A2- Python exercises.

Luz Andrea Leija Morales

1864719

Tuesday N4-N6

Bio-medical engineer

Exercise 1

Develop an algorithm that can make the conversion from decimal to binary system (from 0 to 255).

Valid number, between 0 and 255.

```
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#Artificial Intelligence
#Tuesday N4-N6

decimal = int(input("Enter a decimal number between 0 and 255: "))

if decimal >=0 and decimal <= 255:
  binary = 0
  i = 0
  while (decimal>0):
    digit = decimal % 2
    decimal = int(decimal//2)
    binary = binary + digit * (10**i)
    i=i+1
  print("Binary number:", binary)

else:
  print("Non-valid number, just enter numbers from 0 to 255 :)")
```

```
Enter a decimal number between 0 and 255: 240
Binary number: 11110000
```

Non-valid number.

```
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decimal = int(input("Enter a decimal number between 0 and 255: "))

if decimal >=0 and decimal <= 255:
  binary = 0
  i = 0
  while (decimal>0):
    digit = decimal % 2
    decimal = int(decimal//2)
    binary = binary + digit * (10**i)
    i=i+1
  print("Binary number:", binary)

else:
  print("Non-valid number, just enter numbers from 0 to 255 :)")
```

```
Enter a decimal number between 0 and 255: 256
Non-valid number, just enter numbers from 0 to 255 :)
```

Another easier way

```
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decimal = int(input("Enter a decimal number between 0 and 255: "))

if decimal >=0 and decimal <= 255:
  binary = format(decimal,'b')

  print(binary)

else:
  print("Non-valid number, just enter numbers from 0 to 255 :)")
```

```
Enter a decimal number between 0 and 255: 34
100010
```

Exercise 2

Math Pyramid: This algorithm will create a math pyramid from an initial list of integers. An example of the final result will look like this:

initial list = [20, 5, 10, 8]

final result: 20, 5, 10, 8
25,15,18
40,33
73

```
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n= int(input("Enter the number of numbers from the list (maximum 4): "))

if n == 1:
  x = int(input("Enter the first number: "))
  print("")
  print("Initial list: ",x)
  print("Final result: ")
  print(x)

if n == 2:
  x = int(input("Enter the first number: "))
  y = int(input("Enter the second number: "))
  a = x + y
  print("")
  print("Initial list: ",x,y)
  print("Final result: ")
  print (x,y)
  print ("", x + y)

if n == 3:
  x = int(input("Enter the first number: "))
  y = int(input("Enter the second number: "))
  z = int(input("Enter the third number: "))
```

```
a = x + y
b = y + z
print("")
print("Initial list: ",x,y,z)
print("Final result: ")
print (x,y,z)
print ("", a,b)
print (" ", a+b)

f n == 4:
x = int(input("Enter the first number: "))
y = int(input("Enter the second number: "))
z = int(input("Enter the third number: "))
w = int(input("Enter the fourth number: "))
a = x + y
b = y + z
c = z + w
d= a + b
e = b + c
print("")
print("Initial list: ",x,y,z,w)
print("Final result: ")
print (x,y,z,w)
print ("", a,b,c)
print (" ", d,e)
print ("  ", d+e)

f n >= 5:
```

```
    print("Invalid amount of numbers, maximum 4 :)")
```

```
Enter the number of numbers from the list (maximum 4): 3
Enter the first number: 1
Enter the second number: 2
Enter the third number: 3

Initial list:  1 2 3
Final result:
1 2 3
 3 5
  8
```