1945_AI_AC_5.3

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

Scenario

AI tools can sometimes generate insecure authentication logic.

AI Prompt Used

> “Generate a simple login system in Python.”

AI-Generated 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("Login failed")
```

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

=== Code Execution Successful ===
```

main.py | Share | Run | Output

```
username = "admin"
password = "1234"

u = input("Enter username: ")
p = input("Enter password: ")

if u == username and p == password:
    print("Login successful")
else:
    print("Login failed")
```

```
Enter username: nagashiva
Enter password: 12345
Login failed

=== Code Execution Successful ===
```

Security Issues Identified

1. **Hardcoded credentials** (username and password written directly in code)
2. **Plain text password comparison**
3. **No input validation**
4. **Not scalable or secure for real systems**

Revised Secure Version of the Code

Explanation of Improvements

- Removed plain-text password comparison
- Used **password hashing** to improve security
- Reduced risk of credential leakage
- Demonstrates better authentication practices

Task 2: Bias Detection in AI-Generated Decision Systems

Scenario

AI systems may unintentionally introduce bias.

AI Prompt Used

> “Create a loan approval system in Python.”

AI-Generated Loan Approval Code

```python
name = "Ravi"
gender = "male"
income = 35000

if gender == "male" and income > 30000:
    print("Loan Approved")
elif gender == "female" and income > 50000:
    print("Loan Approved")
else:
    print("Loan Rejected")

```

```
Loan Approved

=== Code Execution Successful ===
```

Bias Identified

- Different rules for male and female
- Gender should not affect loan approval

Revised Fair Code

main.py Share Run Output

```python
income = 35000
credit_score = 720

if income > 40000 and credit_score >= 700:
    print("Loan Approved")
else:
    print("Loan Rejected")

```

```
Loan Rejected

=== Code Execution Successful ===
```

Discussion on Fairness

- Removed gender completely
- Decisions based on **financial factors only**
- Promotes fairness and equality

Bias Mitigation Strategies

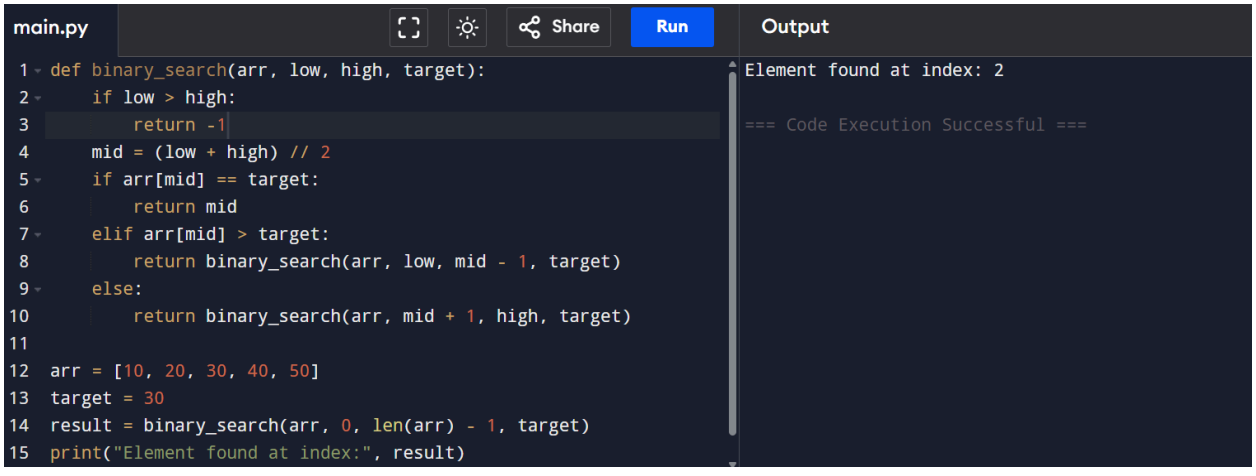
- Avoid personal attributes like gender or name
- Use relevant, objective data
- Regular bias audits and human review

Task 3: Transparency & Explainability (Recursive Binary Search)

Scenario

AI-generated code should be easy to understand and verify.

AI-Generated Recursive Binary Search Code



Step-by-Step Explanation

- **Base Case:** When `low > high`, element does not exist
- **Recursive Case:**
    - Compare middle element with target
    - Search left or right half accordingly

Student Assessment

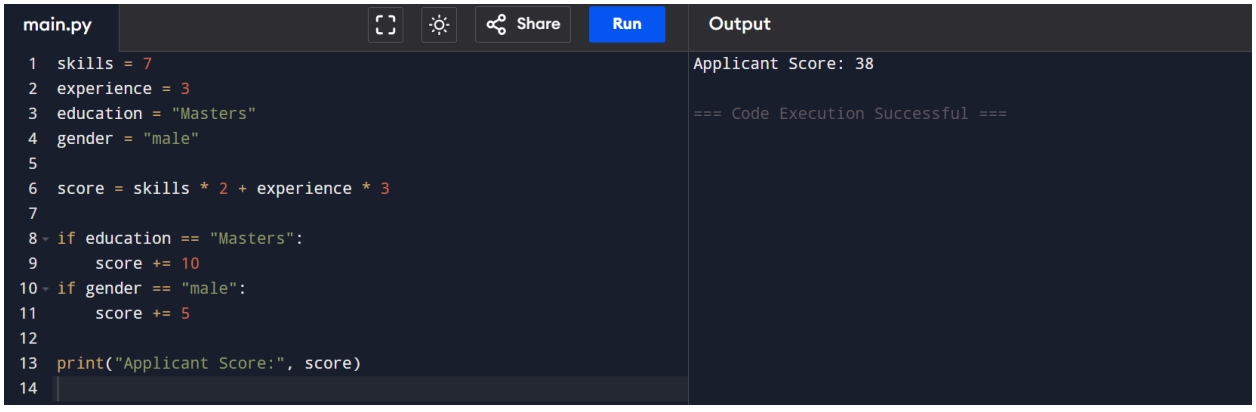
- Comments clearly match the code
- Base case and recursive case are explained well
- Easy to understand for beginner-level students
- Transparent and readable logic

Task 4: Ethical Evaluation of AI-Based Scoring Systems

Scenario

AI scoring systems can affect hiring decisions.

AI-Generated Scoring System Code



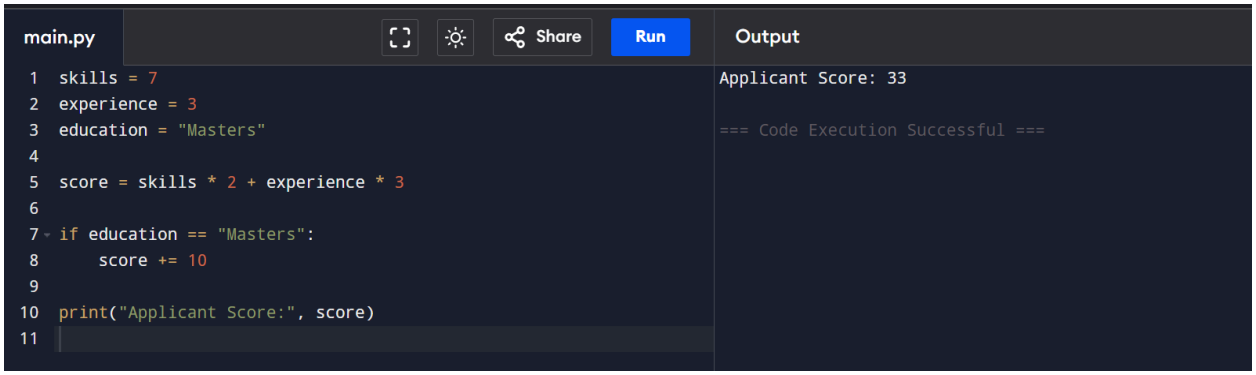
Ethical Issues Identified

- Gender directly affects the score
- Gender is **irrelevant** for job performance
- Leads to biased hiring decisions

Ethical Analysis

- Violates fairness and equal opportunity
- Can disadvantage qualified candidates

Ethical Version



Task 5: Inclusiveness & Ethical Variable Design

Scenario

Inclusive coding avoids gender assumptions.

AI-Generated Code

main.py Share Run Output

```
1  name = "Anita"
2  gender = "female"
3
4  if gender == "male":
5      print("He is an employee")
6  else:
7      print("She is an employee")
8
```

```
She is an employee

=== Code Execution Successful ===
```

Issues Identified

- Gender-specific language
- Assumes only male/female genders
- Not inclusive or respectful

Inclusive Version

Explanation

- Removed gender dependency
- Used neutral language
- More inclusive and professional