AI LAB ASSIGNMENT

by

AMMAR JAMIL (01-134231-010)

Submitted to: DR ARSHAD FARHAD
Date: 9/09/2025

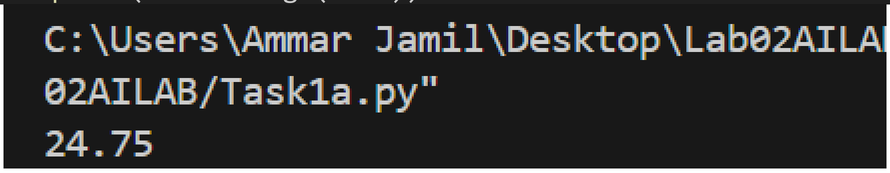
DEPARTMENT OF COMPUTER SCIENCE

BAHRIA UNIVERSITY ISLAMABAD E-8

Task # 1

1. Write a function that takes a list of numbers and returns the average.
2. Write a function with a default parameter to greet a user by name, defaulting to "Student" if no name is provided.

```python
#1.Write a function that takes a list of numbers
# and returns the average.
def ListAverage(nums):
    sum = 0
    for i in nums:
        sum = sum + i
    return sum / len(nums)

nums = [1, 34, 54, 10]
print(ListAverage(nums))
```



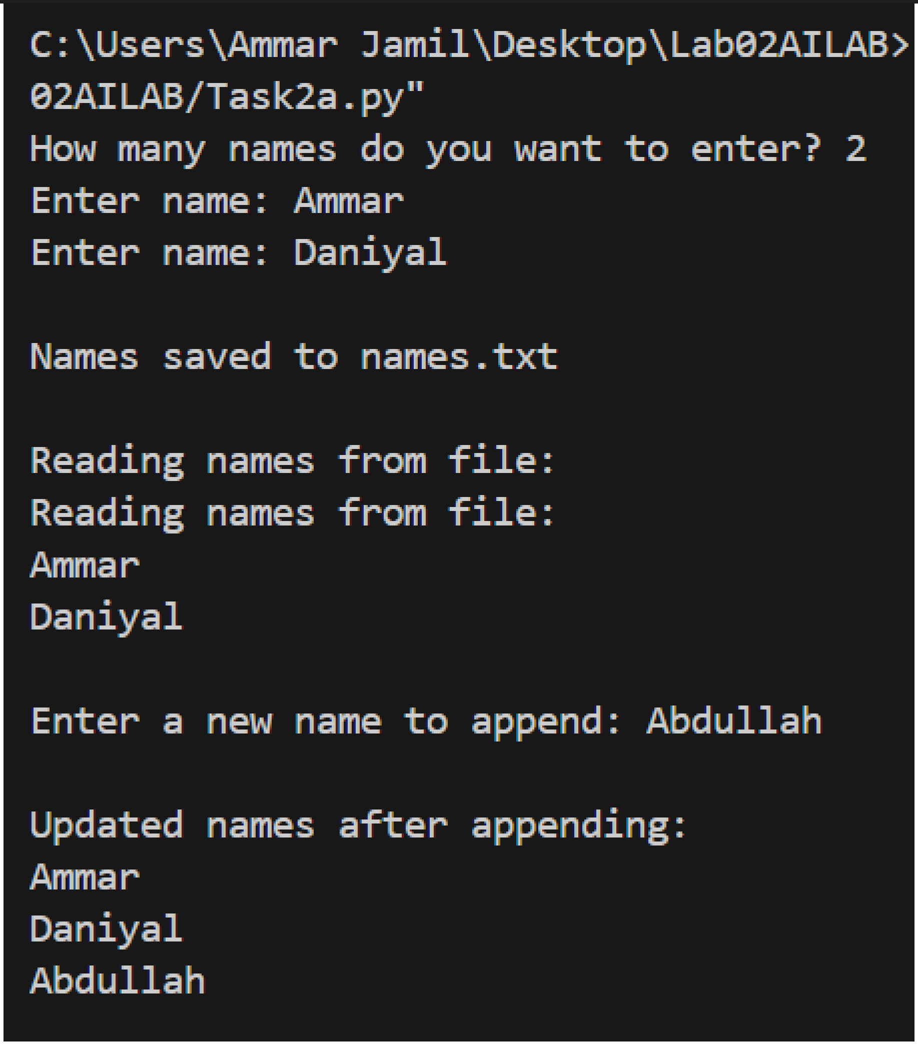
```
C:\Users\Ammar Jamil\Desktop\Lab02AILA
02AILAB/Task1a.py"
24.75
```

Task # 2

1. Write a program to save a user-input list of names to a file named "names.txt".
2. Read the contents of "names.txt" and print them.
3. Append a new name to "names.txt" and verify by reading the file again.

```python
#1.Write a program to save a user-input list of names to a file
#  named "names.txt".
names = []

count = int(input("How many names do you want to enter? "))

for i in range(count):
    name = input("Enter name: ")
    names.append(name)

with open("names.txt", "w") as f:
    for name in names:
        f.write(name + "\n")

print("\nNames saved to names.txt\n")

#2.Read the contents of "names.txt" and print them.
print("Reading names from file:")
with open("names.txt", "r") as f:
    contents = f.read()
    print(contents)
```

```python

# 3.Append a new name to "names.txt" and verify by reading the
# file again.
new_name = input("Enter a new name to append: ")
with open("names.txt", "a") as f:
    f.write(new_name + "\n")
print()

print("Updated names after appending:")
with open("names.txt", "r") as f:
    contents = f.read()
    print(contents)

```



```
C:\Users\Ammar Jamil\Desktop\Lab02AILAB>
02AILAB/Task2a.py"
How many names do you want to enter? 2
Enter name: Ammar
Enter name: Daniyal

Names saved to names.txt

Reading names from file:
Reading names from file:
Ammar
Daniyal

Enter a new name to append: Abdullah

Updated names after appending:
Ammar
Daniyal
Abdullah
```

Task # 3

Combined Comprehensive Task

Description

In this task, students will create a Python program to manage a simple student grade calculator, a common problem that integrates functions and file handling. The program will prompt the user to input a student's name and their marks for three subjects (e.g., Math, English, and Science). It will use functions to calculate the average marks, determine the corresponding grade based on standard grading criteria (A: 90–100, B: 80–89, C: 70–79, D: 60–69, F: Below 60), and check if the student has passed (average marks ≥ 60). The results, including the student's name, individual marks, average, grade, and pass/fail status, will be saved to a file. The program will then read and display the file contents to verify the output. This task encourages students to modularize code with functions and practice file operations while solving a practical problem relevant to academic scenarios.

Task Requirements

Write a Python program that:

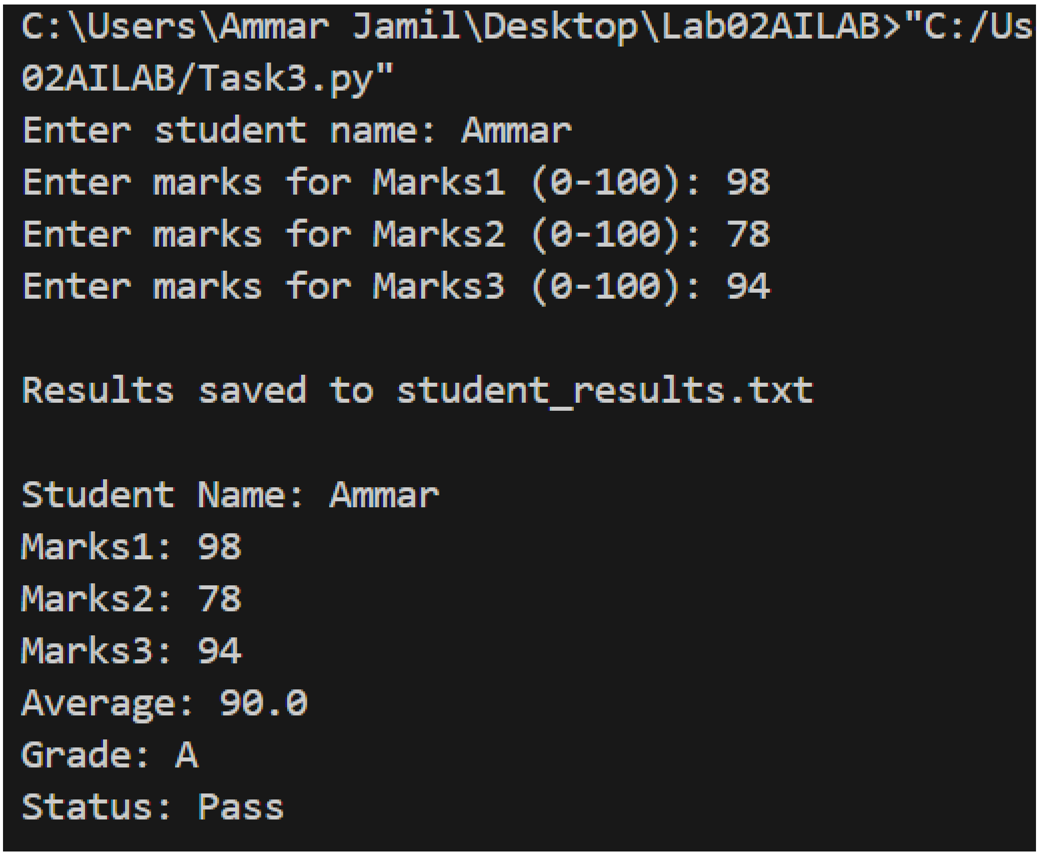
1. Defines a function calculate_average(marks1, marks2, marks3) that takes three subject marks as input and returns their average (as a float, rounded to two decimal places).
2. Defines a function determine_grade(average) that takes the average marks and returns the corresponding letter grade (A, B, C, D, or F) based on the grading criteria provided above.
3. Defines a function is_passing(average) that takes the average marks and returns a string indicating whether the student has passed ("Pass" if average ≥ 60, "Fail" otherwise).
4. Prompts the user to input a student's name and their marks for three subjects (each mark should be between 0 and 100; include basic input validation to ensure valid numbers).
5. Calls the above functions to compute the average, grade, and pass/fail status.
6. Saves the student's details (name, individual marks, average, grade, and pass/fail status) to a file named "student_grades.txt" in a clear, readable format.
7. Reads and **displays the contents of "student_grades.txt" to verify the output.**

SOL:

```
# In this task, students will create a Python program to manage a
# simple student grade calculator, a common problem that integrates
# functions and file handling. The program will prompt the user to
# input a student's name and their marks for three subjects
#  (e.g., Math, English, and Science). It will use functions to
#  calculate the average marks, determine the corresponding grade
#  based on standard grading criteria (A: 90–100, B: 80–89,
#  C: 70–79, D: 60–69, F: Below 60), and check if the student has
# passed (average marks ≥ 60). The results, including the student's
# name, individual marks, average, grade, and pass/fail status, will
#  be saved to a file. The program will then read and display the file
# contents to verify the output. This task encourages students to
#  modularize code with functions and practice file operations while
#  solving a practical problem relevant to academic scenarios.
# Function to calculate average

def calculate_average(marks):
    total = 0
    for m in marks:
        total = total +  m
    return round(total / len(marks), 2)

def get_grade(avg):
    if avg >= 90 :
        return "A"
    elif avg >= 80:
        return "B"
    elif avg >= 70:
        return "C"
    elif avg >= 60:
        return "D"
    else:
        return "F"

def is_pass(avg):
    return avg >= 60


name = input("Enter student name: ")
```

```
subjects = ["Marks1", "Marks2", "Marks3"]
marks = []

for i in range(len(subjects)):
    mark = int(input(f"Enter marks for {subjects[i]} (0-100): "))
    if mark < 0 or mark > 100:
        print("Invalid marks! Please enter between 0 and 100.")
        exit()
    marks.append(mark)

avg = calculate_average(marks)
grade = get_grade(avg)

status = "Pass" if is_pass(avg) else "Fail"

with open("student_results.txt", "w") as f:
    f.write("Student Name: " + name + "\n")
    for i in range(len(subjects)):
        f.write(subjects[i] + ": " + str(marks[i]) + "\n")
    f.write("Average: " + str(avg) + "\n")
    f.write("Grade: " + grade + "\n")
    f.write("Status: " + status + "\n")

print("\nResults saved to student_results.txt\n")

with open("student_results.txt", "r") as f:
```

```
print(f.read())
```



```
C:\Users\Ammar Jamil\Desktop\Lab02AILAB>"C:/Us
02AILAB/Task3.py"
Enter student name: Ammar
Enter marks for Marks1 (0-100): 98
Enter marks for Marks2 (0-100): 78
Enter marks for Marks3 (0-100): 94

Results saved to student_results.txt

Student Name: Ammar
Marks1: 98
Marks2: 78
Marks3: 94
Average: 90.0
Grade: A
Status: Pass
```