

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 6\_COD

Attempt : 1  
Total Mark : 50  
Marks Obtained : 40

### Section 1 : Coding

#### 1. Problem Statement

Tara is a content manager who needs to perform case conversions for various pieces of text and save the results in a structured manner.

She requires a program to take a user's input string, save it in a file, and then retrieve and display the string in both upper-case and lower-case versions. Help her achieve this task efficiently.

File Name: text\_file.txt

#### ***Input Format***

The input consists of a single line containing a string provided by the user.

#### ***Output Format***

The first line displays the original string read from the file in the format: "Original String: {original\_string}".

The second line displays the upper-case version of the original string in the format: "Upper-Case String: {upper\_case\_string}".

The third line displays the lower-case version of the original string in the format: "Lower-Case String: {lower\_case\_string}".

Refer to the sample output for the formatting specifications.

### **Sample Test Case**

Input: #SpecialSymBoLs1234

Output: Original String: #SpecialSymBoLs1234

Upper-Case String: #SPECIALSYMBOLS1234

Lower-Case String: #specialsymbols1234

### **Answer**

```
user_input = input()
```

```
file_name = 'text_file.txt'
```

```
with open(file_name, 'w') as file:  
    file.write(user_input)
```

```
with open(file_name, 'r') as file:  
    original_string = file.read().strip()
```

```
upper_case_string = original_string.upper()  
lower_case_string = original_string.lower()
```

```
print(f"Original String: {original_string}")  
print(f"Upper-Case String: {upper_case_string}")  
print(f"Lower-Case String: {lower_case_string}")
```

**Status :** Correct

**Marks :** 10/10

## **2. Problem Statement**

Write a program that calculates the average of a list of integers. The program prompts the user to enter the length of the list (n) and each element of the list. It performs error handling to ensure that the length of the list is a non-negative integer and that each input element is a numeric value.

### ***Input Format***

The first line of the input is an integer n, representing the length of the list as a positive integer.

The second line of the input consists of an element of the list as an integer, separated by a new line.

### ***Output Format***

If the length of the list is not a positive integer or zero, the output displays "Error: The length of the list must be a non-negative integer."

If a non-numeric value is entered for the length of the list, the output displays "Error: You must enter a numeric value."

If a non-numeric value is entered for a list element, the output displays "Error: You must enter a numeric value."

If the inputs are valid, the program calculates and prints the average of the provided list of integers with two decimal places: "The average is: [average]".

Refer to the sample output for the formatting specifications.

### ***Sample Test Case***

Input: -2

1

2

Output: Error: The length of the list must be a non-negative integer.

### ***Answer***

```

try:
    n = int(input())
    if n <= 0:
        print("Error: The length of the list must be a non-negative integer.")
    else:
        elements = []
        for _ in range(n):
            try:
                element = int(input())
                elements.append(element)
            except ValueError:
                print("Error: You must enter a numeric value.")
                break
        else:
            avg = sum(elements) / len(elements)
            print(f"The average is: {avg:.2f}")

except ValueError:
    print("Error: You must enter a numeric value.")

```

**Status :** Correct

**Marks : 10/10**

### 3. Problem Statement

Sophie enjoys playing with words and wants to count the number of words in a sentence. She inputs a sentence, saves it to a file, and then reads it from the file to count the words.

Write a program to determine the number of words in the input sentence.

File Name: sentence\_file.txt

#### **Input Format**

The input consists of a single line of text containing words separated by spaces.

#### **Output Format**

The output displays the count of words in the sentence.

Refer to the sample output for the formatting specifications.

### **Sample Test Case**

Input: Four Words In This Sentence

Output: 5

### **Answer**

```
with open('sentence_file.txt', 'r') as file:
```

```
    sentence = file.read().strip() # Read and remove any leading/trailing spaces
```

```
    words = sentence.split()
```

```
    word_count = len(words)
```

```
    print(word_count)
```

**Status : Wrong**

**Marks : 0/10**

## **4. Problem Statement**

A retail store requires a program to calculate the total cost of purchasing a product based on its price and quantity. The program performs validation to ensure valid inputs and handles specific error conditions using exceptions:

Price Validation: If the price is zero or less, raise a `ValueError` with the message: "Invalid Price". Quantity Validation: If the quantity is zero or less, raise a `ValueError` with the message: "Invalid Quantity". Cost Threshold: If the total cost exceeds 1000, raise `RuntimeError` with the message: "Excessive Cost".

### **Input Format**

The first line of input consists of a double value, representing the price of a product.

The second line consists of an integer, representing the quantity of the product.

### **Output Format**

If the calculation is successful, print the total cost rounded to one decimal place.

If the price is zero or less prints "Invalid Price".

If the quantity is zero or less prints "Invalid Quantity".

If the total cost exceeds 1000, prints "Excessive Cost".

Refer to the sample output for formatting specifications.

**Sample Test Case**

Input: 20.0

5

Output: 100.0

**Answer**

try:

```
price = float(input())
quantity = int(input())
```

```
if price <= 0:
    raise ValueError("Invalid Price")
```

```
if quantity <= 0:
    raise ValueError("Invalid Quantity")
```

```
total_cost = price * quantity
```

```
if total_cost > 1000:
    raise RuntimeError("Excessive Cost")
```

```
print(f"{total_cost:.1f}")
```

```
except ValueError as e:
    print(e)
```

```
except RuntimeError as e:
```

```
    print(e)
```

**Status : Correct**

**Marks : 10/10**

## 5. Problem Statement

In a voting system, a person must be at least 18 years old to be eligible to vote. If a user enters an age below 18, the system should raise a user-defined exception indicating that they are not eligible to vote.

### ***Input Format***

The input contains a positive integer representing age.

### ***Output Format***

If the age is less than 18, the output displays "Not eligible to vote".

Otherwise, the output displays "Eligible to vote".

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: 18

Output: Eligible to vote

### ***Answer***

```
class NotEligibleToVoteError(Exception):
    pass

try:
    age = int(input())

    if age < 18:
        raise NotEligibleToVoteError("Not eligible to vote")

    print("Eligible to vote")

except NotEligibleToVoteError as e:
    print(e)
```

**Status :** Correct

**Marks :** 10/10

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 6\_PAH

Attempt : 1  
Total Mark : 30  
Marks Obtained : 21

### Section 1 : Coding

#### 1. Problem Statement

Peter manages a student database and needs a program to add students. For each student, Alex inputs their ID and name. The program checks for duplicate IDs and ensures the database isn't full.

If a duplicate or a full database is detected, an appropriate error message is displayed. Otherwise, the student is added, and a confirmation message is shown. The database has a maximum capacity of 30 students, and each student must have a unique ID.

#### ***Input Format***

The first line contains an integer  $n$ , representing the number of students to be added to the school database.



The next n lines each contain two space-separated values, representing the student's ID (integer) and the student's name (string).

### **Output Format**

The output will depend on the actions performed in the code.

If a student is added to the database, the output will display: "Student with ID [ID number] added to the database."

If there is an exception due to a duplicate student ID, the output will display: "Exception caught. Error: Student ID already exists."

If there is an exception due to the database being full, the output will display: "Exception caught. Error: Student database is full."

Refer to the sample outputs for the formatting specifications.

### **Sample Test Case**

Input: 3  
16 Sam  
87 Sabari  
43 Dani

Output: Student with ID 16 added to the database.  
Student with ID 87 added to the database.  
Student with ID 43 added to the database.

### **Answer**

MAX\_CAPACITY = 30

n = int(input())  
database = {}

for \_ in range(n):  
 student\_id, student\_name = input().split()  
 student\_id = int(student\_id)

```
if len(database) >= MAX_CAPACITY:
    print("Exception caught. Error: Student database is full.", end=" ")
    break
elif student_id in database:
    print("Exception caught. Error: Student ID already exists.", end=" ")
else:
    database[student_id] = student_name
    print(f"Student with ID {student_id} added to the database.", end=" ")
```

**Status :** Partially correct

**Marks :** 8.5/10

## 2. Problem Statement

Reeta is playing with numbers. Reeta wants to have a file containing a list of numbers, and she needs to find the average of those numbers. Write a program to read the numbers from the file, calculate the average, and display it.

File Name: user\_input.txt

### **Input Format**

The input file will contain a single line of space-separated numbers (as a string).

These numbers may be integers or decimals.

### **Output Format**

If all inputs are valid numbers, the output should print: "Average of the numbers is: X.XX" (where X.XX is the computed average rounded to two decimal places)

If the input contains invalid data, print: "Invalid data in the input."

Refer to the sample output for format specifications.

### **Sample Test Case**

Input: 1 2 3 4 5

Output: Average of the numbers is: 3.00

### Answer

```
try:
    numbers = [float(x) for x in line]
    avg = sum(numbers) / len(numbers)
    print(f"Average of the numbers is: {avg:.2f}", end="")
except:
    print("Invalid data in the input.", end="")
```

**Status :** Partially correct

**Marks :** 5/10

### 3. Problem Statement

John is a data analyst who often works with text files. He needs a program that can analyze the contents of a text file and count the number of times a specific character appears in the file.

John wants a simple program that allows him to specify a file and a character to count within that file.

#### **Input Format**

The first line of input consists of the file's name to be analyzed.

The second line of the input consists of the string they want to write within the file.

The third line of the input consists of a character to count within the file.

#### **Output Format**

If the character is found, the output displays "The character 'X' appears {Y} times in the file." where X is the character and Y is the count,

If the character does not appear in the file, the output displays "Character not found."

Refer to the sample output for the formatting specifications.

**Sample Test Case**

Input: test.txt

This is a test file to check the character count.

e

Output: The character 'e' appears 5 times in the file.

**Answer**

```
filename = input()
```

```
content = input()
```

```
char_to_count = input()
```

```
with open(filename, 'w') as f:
```

```
    f.write(content)
```

```
with open(filename, 'r') as f:
```

```
    file_content = f.read()
```

```
    count = file_content.count(char_to_count)
```

```
if count > 0:
```

```
    print(f"The character '{char_to_count}' appears {count} times in the file.")
```

```
else:
```

```
    print("Character not found in the file.")
```

**Status :** Partially correct

**Marks :** 7.5/10

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 6\_MCQ

Attempt : 1  
Total Mark : 20  
Marks Obtained : 18

#### Section 1 : MCQ

1. What is the output of the following code?

```
try:  
    x = 1 / 0  
except ZeroDivisionError:  
    print("Caught division by zero error")  
finally:  
    print("Executed")
```

**Answer**

Caught division by zero errorExecuted

**Status : Correct**

**Marks : 1/1**

2. Fill in the code in order to get the following output:

Output:

Name of the file: ex.txt

```
fo = open(_____(1), "wb")  
print("Name of the file: ",_____(2))
```

**Answer**

1) "ex.txt" 2) fo.name

**Status : Correct**

**Marks : 1/1**

3. Fill the code to in order to read file from the current position.

Assuming exp.txt file has following 3 lines, consider current file position is beginning of 2nd line

Meri,25

John,21

Raj,20

Ouptput:

```
['John,21\n','Raj,20\n']
```

```
f = open("exp.txt", "w+")  
_____(1)  
print _____(2)
```

**Answer**

1) f.seek(0, 1) 2) f.readlines()

**Status : Correct**

**Marks : 1/1**

4. Which of the following is true about

fp.seek(10,1)

**Answer**

Move file pointer ten characters ahead from the beginning of a file

**Status :** Wrong

**Marks :** 0/1

5. What is the output of the following code?

```
class MyError(Exception):  
    pass
```

```
try:  
    raise MyError("Something went wrong")  
except MyError as e:  
    print(e)
```

**Answer**

Something went wrong

**Status :** Correct

**Marks :** 1/1

6. How do you rename a file?

**Answer**

```
os.rename(existing_name, new_name)
```

**Status :** Correct

**Marks :** 1/1

7. What is the purpose of the except clause in Python?

**Answer**

To handle exceptions during code execution

**Status :** Correct

**Marks :** 1/1

8. What is the default value of reference\_point in the following code?

```
file_object.seek(offset [,reference_point])
```

**Answer**

0

**Status :** Correct

**Marks :** 1/1

9. What happens if an exception is not caught in the except clause?

**Answer**

The program will display a traceback error and stop execution

**Status :** Correct

**Marks :** 1/1

10. What will be the output of the following Python code?

```
f = None
for i in range (5):
    with open("data.txt", "w") as f:
        if i > 2:
            break
print(f.closed)
```

**Answer**

True

**Status :** Correct

**Marks :** 1/1

11. What happens if no arguments are passed to the seek function?

**Answer**

file position is set to the start of file

**Status :** Wrong

**Marks :** 0/1

12. What is the correct way to raise an exception in Python?

**Answer**

raise Exception()



**Status :** Correct

**Marks :** 1/1

13. Which of the following is true about the finally block in Python?

**Answer**

The finally block is always executed, regardless of whether an exception occurs or not

**Status :** Correct

**Marks :** 1/1

14. What will be the output of the following Python code?

```
# Predefined lines to simulate the file content
lines = [
    "This is 1st line",
    "This is 2nd line",
    "This is 3rd line",
    "This is 4th line",
    "This is 5th line"
]

print("Name of the file: foo.txt")

# Print the first 5 lines from the predefined list
for index in range(5):
    line = lines[index]
    print("Line No %d - %s" % (index + 1, line.strip()))
```

**Answer**

Displays Output

**Status :** Correct

**Marks :** 1/1

15. How do you create a user-defined exception in Python?

**Answer**

By creating a new class that inherits from the Exception class

**Status :** Correct

**Marks :** 1/1

16. What is the difference between r+ and w+ modes?

**Answer**

in r+ the pointer is initially placed at the beginning of the file and the pointer is at the end for w+

**Status :** Correct

**Marks :** 1/1

17. What is the output of the following code?

```
try:
    x = "hello" + 5
except TypeError:
    print("Type Error occurred")
finally:
    print("This will always execute")
```

**Answer**

Type Error occurredThis will always execute

**Status :** Correct

**Marks :** 1/1

18. Which clause is used to clean up resources, such as closing files in Python?

**Answer**

finally

**Status :** Correct

**Marks :** 1/1

19. Match the following:

a) f.seek(5,1) i) Move file pointer five characters behind from the current position

b) f.seek(-5,1) ii) Move file pointer to the end of a file

c) f.seek(0,2) iii) Move file pointer five characters ahead from the current position

d) f.seek(0) iv) Move file pointer to the beginning of a file

**Answer**

a-iii, b-i, c-ii, d-iv

**Status : Correct**

**Marks : 1/1**

20. Fill in the blanks in the following code of writing data in binary files.

```
import _____ (1)
rec=[]
while True:
    rn=int(input("Enter"))
    nm=input("Enter")
    temp=[rn, nm]
    rec.append(temp)
    ch=input("Enter choice (y/N)")
    if ch.upper=="N":
        break
f.open("stud.dat", "_____")(2)
_____.dump(rec,f)(3)
_____.close()(4)
```

**Answer**

(pickle,wb,pickle,f)

**Status : Correct**

**Marks : 1/1**

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 6\_CY

Attempt : 1  
Total Mark : 40  
Marks Obtained : 40

### Section 1 : Coding

#### 1. Problem Statement

Alice is developing a program called "Name Sorter" that helps users organize and sort names alphabetically.

The program takes names as input from the user, saves them in a file, and then displays the names in sorted order.

File Name: sorted\_names.txt.

#### ***Input Format***

The input consists of multiple lines, each containing a name represented as a string.

To end the input and proceed with sorting, the user can enter 'q'.

### **Output Format**

The output displays the names in alphabetical order, each name on a new line.

Refer to the sample output for the formatting specifications.

### **Sample Test Case**

Input: Alice Smith

John Doe

Emma Johnson

q

Output: Alice Smith

Emma Johnson

John Doe

### **Answer**

```
def save_names_to_file(names):
    with open("sorted_names.txt", "w") as file:
        for name in names:
            file.write(name + "\n")

def main():
    names = []
    while True:
        name = input().strip()
        if name.lower() == "q":
            break
        names.append(name)

    if not (3 <= len(names) <= 20):
        print("Error: Number of names should be between 3 and 20")
        return

    sorted_names = sorted(names)

    save_names_to_file(sorted_names)

    for name in sorted_names:
```

```
print(name)
```

```
main()
```

**Status :** Correct

**Marks :** 10/10

## 2. Problem Statement

In the enchanted realm of Academia, you, the Academic Alchemist, are bestowed with a magical quill and a parchment to weave the grades of aspiring students into a tapestry of academic brilliance.

The mission is to craft a Python program that empowers faculty members to enter student grades for any two subjects, stores these magical grades in a mystical file, and then, with a wave of your virtual wand, calculates the GPA to unveil the true essence of academic achievement.

### ***Input Format***

The input format is a string representing the student's name, any two subjects, and corresponding grades.

After entering grades, they can type 'done' when prompted for the student's name.

### ***Output Format***

The output should display the (average of grades) calculated GPA with a precision of two decimal places.

The magical grades will be saved in a mystical file named "magical\_grades.txt".

Refer to the sample output for format specifications.

### ***Sample Test Case***

Input: Alice  
Math  
95

English

88

done

Output: 91.50

**Answer**

```
def save_grades_to_file(student_name, subject1, grade1, subject2, grade2):  
    with open("magical_grades.txt", "a") as file:  
        file.write(f"{student_name}, {subject1}, {grade1}, {subject2}, {grade2}\n")
```

```
def calculate_gpa(grade1, grade2):  
    return f"{{(grade1 + grade2) / 2:.2f}}"
```

```
while True:  
    student_name = input().strip()  
    if student_name.lower() == "done":  
        break
```

```
    subject1 = input().strip()  
    grade1 = int(input().strip())  
    subject2 = input().strip()  
    grade2 = int(input().strip())
```

```
    if not (0 <= grade1 <= 100 and 0 <= grade2 <= 100):  
        print("Grades must be between 0 and 100")  
        continue
```

```
    save_grades_to_file(student_name, subject1, grade1, subject2, grade2)
```

```
    print(calculate_gpa(grade1, grade2))
```

**Status :** Correct

**Marks :** 10/10

### 3. Problem Statement

Alex is creating an account and needs to set up a password. The program prompts Alex to enter their name, mobile number, chosen username, and desired password. Password validation criteria include:

Length between 10 and 20 characters. At least one digit. At least one

special character from !@#\$%^&\* set. Display "Valid Password" if criteria are met; otherwise, raise an exception with an appropriate error message.

### ***Input Format***

The first line of the input consists of the name as a string.

The second line of the input consists of the mobile number as a string.

The third line of the input consists of the username as a string.

The fourth line of the input consists of the password as a string.

### ***Output Format***

If the password is valid (meets all the criteria), it will print "Valid Password"

If the password is weak (fails any one or more criteria), it will print an error message accordingly.

Refer to the sample outputs for the formatting specifications.

### ***Sample Test Case***

Input: John  
9874563210  
john  
john1#nhøj

Output: Valid Password

### ***Answer***

```
def validate_password(password):  
    special_chars = "!@#$%^&*"   
    errors = []  
  
    if not (10 <= len(password) <= 20):  
        errors.append("Should be a minimum of 10 characters and a maximum of  
20 characters")  
  
    if not any(char.isdigit() for char in password):
```



```

        errors.append("Should contain at least one digit")
    if not any(char in special_chars for char in password):
        errors.append("It should contain at least one special character")

    if errors:
        return errors[0]

    return "Valid Password"

try:
    name = input().strip()
    mobile_number = input().strip()
    username = input().strip()
    password = input().strip()

    print(validate_password(password))

except Exception as e:
    print(e)

```

**Status :** Correct

**Marks :** 10/10

#### 4. Problem Statement

Implement a program that checks whether a set of three input values can form the sides of a valid triangle. The program defines a function `is_valid_triangle` that takes three side lengths as arguments and raises a `ValueError` if any side length is not a positive value. It then checks whether the sum of any two sides is greater than the third side to determine the validity of the triangle.

##### ***Input Format***

The first line of input consists of an integer A, representing side1.

The second line of input consists of an integer B, representing side2.

The third line of input consists of an integer C, representing side3.

##### ***Output Format***

The output prints either "It's a valid triangle" if the input side lengths form a valid triangle,

or "It's not a valid triangle" if they do not.

If there is a ValueError, it should print "ValueError: <error\_message>".

Refer to the sample output for the formatting specifications.

### **Sample Test Case**

Input: 3

4

5

Output: It's a valid triangle

### **Answer**

```
def is_valid_triangle(a, b, c):  
    if a <= 0 or b <= 0 or c <= 0:  
        raise ValueError("Side lengths must be positive")
```

```
    if a + b > c and a + c > b and b + c > a:
```

```
        return "It's a valid triangle"
```

```
    else:
```

```
        return "It's not a valid triangle"
```

```
# Reading input values
```

```
try:
```

```
    side1 = int(input().strip())
```

```
    side2 = int(input().strip())
```

```
    side3 = int(input().strip())
```

```
    print(is_valid_triangle(side1, side2, side3))
```

```
except ValueError as e:
```

```
    print(f"ValueError: {e}")
```

**Status :** Correct

**Marks :** 10/10