



# United International University

## B.Sc. in Data Science

DS 1501: Programming for Data Science

Final Exam: Fall 2023 Time: 2 Hours Marks: 40

Answer all of the following questions.

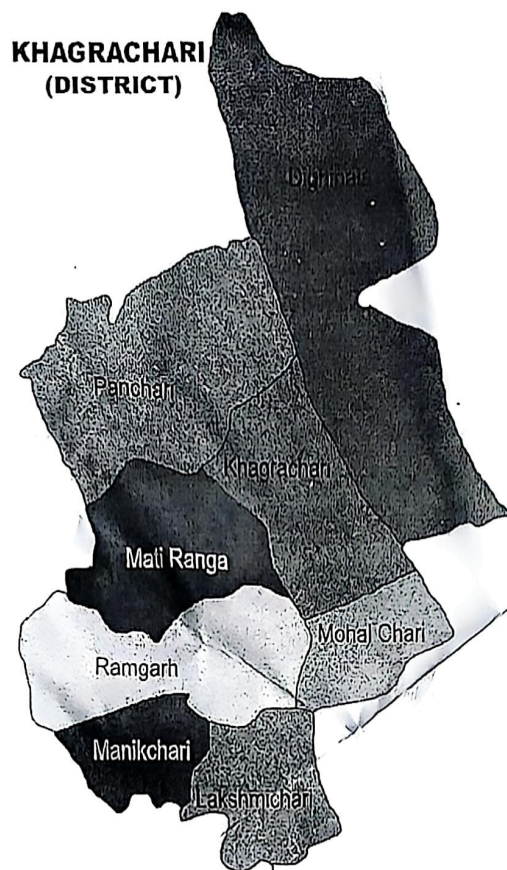


Figure 1: Map of Khagrachari District..

1. Consider the map of Khagrachari district shown in Figure 1. There are 8 upozilla shown in the map. *Dighinala* is neighbor to *Panchari* and *Khagrachari*.
  - (a) Write python code to create a dictionary that will store the name of the upozillas as key (string) and its neighbor upozillas as value in a list of strings. Call this dictionary *upozilla\_map*. [4]
  - (b) Use this *upozilla\_map* created in the previous question and write a code that will print name of all Upozillas and the number of neighbors they have. Your code will also print the names of upozillas with maximum neighbors and minimum neighbors. [6]
2. (a) Write a python program to declare a function named *evenSum* that will take two parameters *x* and *y* as the range of numbers. The function will find the even numbers in the range and return the sum of those even numbers. [5]

- (b) Write a python program to declare a function that will declare a function that will take  $N$  (integer) as a input parameter and print the following as output. [5]

Input: 7	Input: 9
Output:	Output:
1	1
1 3	1 3
1 3 5	1 3 5
1 3 5 7	1 3 5 7
	1 3 5 7 9

3. Find output of the following programs. If there are errors in the program then find it and mention the reasons. [3+3+4=10]

(a) `def bello(a):`

`a[2]=9`

`a[3]=5`

`a = [1,2,3,4,5,6]`

`bello(a[:])`

`print(a)`

(b) `def hello(t):`

`t.append(0)`

`print(t)`

`hello((1,2,3))`

(c) `import numpy as np`

`def gello(a):`

`a[0]=0`

`a[1]=0`

`a = np.array([1,2,3,4,5,6,7,8])`

`gello(a[-5:5])`

`print(a)`

[4, 5]

4. Consider the file *source.txt* shown in Table 1. Write a python code that will read this file and write the words that start with vowels only into another file names *dest.txt*. A glimpse of the *dest.txt* in shown in Table 1. [10]

source.txt	Bangladesh is a country of rivers which flow through the different areas of the country. However, during summer, our country still gets affected by droughts.
dest.txt	is, a, of, areas, of, our, affected.

Table 1: source.txt