# Mogamat Smith - Code Explanation

# Question 1: Arithmetic and Assignment Operators

This part of the program demonstrates how to use arithmetic operators like addition, multiplication, and division, along with assignment operators (+=, \*=).

The variables x and y are initialized, then x is increased by 3 using 'x += 3', and y is multiplied by 2 using 'y \*= 2'. The final result is calculated by dividing x by y.

Code Snippet:  
x = 5  
y = 4  
x += 3  
y \*= 2  
result = x / y  
print(result)

# Question 2: Comparison and Logical Operators

This section explores the use of comparison operators (>, %, <=) and logical operators (and, or). Three variables a, b, and c are defined. The program checks if a > b, if b is even, and if c <= a. Then, it combines the results using logical operators.

Code Snippet:  
a = 10  
b = 6  
c = 8  
condition1 = a > b  
condition2 = b % 2 == 0  
condition3 = c <= a  
final\_condition = condition1 or (condition2 and condition3)  
print(final\_condition)

# Question 3: Conditional Statements

This part takes user input for a test score between 0 and 100. It checks if the input is valid using a loop with error handling. Then, it uses if-elif-else statements to determine the grade based on the score range.

Code Snippet:  
while True:  
 try:  
 score = float(input("Enter score: "))  
 if 0 <= score <= 100:  
 break  
 else:  
 print("Score must be 0-100")  
 except ValueError:  
 print("Enter a number")  
  
if score >= 90:  
 grade = "A"  
elif score >= 80:  
 grade = "B"  
elif score >= 70:  
 grade = "C"  
elif score >= 60:  
 grade = "D"  
else:  
 grade = "F"  
print(grade)

# Question 4: Combining Operators and Conditionals

This final part prompts the user to enter two numbers and an arithmetic operation (+, -, \*, /). It then performs the chosen operation using conditional statements. If division is chosen and the second number is zero, it handles the error gracefully.

Code Snippet:  
while True:  
 try:  
 num1 = float(input("Enter first number: "))  
 num2 = float(input("Enter second number: "))  
 break  
 except ValueError:  
 print("Enter valid numbers")

while True:  
 operation = input("Enter operation (+, -, \*, /): ")  
 if operation in ["+", "-", "\*", "/"]:  
 break  
 else:  
 print("Invalid operation")  
  
try:  
 if operation == "+":  
 result = num1 + num2  
 elif operation == "-":  
 result = num1 - num2  
 elif operation == "\*":  
 result = num1 \* num2  
 elif operation == "/":  
 if num2 == 0:  
 raise ZeroDivisionError  
 result = num1 / num2  
 print(result)  
except ZeroDivisionError:  
 print("Division by zero not allowed")