Python Programming Lab. [Batch-B3]

Assignment Submission Details

Field	Details
Student Name *	Dilip Balu Magar
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Course Name	Python Programming Lab. (MCA31PC06)
Academic Year	2025-26 (Semester-1)
Course Teacher	Prof. Prakash Ukhalkar
Assignment Name	Assignment based on Data Structures in Python (List, Tuple, Set, Dictionary)
Assignment Number	Assignment 03
Submission Date *	17-10-2025

Instructions

1. **Fill in your details** in the table above
2. **Write your code** in the provided code cells below each question
3. **Test your code** to ensure it works correctly
4. **Add comments** to explain your logic
5. **Save the notebook** before submission

Question 1: Design a Python program to simulate a simple game of rock-paper-scissors.

In [1]:
```
import random

print("**Rock Paper Scissor Game**")
choice_list = ["rock","paper","scissor"]
print("choose any one\nRock\nPaper\nScissor\n")
while(True):
    player_choice = input("Enter your choice:").lower()
    if player_choice not in(choice_list):
        print("please choose correct choice")
```

```
    else:
        random_choice = random.choice(choice_list)
        print(f"your choice: {player_choice}")
        print(f"computer`s choice: {random_choice}")
        if player_choice == random_choice:
            print("Tie")
        elif (player_choice=="rock" and  random_choice=="scissor") or (player_choic
            print("congragulations! you wiin")
        else:
            print("ooh! You loss")

    confirm=input("you want to continue(y/n)").lower()
    if confirm=='n':
        print("bye")
        break
```

```
**Rock Paper Scissor Game**
choose any one
Rock
Paper
Scissor

please choose correct choice
please choose correct choice
please choose correct choice
please choose correct choice
please choose correct choice
please choose correct choice
please choose correct choice
please choose correct choice
bye
```

Question 2:Develop a Python code to generate a random password with specified criteria.

In [ ]:
```
# import random
import string

lowercase_letters = string.ascii_lowercase
uppercase_letters = string.ascii_uppercase
numbers = string.digits
symbols = string.punctuation

length = int(input("Enter the password length (min 8): "))
print("given password length", length)

if length < 8:
    print("Length too short. It must be at least 8.")
    length = 8

# Combine all characters using +=
all_characters = ""
all_characters += lowercase_letters
all_characters += uppercase_letters
all_characters += numbers
all_characters += symbols
```

```
# Ensure at least one of each type
password = ""
password += random.choice(lowercase_letters)
password += random.choice(uppercase_letters)
password += random.choice(numbers)
password += random.choice(symbols)

remaining_length = length - len(password)

# 🔥 REPLACED LOOP WITH random.choices()
extra_chars = random.choices(all_characters, k=remaining_length)
password += "".join(extra_chars)

# Shuffle password
password_list = list(password)
random.shuffle(password_list)
password = "".join(password_list)

print("Generated password is:", password)
```

```
given password length 10
generated password is: T+rXb6;0f9
```

Question 3:Create a Python script that calculates the area and perimeter of different geometric shapes based on user-provided dimensions.

In [29]:
```
import math   #for value of pi

print("Select a shape:")
print("1. Circle")
print("2. Rectangle")
print("3. Square")

choice = int(input("Enter your choice (1, 2, or 3): "))

if choice == 1:
    print("\n You select Circle")
    radius = float(input("Enter the radius of the circle: "))

    area = math.pi * (radius ** 2)
    perimeter = 2 * math.pi * radius

    print("radius of circle is:",radius)
    print(f"\nThe area of the circle is: {area:.2f}")
    print(f"The perimeter is: {perimeter:.2f}")

elif choice == 2:
    print("\nYou select Rectangle ")
    length = float(input("Enter the length of the rectangle: "))
    width = float(input("Enter the width of the rectangle: "))

    area = length * width
    perimeter = 2 * (length + width)

    print(f"length of rectangle{length}")
```

```
    print(f"width of rectangle{width}")
    print(f"The area of the rectangle is: {area:.2f}")
    print(f"The perimeter is: {perimeter:.2f}")

elif choice == 3:
    print("\nYou select Square")
    side = float(input("Enter the length of one side of the square: "))

    area = side * side
    perimeter = 4 * side

    print(f"Side of sqaure:{side}")
    print(f"The area of the square is: {area:.2f}")
    print(f"The perimeter is: {perimeter:.2f}")

else:
    print("wrong choice.")
```

```
Select a shape:
1. Circle
2. Rectangle
3. Square

You select Square
Side of sqaure:4.0
The area of the square is: 16.00
The perimeter is: 16.00
```

Question 4: Write a Python program that reads two numbers from the user, calculates their sum and difference, and prints the results with appropriate labels.

In [26]:
```
number1 = float(input("Enter the first number: "))

number2 = float(input("Enter the second number: "))

sum = number1 + number2

difference = number1 - number2

print(f"The sum of {number1} and {number2} is: {sum}")
print(f"The difference between {number1} and {number2} is: {difference:.2f}")
```

```
The sum of 55.4 and 44.4 is: 99.8
The difference between 55.4 and 44.4 is: 11.00
```

Question 5: Create a Python script that converts a Fahrenheit temperature to Celsius and vice versa, using appropriate data types and conversion formulas.

In [24]:
```
# Celsius to Fahrenheit: (Celsius * 9/5) + 32
# Fahrenheit to Celsius: (Fahrenheit - 32) * 5/9

print("1. Fahrenheit to Celsius")
print("2. Celsius to Fahrenheit")

choice = int(input("Enter your choice (1 or 2): "))
print(f"you select choice{choice}")
```

```
temp_value = float(input("Enter the temperature to convert: "))
print("entered temperatue")

if choice == 1:
    # Convert Fahrenheit to Celsius
    celsius = (temp_value - 32) * 5 / 9
    print(f"{temp_value}F is equal to {celsius:.2f}C")

elif choice == 2:
    # Convert Celsius to Fahrenheit
    fahrenheit = (temp_value * 9 / 5) + 32
    print(f"{temp_value}C is equal to {fahrenheit:.2f}F")

else:
    print(" select 1 or 2.")
```

```
1. Fahrenheit to Celsius
2. Celsius to Fahrenheit
you select choice1
entered temperatue
72.0F is equal to 22.22C
```

Question 6:Implement a Python function to sort a list of numbers using the bubble sort algorithm.

In [21]:
```
def bubble_sort(numbers_list):
    list_copy = numbers_list[:]

    n = len(list_copy)
    for i in range(n-1):
        swapped = False
        for j in range(0, n-i-1):
            if list_copy[j] > list_copy[j + 1]:
                list_copy[j], list_copy[j + 1] = list_copy[j + 1], list_copy[j]
                swapped = True
        if not swapped:
            break

    return list_copy

given_list1 = [64, 34, 25, 12, 22, 11, 90, 5]
given_list2= [7, 11, 22, 22, 27, 44, 54, 90]

print(f"Given list 1: {given_list1}")
sorted_list1 = bubble_sort(given_list1)
print(f"Sorted list1:   {sorted_list1}")

print(f"Given list 2: {given_list2}")
sorted_list2 = bubble_sort(given_list2)
print(f"Sorted list2:   {sorted_list2}")
```

```
Given list 1: [64, 34, 25, 12, 22, 11, 90, 5]
Sorted list1:   [5, 11, 12, 22, 25, 34, 64, 90]
Given list 2: [7, 11, 22, 22, 27, 44, 54, 90]
Sorted list2:   [7, 11, 22, 22, 27, 44, 54, 90]
```

Question 7:Write a Python program that takes a list of numbers as input and prints the sum of all the even numbers in the list.

In [17]:
```
num_list=[]
even_sum = 0
n = int(input("enter the no of elemetns you want to add in list "))

for i in range(0,n):
    element = int(input(f"enter element {i+1}:"))
    num_list.append(element)
    if num_list[i]%2 == 0:
        even_sum+=num_list[i]

print("Given List:",num_list)
print("Sum of all even numbers in the list=",even_sum)
```

```
Given List: [1, 2, 3, 4, 5, 6, 7, 8, 9, 19]
Sum of all even numbers in the list= 20
```

Question 8:Write a Python program that takes a list of strings and prints the count of each unique word in the list.

In [ ]:
```
def count_words(sentence_list):
    word_counts = {}  #empty dictionary to store word counts.like {'hello': 1, 'wor


    for sentence in sentence_list:
        words = sentence.lower().split()   # .lower() use to treat "Dilip" and "dil

        for word in words:
            if word in word_counts:
                word_counts[word] += 1 #for already seen word
            else:
                word_counts[word] = 1 #if word occurs first time

    print(" Unique Word Count")
    for word, count in word_counts.items():
        print(f"{word}: {count}")


print("Enter your sentences.")
input_list = []

line = input()

input_list.append(line)
print(input_list)

count_words(input_list)
```

```
Enter your sentences.
['hello world, hello python ']
 Unique Word Count
hello: 2
world,: 1
python: 1
```

Question 9:Write a Python program that defines two tuples of numbers and calculates the element-wise sum of the tuples.

In [ ]:
```python
def elementwise_sum(tuple1,tuple2):
    if len(tuple1) != len(tuple2):
        print("Error: Tuples must have same length.")
        return None

    sum_list = []

    for i in range(len(tuple1)):

        tuple1_element = tuple1[i]
        tuple2_element = tuple2[i]

        current_sum = tuple1_element + tuple2_element
        sum_list.append(current_sum)

    result_tuple = tuple(sum_list)

    return result_tuple


tuple1 = (10, 20, 30, 40)
tuple2 = (5, 15, 25, 35)

print(f"First Tuple:  {tuple1}")
print(f"Second Tuple: {tuple2}")

result = elementwise_sum(tuple1, tuple2)

if result:
    print(f"Element wise Sum: {result}")
```

```
First Tuple:  (10, 20, 30, 40)
Second Tuple: (5, 15, 25, 35)
Element wise Sum: (15, 35, 55, 75)
```

Question 10:Create a program that checks if a given element exists in a tuple and prints whether it is present or not.

In [14]:
```python
def search(fruit_tuple, element):

    if element in fruit_tuple:
        return True
    else:
        return False
```

```
fruit_tuple = ("apple","banana","mango","orange")


element = input("Enter fruit name to check it is in fruit tuple or not: ").lower()

print(f"\nSearching in  given tuple: {fruit_tuple}")


is_present = search(fruit_tuple, element)

if is_present:
    print(f"Yes, '{element}' is present in the tuple.")
else:
    print(f"No, '{element}' is not present in the tuple.")
```

```
Searching in  given tuple: ('apple', 'banana', 'mango', 'orange')
Yes, 'apple' is present in the tuple.
```

Submission Checklist

Before submitting, make sure you have completed the following:

- ☐ Filled in all personal details in the header
- ☐ Completed all 10 questions
- ☐ Added appropriate comments to your code
- ☐ Tested all programs to ensure they work correctly
- ☐ Used proper variable names and coding conventions
- ☐ Saved the notebook file (.ipynb)
- ☐ Followed file naming format as PRN_A01_PPLAB_B3.ipynb
