

```
def is_palindrome(num):  
    temp = num  
    rev = 0  
    while num > 0:  
        rev = rev * 10 + num % 10  
        num //= 10  
    return temp == rev
```

```
C:\Users\kunda>python "c:\Users\kunda\OneDrive\Pictures - Copy\Dokumen\AI coding\AI LAB 3.1.py"  
121: Palindrome  
123: Not palindrome  
0: Palindrome  
5: Palindrome  
1221: Palindrome  
12321: Palindrome  
10: Not palindrome  
-121: Not palindrome
```

```
def factorial(n):  
    if n < 0:  
        return "Factorial not defined for negative numbers"  
    result = 1  
    for i in range(1, n + 1):  
        result *= i  
    return result
```

```
Factorial tests:  
0! = 1  
1! = 1  
5! = 120  
10! = 3628800  
-3: Error: factorial is not defined for negative integers  
3.5: Error: factorial expects an integer
```

```
def is_armstrong(num):  
    digits = str(num)  
    power = len(digits)  
    total = sum(int(d)**power for d in digits)  
    return total == num
```

Factorial tests:

```
0! = 1  
1! = 1  
5! = 120  
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-3: Error: factorial is not defined for negative integers  
3.5: Error: factorial expects an integer
```

```
def classify_number(n):  
    if not isinstance(n, int):  
        return "Invalid input"  
    if n <= 1:  
        return "Neither Prime nor Composite"  
    for i in range(2, int(n ** 0.5) + 1):  
        if n % i == 0:  
            return "Composite"  
    return "Prime"
```

Armstrong tests:

```
0: Error: name 'is_armstrong' is not defined  
1: Error: name 'is_armstrong' is not defined  
153: Error: name 'is_armstrong' is not defined  
370: Error: name 'is_armstrong' is not defined  
371: Error: name 'is_armstrong' is not defined  
9474: Error: name 'is_armstrong' is not defined  
9475: Error: name 'is_armstrong' is not defined  
-153: Error: name 'is_armstrong' is not defined  
153: Error: name 'is_armstrong' is not defined
```

```
def is_perfect(num):  
    total = 0  
    for i in range(1, num):  
        if num % i == 0:  
            total += i  
    return total == num
```

Perfect-number tests:

```
6: Error: name 'is_perfect' is not defined  
28: Error: name 'is_perfect' is not defined  
496: Error: name 'is_perfect' is not defined  
8128: Error: name 'is_perfect' is not defined  
12: Error: name 'is_perfect' is not defined  
-6: Error: name 'is_perfect' is not defined  
6: Error: name 'is_perfect' is not defined
```

```
def even_or_odd(n):  
    if not isinstance(n, int):  
        return "Invalid input"  
    return "Even" if n % 2 == 0 else "Odd"
```

Even/Odd tests:

```
0: Even  
1: Odd  
2: Even  
-3: Odd  
10: Even  
2: Invalid input
```