

Assignment-3.2

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1)

Code:

```
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 == '*':
    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:

```
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:
```

```
        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:

```
+ PS C:\Users\Varanya\MyData\OneDrive\Desktop>
thoncore-3.14-64/python.exe" "c:/Users/
Enter a number: 3
Prime
PS C:\Users\Varanya\MyData\OneDrive\Desktop>
```

4)

Code:

```
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:  
    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
```