Assignment-3.2

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1)

Code:

```python
def calculator():
    print("Simple Calculator")
while True:
        # Input numbers with error handling
try:
        num1 = float(input("Enter first number: "))
num2 = float(input("Enter second number: "))
except ValueError:
        print("Error: Please enter a valid number.")
continue        # Input operator        operator =
input("Enter operator (+, -, *, /): ").strip()
    # Perform calculation
if operator == '+':
        result = num1 + num2
elif operator == '-':
        result = num1 - num2
    elif operator == '*':
```

```python
        result = num1 * num2
    elif operator == '/':            if
num2 != 0:
            result = num1 / num2
    else:
            print("Error: Division by zero is not allowed.")
continue        else:
        print("Error: Invalid operator.")
continue        print(f"Result:
{result}")
    # Ask if the user wants to continue        again = input("Do you
want to perform another calculation?
(y/n): ").strip().lower()
    if again != 'y':
        print("Goodbye!")
break
# Run the calculator
calculator()
```

Output:

```
/ai_coding/New folder/ass_3.py"
Simple Calculator
Enter first number: 2
Enter second number: 3
Enter operator (+, -, *, /): +
Result: 5.0
Do you want to perform another calculation? (y/n): n
Goodbye!
```

2)

Code:

def sort_students(students):

   # Sort by marks (descending), then by name (ascending)

return sorted(students, key=lambda x: (-x[1], x[0])) students

= [] n = int(input("Enter number of students: ")) for i in

range(n):

   name = input(f"Enter name of student {i+1}: ")

marks = int(input(f"Enter marks of student {i+1}: "))

students.append((name, marks)) sorted_students =

sort_students(students) print("\nSorted Student List:")

for name, marks in sorted_students:

   print(name, marks)

Output:

```
Enter number of students: 4
Enter name of student 1: ananya
Enter marks of student 1: 98
Enter name of student 2: pooja
Enter marks of student 2: 98
Enter name of student 3: hasini
Enter marks of student 3: 40
Enter name of student 4: nandini
Enter marks of student 4: 20

Sorted Student List:
ananya 98
pooja 98
hasini 40
nandini 20
```

3)

Code:

```python
def is_prime(n):    #

Handle edge cases    if

n <= 1:

    return False

if n == 2:

    return True

if n % 2 == 0:

return False

    # Check divisibility up to sqrt(n)

for i in range(3, int(n ** 0.5) + 1, 2):

if n % i == 0:
```
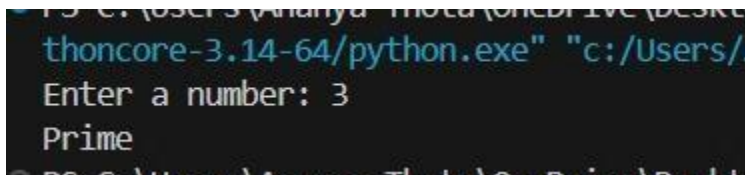
```python
        return False
return True
# Taking input from user num =
int(input("Enter a number: ")) if
is_prime(num):    print("Prime") else:
print("Not Prime")
```

Output:


```
thoncore-3.14-64/python.exe" "c:/Users/
Enter a number: 3
Prime
```

4)

Code:

```python
def calculate_grade(percentage):
if percentage >= 90:        return
"A+"    elif percentage >= 80:
return "A"    elif percentage >= 70:
    return "B"
  elif percentage >= 60:
return "C"    elif
percentage >= 50:
```

```python
        return "D"
    else:
        return "Fail"

print("===== Student Grading System =====")
name = input("Enter Student Name: ")
roll_no = input("Enter Roll Number: ")
subjects = int(input("Enter number of subjects: "))
total_marks = 0
max_marks = subjects * 100

for i in range(subjects):
    marks = int(input(f"Enter marks for subject {i+1}: "))
    total_marks += marks

percentage = (total_marks / max_marks) * 100
grade = calculate_grade(percentage)

print("\n===== Result =====")
print("Name     :", name)
print("Roll No  :", roll_no)
print("Total Marks:", total_marks, "/", max_marks)
print("Percentage :", round(percentage, 2), "%")
print("Grade     :", grade)
```

Output:

```
===== Student Grading System =====
Enter Student Name: janaki
Enter Roll Number: 234
Enter number of subjects: 4
Enter marks for subject 1: 90
Enter marks for subject 2: 80
Enter marks for subject 3: 70
Enter marks for subject 4: 60

===== Result =====
Name        : janaki
Roll No     : 234
Total Marks: 300 / 400
Percentage : 75.0 %
Grade       : B
```

5)

Code:

```
def km_to_miles(km):    return km * 0.621371

def miles_to_km(miles):    return miles /

0.621371 print("=== Unit Conversion System

===") print("1. Kilometers to Miles") print("2.

Miles to Kilometers") choice = int(input("Enter

your choice (1 or 2): ")) if choice == 1:

    km = float(input("Enter distance in kilometers: "))

print("Distance in miles:", round(km_to_miles(km), 2)) elif choice

== 2:

    miles = float(input("Enter distance in miles: "))    print("Distance

in kilometers:", round(miles_to_km(miles), 2)) else:

    print("Invalid choice")
```

Output:

```
=== Unit Conversion System ===
1. Kilometers to Miles
2. Miles to Kilometers
Enter your choice (1 or 2): 1
Enter distance in kilometers: 40
Distance in miles: 24.85
```