Artificial Intelligence with Python

ASSIGNMENT_01

1. Take list of elements from the user and find the square root of each number in the list and store in it another list and print that list.

Program:

```
import math
user_list = input("Enter the values to List: ").split()
num_list = [float(num) for num in user_list]
new_list = [math.sqrt(num) for num in num_list]
print("Square roots:", new_list)
```

Output:

```
Enter the values to List: 9 16 25 36 100
Square roots: [3.0, 4.0, 5.0, 6.0, 10.0]
```

2. Write a function which prints all the numbers divisible by 3 and 5

Program:

```
def func(a, b):
    for num in range(a, b):
        if num % 3 == 0 and num % 5 == 0:
            print(num)
func(1, 100)
```

Output:

```
15
30
45
60
75
90
```

3. Write a program to check whether a given letter is vowel or consonant

Program:

```
import re
pattern = r"^[aeiouAEIOU]$"
letter = input("Enter the Letter that you want to Check Vowel Or Consonant :")
if re.match(pattern,letter):
  print(letter,"is a Vowel")
else:
  print(letter,"is Consonant")
```

Output:

```
Enter the Letter that you want to Check Vowel Or Consonant :A
A is a Vowel
```

4. Calculate the distance between any two characters given by user

(Example distance between “a” and “d” is 3)

Program:

```
def distance(char1, char2):
    d = abs(ord(char1) - ord(char2))
    return d
char1 = input("Enter the first character: ")
char2 = input("Enter the second character: ")
d = distance(char1, char2)
print("The distance between", char1, "and", char2, "is", d)
```

Output:

```
Enter the first character: a
Enter the second character: d
The distance between a and d is 3
```

5. Write a function which returns the number of vowels present in the given string

Program:

```
def count_vowels(string):
    vowels = "aeiouAEIOU"
    count = 0
    for char in string:
        if char in vowels:
            count += 1
    return count
string = input("Enter a string: ")
count = count_vowels(string)
print("Number of vowels:", count)
```

Output:

```
Enter a string: Sk. Zahir Hossain
Number of vowels: 5
```

6. Print all the alphabets by using loop and ascii code

Program:

```
print("Lowercase Alphabets:")
for i in range(ord('a'), ord('z') + 1):
    print(chr(i), end=" ")
print()
print("Uppercase Alphabets:")
for i in range(ord('A'), ord('Z') + 1):
    print(chr(i), end=" ")
print()
```

Output:

```
Lowercase Alphabets:
a b c d e f g h i j k l m n o p q r s t u v w x y z
Uppercase Alphabets:
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
```

7. Write a program find the sum of all the even numbers of the list

Program:

```
l = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
even_count = 0
odd_count = 0
for i in l:
    if  i%2==0:
        even_count+=1
    else :
        odd_count+=1
print("Number of Even number =",even_count)
print("Number of Odd number =",odd_count)
```

Output:

```
Number of Even number = 5
Number of Odd number = 5
```

8. Write a program for print the squares of all the numbers, except for factors of 3

Program:

```
def factors(n):
    for num in range(1, n + 1):
        if num % 3 == 0:
            continue
        print(num ** 2)
n = int(input("Enter a number: "))
factors(n)
```

Output:

```
Enter a number: 3
1
4
```

9. Take 2 strings from user and then replace all the A's with a's and then concatenate the 2 strings and print

Program:

```
def replace_strings(str1, str2):
    str1 = str1.replace('A', 'a')
    str2 = str2.replace('A', 'a')
    concatenated_string = str1 + str2
    print(concatenated_string)
string1 = input("Enter the first string: ")
string2 = input("Enter the second string: ")
replace_strings(string1, string2)
```

Output:

```
Enter the first string: ZAHIR
Enter the second string: SAKIP
ZaHIRSaKIP
```

10. write a program to get a list of odd number from the list of numbers given by user (use list comprehension)

Program:

```
def get_odd(numbers):
    odd_numbers = [num for num in numbers if num % 2 != 0]
    return odd_numbers
n = input("Enter the numbers for the List: ")
number_list = list(map(int, n.split()))
odd_list = get_odd(number_list)
print("Odd numbers:", odd_list)
```

Output:

```
Enter the numbers for the List: 1 2 3 4 5 6 7 8 9 10
Odd numbers: [1, 3, 5, 7, 9]
```

11. write a program to print lower when you have upper letter in string and vice versa

(if your input is “aBcD” your output should be “AbCd”)

Program:

```
def swap(string):
    swapped_string = ''
    for char in string:
        if char.isupper():
            swapped_string += char.lower()
        else:
            swapped_string += char.upper()
    return swapped_string
s = input("Enter a string: ")
result = swap(s)
print("Swapped case string:", result)
```

Output:

```
Enter a string: Zahir
Swapped case string: zAHIR
```