Practical No. 09

Q.no.1.

Code:-

# --------- Arithmetic Associative Law--------

print("=== Arithmetic Associative Law ===")

a = int(input("Enter value for a : "))

b = int(input("Enter value for b : "))

c = int(input("Enter value for c : "))

lhs\_add = (a + b) + c

rhs\_add = a + (b + c)

print(f"(a + b) + c = ({a} + {b}) + {c} = {lhs\_add}")

print(f"a + (b + c) = {a} + ({b} + {c}) = {rhs\_add}")

if lhs\_add == rhs\_add:

print("Addition Associative Law holds ")

else:

print("Addition Associative Law does not hold ")

lhs\_mul = (a \* b) \* c

rhs\_mul = a \* (b \* c)

print(f"(a \* b) \* c = ({a} \* {b}) \* {c} = {lhs\_mul}")

print(f"a \* (b \* c) = {a} \* ({b} \* {c}) = {rhs\_mul}")

if lhs\_mul == rhs\_mul:

print("Multiplication Associative Law holds ")

else:

print("Multiplication Associative Law does not hold ")

print("\n")

# --------- Boolean Associative Law--------

print("=== Boolean Associative Law ===")

A = bool(int(input("Enter value for a : ")))

B = bool(int(input("Enter value for b : ")))

C = bool(int(input("Enter value for c : ")))

lhs\_or = (A or B) or C

rhs\_or = A or (B or C)

print(f"(A or B) or C = ({A} or {B}) or {C} = {lhs\_or}")

print(f"A or (B or C) = {A} or ({B} or {C}) = {rhs\_or}")

if lhs\_or == rhs\_or:

print("OR Associative Law holds ")

else:

print("OR Associative Law does not hold ")

lhs\_and = (A and B) and C

rhs\_and = A and (B and C)

print(f"(A and B) and C = ({A} and {B}) and {C} = {lhs\_and}")

print(f"A and (B and C) = {A} and ({B} and {C}) = {rhs\_and}")

if lhs\_and == rhs\_and:

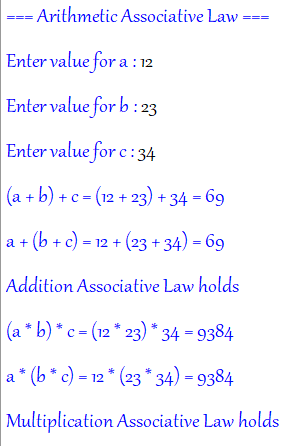
print("AND Associative Law holds ")

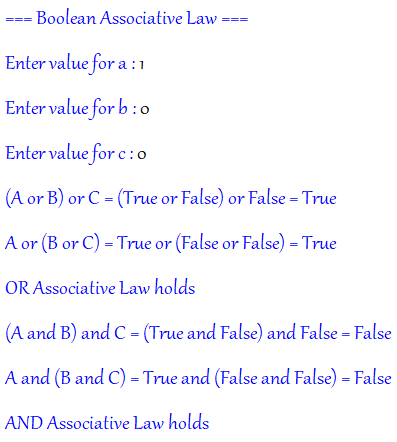
else:

print("AND Associative Law does not hold ")

print("\n")

Output:-





Q.no.2

Code:-

# --------- Arithmetic Distributed Law--------

print("=== Arithmetic Distributed Law ===")

a = int(input("Enter value for a : "))

b = int(input("Enter value for b : "))

c = int(input("Enter value for c : "))

lhs = a \* (b + c)

rhs = (a \* b) + (a \* c)

print(f"LHS = {a} \* ({b} + {c}) = {lhs}")

print(f"RHS = ({a} \* {b}) + ({a} \* {c}) = {rhs}")

if lhs == rhs:

print("Distributed Law holds for Arithmetic!\n ")

else:

print("Not Equal")

print("--------------------------------------------------")

# --------- Boolean Distributed Law--------

print("=== Boolean Distributed Law ===")

A = bool(int(input("Enter value for a : ")))

B = bool(int(input("Enter value for b : ")))

C = bool(int(input("Enter value for c : ")))

lhs\_bool = (A and B) or C

rhs\_bool = (A and B) or (A and C)

print(f"LHS = ({A} and {B}) or {C} = {lhs\_bool}")

print(f"RHS = ({A} and {B}) or ({A} and {C}) = {rhs\_bool}")

if lhs\_bool == rhs\_bool:

print("Distributed Law holds for Boolean logic!\n ")

else:

print("Not Equal ")

Output:-

