VIT-AP UNIVERSITY, ANDHRA PRADESH

CSE4027 – DWDM - Lab Sheet :1

Academic year: 2022-2023 **Branch/ Class:** B.Tech
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1. Calculate income tax for the given income by adhering to the below rules

Taxable Income	Rate (%)
First 5,00,000	0
Second 7,50,000	10
Third 10,00,000	20
Remaining	30

```
givenincome = float(input("enter your income: "))

if givenincome <= 500000:
    taxAmount = 0
elif givenincome <= 750000:
    taxAmount = (givenincome - 500000) * 0.10
elif givenincome <= 1000000:
    taxAmount = (givenincome - 750000) * 0.20
else:
    taxAmount = (givenincome - 1000000) * 0.30
# Print the Tax.
print('The tax for the income ', givenincome, '=', taxAmount)
```

Output

```
enter your income: 1435000
The tax for the income  1435000.0 = 130500.0
```

2. Write a program to read numbers until -1 is encountered. Display the number of prime numbers and composite numbers entered by user

```
cp = 0
cc = 0

while True:
    n = int(input("Enter a number: "))

    if(n == -1):
        break

    c = 0
    for i in range(1, n+1):
        if(n % i == 0):
            c = c + i

    if c == (n + 1):
        cp = cp + 1
    else:
        cc = cc + 1

print("Number of prime numbers: ", cp)
print("Number of composite numbers: ", cc)
```

Output

```
Enter a number: 12
Enter a number: 13
Enter a number: 2
Enter a number: 3
Enter a number: 5
Enter a number: 7
Enter a number: 11
Enter a number: -1
Number of prime numbers:  6
Number of composite numbers:  1
```

3. Given a list iterate it and display numbers which are divisible by 5 and if you find number greater than 150 stop the loop iteration

1. list1 = [12, 15, 32, 42, 55, 75, 122, 132, 150, 180, 200]

Expected output:
15
55
75
150

```
[2]  list1 = [12,15,32,42,55,75,122,132,150,180,200]
     for i in range(0,len(list1),1):
      if list1[i]<=150:
         if list1[i]%5==0:
             print(list1[i])
```

Output

```
15
55
75
150
```

4. Write a function to print a table of binomial coefficients which is given by the formula:
   B(m,x) = m! / (x! (m-x)!).
   Hint: B(m,0) = B(0,0) = 1, B(m,x) = B(m, x-1) * [(m-x+1)/x]
   The default 'm' value is 5.

```
def printbinomial (max):
    for m in range(max + 1):
        print('% 2d'%m,end = ' ')
        binom = 1
        for x in range(m + 1):
            if m != 0 and x != 0:
                binom = binom * (m - x + 1)/x
            print('% 4d'% binom, end = ' ')
        print(" ",end = ' ')

max = 5
printbinomial(max)
```

Output

```
 0   1   1   1   1   2   1   2   1   3   1   3   3   1   4   1   4   6   4   1   5   1   5  10  10   5   1
```

5. Count all lower case, upper case, digits, and special symbols from a given string
   Given:
   str1 = "P@#yn26at^&i5ve"
   Expected Outcome:
   Total counts of chars, digits,and symbols
   Chars = 8
   Digits = 3
   Symbol = 4

```python
def count_chars(str):
    upper_ctr, lower_ctr, number_ctr, special_ctr = 0, 0, 0, 0
    for i in range(len(str)):
        if str[i] >= 'A' and str[i] <= 'Z': upper_ctr += 1
        elif str[i] >= 'a' and str[i] <= 'z': lower_ctr += 1
        elif str[i] >= '0' and str[i] <= '9': number_ctr += 1
        else: special_ctr += 1
    return upper_ctr, lower_ctr, number_ctr, special_ctr

str = "M@jA$Want90i()"
print("Original Substrings:",str)
u, l, n, s = count_chars(str)
print('\nUpper case characters: ',u)
print('Lower case characters: ',l)
print('Number case: ',n)
print('Special case characters: ',s)
```

Output

```
Original Substrings: M@jA$Want90i()

Upper case characters:  3
Lower case characters:  5
Number case:  2
Special case characters:  4
```

6. Given a string, return the sum and average of the digits that appear in the string, ignoring all other characters
Given:
str1 = " English = 78 Science = 83 Math = 68 History = 65"
Expected Outcome:
sum is 294
average is 73.5

```python
str1 = "English = 78 Science = 83 Math = 68 History = 65"
str2 = str1.split(' ')
nums = 0
count = 0
for i in str2:
  if i.isdigit():
     nums += int(i)
     count+=1

print(nums)
print(nums/count)
```

Output

```
294
73.5
```

7. Given a two list. Create a third list by picking an odd-index element from the first list and even index elements from second.
For Example:
listOne = [3, 6, 9, 12, 15, 18, 21]
listTwo = [4, 8, 12, 16, 20, 24, 28]
Expected Output:
Element at odd-index positions from list one
[6, 12, 18]
Element at even-index positions from list two
[4, 12, 20, 28]
Printing Final third list
[6, 12, 18, 4, 12, 20, 28]

```python
listOne = [3,6,9,12,15,18,21]
listTwo = [4,8,12,16,20,24,28]
res = list()

odd_elements = listOne[1::2]
print("Element at odd-index positions from list one")
print(odd_elements)

even_elements = listTwo[0::2]
print("Element at even-index positions from list two")
print(even_elements)

print("Printing Final third list")
res.extend(odd_elements)
res.extend(even_elements)
print(res)
```

Output

```
Element at odd-index positions from list one
[6, 12, 18]
Element at even-index positions from list two
[4, 12, 20, 28]
Printing Final third list
[6, 12, 18, 4, 12, 20, 28]
```

8. Given a two list of equal size create a set such that it shows the element from both lists in the pair
Expected Output:
First List [1, 3, 4, 12, 6, 7, 8]
Second List [5, 9, 16, 56, 36, 49, 71]
Result is {(6, 36), (8, 71), (4, 16), (12, 56), (3, 9), (7, 49), (1, 5)}

```
first_list = [1,3,4,12,6,7,8]
print("First List ",first_list)

second_list = [5,9,16,56,36,49,71]
print("Second List ",second_list)

result = zip(first_list,second_list)
result_set = set(result)
print(result_set)
```

Output

```
First List  [1, 3, 4, 12, 6, 7, 8]
Second List  [5, 9, 16, 56, 36, 49, 71]
{(6, 36), (12, 56), (4, 16), (1, 5), (3, 9), (8, 71), (7, 49)}
```

9. Given a dictionary get all values from the dictionary and add it in a list but don't add duplicates.
speed = {'jan':47, 'feb':52, 'march':47, 'April':44, 'May':52, 'June':53, 'july':54, 'Aug':44, 'Sept':54}
Expected Outcome: [47, 52, 44, 53, 54]

```
speed = {'jan': 47, 'feb': 52, 'march': 47, 'April': 44, 'May': 52, 'June': 53,
         'july': 54, 'Aug': 44, 'Sept': 54}

print("Dictionary's values - ", speed.values())

speed_list = list()

# iterate dict values
for val in speed.values():
    # check if value not present in a list
    if val not in speed_list:
        speed_list.append(val)
print("unique list", speed_list)
```

Output

```
Dictionary's values -  dict_values([47, 52, 47, 44, 52, 53, 54, 44, 54])
unique list [47, 52, 44, 53, 54]
```

10. Remove duplicate from a list and create a tuple and find the minimum and maximum number.
For Example:
sampleList = [87, 45, 41, 65, 94, 41, 99, 94]
Expected Outcome:
unique items [87, 45, 41, 65, 99]
tuple (87, 45, 41, 65, 99)
min: 41
max: 99

```
sample_list = [87, 45, 41, 65, 94, 41, 99, 94]

print("Original list", sample_list)

sample_list = list(set(sample_list))
print("unique list", sample_list)

t = tuple(sample_list)
print("tuple ",t)

print("Minimum number is: ", min(t))
```

Output

```
Original list [87, 45, 41, 65, 94, 41, 99, 94]
unique list [65, 99, 41, 45, 87, 94]
tuple  (65, 99, 41, 45, 87, 94)
Minimum number is:  41
```