WEEK 9

### Question 1

Write a code to check whether product of digits at even places is divisible by sum of digits

at odd place of a positive integer.

Input Format:

Take an input integer from stdin.

Output Format:

Print TRUE or FALSE.

Example Input:

1256

Output:

TRUE

Example Input:

1595

Output:

FALSE

**For example:**

| **Test** | **Result** |
| --- | --- |
| print(productDigits(1256)) | True |
| print(productDigits(1595)) | False |

PROGRAM:

def productDigits(n):

a=str(n)

even=1

odd=0

sump=0

for i in range(1,len(a),2):

even\*=int(a[i])

for i in range (0,len(a),2):

sump+=int(a[i])

if(even%sump==0):

return"True"

else:

return"False"

#### OUTPUT:

|  | **Test** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | print(productDigits(1256)) | True | True |  |
|  | print(productDigits(1595)) | False | False |  |

Passed all tests!

### Question 2

An automorphic number is a number whose square ends with the number itself.

For example, 5 is an automorphic number because 5\*5 =25. The last digit is 5 which same

as the given number.

If the number is not valid, it should display “Invalid input”.

If it is an automorphic number display “Automorphic” else display “Not Automorphic”.

Input Format:

Take a Integer from Stdin Output Format: Print Automorphic if given number is Automorphic number,otherwise Not Automorphic Example input: 5 Output: Automorphic Example input: 25 Output: Automorphic Example input: 7 Output: Not Automorphic

**For example:**

| **Test** | **Result** |
| --- | --- |
| print(automorphic(5)) | Automorphic |

PROGRAM:

def automorphic(number):

if number <= 0:

return "Invalid input"

square = number \*\* 2

square\_last\_digit = square % 10

number\_last\_digit = number % 10

if square\_last\_digit == number\_last\_digit:

return "Automorphic"

else:

return "Not Automorphic"

# Input

try:

number = int(input())

print(automorphic(number),end="")

except ValueError:

print(end="")

except EOFError:

print(end="")

#### OUTPUT:

|  | **Test** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | print(automorphic(5)) | Automorphic | Automorphic |  |
|  | print(automorphic(7)) | Not Automorphic | Not Automorphic |  |

Passed all tests!

### Question 3

A number is considered to be ugly if its only prime factors are 2, 3 or 5.

[1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 15, …] is the sequence of ugly numbers.

Task:

complete the function which takes a number n as input and checks if it's an ugly number.

return ugly if it is ugly, else return not ugly

Hint:

An ugly number U can be expressed as: U = 2^a \* 3^b \* 5^c, where a, b and c are nonnegative integers.

**For example:**

| **Test** | **Result** |
| --- | --- |
| print(checkUgly(6)) | ugly |
| print(checkUgly(21)) | not ugly |

PROGRAM:

def checkUgly(n):

if n <= 0:

return "not ugly"

while n % 2 == 0:

n //= 2

while n % 3 == 0:

n //= 3

while n % 5 == 0:

n //= 5

if n == 1:

return "ugly"

else:

return "not ugly"

#### OUTPUT:

|  | **Test** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | print(checkUgly(6)) | ugly | ugly |  |
|  | print(checkUgly(21)) | not ugly | not ugly |  |

Passed all tests!

### Question 4

complete function to implement coin change making problem i.e. finding the minimum

number of coins of certain denominations that add up to given amount of money.

The only available coins are of values 1, 2, 3, 4

Input Format:

Integer input from stdin.

Output Format:

return the minimum number of coins required to meet the given target.

Example Input:

16

Output:

4

Explanation:

We need only 4 coins of value 4 each

Example Input:

25

Output:

7

Explanation:

We need 6 coins of 4 value, and 1 coin of 1 value

PROGRAM:  
def coinChange(n):

coinlist=[4,3,2,1]

result=[]

while(n!=0):

for i in coinlist:

if(i<n or i==n):

result.append(i)

n=n-i

break

return len(result)

#### OUTPUT:

|  | **Test** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | print(coinChange(16)) | 4 | 4 |  |

Passed all tests!

### Question 5

An e-commerce company plans to give their customers a special discount for Christmas.

They are planning to offer a flat discount. The discount value is calculated as the sum of all

the prime digits in the total bill amount.

Write an algorithm to find the discount value for the given total bill amount.

Constraints

1 <= orderValue< 10e100000

Input

The input consists of an integer orderValue, representing the total bill amount.

Output

Print an integer representing the discount value for the given total bill amount.

Example Input

578

Output

12

**For example:**

| **Test** | **Result** |
| --- | --- |
| print(christmasDiscount(578)) | 12 |

PROGRAM:

def is\_prime(n):

if n<= 1:

return False

if n<=3:

return False

if n%2==0 or n%3==0:

return False

i=5

while i\*i <=n:

if n%i==0 or n%(i+2)==0:

return False

i +=6

return True

def christmasDiscount(orderValue):

order\_str= str(orderValue)

discount=0

for digit in order\_str:

num= int(digit)

if is\_prime(num):

discount+=num

return discount

#### OUTPUT:

|  | **Test** | **Expected** | **Got** |  |
| --- | --- | --- | --- | --- |
|  | print(christmasDiscount(578)) | 12 | 12 |  |

Passed all tests!