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Course: AI ASSISSTED CODING

Semester: Even

Task 1: Statistical Summary for Survey Data

You are a data analyst intern working with survey responses stored as numerical lists.

PROMPT:

You are a data analyst intern working with survey responses stored as numerical lists.

```python
#Task 1: Statistical Summary for Survey Data
#You are a data analyst intern working with survey responses stored as numerical lists

def statistical_summary(survey_data):
    if not survey_data:
        return "The survey data is empty."
```

Code and output:

```python
def statistical_summary(survey_data):
    if not survey_data:
        return "The survey data is empty."
    n = len(survey_data)
    mean = sum(survey_data) / n
    sorted_data = sorted(survey_data)
    if n % 2 == 0:
        median = (sorted_data[n // 2 - 1] + sorted_data[n // 2]) / 2
    else:
        median = sorted_data[n // 2]
    data_range = max(survey_data) - min(survey_data)
    variance = sum((x - mean) ** 2 for x in survey_data) / n
    std_deviation = variance ** 0.5
    summary = {
        "Mean": mean,
        "Median": median,
        "Range": data_range,
```

```python
20            "Range": data_range,
21            "Standard Deviation": std_deviation
22        }
23        return summary
24    survey_responses = [4, 8, 6, 5, 3, 7, 9, 2, 10, 1]
25    summary = statistical_summary(survey_responses)
26    print("Statistical Summary of Survey Data:")
27    for key, value in summary.items():
28        print(f"{key}: {value:.2f}")
```

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```
Statistical Summary of Survey Data:
Mean: 5.50
Median: 5.50
Range: 9.00
Standard Deviation: 2.87
```

Task 2: Armstrong Number

Prompt:

#Write an Armstrong number code

```python
#Write an Armstrong number code
def is_armstrong_number(num):
    num_str = str(num)
    num_digits = Len(num_str)
    sum_of_powers = sum(int(digit) ** num_d
    return sum of powers == num
```

Code and output:

```python
30    #Write an Armstrong number code
31    def is_armstrong_number(num):
32        num_str = str(num)
33        num_digits = len(num_str)
34        sum_of_powers = sum(int(digit) ** num_digits for digit in num_str)
35        return sum_of_powers == num
36    number = 153
37    if is_armstrong_number(number):
38        print(f"{number} is an Armstrong number.")
39    else:
40        print(f"{number} is not an Armstrong number.")
41    number = 9474
42    if is_armstrong_number(number):
```

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```
153 is an Armstrong number.
9474 is an Armstrong number.
```

Task 3: Leap Year Validation

Prompt:

#Write a code to check leap year

```python
#Write a code to check leap year
def is_leap_year(year):
    if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
        return True
    return False
```

Code and Output:

```
48    #Write a code to check leap year
49    def is_leap_year(year):
50        if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
51            return True
52        return False
53    print(is_leap_year(2020))  # True
54    print(is_leap_year(1900))  # False
55    print(is_leap_year(2000))  # True
```

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```
True
False
True
```

Task 4:
#Write a Python program that calculates the sum of odd and even numbers in a tuple.
Prompt:

```
#Write a Python program that calculates the sum of odd and even numbers in a tuple
def sum_odd_even(numbers):
    sum_odd = sum(num for num in numbers if num % 2 != 0)
    sum_even = sum(num for num in numbers if num % 2 == 0)
    return sum_odd, sum_even
```

Code and output:

```python
#Write a Python program that calculates the sum of odd and e
def sum_odd_even(numbers):
    sum_odd = sum(num for num in numbers if num % 2 != 0)
    sum_even = sum(num for num in numbers if num % 2 == 0)
    return sum_odd, sum_even
numbers_tuple = (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
sum_odd, sum_even = sum_odd_even(numbers_tuple)
print(f"Sum of odd numbers: {sum_odd}")
print(f"Sum of even numbers: {sum_even}")
```

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Sum of odd numbers: 25
Sum of even numbers: 30