**Assignment 1**

Code 1:

Objective: To Identify and fix errors in a Python Program that manipulates strings.

Corrected Code: **No change in the Given code**

def reverse\_string(s):

reversed=""

for i in range(len(s)-1,-1,-1):

reversed+=s[i]

return reversed

def main():

input\_string="Hello, world!"

reversed\_string = reverse\_string(input\_string)

print(f"Reversed string:{reversed\_string}")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**Output:**

Reversed string: !dlrow ,olleH

Code 2:

Objective: To identify and fix errors in a Python program that validates UserInput.

Corrected Code: **Type Conversions from String to Int.**

def get\_age():

age = input("Please enter your age: ")

if age.isnumeric() and int(age) >= 18:

return int(age)

else:

return None

def main():

age = get\_age()

if age:

print(f"You are {age} years old and eligible.")

else:

print("Invalid input. You must be at least 18 years old.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

Code 3:

Objective: To identify and fix errors in a Python program that reads and writes to a file.

Corrected Code: text file content is converted to Upper case.

def read\_and\_write\_file(filename):

try:

with open(filename, 'r') as file:

content = file.read()

with open(filename, 'w') as file:

file.write(content.upper())

print(f"File '{filename}' processed successfully.")

except Exception as e:

print(f"An error occurred: {str(e)}")

def main():

filename = "sample.txt"

read\_and\_write\_file(filename)

if \_\_name\_\_ == "\_\_main\_\_":

main()

Code 4: Implement the merge sort algorithm.

Corrected Code:

def merge\_sort(arr):

if len(arr) <= 1:

return arr

mid = len(arr) // 2

left = arr[:mid]

right = arr[mid:]

merge\_sort(left)

merge\_sort(right)

i = j = k = 0

while i < len(left) and j < len(right):

if left[i] < right[j]:

arr[k] = left[i]

i += 1

else:

arr[k] = right[j]

j += 1

k += 1

while i < len(left):

arr[k] = left[i]

i += 1

k += 1

while j < len(right):

arr[k] = right[j]

j += 1

k += 1

arr = [38, 27, 43, 3, 9, 82, 10]

merge\_sort(arr)

print(f"The sorted array is: {arr}")

**Output:**

The sorted array is: [3, 9, 10, 27, 38, 43, 82]