AI Assisted Coding – Lab Report

Name: Mohammad Muneer Ahmed
Roll No: 2303A51475

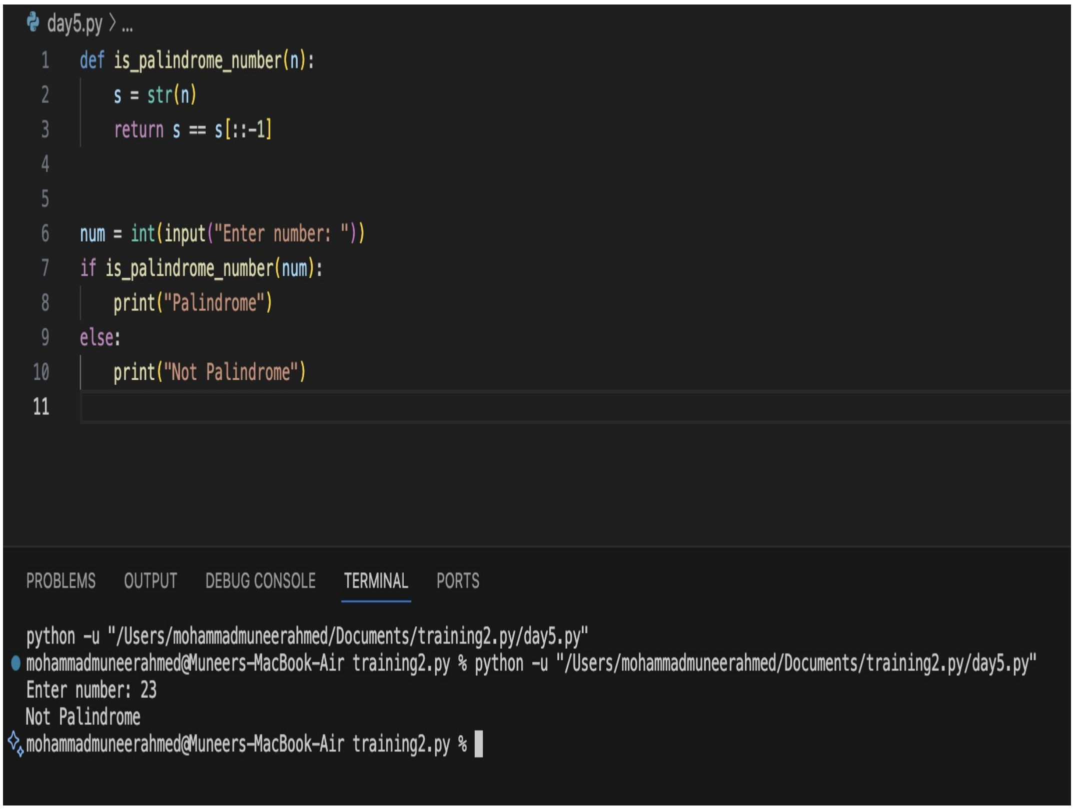
Task 1 — Palindrome Number Check

Algorithm:

1. Read integer
2. Convert to string
3. Reverse string
4. Compare
5. Print result

Pseudocode:

```
input n
s = string(n)
if s == reverse(s)
print Palindrome
else print Not
```



```python
def is_palindrome_number(n):
    s = str(n)
    return s == s[::-1]


num = int(input("Enter number: "))
if is_palindrome_number(num):
    print("Palindrome")
else:
    print("Not Palindrome")
```

```
python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
mohammadmuneerahmed@Muneers-MacBook-Air training2.py % python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
Enter number: 23
Not Palindrome
mohammadmuneerahmed@Muneers-MacBook-Air training2.py %
```

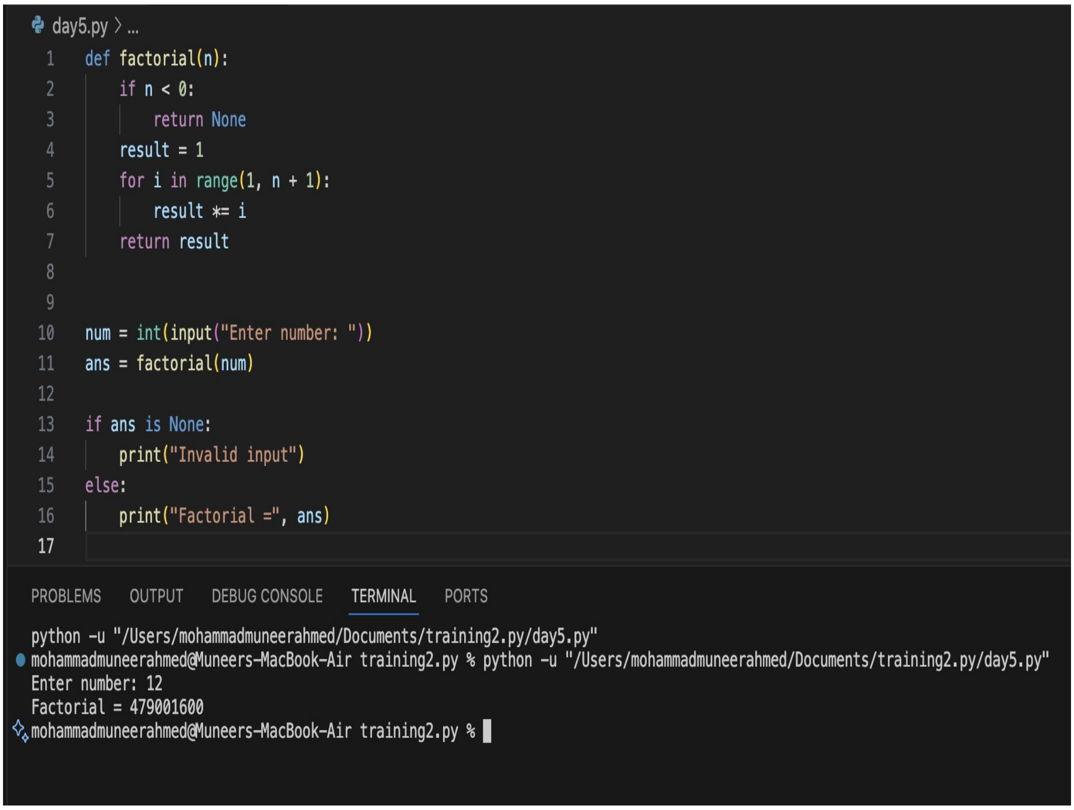
Task 2 — Factorial

Algorithm:

1. Read n
2. If n<0 invalid
3. result=1
4. Loop multiply
5. Print

Pseudocode:

```
input n
if n<0 stop
result=1
for i 1..n result*=i
print result
```



```python
def factorial(n):
    if n < 0:
        return None
    result = 1
    for i in range(1, n + 1):
        result *= i
    return result


num = int(input("Enter number: "))
ans = factorial(num)

if ans is None:
    print("Invalid input")
else:
    print("Factorial =", ans)
```

```
python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
● mohammadmuneerahmed@Muneers-MacBook-Air training2.py % python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
Enter number: 12
Factorial = 479001600
mohammadmuneerahmed@Muneers-MacBook-Air training2.py %
```

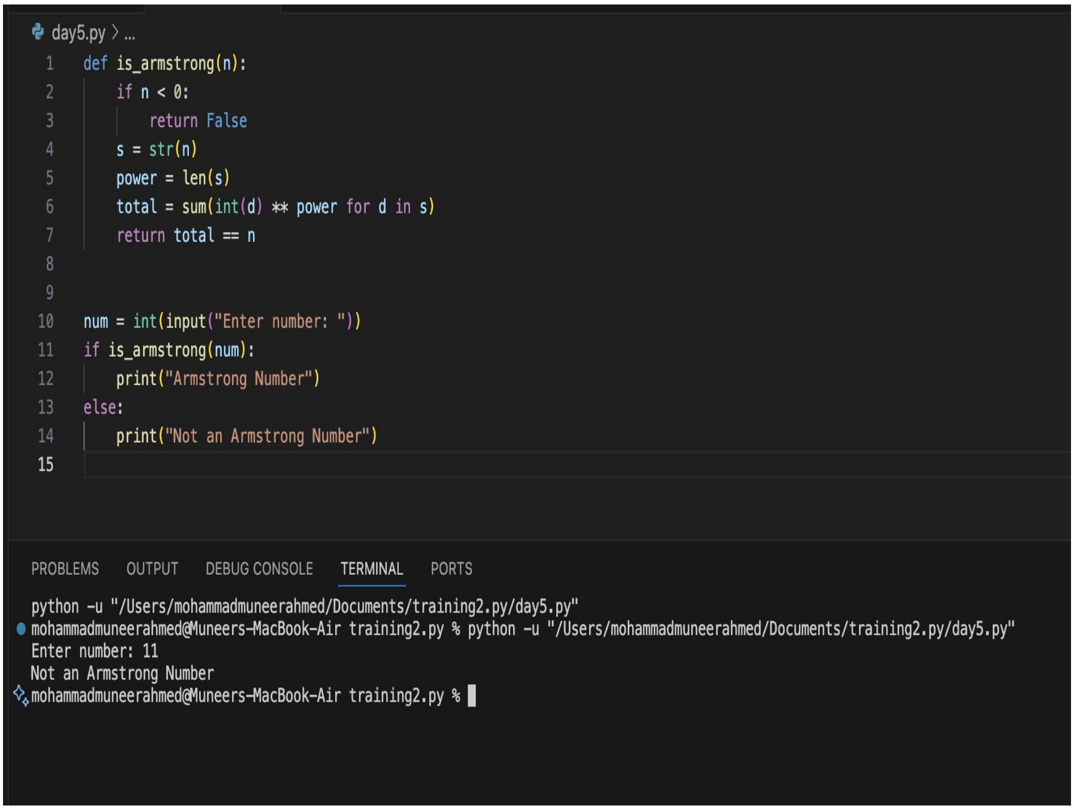
Task 3 — Armstrong

Algorithm:

1. Read n
2. Count digits
3. Sum powers
4. Compare
5. Print

Pseudocode:

```
input n
p=len(digits)
total=sum(d^p)
if total==n Armstrong
```



```python
def is_armstrong(n):
    if n < 0:
        return False
    s = str(n)
    power = len(s)
    total = sum(int(d) ** power for d in s)
    return total == n


num = int(input("Enter number: "))
if is_armstrong(num):
    print("Armstrong Number")
else:
    print("Not an Armstrong Number")
```

```
python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
mohammadmuneerahmed@Muneers-MacBook-Air training2.py % python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
Enter number: 11
Not an Armstrong Number
mohammadmuneerahmed@Muneers-MacBook-Air training2.py % 
```

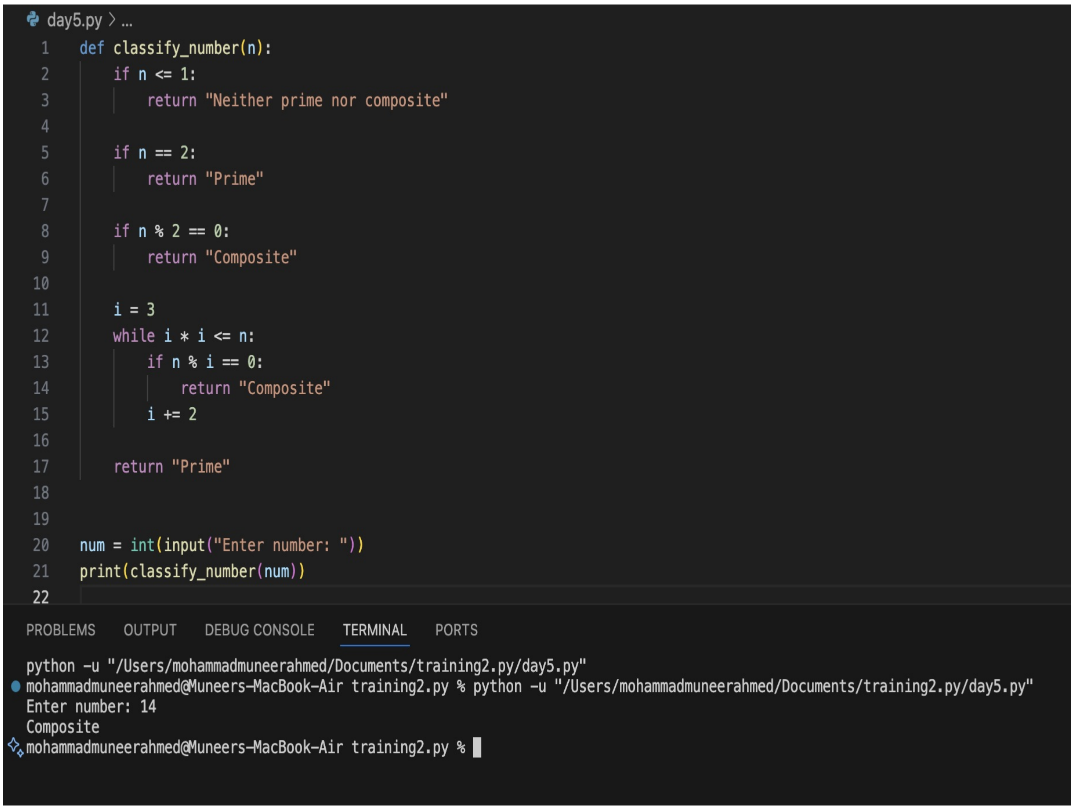
Task 4 — Prime or Composite

Algorithm:

1 Read n
2 Check <=1
3 Check even
4 Test odd divisors
5 Print

Pseudocode:

```
input n
if <=1 neither
test divisors
if divides composite
else prime
```



```python
def classify_number(n):
    if n <= 1:
        return "Neither prime nor composite"

    if n == 2:
        return "Prime"

    if n % 2 == 0:
        return "Composite"

    i = 3
    while i * i <= n:
        if n % i == 0:
            return "Composite"
        i += 2

    return "Prime"


num = int(input("Enter number: "))
print(classify_number(num))

```

```
python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
mohammadmuneerahmed@Muneers-MacBook-Air training2.py % python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
Enter number: 14
Composite
mohammadmuneerahmed@Muneers-MacBook-Air training2.py % 
```

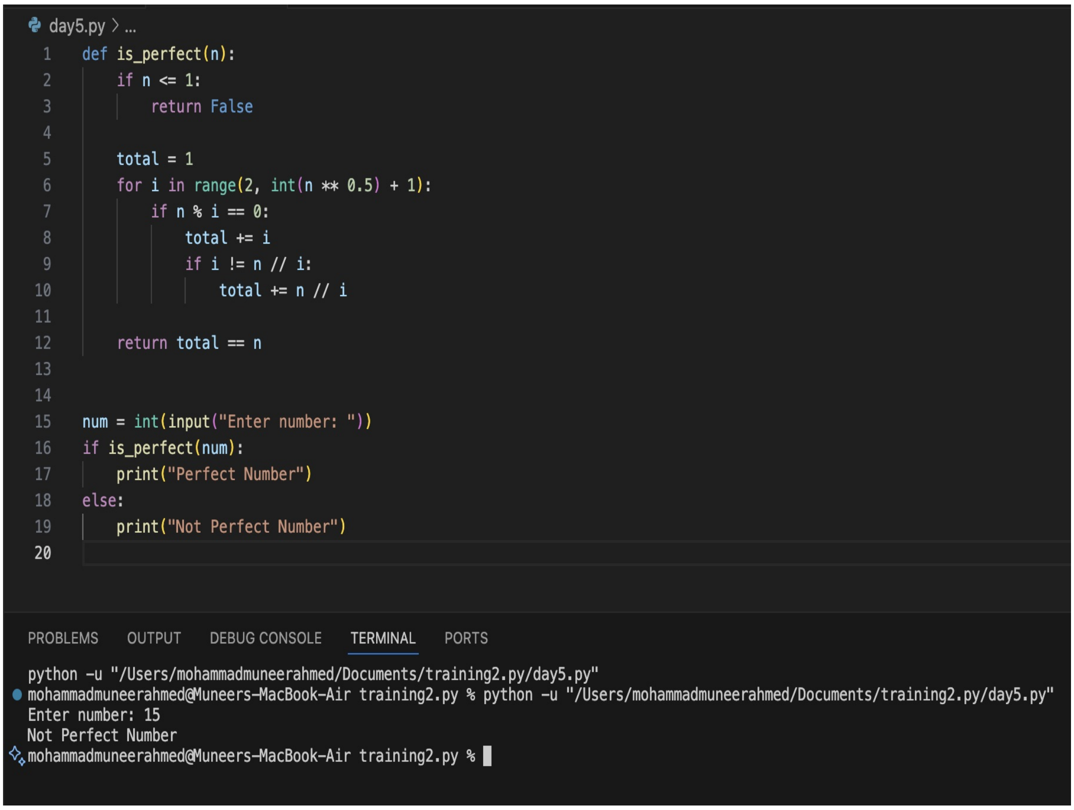
Task 5 — Perfect Number

Algorithm:

1 Read n
2 Sum divisors
3 Use sqrt loop
4 Compare
5 Print

Pseudocode:

```
input n
sum=1
add divisor pairs
if sum==n perfect
```



```python
def is_perfect(n):
    if n <= 1:
        return False

    total = 1
    for i in range(2, int(n ** 0.5) + 1):
        if n % i == 0:
            total += i
            if i != n // i:
                total += n // i

    return total == n


num = int(input("Enter number: "))
if is_perfect(num):
    print("Perfect Number")
else:
    print("Not Perfect Number")
```

```
python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
mohammadmuneerahmed@Muneers-MacBook-Air training2.py % python -u "/Users/mohammadmuneerahmed/Documents/training2.py/day5.py"
Enter number: 15
Not Perfect Number
mohammadmuneerahmed@Muneers-MacBook-Air training2.py % 
```