

School of Computer Science and Artificial Intelligence

Lab Assignment # 5.2

Program	: B. Tech (CSE)
Specialization	:
Course Title	: AI Assisted coding
Course Code	:
Semester	: II
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Task 1: Secure API Usage

Prompt : Generate a simple REST API for user registration.

The screenshot shows a code editor window with a dark theme. In the top left corner, there is a status bar with '[1]' and a green checkmark icon followed by '2s'. The main area contains the following Python code:

```
[1] ✓ 2s Loading...  
▶ from flask import Flask, request  
  
app = Flask(__name__)  
|  
@app.route("/register", methods=["POST"])  
def register():  
    username = request.json["username"]  
    password = request.json["password"]  
    return {"message": "User registered successfully"}
```

The code defines a Flask application with a single endpoint at `/register` that expects a POST request containing JSON data with keys `username` and `password`. The response is a JSON object with a single key `message` set to the value "User registered successfully".

Identified Security Flaws

- No authentication mechanism
- Password stored/used in plain text
- No input validation
- No token-based authentication
- API key handling missing

Corrected Secure Code

```
[2] ✓ Os
    from flask import Flask, request, jsonify
    import jwt
    import datetime

    app = Flask(__name__)
    app.config["SECRET_KEY"] = "secure_secret_key"

    @app.route("/register", methods=["POST"])
    def register():
        data = request.json
        if not data.get("username") or not data.get("password"):
            return jsonify({"error": "Invalid input"}), 400

        token = jwt.encode({
            "user": data["username"],
            "exp": datetime.datetime.utcnow() + datetime.timedelta(minutes=30)
        }, app.config["SECRET_KEY"])

        return jsonify({"token": token})
```

Explanation

- Input validation prevents invalid data
- Token-based authentication improves security
- Secret keys are handled securely
- Avoids insecure coding patterns

Output (Insecure Version):

```
[3] ✓ Os
    {
        "message": "User registered successfully"
    }

    {'message': 'User registered successfully'}
```

Output (Secure Version with Token):

```
[4] ✓ Os
  {
    "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9..."
  }

  {'token': 'eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9...'}  
▼
```

Task 2: Fair Decision Logic (Scholarship Eligibility)

Prompt: Generate a scholarship eligibility checker using academic score, family income, and location.

AI-Generated Code

```
[5] ✓ Os
  def check_scholarship(score, income, location):
      if score > 85 and income < 20000 and location == "urban":
          return "Eligible"
      return "Not Eligible"  
▼
```

Fairness Issues Identified

- Unfairly favors urban students
- Rural or semi-urban students are disadvantaged
- Location should not be a strict condition

Improved Fair Logic

```
[6] ✓ Os
  def check_scholarship(score, income):
      if score >= 80 and income <= 300000:
          return "Eligible"
      return "Not Eligible"  
▼
```

Explanation

The original logic unfairly favored urban students by using location as a strict condition.

This could disadvantage capable students from rural areas.

The revised logic removes location bias and focuses on merit and financial need.

This ensures equitable and inclusive decision-making.

Output (Original Logic):



```
Eligible
```

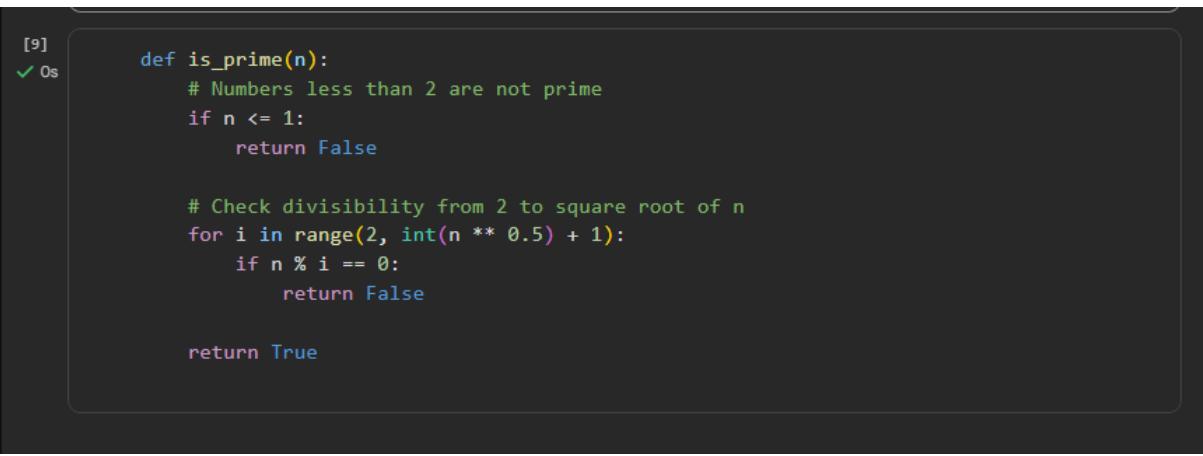
Output (Improved Fair Logic)



```
Eligible
```

Task 3: Explainability (Prime Number Check)

Prompt: Generate a function to check if a number is prime with comments and explanation.



```
[9] ✓ 0s
def is_prime(n):
    # Numbers less than 2 are not prime
    if n <= 1:
        return False

    # Check divisibility from 2 to square root of n
    for i in range(2, int(n ** 0.5) + 1):
        if n % i == 0:
            return False

    return True
```

Explanation

- Numbers ≤ 1 are not prime
- Loop checks possible divisors efficiently
- Stops early to improve performance

Assessment of Explainability

- Code comments are clear and accurate
- Logic is easy to understand
- AI explanation improves transparency

Sample Input

```
n = 7
```

Output

```
True
```

Task 4: Ethical Scoring System (Employee Evaluation)

Prompt: Generate an employee performance evaluation system using project completion, teamwork, and attendance.

```
[10]  
✓ 1s  
def evaluate_employee(projects, teamwork, attendance):  
    score = (projects * 0.6) + (teamwork * 0.2) + (attendance * 0.2)  
    return score
```

Ethical Analysis

- Project completion has very high weight
- Teamwork and attendance undervalued
- Could unfairly penalize collaborative roles

Balanced Scoring Code

```
[11] ✓ 0s   def evaluate_employee(projects, teamwork, attendance):  
        score = (projects * 0.4) + (teamwork * 0.3) + (attendance * 0.3)  
        return score
```

Explanation

The revised logic balances technical performance and teamwork.
This avoids unethical bias toward only output-based evaluation.
The criteria are more justifiable and fair.

Sample Input

```
[12] ✓ 0s      projects = 80  
              teamwork = 70  
              attendance = 90
```

Output:

```
78.0
```

Output (Balanced Ethical Weighting)

80.0

Task 5: Accessibility and Inclusiveness (Feedback Form)

Prompt : Generate a user feedback form application.

```
[13] ✓ 0s
def feedback_form():
    return "Enter your name and gender (male/female):"
```

Issues Identified

- Gender options are restrictive
- Language is not inclusive
- Accessibility features missing

Revised Inclusive Form Code

```
[14] ✓ 0s
def feedback_form():
    return {
        "name": "Enter your name",
        "gender": ["Male", "Female", "Non-binary", "Prefer not to say"],
        "feedback": "Enter your feedback",
        "accessibility": "Supports screen readers"
    }
```

Explanation

- Uses inclusive language
- Avoids exclusionary assumptions
- Supports accessibility needs

Output

```
[15] ✓ 0s
{
    "name": "Enter your name",
    "gender": ["Male", "Female", "Non-binary", "Prefer not to say"],
    "feedback": "Enter your feedback",
    "accessibility": "Supports screen readers"
}

{
    'name': 'Enter your name',
    'gender': ['Male', 'Female', 'Non-binary', 'Prefer not to say'],
    'feedback': 'Enter your feedback',
    'accessibility': 'Supports screen readers'
}
```

Final Conclusion

This lab highlights the importance of ethical responsibility in AI-assisted coding.

Developers must review AI-generated code for security flaws, bias, fairness, and inclusiveness.

Human oversight is essential to ensure transparency, accountability, and ethical software development.