

AI LAB 9 – 9762-Aditi Gupta– Batch D

Simple Prototype for expert system Code:

```
class ExpertSystem:
    def __init__(self):
        self.rules = {
            "low_calorie": "Focus on consuming fruits, vegetables, lean proteins,
and whole grains. Limit added sugars and fats.",
            "high_protein": "Include plenty of protein-rich foods such as lean meats,
fish, eggs, dairy, legumes, and nuts.",
            "low_carb": "Limit carbohydrate intake and focus on consuming
nonstarchy vegetables, lean proteins, and healthy fats.",
            "balanced_diet": "Eat a variety of foods from all food groups, including
fruits, vegetables, grains, protein-rich foods, and healthy fats."
        }

    def consult(self, dietary_needs):
        recommendations = []
        for need in dietary_needs:
            if need in self.rules:
                recommendations.append(self.rules[need])
            else:
                recommendations.append("Sorry, I'm not sure what to advise for '{}'
dietary need.".format(need))
        return recommendations

def main():
    expert_system = ExpertSystem()
```

Example consultations

```
print("Dietary needs: low_calorie, high_protein")
```

```
print(expert_system.consult(["low_calorie", "high_protein"]))
```

```
print("\nDietary needs: low_carb, balanced_diet")
```

```
print(expert_system.consult(["low_carb", "balanced_diet"]))
```

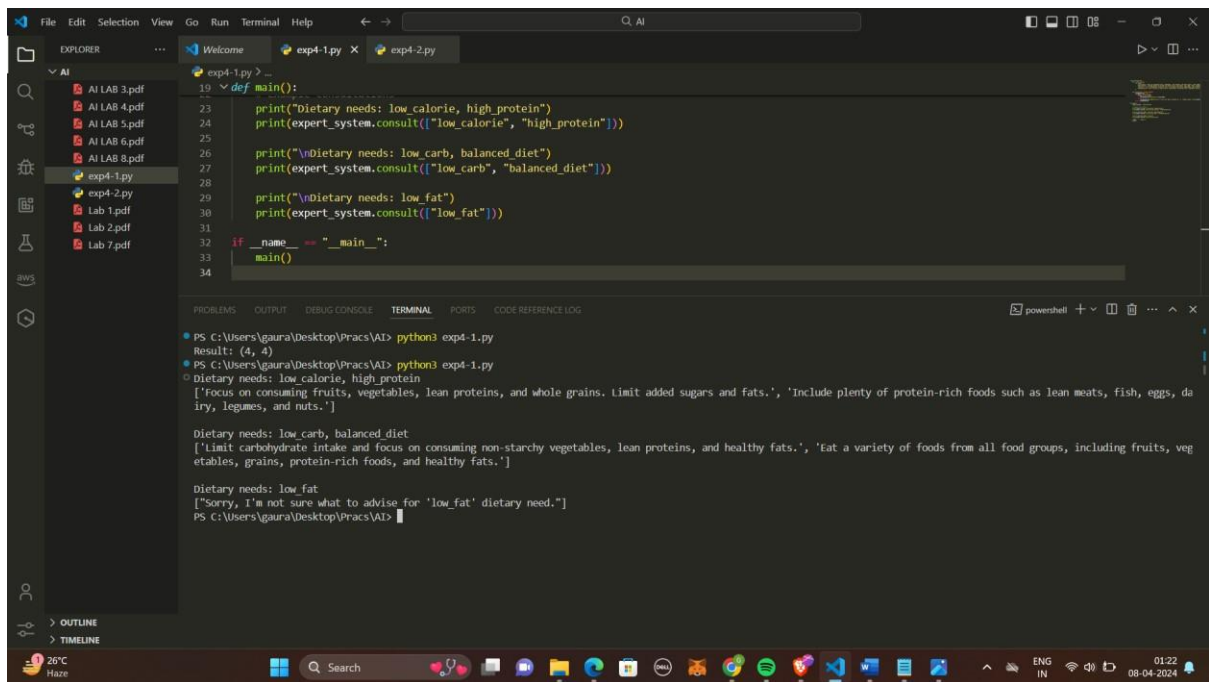
```
print("\nDietary needs: low_fat")
```

```
print(expert_system.consult(["low_fat"]))
```

```
if __name__ == "__main__":
```

```
    main()
```

OUTPUT:



The screenshot shows a Visual Studio Code editor with a Python script named `exp4-1.py` open. The script contains a `main()` function that prints dietary needs and consults an `expert_system` for three different scenarios: low calorie/high protein, low carb/balanced diet, and low fat. The terminal window at the bottom shows the output of running the script with `python3 exp4-1.py`. The output displays the dietary needs for each scenario and the corresponding consultation results from the expert system.

```
PS C:\Users\gaura\Desktop\Pracs\AI> python3 exp4-1.py
Result: (4, 4)
PS C:\Users\gaura\Desktop\Pracs\AI> python3 exp4-1.py
Dietary needs: low calorie, high protein
['focus on consuming fruits, vegetables, lean proteins, and whole grains. Limit added sugars and fats.', 'Include plenty of protein-rich foods such as lean meats, fish, eggs, dairy, legumes, and nuts.']

Dietary needs: low carb, balanced diet
['Limit carbohydrate intake and focus on consuming non-starchy vegetables, lean proteins, and healthy fats.', 'Eat a variety of foods from all food groups, including fruits, vegetables, grains, protein-rich foods, and healthy fats.']

Dietary needs: low fat
['Sorry, I'm not sure what to advise for 'low_fat' dietary need.']
PS C:\Users\gaura\Desktop\Pracs\AI>
```