

Activity 05: Function

1. Create a program that will simulate the following mathematical operations. Design a menu that will ask the user to enter the choice and provide each functions for each operations. The functions must provide the following validation on each given input. A None value must be return.

[D] - Divide (the second number or denominator must not be equal to zero)

[E] - Exponentiation

[R] - Remainder (the second number or denominator must not be equal to zero)

[F] - Summation (the two numbers are the limits and it must be the second number must be greater than the first number, if the input is 4 and 8 the sum must be $4 + 5 + 6 + 7 + 8$).

TO SUBMIT: Upload your files in your GitHub repository under a folder named TA5

Source Code:

```
def divide(a, b):
    return a / b if b != 0 else None
def exponentiation(a, b):
    return a ** b
def remainder(a, b):
    return a % b if b != 0 else None
def summation(a, b):
    if b <= a:
        return None
    return sum([x for x in range(int(a), int(b)+1)]) if (a.is_integer() and
b.is_integer()) else None

while True:
    print("\n[D] Division")
    print("[E] Exponentiation")
    print("[R] Remainder")
    print("[F] Summation")
    print("[Q] Quit")
    print("-----")

    choice = input("Enter choice: ").upper()

    if choice == "Q":
        print("Thank you for using the program")
```

```
        break

if choice not in ["D", "E", "R", "F"]:
    print("Error, Invalid input choice")
    continue

try:
    num1 = float(input("Enter first number: "))
    num2 = float(input("Enter second number: "))
except ValueError:
    result = None
else:
    if choice == "D":
        result = divide(num1, num2)
    elif choice == "E":
        result = exponentiation(num1, num2)
    elif choice == "R":
        result = remainder(num1, num2)
    elif choice == "F":
        result = summation(num1, num2)

    print(f"Operation Result: {result if result is not None else 'Invalid input'}")
```

Output:

```
[D] Division
[E] Exponentiation
[R] Remainder
[F] Summation
[Q] Quit
-----
Enter choice: d
Enter first number: 10
Enter second number: 5
Operation Result: 2.0

[D] Division
[E] Exponentiation
[R] Remainder
[F] Summation
[Q] Quit
-----
Enter choice: e
Enter first number: 5
Enter second number: 5
Operation Result: 3125.0

[D] Division
[E] Exponentiation
[R] Remainder
[F] Summation
[Q] Quit
-----
Enter choice: r
Enter first number: 10
Enter second number: 5
Operation Result: 0.0

[D] Division
[E] Exponentiation
[R] Remainder
[F] Summation
[Q] Quit
-----
Enter choice: f
Enter first number: 1
Enter second number: 5
Operation Result: 15

[D] Division
[E] Exponentiation
[R] Remainder
[F] Summation
[Q] Quit
-----
Enter choice: q
Thank you for using the program
```

