Assignment-3.2

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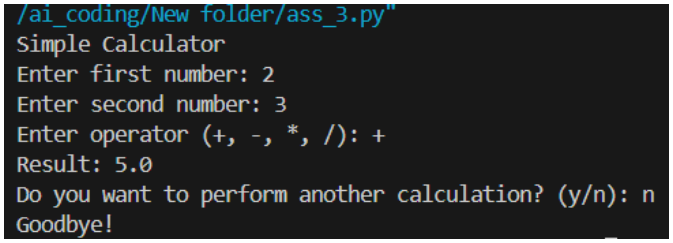
1)

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:

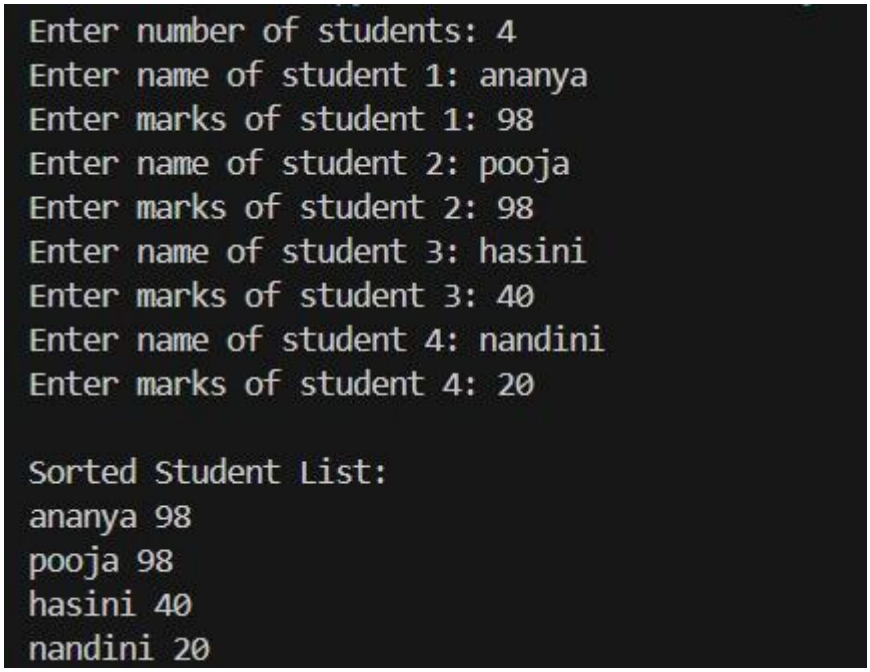


2)

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:



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:

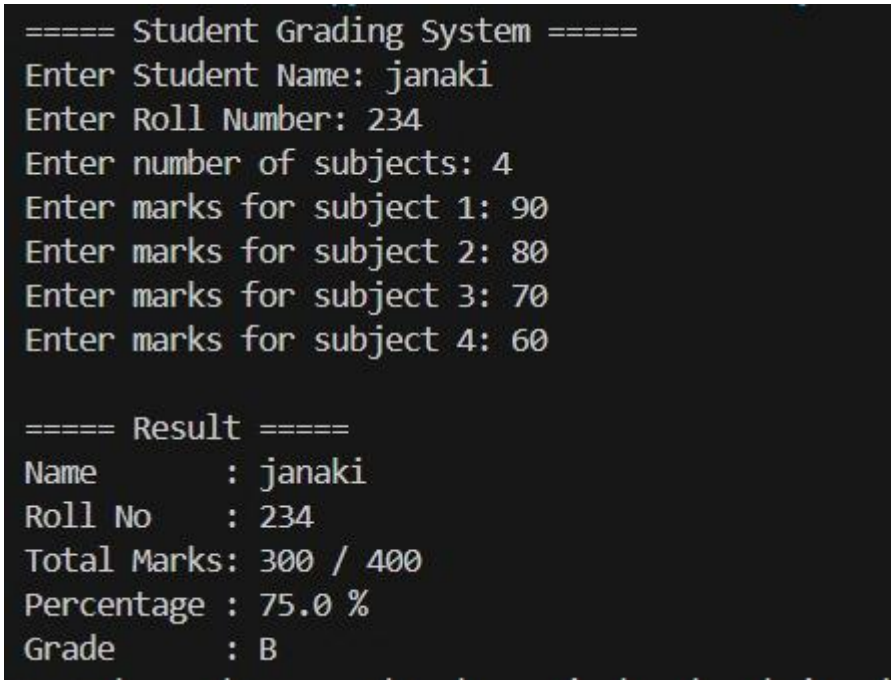
4)

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:



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: