



INDIAN INSTITUTE OF INFORMATION TECHNOLOGY KOTTAYAM

Department of Computer Science and Engineering

MID SEMESTER EXAMINATION - SEPTEMBER, 2024

COURSE TITLE: ICS214 IT WORKSHOP III

Date & Time: 25/09/2024, 2.30 PM – 4.00 PM

Max. Marks: 50

Course Instructors: Dr. Suchithra M S, Dr. Lakshmi N S & Dr. Vineeth P. Sem: III

Batch: I, II, III

Answer all Questions

- 1) For the given Python codes predict the output.

```
a) def count(child_dict, i):
    if i not in child_dict.keys():
        return 1
    ans = 1
    for j in child_dict[i]:
        ans+= count (child_dict, j)
    return ans
child_dict=dict()
child_dict[0]=[1,2]
child_dict[1]=[3,4,5]
child_dict[2]=[6,7,8]
print(count(child_dict,0))
```

(3 marks)

```
b) def fun(D,s1,s2):
    if s1<s2 :
        D[s1],D[s2]=D[s2]+D[s1]
        fun(D,s1+1,s2-1)
D=[5,7,2,1,1,9,-4,-2,0]
fun(D,8,2)
print(D)
```

(2 marks)

- c) Write a python program to demonstrate the following four file handling operations. Create a file with name as your batch name and add the content to your file -your name, roll number, and department. Read the file and print its contents. Append the file with the content your college name

(5 marks)

- 2) Creating a banking application in Python. Use a dictionary to keep a record of accounts and balances. Keys are account holder names. Values are the current balance. Your application should be user friendly, for each option listed below appropriate inputs have to be taken- Name of account holder, Amount to be deposited, Amount to be withdrawn. Program should have a display menu with four options. Show the available options to the user.

Option 1: Create account: Creates a new account if it doesn't already exist.

Option 2: Deposit money: Deposits a specified amount into an existing account. Update the current balance.

Option 3: Withdraw money: Withdraws a specified amount from an existing account if sufficient funds are available. If the withdrawal amount is greater than current balance, Display 'Insufficient Balance'.

Option4. Check balance: Displays the current balance of an existing account. **(10 marks)**

- 3) You are assigned with two tasks. Task1- Allotting students of semester 3 to Batch1, Batch2 or Batch3. Allotment procedure is given as follows: The last digit of his/her roll number is divided by 3. If the remainder is 0, student is in batch3, if the remainder is 2, the student is in batch2 and if the remainder is 1, the student is in batch1. Based on the allotment, display the details of the student- name, roll number and allotted batch.Task2- Keep a record of the student details in semester 3 as a list of tuple. Each tuple consists of the name and the roll number of students. **(10 marks)**
- 4) You are going to take a class on Operations on string in python. You have come up with the idea of demonstrating some of the operations on string, and a simple application program through a menu driven user interface. User interface has following options
- a. Reverse the string
 - b. Check if the string is palindrome
 - c. Count the vowels
 - d. Returns a trimmed version of the string (removes any leading, and trailing whitespaces.)
 - e. Application- Spam email detection. If the email-id ends with @collegename.com, it's not spam. Otherwise notify it as spam. **(10 marks)**
- 5) Answer the following
- a) Given the following details Subjects and marks obtained for each subject-[('English', 80), ('Science', 95), ('Maths', 98), ('Social sciences', 56)] Write a Python program to sort it based on marks using Lambda function. **(5 marks)**
 - b) Given the details of students who have taken Common course and elective course in following records.
Common course={"Alice", "Vishnu", "Naveen", "Midhun"}
Elective course={"Alice", "Naveen"}
Write a python program to do the following operations on given records
Update elective course with students who are common in both the records.
Update common course with students who have taken the common course but not the elective course.
Update the elective course with students from both the record, but it should not include those students who have taken both common course and elective course.
Update common course with students who have taken both common course and elective course. **(5 marks)**



INDIAN INSTITUTE OF INFORMATION TECHNOLOGY KOTTAYAM

Department of Computer Science and Engineering FIRST MID SEMESTER EXAMINATION- SEP, 2023 COURSE TITLE: ICS 214 IT WORKSHOP III

Date &Time: 02.09.2023 & 02.00 – 03.30 PM

Max. Marks: 50

Course Instructor: Dr. Selvi C & Dr. Cinu C. Kiliroor

Batch: 2022(I & II)

Answer all Questions

(5 *10 = 50 marks)

1. a. Write a python program that takes a list of integers as input and displays True if they form an arithmetic sequence. (Hint - A sequence of integers is an arithmetic sequence if the difference between consecutive items of the list is always the same.) Justify the workflow of your program with an example. (5 Marks)
- b. Write a python program that takes two lists of integers as input and outputs a list containing all products of integers from the first list with the integers from the second list. Justify the workflow of your program with an example. (5 Marks)
2. a. How copy() method works in python list. Discuss with an example. (3 Marks)
- b. Write a python program that takes as input an hourly wage and the number of hours an employee worked in the last week. The program should compute and prints the employee's pay. Overtime work should be paid in this way: Any hours beyond 40 but less than or equal 60 should be paid at 1.5 times the regular hourly wage. Any hours beyond 60 should be paid at 2 times the regular hourly wage. Justify the workflow of your program with an example. (7 Marks)
3. Write a python program that takes inputs as initial investment and a floating-point interest rate (e.g., 0.06 which corresponds to a 6% interest rate). Your program should compute and displays how long (in years) it will take for an investment to double in value. Note: The number of years it takes for an investment to double does not depend on the value of the initial investment. Justify the workflow of your program with an example. (10 Marks)

4. What will be the final evaluated value and its type of the following expression?

- a. print (type (5 * 2)) (2 Marks)
- b. print (type (3 * 32 // 16)) (2 Marks)
- c. print (type (14 * 5.0 * 2)) (2 Marks)
- d. print (type (50 / 2 + 5)) (2 Marks)
- e. print (type ((17 > 4) or (3 < 5) and not (3 < 2) and not 17 < 18)) (2 Marks)

5. There are several cricket players lined up in a queue. The number put on the back of their t-shirt serves as their identification. Only one player needs to be chosen for the following round, however everyone is equally qualified. To solve this problem, a rule stating that the addition of every two successive players' numbers from left to right should match the addition of players' numbers from right to left will be used to choose the player.

(10 Marks)

Procedure:

1. Get the list of elements from user for example 1 4 2 5
2. Add the numbers from left to right 1 5 7 12
3. Similarly, add the numbers from right to left 12 11 7 5
4. Now compare step 2 and step 3 values index by index and look for the equal number. '7' for this case which occurs at the second index. Now the corresponding index position will give the player number as a result.

Sample Input

1,4,2,5

Sample Output

After the summation of left to right

[1, 5, 7, 12]

After the summation of right to left

[12, 11, 7, 5]

Selected players number with index 2 is

2

***** All the Best *****



INDIAN INSTITUTE OF INFORMATION TECHNOLOGY KOTTAYAM
Department of Computer Science and Engineering
SECOND MID SEMESTER EXAMINATION- OCTOBER, 2023
COURSE TITLE: ICS 214 IT WORKSHOP III

Date & Time: 06.10.2023 & 2.30 PM to 4.00 PM

Max. Marks: 50

Course Instructor: Dr Selvi C & Dr Cinu C Kiliroor

Batch: I & II

Answer all Questions

1.

- a. Dictionaries provide a convenient way to store structured data, below example dictionary [6 M]

```
D = [{"name": "Todd", "phone": "555-1414", "email": "todd@mail.net"},  
 {"name": "Helga", "phone": "555-1618", "email": "helga@mail.net"},  
 {"name": "Princess", "phone": "555-3141", "email": ""},  
 {"name": "LJ", "phone": "555-2718", "email": "lj@mail.net"}]
```

Write a program that reads through any dictionary like this and prints the following:

- i. All the users whose phone number ends in an 8. (5 marks)
 ii. All the users that don't have an email address listed. (5 marks)

2.

- a. Is `sampleSet.discard("Orange")` is the correct python command to remove "Orange" from the given set. Justify your answer (3 marks)

```
sampleSet = {"Yellow", "Orange", "Black"}
```

- b. What will be the final output for the following python code. Justify your answer. (2 marks)

```
Set1= {10, 20, 30, 40, 50}  
Set2= {60, 70, 10, 30, 40, 80, 20, 50}  
print (Set1.issubset(Set2))  
print (Set2.issuperset(Set1))
```

3.

- In a certain school, student email addresses end with @student.college.edu, while professor email addresses end with @prof.college.edu. Write a program that first asks the user how many email addresses they will be entering, and then has the user enter those addresses. After all the email addresses are entered, the program should print out a message indicating either that all the addresses are student addresses or that there were some professor addresses entered. (5 marks)

4.

- a. Given a list of integers, return True if the array contains a 3 next to a 3 somewhere. (5 marks)

Sample Output:

```
has_33([1, 3, 3]) → True  
has_33([1, 3, 1, 3]) → False  
has_33([3, 1, 3]) → False
```

b. What will be the final evaluated value and its type of the python code shown in (i) and (ii)?

i.

```
def add(a, b):
    return a+5, b+5
result = add(3,2)
print(result)
```

(2 Marks)

ii.

```
S 10
def outer_fun(a,b):
    S 10
    def inner_func(c, d):
        return c+d
    return inner_func(a, b)
result=outer_fun(5,10)
print(result)
```

(3 Marks)

5.

a. Define a class called **Address** that has two attributes: *number* and *street name*. Make sure you have *an __init__ method* that initializes the object appropriately. You do not need to define any other methods. (5 marks)

b. Write a Python program that creates a class which represents a **Candidate** in an election. The class must have the candidates *first and last name*, as well as the *number of votes received* as attributes. The class must also have a method that allows the user to *set and get* these attributes. Create instances of the class to represent **5 candidates** in the election, then it should **output**

- i. each candidate's name,
- ii. the votes received by that candidate,
- iii. the percentage of the total votes received by the candidate.

Your program should also **output the winner of the election.**

(15 marks)

*****All the best*****



INDIAN INSTITUTE OF INFORMATION TECHNOLOGY KOTTAYAM
Department of Computer Science and Engineering

END SEM EXAMINATION- NOVEMBER, 2023
COURSE TITLE: ICS 214 IT WORKSHOP III

(95)

Date & Time: 24/11/2023 & 09:30 am -12:30 pm

Max. Marks: 100
Semester: III

Course Instructor: Dr Selvi C, Dr. Cinu C Kiliroor and Dr. Bhanu Chander

Answer all Questions (10 * 10 marks=100 marks)

- 1 Given a number of mangoes and number of persons. Write a python code to find the number of ways to distribute mangoes among persons. **(10 Marks)**

Input

2 #the number of mangoes
2 # the number of persons

Output

3 #Return the number of ways to distribute mangoes among persons.

Explanation

All possible distributions of 2 mangoes to 2 persons are (1, 1), (2, 0) and (0, 2).

Hence the output is 3. .

Input

1
12

Output

12

Explanation

All possible distributions of 1 mango to 12 persons are 12. Hence the output is 12.

2. N number of people participated in a coding marathon where they were asked to solve some problems. Each problem carried 1 mark and at the end of the marathon, the total marks that each person achieved is calculated. As an organiser, you have the list of the total marks that each person achieved. Write a python code to calculate the sum of the marks of top K scorers from the list.

(10 Marks)

Input

input1: 4 #N, Total number of participants

input2: 2 #K, Top scorers

input3: {4, 1, 2, 5} #An array of length N with the scores of all N participants

Output

9 #Return S, the sum of the marks of top K scorers from the list.

3. The placement season has begun in college. There are N number of students standing outside an interview room in a line. Each student has a number

associated with them known as the problem-solving capability (PSC). The higher the capability, the higher the chances of selection. Now, each student wants to know the number of students **ahead** of him/her who have more problem-solving capability than him/her. Write a python code to find this number for each student.

Input 1

(10 Marks)

6 #An integer N, which denotes the number of students present.

4 9 5 3 2 10 #An array of size N, denoting the problem-solving capability of the students.

Output 1

0 0 1 3 4 0 #An array of size N denoting the required answer for each student.

Input 2

5
3 4 1 5 2

Output 2

0 0 2 0 3

4. Write a python program for the following. Define a dictionary called agencies that stores a mapping of acronyms CCC, FCC, FDIC, SSB, WPA (the keys) to the federal government agencies 'Civilian Conservation Corps', 'Federal Communications Commission', 'Federal Deposit Insurance Corporation', 'Social Security Board', and 'Works Progress Administration' (the values) created. Then: **(10 Marks)**

a. Add the map of acronym SEC to 'Securities and Exchange Commission'.

b. Change the value of key SSB to 'Social Security Administration'.

c. Remove the (key, value) pairs with keys CCC and WPA.

5. **Anagrams:** An anagram is a word, phrase, or name formed by rearranging the letters of another word, phrase, or name. Write a function to check if two given strings are anagrams or not. Write a python code to return "yes" if they are anagrams, otherwise return "no". **(10 Marks)**

Input

input1: build

input2: dubli

Output

yes

Input

input1: beast

input2: yeast

Output

no

6. Write a class in python called *Wordplay*. It should have a field that holds a list of words. The user of the class should pass the list of words they want to use to the class. There should be the following methods: **(10 Marks)**

- `starts_with(s)` — returns a list of all the words that start with `s`
- `ends_with(s)` — returns a list of all the words that end with `s`
- `palindromes()` — returns a list of all the palindromes in the list
- `only(L)` — returns a list of the words that contain only those letters in `L`
- `avoids(L)` — returns a list of the words that contain none of the letters in `L`

- ✓ 7. Consider the triangle in the given Figure. The first line, line 0, contains just 1. All other lines start and end with a 1 too. Write a python program with a recursive function `pascal_Line()` that takes a nonnegative integer `n` as input and returns a list containing the sequence of numbers appearing in the n^{th} line of the triangle. **(10 marks)**

```

      1
    1   1
  1   2   1
 1   3   3   1
1   4   6   4   1

```

- ✓ 8. In an online grocery shop, customers want to purchase multiple items. Create a class `store` in python which has private attributes *Item code, Brand name, Item Name, Quantity, Price of the product*. Create an array of objects to add an item of `store` class. **(10 marks)**

- a. Write a function in python `MESSAGE()` to alert the customer with the product name if the rate of a product is more than Rs.1000.
- b. Write a function in python `VOUCHER()` to generate the voucher for Rs.200 if the bill amount is greater than Rs.10000.

Input 1

2 #The first line of the input consists of the value of `n`.

101 philsbury flour 10 55 #Next `n` inputs consist of the item code, brand name, item name, quantity, and price of the product(per item).

102 dettol soap 500 25

Output 1

soap costs more than 1000 #The output prints a message if the final amount of the product is greater than 1000.

13050.00 #The next line prints the bill amount (Rounded off to two decimal places).

You have won a voucher of Rs.200 #The last line prints whether the customer gets a voucher or not.

Input 2

2

101 philsbury flour 10 55

102 dettol soap 10 25

Output 2

800

No voucher

9. A departmental store MyStore is considering maintaining their inventory using SQL to store the data. As a database administrator, Mr. Amir has decided that: Name of the database as mystore, Name of the table as STORE and The attributes of STORE as ItemNo(Numeric), ItemName(Character of size 20), Scode(Numeric) and Quantity(Numeric) **(10 Marks)**

- a. Identify the attribute best suitable to be declared as a primary key
- b. Create Connection and a cursor object
- c. Execute the following query
 - i. Create a table STORE
 - ii. Insert the following data into the attributes ItemNo, ItemName and Scode respectively in the table STORE. ItemNo = 2010, ItemName = "Note Book" and Scode = 25
 - iii. Amir wants to remove the table STORE from the database MyStore.
 - iv. Amir wants to display the structure of the table STORE, i.e. name of the attributes and their respective data types that he has used in the table. Write the query to display the same.

OR

A PDF file needs to be sent from Computer A to Computer B by CR of Batch 2022. He must employ connection-oriented or connectionless services for this. To assist your CR in sending his PDF file, write a Python socket programming that is linked to the service that has been chosen. **(10 Marks)**

10.

- a. What does each of the following expressions evaluate to? Suppose that T is the tuple containing :

("These", ["are", "a", "few", "words"], "that", "we", "will", "use")

- i. T[1][0: :2]
- ii. "a" in T[1][0]
- iii. T[:1] + [1]
- iv. T[2::2]
- v. T[2][2] in T[1]

- b. Write a NumPy program to create a 5x5 array with random values and find the second-largest value in each column. **(5 Marks)**

ALL THE BEST



INDIAN INSTITUTE OF INFORMATION TECHNOLOGY KOTTAYAM

Department of Computer Science and Engineering

END SEMESTER EXAMINATION - ODD 2024-'25

NOVEMBER 2024

COURSE TITLE: ICS214 IT WORKSHOP III

Date and Time: 25/11/2024 9:30 AM -12:30 PM

Course Instructor: Dr. Suchithra M S, Dr. Lakshmi N S, Dr. Vineeth P

Max. Marks: 100

Batch:2023 (I,II,III)

Answer All Questions . Each question carries 10 marks

1. Design a Python application for an online quiz system that incorporates object-oriented programming principles. The application should contain classes and methods to organize the quiz's data and behaviour. Features to be incorporated are given as follows: The quiz has multiple-choice questions. A user can input their answers, and the system will grade them. There is a positive mark for correct answers and a negative mark for wrong answers. The user will get feedback on the answer he has given after each question, and the total score will be displayed at the end. (10 marks)
2. Check if there are any errors in the given code. If error is found, mention it, else if there are no errors, find the output of code below (10 marks)

```

def q(a):
    if len(a) <= 1:
        return a
    else:
        z = a[0]
        u = [x for x in a[1:] if x < z]
        v = [x for x in a[1:] if x >= z]
        return q(u) + [z] + q(v)
a = [1, 7, 4, 1, 10, 9, -2]
b = q(a)
print(b)

```

3. Write a Python program that visualizes a college placement statistics for companies. The program should generate the following visualizations based on the placement data of students:

Bar Chart: Display the number of students placed in each company. (10 marks)

Pie Chart: Show the percentage of students placed in each core company.

Line Plot: Represent the trend of placement percentages over the last 5 years. X axis-Years and Y axis-Placement trend. Given the following inputs

companies = ['Tata', 'Infosys', 'Wipro', 'Accenture', 'IBM', 'Capgemini']

students_placed = [100, 200, 180, 220, 140, 160]

total_students = 1000

years = [2019, 2020, 2021, 2022, 2023]

placement_trend = [50, 55, 60, 65, 70] (Placement percentage trend over the 5 years)

4. Check if there are any errors in the given code. If error is found, mention it, else if there are no errors, find the output of code below **(10 marks)**

```
data1 = {  
    'a': 1,  
    'b': 2,  
    'c': 3  
}  
m = dict(map(lambda item: (item[0], item[1] * 2), data1.items()))  
print(m)  
data2 = {  
    'a': 1,  
    'b': 3,  
    'c': 2  
}  
f= dict(filter(lambda item: item[1] > 2, data2.items()))  
print(f)
```

5. Implement socket programming in Python, which demonstrates how to create a simple client-server application using TCP/IP sockets. **(10 marks)**
6. Write a python program to establish a connection and to create a database in MySQL server. Create the following table "Employee Details" in that database and execute the queries listed below. **(10 marks)**

Employee ID	Employee Name	Salary (Rs)
1	RAM	2500
2	SAM	1500
3	TOM	200
4	ANN	300
5	JEFF	600
6	KATY	800
7	NAINA	400
8	NEENU	500
9	RINKU	1200
10	TINKU	1000

- (a) Create table. Make Employee id as Primary key.
- (b) Insert data in the database as given in the table
- (c) Select record of employee whose salary is Rs.600
- (d) Select all records from the "Employee Details" table, and display the result
- (e) Sort the record in descending order based on salary
- (f) Delete record corresponding to employee id 5 and display all the records after deletion
- (g) Update salary of TOM from Rs.200 to Rs.250 and display all the records after this updation.
- (h) Display the records from 2nd entry to the last entry in the table
Note that changes that are made should be reflected in database. Close the connection once all queries are executed

7. Implement a Coffee Vending Machine in python using a menu driven user interface. The machine offers three types of coffee: Espresso -Rs.20, Latte- Rs.30, and Cappuccino Rs.40. The program should allow users to select a coffee, make a payment, and check the current balance in the machine after the payment. (10 marks)
8. You need to create the foundations of an e-commerce engine for a B2C (business-to-consumer) retailer. You need to have a class for a customer called **User**, a class for items in inventory called **Item**, and a shopping cart class called **Cart**. Items go in Carts, and Users can have multiple Carts. Also, multiple items can go into Carts, including more than one of any single item. (10 marks)
9. Answer the following
- You are working on text processing. From a given text consisting of numbers, alphabets and symbols, extract the numbers. If the number of digits extracted is 5 reshape it is a 5x1 matrix using NumPy, else display the message extraction doesn't meet requirements. (5 marks)
 - Implement stack in python. Implement the following functionalities in your code
 - Inserts the elements at the top of the stack
 - Deletes the topmost element of the stack
 - Returns whether the stack is empty
 - Returns the size of the stack
 - Returns topmost element of the stack
10. Answer the following
- Find the output of code given below (5 marks)
- ```
def fun1(x,l=[]):
 for i in range(x):
 l.append(i*i)
 print(l)

fun1(2)
fun1(3,[3,2,1])
fun1(3)
```
- Find the output of code given below (5 marks)
- ```
def c(v, x=None, y=None):
    return {'v': v, 'x': x, 'y': y}
def p(n):
    if n:
        p(n['x'])
        p(n['y'])
        print(n['v'], end=" ")
r = c(1)
r['x'] = c(2)
r['y'] = c(3)
r['x']['x'] = c(4)
r['x']['y'] = c(5)
r['y']['x'] = c(6)
r['y']['y'] = c(7)
p(r)
```



INDIAN INSTITUTE OF INFORMATION TECHNOLOGY KOTTAYAM

Department of Computer Science and Engineering

END SEM EXAMINATION- FEBRUARY, 2023

COURSE TITLE: ICS 214 IT WORKSHOP III

Date & Time: 24/02/2023 & 10:00 am -01:00 pm

Max. Marks: 100

Course Instructor: Dr. Selvi C & Dr. Cinu C. Kiliroor

Semester: III

Answer all Questions

PART A (10*3=30 marks)

1. Predict the output of the following function (3 marks)

```
def function(List1):
    S=0
    for i in range(0, len(List1), 2):
        S+=List1[i] 1+3
    print("Result is ",S) ④
function([1,2,3,45])
```

2. Given the list List1=[5,11,17,19,25,29,30,46,90], write down the python statements for the following requirement:

a. To find the frequency of item 30 in List1. count(30) (1.5 marks)

b. Write the code to delete 17 from the above sorted list
delete L[3] (1.5 marks)

3. What will be the output of the following code (3 marks)

```
x='ba'
y='na'
print(x+y*2)      banana
print((y*2)[:3]+x) nanba
```

4. Find the output of (3 marks)

- a. print(True + True) True
- b. print(100 + False) True
- c. print(-1 + True) True
- d. print(bool (-1 + True)) True

5. Trace and find the output of the following code (3 marks)

```
def call(x):
    return x, x+2, x+3
x=call(3)
print(x) (3,5,6)
```

6. Which line number of code(s) will not work and why? Predict the output for the error free lines. (3 marks)

```

def interest(P,R,T=7):
    I=(P*R*T)/100
    print(I)
interest(20000,0.08,15) ✓ # Line 1
interest(T=10,20000,0.075) ✗ # Line 2
interest(50000, 0.07) ✓ # Line 3
interest(80000,T=10) ✗ # Line 4

```

✓ Find and write the output of the following python code

(3 marks)

```

box={}
jars={}
crates={}
box['biscuit']=3 ✓
box['cake']=4 ✓
print (box) ✓
jars['jam']=4 ✓
print (jars)
crates['box']=box
crates['jars']=jars
print(crates) ✓

```

8. Answer the following

- Write a Numpy function to store elements in 3×3 2D array and compute
 - Sum of all elements (1 mark)
 - Sum of elements in each row (1 mark)
- What is the value of this expression $4 * (3^{**2})$? (1 mark)

✓ Find and predict the output of the following code

(3 marks)

```

def Shuffle(mystr):
    L = len(mystr) ✓
    str2=''
    str3=''
    for i in range(0,L,2):
        str2=str2 + mystr[i] + mystr[i+1].lower()
    print(str2)
    for ch in mystr:
        if ch=='R' or ch=='N':
            str3 = str3 + ch + 'i'
        else:
            str3 = str3 + ch + 'a'
    return str3

```

mystr="AABBCCDDEEFFGGHH"

mystr=Shuffle(mystr)

print(mystr)

str2 = AaBbCcDdEeFfGgHh

str3 = AaAaBbBbCaCa ..

10. Consider a Tuple: Record=(10, 20, 30, 40). Raj wants to add new item 50 to tuple, and he has written the expression as Record = Record + 50, but the statement is giving an error, help Raj in writing the correct expression. (3 marks)

PART B (8*5= 40 marks)

✓ immutable

11. Consider a Dictionary

Employee = { 'Empno' : 1, 'Name' : 'Snehil', 'Salary': 80000 }

Write statements(use predefined function) and output: (5 marks)

- a. To print employee name
- b. To update the salary from 80000 to 90000
- c. to get all values only from the dictionary

Employee[Name]

Employee [Salary] = 90000

12. Complete the below COUNT() function which reads content from file "Repeated.txt", to count and display the occurrence of the word "Catholic" or "Mother". (5 marks)

```
def COUNT():
    f=open("Repeated.txt", "r")
    count=0
    for line in f:
        words=line.split()
        for w in words:
            if w.lower() == "catholic" or w == "mother":
                count+=1
    print('Count of catholic and mother is', count)
```

13. Fill in the below python code that checks whether the connection to mysql is successfully done or not. Also write the command in MySQL to insert the record into the table. (5 marks)

```
import mysql.connector as myq
con=myq.connect() #Assuming all parameters are passed
if _____:
    print("Connected")
else:
    print("Error! Not Connected")
```

my cursor = myq.cursor()

14. Write a function in Python to display the elements of list thrice if it is a number and display the elements terminated with # if it is not a number. (5 marks)

For example, if the content of list is as follows:

List=['10', 'one', '20', 'two', '30', 'three']

inum()

Output:

101010

One#

202020

Two#

303030

Three#

15. Write a program to calculate the updated salary of an employee after a hike meeting. The current salary is computed using the total of the previous salary and the rating percentage of the previous salary. (5 marks)

Input format

First integer represents hike rating.

Second integer represents the old salary.

Output format

Output value is a float (up to two decimal places) which represents updated salary.

Sample test cases

Input 1	Output 1	Input 2	Output 2
4	12480.00	9	134567.05
12000	$\text{Rating} = \frac{\text{Hike}}{100}$	123456	

16. Kalpana is working in the data entry section in Diamond Jubilee Hr Sec School. She needs to assign grades to the students based on the given marks. Since it is difficult to assign grades manually for all students, she decided to write a program to automate her work. Help Kalpana to complete his work by writing a suitable program. (5 marks)

Range of score (x)	Grade
$80 \leq x \leq 100$	A
$70 \leq x < 80$	B
$60 \leq x < 70$	C
$0 \leq x < 60$	D
Others	Error message

Input format

Mark in first line

Output format

Grade as per given conditions / Invalid Mark

Code constraints: $1 \leq \text{Mark} \leq 100$ **Sample test cases**

Input 1	Output 1	Input 2	Output 2
96	A	125	Invalid Mark

17. Write a Python function/method SwapMiddle(Codes) to swap the first half of the content of the list Codes with second half of the list Codes and display the swapped values

For e.g. if the list Codes contains: [22, 44, 55, 66, 88, 11] then function should swap and display as: [66, 88, 11, 22, 44, 55] (5 marks)

$$[1, 2, 3, 4, 5] = [4, 5, 3, 1, 2] \quad [:n] \leftarrow [n :]$$

18. Calculate the percentage of marks obtained in three subjects (each out of 100) by student A and in four subjects (each out of 100) by student B. Create an abstract class 'Marks' with an abstract method 'getPercentage'. It is inherited by two other classes 'A' and 'B' each having a method with the same name which returns the percentage of the students. The constructor of student A takes the marks in three subjects as its parameters and the marks in four subjects as its parameters for student B. Create an object for each of the two classes and print the percentage of marks for both the students. (5 marks)

PART C (2 *15= 30 marks)

19. Five workers from an organization want to join in a Sukanya Samriddhi Yojana scheme in the post office. Create a class employee with the details Policyholder name, Policy number, Mobile number, Child Name, Child Age, Maturity period (Minimum Maturity Period of 5 Years), and Monthly deposit amount (Fixed amount). Every month they have to pay a fixed amount in that account. Based on the policy number a worker wants to check the amount accumulated after 2.5 yrs. Use default and parameterized constructor to get the employee details. Write a function to display the details of the Policyholder, Scheme started month and Year, Maturity Period and the Total amount accumulated. (15 marks)

Input format

The first line of the input consists of the value of n.

Next n inputs consist of the policy holder's name, policy number, mobile number, child name, child age, maturity period, and deposit amount.

The last line consists of the policy number to be searched.

Output format

The output prints the policy holder's details and accumulated amount else not found.

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Sample test cases

Input 1	Input 2
2 Alice 123456 9876543210 sam 3 3 5000 Bob 235689 8569745825 zara 4 4 6000 123456	2 Alice 123456 9876543210 sam 3 3 5000 Bob 235689 8569745825 zara 4 4 6000 123458
Output 1	Output 2
Alice 123456 9876543210 sam 3 3 5000 Amount accumulated after 2.5 years: 150000	123458 is not found in the list

20. There is a base class called Person, with attributes Name (String), Age (integer) in the range 3 to 70 and Gender (String). This class has a static variable called population, that keeps track of the number of objects created for this class.

There are three derived classes – Student, Faculty and Office staff. Each of these classes maintain an ID (Alphanumeric string) to uniquely identify their objects – each student is identified by letter S followed by a four-digit number, each Faculty is identified by letter F followed by a four-digit number and each Office_staff is identified by letter O followed by a four-digit number.

The four-digit number is initially zero for all three classes. Each class maintains its own static variable to keep track of the objects created. This is used to generate the four-digit number for the ID. **In the class constructor, the static variable is incremented and appended to the letter (S, F or O) to generate the unique ID.** (15 marks)

Write a Python program using the concept of Inheritance with the following functionalities:-

- Method to list names of all Females of a particular age group (Eg: - Females within the age group 15 to 50).
- Method to list the age of all office_staff with a given name (either First, Middle or Last name)
- Method to list the names of all Faculty who have the given age
- Methods to list the count of people in a given category (Person, Student, Faculty or Office_staff - **Use an overridden method**)

ALL THE BEST
