.
fullstack@iiht.com

Use Case: Recipe Management System (recipe.py)

Dataset

```
recipes = {
  "Pasta": {"Flour": 200, "Eggs": 2, "Cheese": 50, "Milk": 100},
  "Pizza": {"Flour": 250, "Tomato": 100, "Cheese": 150, "Olives": 50},
  "Salad": {"Lettuce": 100, "Tomato": 150, "Cucumber": 100, "Cheese": 50},
  "Soup": {"Carrot": 200, "Potato": 150, "Onion": 100, "Garlic": 20},
  "Cake": {"Flour": 300, "Sugar": 200, "Butter": 150, "Eggs": 3}
}

ingredient_prices = {
  "Flour": 0.5, "Eggs": 5, "Cheese": 2, "Milk": 1,
  "Tomato": 1.5, "Olives": 3, "Lettuce": 1.2, "Cucumber": 2,
  "Carrot": 0.8, "Potato": 0.6, "Onion": 0.9, "Garlic": 4,
  "Sugar": 1.3, "Butter": 2.5
}
```

1. Write a Python function to calculate the total cost of each recipe. Define calculate_total_cost() The function should:
   • **Return a dictionary** with the following exact values:
   ```
   {
    "Pasta": 310,
   "Pizza": 725,
    "Salad": 645,
    "Soup": 420,
    "Cake": 800
   }
   ```

2. Write a Python function to normalize ingredient quantities. Define normalize_quantities() The function should:
   •Create a DataFrame with recipes as columns and ingredients as rows.
   • Use the exact same data structure as in the recipes dictionary. • Scale ingredient quantities by a factor of 1.5.
   • Return the scaled DataFrame.
3. Write a Python function to identify unique ingredients used in all recipes. Define unique_ingredients() The function should:
   • Extract unique ingredient names from all recipes.
   • Return a set of unique ingredient names.

Use Case: Sports Score Prediction System (SportsScorePredictionSystem.py)

```
match_data = [
  {"team": "Team A", "prev_score": 65, "opp_strength": 70},
  {"team": "Team B", "prev_score": 80, "opp_strength": 60},
  {"team": "Team C", "prev_score": 55, "opp_strength": 75},
  {"team": "Team D", "prev_score": 90, "opp_strength": 50},
  {"team": "Team E", "prev_score": 70, "opp_strength": 65}
]
```

Write a Python function to predict the match score. Define predict_score(prev_score, opp_strength) The function should:

- • Take the previous score and opponent strength as inputs.
- • Predict the score using the formula: prev_score * 0.8 + opp_strength * 0.2.
- • Return the predicted score as an integer.

Write a Python function to save match predictions. Define save_predictions(match_data, filename="predictions.csv") The function should:

- • Iterate through the match data list.
- • Calculate and add the predicted score for each match.
- • Save the predictions to a CSV file.
- • Return the list of predictions.

Write a Python function to analyze predictions and find the highest predicted scorer. Define analyze_predictions(filename="predictions.csv") The function should:

- • Read the predictions from the CSV file.
- • Identify the team with the highest predicted score.
- • Print and return the team name along with its predicted score.

3)Write a Python function to analyze predictions and find the highest predicted scorer.
Define analyze_predictions(filename="predictions.csv")
The function should:

- Read the predictions from the CSV file.
- Identify the team with the highest predicted score.
- Print and return the team name along with its predicted score.

Use Case: Loan Management System (LoanManagementSystem.py)
1)Write a Python function to calculate the total repayment amount.
Define calculate_total_amount(principal, rate, tenure)

```
loan_data = np.array([
  [101, 5000, 5, 2],
  [102, 10000, 4, 5],
  [103, 7500, 6, 3],
  [104, 12000, 3, 4],
  [105, 3000, 7, 1]
])
```

1. **Write a Python function to calculate the total repayment amount**. Define calculate_total_amount(principal, rate, tenure) The function should:
   • Take principal amount, interest rate (in %), and tenure (in years) as inputs.
   • Calculate the total repayment amount using the formula: Total Amount = Principal + (Principal × Rate/100 × Tenure)
   • Return the total repayment amount.
2. **Write a Python function to display loan details**. Define display_loans(loan_data) The function should:
   • Iterate through the loan dataset.
   • Extract loan details including loan ID, principal, interest rate, and tenure.
   • Calculate the total repayment amount for each loan.
   • Return a list of formatted loan details with this exact format: "Loan ID: {id}, Principal: ${principal}, Interest Rate: {rate}%, Tenure: {tenure} years, Total Repayment: ${total_repayment:.2f}"
3. **Write a Python function to find the loan with the highest total repayment amount**. Define find_highest_repayment(loan_data) The function should:
   • Iterate through the loan dataset

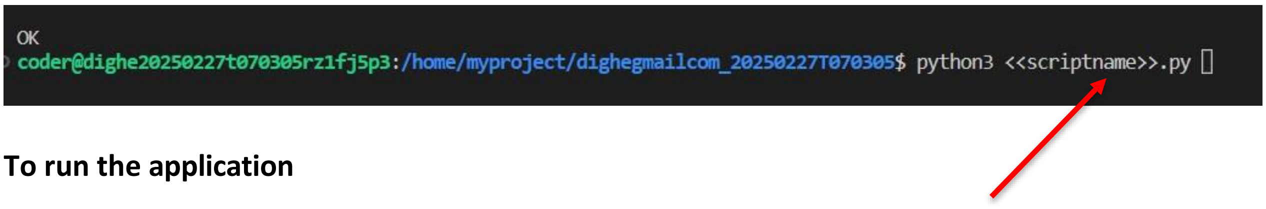
• Identify the loan with the highest total repayment amount.
• Return the original loan array (not a tuple or new data structure**).**
The test expects exactly 4 elements in the returned array, not 5 elements with the total_repayment added
For example, if loan with ID 104 has the highest repayment, return the original array [104, 12000, 3, 4]

Execution Steps to Follow:

1. All actions like build, compile, running application, running test cases will bethrough Command Terminal.
2. To open the command terminal the test takers, need to go to Application menu(Three horizontal lines at left top) -> Terminal -> New Terminal
3. This editor Auto Saves the code
4. If you want to exit(logout) and continue the coding later anytime (using Save & Exit option on Assessment Landing Page) then you need to use **CTRL+Shift+B** -command compulsorily on code IDE. This will push or save the updated contents in the internal git/repository. Else the code will not be available in the next login.
5. These are time bound assessments the timer would stop if you logout and while logging in back using the same credentials the timer would resume from the sametime it was stopped from the previous logout.
6. To setup environment:
   You can run the application without importing any packages
7. To launch application:
   python3 recipe.py
   python3 SportsScorePredictionSystem.py
   python3 LoanManagementSystem.py
8. To run Test cases:
   python3 -m unittest

9. You need to use **CTRL+Shift+B** - command compulsorily on code IDE, before final submission as well. This will push or save the updated contents in the internal git/repository, and will be used to evaluate the code quality.

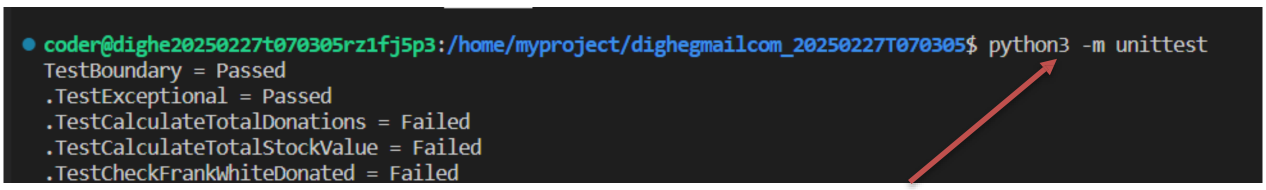
Screen shot to run the program



```
OK
coder@dighe20250227t070305rz1fj5p3:/home/myproject/dighegmailcom_20250227T070305$ python3 <<scriptname>>.py
```

To run the application

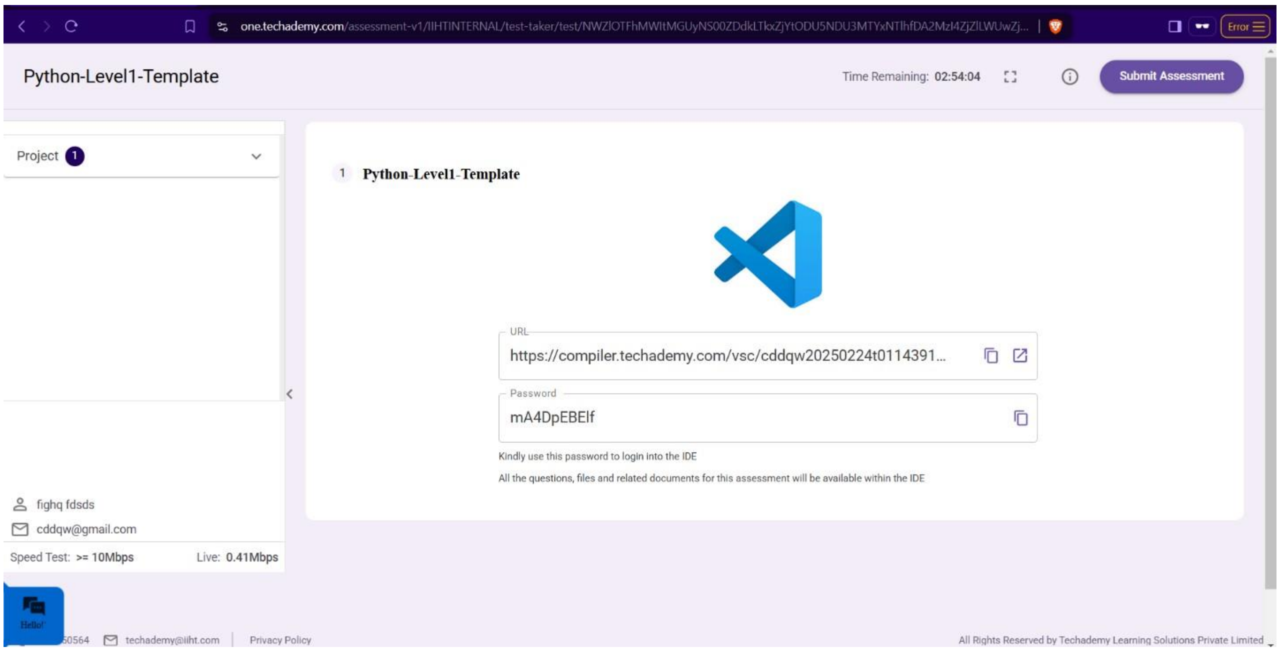
python3 recipe.py
python3 SportsScorePredictionSystem.py
python3 LoanManagementSystem.py



```
● coder@dighe20250227t070305rz1fj5p3:/home/myproject/dighegmailcom_20250227T070305$ python3 -m unittest
  TestBoundary = Passed
  .TestExceptional = Passed
  .TestCalculateTotalDonations = Failed
  .TestCalculateTotalStockValue = Failed
  .TestCheckFrankWhiteDonated = Failed
```

To run the testcase

```
python3 -m unittest
```



one.techademy.com/assessment-v1/IIHTINTERNAL/test-taker/test/NWZlOTFhMWItMGUyNS00ZDdkLTkxZjYtODU5NDU3MTYxNTlhfDA2Mzl4ZjZlLWUwZj...

Python-Level1-Template

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Project 1

1 Python-Level1-Template

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