

# Rajalakshmi Engineering College

Name: Mohamed Humaid Zahir Hussain

Email: 240701322@rajalakshmi.edu.in

Roll no: 2116240701322

Phone: 6382261139

Branch: REC

Department: I CSE FC

Batch: 2028

Degree: B.E - CSE

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 6\_MCQ

Attempt : 1

Total Mark : 20

Marks Obtained : 19

#### 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 error Executed

**Status :** Correct

**Marks :** 1/1

2. 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**

3. 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**

4. 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**

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

**Answer**

error

**Status : Wrong**

**Marks : 0/1**

6. 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**

7. 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**

8. 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**

9. 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**

10. Which of the following is true about

fp.seek(10,1)

**Answer**

Move file pointer ten characters ahead from the current position

**Status : Correct**

**Marks : 1/1**

11. 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**

12. 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**

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

**Answer**

To handle exceptions during code execution

**Status : Correct**

**Marks : 1/1**

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

**Answer**

raise Exception()

**Status : Correct**

**Marks : 1/1**

15. 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**

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

**Answer**

finally

**Status : Correct**

**Marks : 1/1**

17. 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**

18. How do you rename a file?

**Answer**

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

**Status : Correct**

**Marks : 1/1**

19. 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**

20. 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**

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 6\_COD

Attempt : 1

Total Mark : 50

Marks Obtained : 48.5

#### **Section 1 : Coding**

##### **1. 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())  
    if price<=0:  
        raise ValueError("Invalid Price")  
    quantity=int(input())  
    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 ve:  
    print(ve)  
except RuntimeError as re:  
    print(re)
```

**Status :** Correct

**Marks :** 10/10

## 2. 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***

```
# Define a user-defined exception
class NotEligibleToVote(Exception):
    pass

def check_voting_eligibility(age):
    if age < 18:
        raise NotEligibleToVote("Not eligible to vote")
    else:
        print("Eligible to vote")

def main():
    try:
        age_input = input()
        if not age_input.isdigit():
            print("Invalid input: Please enter a numeric age.")
        return
```

```
age = int(age_input)

if age < 1 or age > 100:
    print("Invalid input: Age must be between 1 and 100.")
    return

check_voting_eligibility(age)

except NotEligibleToVote as e:
    print(e)

if __name__ == "__main__":
    main()
```

Status : Partially correct

Marks : 8.5/10

### 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**

```
sentence=input().strip()  
words=sentence.split()  
print(len(words))
```

**Status :** Correct

**Marks :** 10/10

#### 4. 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

```
input_string=input().strip()  
print(f"Original String:{input_string}")  
print(f"Upper-Case String:{input_string.upper()}")  
print(f"Lower-Case String:{input_string.lower()}")
```

**Status :** Correct

**Marks :** 10/10

## 5. 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**

```
def main():
    try:
        n_input = input()
        if not n_input.strip().isdigit() and not (n_input.strip().startswith('-') and
n_input.strip()[1:].isdigit()):
            print("Error: You must enter a numeric value.")
            return
        n = int(n_input)

        # Check if n is a non-negative integer
        if n < 0:
            print("Error: The length of the list must be a non-negative integer.")
            return
        elif n == 0:
            print("Error: The length of the list must be a non-negative integer.")
            return

        numbers = []
        for _ in range(n):
            value = input()
            if not value.strip().lstrip('-').isdigit():
                print("Error: You must enter a numeric value.")
```

```
        return  
        numbers.append(int(value))  
  
    # Calculate and print the average  
    avg = sum(numbers) / n  
    print(f"The average is: {avg:.2f}")  
  
except Exception:  
    print("Error: You must enter a numeric value.")  
  
if __name__ == "__main__":  
    main()
```

**Status :** Correct

**Marks :** 10/10

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## NeoColab\_REC\_CS23221\_Python Programming

### **REC\_Python\_Week 6\_CY**

Attempt : 1

Total Mark : 40

Marks Obtained : 32.5

### **Section 1 : Coding**

#### **1. 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 a+c>a:
        return True
    else:
        return False
try:
    a=int(input())
    b=int(input())
    c=int(input())
    if is_valid_triangle(a,b,c):
        print("It's a valid triangle")
    else:
        print("It's not a valid triangle")
except ValueError as e:
    print(f"ValueError: {e}")
```

**Status : Correct**

**Marks : 10/10**

## 2. Problem Statement

Write a program to read the Register Number and Mobile Number of a student. Create user-defined exception and handle the following:

If the Register Number does not contain exactly 9 characters in the specified format(2 numbers followed by 3 characters followed by 4 numbers) or if the Mobile Number does not contain exactly 10 characters, throw an `IllegalArgumentException`. If the Mobile Number contains any character other than a digit, raise a `NumberFormatException`. If the Register Number contains any character other than digits and alphabets, throw a `NoSuchElementException`. If they are valid, print the message 'valid' or else print an Invalid message.

### ***Input Format***

The first line of the input consists of a string representing the Register number.

The second line of the input consists of a string representing the Mobile number.

### ***Output Format***

The output should display any one of the following messages:

If both numbers are valid, print "Valid".

If an exception is raised, print "Invalid with exception message: ", followed by the specific exception message.

Refer to the sample output for the formatting specifications.

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

Input: 19ABC1001

9949596920

Output: Valid

### ***Answer***

```
class IllegalArgumentException(Exception):
    pass
class NumberFormatException(Exception):
```

```

    pass
class NoSuchElementException(Exception):
    pass
def validate_register_number(reg):
    if len(reg)!=9:
        raise IllegalArgumentException("Register Number should have exactly 9
characters.")
    if not (reg[:2].isdigit() and reg[2:5].isalpha() and reg[5:].isdigit()):
        raise IllegalArgumentException("Register Number should have the format: 2
numbers, 3 characters, and 4 numbers.")
def validate_mobile_number(mob):
    if len(mob)!=10:
        raise IllegalArgumentException("Mobile Number should have exactly 10
characters.")
    if not mob.isdigit():
        raise NumberFormatException("Mobile Number should only contain digits.")
    if any(c.isalpha() for c in mob):
        raise NoSuchElementException("Register Number should have the format: 2
numbers, 3 characters, and 4 numbers.")
try:
    reg_number=input().strip()
    mobile_number=input().strip()
    validate_register_number(reg_number)
    validate_mobile_number(mobile_number)
    print("Valid")
except
    (IllegalArgumentException,NumberFormatException,NoSuchElementException)
as e:
    print(f"Invalid with exception message: {e}")

```

**Status : Correct**

**Marks : 10/10**

### 3. 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***

```
names=[]
while True:
    name=input().strip()
    if name=='q':
        break
    names.append(name)
names.sort()
with open("sorted_names.txt","w") as file:
    for name in names:
        file.write(name + "\n")
with open("sorted_names.txt","r") as file:
    for line in file:
        print(line.strip())
```

Status : Correct

Marks : 10/10

#### 4. 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#nhoj

Output: Valid Password

##### ***Answer***

```
class WeakPasswordException(Exception):  
    pass
```

```
def validate_password(password):
    special_chars = "!@#$%^&*"

    if len(password) < 10 or len(password) > 20:
        raise WeakPasswordException("Should contain at least one digit")
    if not any(char.isdigit() for char in password):
        raise WeakPasswordException("Should be a minimum of 10 characters and
a maximum of 20 characters")

    if not any(char in special_chars for char in password):
        raise WeakPasswordException("It should contain at least one special
character")

    print("Valid Password")

def main():
    name = input()
    mobile = input()
    username = input()
    password = input()

    try:
        validate_password(password)
    except WeakPasswordException as e:
        print(e)

if __name__ == "__main__":
    main()
```

**Status :** Partially correct

**Marks :** 2.5/10

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 6\_PAH

Attempt : 1

Total Mark : 30

Marks Obtained : 11

#### Section 1 : Coding

##### 1. 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().strip()  
content = input().strip()  
char_to_count = input().strip()
```

```
with open(filename, 'w') as file:  
    file.write(content)
```

```
with open(filename, 'r') as file:  
    data = file.read()  
    count = data.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 :** 5/10

## 2. 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())
```

```
student_ids = set()
```

```
total_students = 0
```

```
for _ in range(n):
```

```
    try:
```

```
        parts = input().split()
```

```
        student_id = int(parts[0])
```

```
        student_name = parts[1]
```

```
        if student_id in student_ids:
```

```
            raise ValueError("Student ID already exists.")
```

```
        if total_students >= MAX_CAPACITY:
```

```
            raise OverflowError("Student database is full.")
```

```
        student_ids.add(student_id)
```

```
        total_students += 1
```

```
        print(f"Student with ID {student_id} added to the database.")
```

```
    except ValueError as ve:
```

```
        print(f"Exception caught. Error: {ve}")
```

```
    except OverflowError as oe:
```

```
        print(f"Exception caught. Error: {oe}")
```

**Status :** Partially correct

**Marks :** 6/10

### 3. 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***

```
# You are using Python
total = 0
count = 0
valid = True
```

```
for num in numbers:
```

```
    try:
```

```
        total += float(num)
```

```
        count += 1
```

```
    except ValueError:
```

```
        valid = False
```

```
        break
```

```
if valid and count > 0:
```

```
    average = total / count
```

```
print(f"Average of the numbers is: {average:.2f}")  
else:  
    print("Invalid data in the input.")
```

**Status : Wrong**

**Marks : 0/10**