

AI Assisted Coding

Assignment-5.3

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Batch 27

Task 1: Privacy & Data Security in AI-Generated Code

Scenario (in simple words)

AI may generate **unsafe login systems**. Your job is to:

1. Show **unsafe code**
2. Point out **security problems**
3. Fix it and **explain improvements**

AI-Generated Insecure Login Code

```
username = "admin"  
password = "1234"  
  
u = input("Enter username: ")  
p = input("Enter password: ")  
  
if u == username and p == password:  
    print("Login successful")  
else:  
    print("Invalid credentials")
```

Output:

```
*** Enter username: admin  
Enter password: 1234  
Login successful
```

Security Issues Identified

- Credentials are **hardcoded**
- Password stored and compared in **plain text**
- No input validation
- Easy to hack

Revised Secure Login Code

```
import hashlib

stored_username = "admin"

stored_password_hash = hashlib.sha256("1234".encode()).hexdigest()

u = input("Enter username: ")

p = input("Enter password: ")

p_hash = hashlib.sha256(p.encode()).hexdigest()

if u == stored_username and p_hash == stored_password_hash:

    print("Login successful")

else:

    print("Invalid credentials")
```

Output:

```
... Enter username: admin
      Enter password: 1234
      Login successful
```

Explanation of Improvements

- Removed plain-text password storage
- Used **hashing (SHA-256)** for security

- Reduced risk of credential leakage
- Improved responsible coding practice
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Task 2: Bias Detection in AI-Generated Decision Systems

Scenario

AI may **favor or discriminate** based on name or gender.

AI-Generated Loan Approval Code:

```
def loan_approval(name, gender, income):
    if gender == "male" and income > 30000:
        return "Loan Approved"
    elif gender == "female" and income > 50000:
        return "Loan Approved"
    else:
        return "Loan Rejected"
```

Bias Identified

- Different income rules for males vs females
- Gender is **irrelevant** for loan approval
- This is **unfair and discriminatory**

Bias-Free Version

```
def loan_approval(income, credit_score):
    if income > 40000 and credit_score > 700:
        return "Loan Approved"
    else:
        return "Loan Rejected"
```

Fairness Discussion

- Removed gender and name
- Decisions based only on **financial factors**
- Ensures equal treatment

Task 3: Transparency & Explainability

(Recursive Binary Search)

What they want

- Clear code
- Clear comments
- Easy explanation

Recursive Binary Search Code

```
def binary_search(arr, low, high, target):
    if low > high:
        return -1
    mid = (low + high) // 2
    if arr[mid] == target:
        return mid
    elif arr[mid] > target:
        return binary_search(arr, low, mid - 1, target)
    else:
        return binary_search(arr, mid + 1, high, target)

arr = [2, 4, 6, 8, 10, 12]
target = 8
result = binary_search(arr, 0, len(arr)-1, target)
print("Element found at index:", result)
```

output:

... Element found at index: 3

Student Assessment

- Base case clearly defined
- Recursive calls explained
- Code is beginner-friendly
- Transparent and readable

Task 4: Ethical Evaluation of AI-Based Scoring Systems

AI-Generated Scoring Code

```
def applicant_score(name, gender, skills, experience):  
    score = skills * 2 + experience * 3  
  
    if gender == "male":  
        score += 5  
  
    return score
```

Ethical Issues

- Gender affects score
- Not job-related
- Biased hiring logic

Ethical Version

```
def applicant_score.skills, experience, education_level):  
    score = skills * 2 + experience * 3 + education_level * 2  
  
    return score
```

Ethical Analysis

- Removed gender & name

- Focused on professional merit
- Fair and objective scoring

Task 5: Inclusiveness & Ethical Variable Design

Non-Inclusive Code

```
def employee_details(name, gender):
    if gender == "male":
        print(name, "is a strong leader")
    else:
        print(name, "is supportive")
```

Problems

- Gender stereotypes
- Non-inclusive logic
- Assumptions based on identity

Inclusive Version

```
def employee_details(name, role):
    print(name, "is performing well in the role of", role)
```

Inclusiveness Improvement

- Removed gender-based assumptions
- Used neutral variables
- Respectful and fair design