Bahria University,

Karachi Campus

COURSE: CSL 411
ARTIFICIAL INTELLIGENCE LAB
TERM:
Spring-2024, CLASS: BSE- 6(A)

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Signed **Remarks:** **Score:**

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SNO	DATE	LAB NO	LAB OBJECTIVE	SIGN

Bahria University,

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LAB EXPERIMENT NO.

01

LIST OF TASKS

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1	Calculator Program:
2	Guess the Number Game:
3	Palindrome Checker:
4	Word Counter:
5	Fizz Buzz:
6	Temperature Converter
7	Hangman Game:
8	File Manipulation:

Submitted On:

Date: 4/5/2024

Task No.01:Calculator Program: Create a simple calculator program that can perform basic arithmetic operations like addition, subtraction, multiplication, and division.

```
def add(n1, n2):
    return n1 + n2
def sub(n1, n2):
    return n1 - n2
def mul(n1, n2):
    return n1 * n2
def div(n1, n2):
    return n1 / n2
def rem(n1, n2):
    return n1 % n2
while True:
    opt = int(input("Select an operation:\n 1- Addition\n 2- Subtraction\n 3-
Multiplication\n 4- Division\n 5- Reminder\n 6- Exit\n"))
    if opt >6:
        print(f"Invalid option {opt}")
    else:
        if opt == 6:
            break
n1 = int(input("Enter number 1: "))
n2 = int(input("Enter number 2: "))
if opt == 1:
    print(f"{n1} + {n2} = {add(n1, n2)}")
elif opt == 2:
    print(f"{n1} - {n2} = {sub(n1, n2)}")
elif opt == 3:
    print(f"{n1} * {n2} = {mul(n1, n2)}")
elif opt == 4:
    if n2 == 0:
        print("Error! Division by zero.")
    else:
        print(f"{n1} / {n2} = {div(n1, n2)}")
elif opt == 5:
    print(f"{n1} % {n2} = {rem(n1, n2)}")
```

```
24 + 12 = 36
24 - 12 = 12
24 * 12 = 288
Error! Division by zero.
24 / 12 = 2.0
24 % 12 = 0
Invalid option 23
```

Task No.02:Guess the Number Game:

```
import random
num = random.randint(0,10)
inp = int(input("Enter a number from 0-10"))
while(inp!=num):
    if(inp < num):
        print(f"Number entered = {inp}    TOO LOW!")
    else:
        print(f"Number entered = {inp}    TOO HIGH")
    inp = int(input("Enter a number from 0-10"))
print("Correct guess")
```

```
Number entered = 2    TOO LOW!
Number entered = 3    TOO LOW!
Number entered = 4    TOO LOW!
Number entered = 8    TOO LOW!
Number entered = 10    TOO HIGH
Correct guess 9
```

Task No.03:Palindrome Checker:

```
def is_palindrome(s):
    return s == s[::-1]
print(is_palindrome("radar"))
print(is_palindrome("MAHAM"))
```

```
True
True
```

Task No.04Word Counter:

```
import re
from collections import Counter
def count_words(text):
    words = re.findall(r'\b\w+\b', text.lower())
    word_count = Counter(words)
    return word_count
user_input = input("Enter 'file' to count words from a file or 'string' to count
words from a string: ").lower()
if user_input == 'file':
    filename = input("Enter the name of the text file: ")
    try:
        with open(filename, 'r') as file:
            text = file.read()
            word_count = count_words(text)
            print("Word frequency in the file:")
            for word, count in word_count.items():
                print(f"{word}:
    except FileNotFoundE:
        print("File not found. ,
elif user_input == 'string':
    text = input("Enter the string: ")
    word_count = count_words(text)
    print("Word frequency in the string:")
    for word, count in word_count.items():
        print(f"{word}: {count}")
else:
    print("Invalid input. Please enter 'file' or 'string'.")
```

```
Calculator Program: Guess the Number Game:  Palindrome Checker:
Enter the string: (Press 'Enter' to confirm or 'Escape' to cancel)
```

```
Word frequency in the string:
calculator: 1
program: 1
guess: 1
the: 1
number: 1
game: 1
palindrome: 1
checker: 1
```

input.txt

```
Calculator Program:
Guess the Number Game:
Palindrome Checker:
Word Counter:
Fizz Buzz:
Temperature Converter:
Hangman Game:
File Manipulation:
```

```
Word frequency in the file:
calculator: 1
program: 1
guess: 1
the: 1
number: 1
game: 2
palindrome: 1
checker: 1
word: 1
counter: 1
fizz: 1
buzz: 1
temperature: 1
converter: 1
hangman: 1
file: 1
manipulation: 1
```

Task No.05:Fizz Buzz

```
for i in range (101):
    if(i%3 ==0 and i%5==0 and i!=0):
        print(f"{i}\tFizz Buzz")
    elif(i%3==0):
        print(f"{i}\tFizz ")
    elif(i%5==0):
```

```
0       Fizz
3       Fizz
5       Buzz
6       Fizz
9       Fizz
10      Buzz
12      Fizz
15      Fizz Buzz
```

```
45      Fizz Buzz
48      Fizz
50      Buzz
51      Fizz
...
95      Buzz
96      Fizz
99      Fizz
100     Buzz
```

Task No.06:Temperature Converter

```
while(True):
    temp = int(input("Select a temprature conversion:\n 1- Celsius to Fahrenheit\n 2- Fahrenheit to Celsius 3- Exit"))
    if(temp ==1):
        c= float(input("Enter temperature in Celsius:"))
        c_f = (c*1.8) +32
        print(f"Celsius {c} to Fahrenheit {c_f}")
    elif(temp ==2):
        f= float(input("Enter temperature in Fahrenheit:"))
        f_c = (f-32)*(5/9)
        print(f"Fahrenheit {f} to Celsius {f_c}")
    elif(temp ==3):
        break
    else:
        print("Invalid input")
```

```
Celsius 5.0 to Fahrenheit 41.0
Fahrenheit 41.0 to Celsius 5.0
```

Task No.07:Hangman Game

```
import random
def choose_word():
    words = ["apple", "banana", "orange", "grape", "pineapple", "watermelon"]
    return random.choice(words)
def display_word(word, guessed_letters):
    displayed_word = ""
    for letter in word:
        if letter in guessed_letters:
            displayed_word += letter
        else:
            displayed_word += "_"
    return displayed_word
def hangman():
    max_attempts = 6
    word_to_guess = choose_word()
    guessed_letters = []
    attempts = 0

    print("Welcome to Hangman!")
    print("Try to guess the word.")

    while True:
        print("\n" + display_word(word_to_guess, guessed_letters))
        guess = input("Enter a letter: ").lower()
        if guess in guessed_letters:
            print("You've already guessed that letter.")
            continue
        elif guess in word_to_guess:
            print("Correct!")
            guessed_letters.append(guess)
        else:
            print("Incorrect!")
            attempts += 1
            print(f"Attempts left: {max_attempts - attempts}")
        if "_" not in display_word(word_to_guess, guessed_letters):
            print("\nCongratulations! You've guessed the word:", word_to_guess)
            break
        elif attempts == max_attempts:
            print("\nSorry, you've run out of attempts.")
            print("The word was:", word_to_guess)
            break
```

```
Welcome to Hangman!
Try to guess the word.

_____
Incorrect!
Attempts left: 5

_____
Incorrect!
Attempts left: 4

_____
Incorrect!
Attempts left: 3
Attempts left: 3

_____
Incorrect!
Attempts left: 2

_____
Incorrect!
Attempts left: 1

_____
Correct!

_____
```

Task No.08: File Manipulation:

```
def read_file(input_file):
    with open(input_file, 'r') as file:
        data = file.readlines()
    return data
def write_file(output_file, data):
    with open(output_file, 'w') as file:
        file.writelines(data)
def sort_lines(data):
    return sorted(data)
input_file = "input.txt"
output_file = "output.txt"
data = read_file(input_file)
sorted_data = sort_lines(data)
write_file(output_file, sorted_data)
```