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Activity Report

Submitted by

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**SUBJECT: Introduction to Python Programming**

**(PLC2)**

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Python ABL 1

1. Write a Python program to realize Rock, Paper and Scissor games with a number of wins, losses and draws.

```
import random

def get_computer_choice():
    return random.choice(["rock", "paper", "scissors"])

def get_user_choice():
    while True:
        choice = input("Please enter your choice (rock, paper, or scissors): ").strip().lower()
        if choice in ["rock", "paper", "scissors"]:
            return choice
        print("Invalid input. Try again.")

def determine_winner(user, computer):
    if user == computer:
        return "draw"
    winning_combinations = {
        "rock": "scissors",
        "paper": "rock",
        "scissors": "paper"
    }
    return "win" if winning_combinations[user] == computer else "loss"

def display_result(result):
    if result == "win":
        print("Congratulations, you won!")
    elif result == "loss":
        print("You lost. Better luck next time!")
    else:
        print("It's a draw!")

def main():
    print("Welcome to the Rock, Paper, Scissors game!")
    wins, losses, draws = 0, 0, 0

    while True:
        user_choice = get_user_choice()
        computer_choice = get_computer_choice()

        print(f"\nYour choice: {user_choice}")
        print(f"Computer's choice: {computer_choice}")

        result = determine_winner(user_choice, computer_choice)
        display_result(result)

        if result == "win":
            wins += 1
        elif result == "loss":
            losses += 1
        else:
            draws += 1

        print(f"Current Score -> Wins: {wins}, Losses: {losses}, Draws: {draws}\n")

        play_again = input("Would you like to play another round? (yes/no): ").strip().lower()
        if play_again != "yes":
            print("\nFinal Score:")
            print(f"Wins: {wins}, Losses: {losses}, Draws: {draws}")
            print("Thank you for playing! Goodbye.")
            break

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

Output 1:

```
========== RESTART: C:/Users/18che/Code_Projects/PLC2/ABL1a.py ==========
Welcome to the Rock, Paper, Scissors game!
Please enter your choice (rock, paper, or scissors): paper

Your choice: paper
Computer's choice: paper
It's a draw!
Current Score -> Wins: 0, Losses: 0, Draws: 1

Would you like to play another round? (yes/no): yes
Please enter your choice (rock, paper, or scissors): rock

Your choice: rock
Computer's choice: rock
It's a draw!
Current Score -> Wins: 0, Losses: 0, Draws: 2

Would you like to play another round? (yes/no): yes
Please enter your choice (rock, paper, or scissors): rock

Your choice: rock
Computer's choice: scissors
Congratulations, you won!
Current Score -> Wins: 1, Losses: 0, Draws: 2

Would you like to play another round? (yes/no): no

Final Score:
Wins: 1, Losses: 0, Draws: 2
Thank you for playing! Goodbye.
>>>
```

2. Write a Python program to convert temperature from Celsius scale to Fahrenheit scale. (Hint: C=(F-32)*5/9)

```
def celsius_to_fahrenheit(celsius):
    return (celsius * 9/5) + 32

def display_conversion(celsius, fahrenheit):
    print(f"\n{celsius:.2f}°C is equal to {fahrenheit:.2f}°F")

def main():
    print("Welcome to the Celsius to Fahrenheit Converter!")
    while True:
        try:
            celsius = float(input("\nEnter temperature in Celsius: "))
            fahrenheit = celsius_to_fahrenheit(celsius)
            display_conversion(celsius, fahrenheit)
        except ValueError:
            print("Invalid input. Please enter a valid numeric value.")

        repeat = input("Would you like to convert another temperature? (yes/no): ").strip().lower()
        if repeat != "yes":
            print("Thank you for using the converter. Goodbye!")
            break

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

Output 2:

```
========== RESTART: C:/Users/18che/Code_Projects/PLC2/ABL1b.py
Welcome to the Celsius to Fahrenheit Converter!

Enter temperature in Celsius: 25

25.00°C is equal to 77.00°F
Would you like to convert another temperature? (yes/no): yes

Enter temperature in Celsius: 38

38.00°C is equal to 100.40°F
Would you like to convert another temperature? (yes/no): no
Thank you for using the converter. Goodbye!
>>>
```

3. Develop a program to total size of all the files available in the directory ‘C:\Windows\system32.

```
import os

def get_directory_size(directory_path):
    total_size = 0
    for root, dirs, files in os.walk(directory_path):
        for file in files:
            file_path = os.path.join(root, file)
            try:
                total_size += os.path.getsize(file_path)
            except (OSError, FileNotFoundError):
                print(f"Warning: Unable to access {file_path}")
    return total_size

def main():
    directory = r"C:\Windows\System32"
    print(f"Calculating the total size of all files in '{directory}'...")

    try:
        total_size = get_directory_size(directory)
        print(f"Total size of all files in '{directory}': {total_size / (1024**2):.2f} MB")
    except Exception as e:
        print(f"An error occurred: {e}")

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

Output 3:

```
>>>
========== RESTART: C:/Users/18che/Code_Projects/PLC2/ABL1c.py
Calculating the total size of all files in 'C:\Windows\System32'...
Total size of all files in 'C:\Windows\System32': 6866.59 MB
>>>
```

4. Develop a program to generate 5 different quizzes having 5 multiple choice questions for each quiz in random order which provides the correct answer and three random wrong answers for each question.

```
import random

question_bank = [
    ("What is the capital of India?", "New Delhi", ["Mumbai", "Bengaluru", "Chennai"]),
    ("Who is known as the Father of the Nation in India?", "Mahatma Gandhi", ["Jawaharlal Nehru", "Subhash Chandra Bose", "Sardar Patel"]),
    ("Which is the national animal of India?", "Tiger", ["Lion", "Elephant", "Peacock"]),
    ("In which year did India gain independence?", "1947", ["1950", "1935", "1965"]),
    ("Which is the longest river in India?", "Ganga", ["Yamuna", "Brahmaputra", "Godavari"]),
    ("Who was the first Prime Minister of India?", "Jawaharlal Nehru", ["Indira Gandhi", "Rajendra Prasad", "B. R. Ambedkar"]),
    ("Which is the national bird of India?", "Peacock", ["Crow", "Sparrow", "Eagle"]),
    ("Where is the Taj Mahal located?", "Agra", ["Delhi", "Jaipur", "Mumbai"]),
    ("What is the currency of India?", "Indian Rupee", ["Dollar", "Euro", "Yen"]),
    ("Which festival is known as the festival of lights in India?", "Diwali", ["Holi", "Eid", "Pongal"])
]

def generate_quiz(num_quizzes=5, num_questions=5):
    for quiz_num in range(1, num_quizzes + 1):
        print(f"\n--- Quiz {quiz_num} ---\n")
        quiz_questions = random.sample(question_bank, num_questions)

        for i, (question, correct, wrong_options) in enumerate(quiz_questions, start=1):
            options = wrong_options + [correct]
            random.shuffle(options)

            print(f"Q{i}. {question}")
            for idx, option in enumerate(options, start=1):
                print(f"   {idx}. {option}")
            print(f"Correct Answer: {correct}\n")

if __name__ == "__main__":
    generate_quiz()
|
```

Output 4:

```
--- Quiz 1 ---

Q1. Which is the longest river in India?
   1. Brahmaputra
   2. Godavari
   3. Ganga
   4. Yamuna
Correct Answer: Ganga

Q2. Which is the national bird of India?
   1. Peacock
   2. Crow
   3. Sparrow
   4. Eagle
Correct Answer: Peacock

Q3. What is the currency of India?
   1. Dollar
   2. Yen
   3. Euro
   4. Indian Rupee
Correct Answer: Indian Rupee

Q4. In which year did India gain independence?
   1. 1950
   2. 1965
   3. 1935
   4. 1947
Correct Answer: 1947

Q5. Who is known as the Father of the Nation in India?
   1. Jawaharlal Nehru
   2. Subhash Chandra Bose
   3. Mahatma Gandhi
   4. Sardar Patel
Correct Answer: Mahatma Gandhi
```

```
--- Quiz 2 ---

Q1. Who was the first Prime Minister of India?
   1. Rajendra Prasad
   2. B. R. Ambedkar
   3. Jawaharlal Nehru
   4. Indira Gandhi
Correct Answer: Jawaharlal Nehru

Q2. Where is the Taj Mahal located?
   1. Mumbai
   2. Delhi
   3. Jaipur
   4. Agra
Correct Answer: Agra

Q3. Which festival is known as the festival of lights in India?
   1. Pongal
   2. Diwali
   3. Holi
   4. Eid
Correct Answer: Diwali

Q4. What is the currency of India?
   1. Yen
   2. Indian Rupee
   3. Dollar
   4. Euro
Correct Answer: Indian Rupee

Q5. Who is known as the Father of the Nation in India?
   1. Jawaharlal Nehru
   2. Sardar Patel
   3. Mahatma Gandhi
   4. Subhash Chandra Bose
Correct Answer: Mahatma Gandhi
```

```
--- Quiz 3 ---

Q1. In which year did India gain independence?
   1. 1935
   2. 1947
   3. 1965
   4. 1950
Correct Answer: 1947

Q2. Who is known as the Father of the Nation in India?
   1. Mahatma Gandhi
   2. Subhash Chandra Bose
   3. Jawaharlal Nehru
   4. Sardar Patel
Correct Answer: Mahatma Gandhi

Q3. Which festival is known as the festival of lights in India?
   1. Diwali
   2. Holi
   3. Eid
   4. Pongal
Correct Answer: Diwali

Q4. What is the capital of India?
   1. Bengaluru
   2. Mumbai
   3. New Delhi
   4. Chennai
Correct Answer: New Delhi

Q5. Who was the first Prime Minister of India?
   1. Rajendra Prasad
   2. B. R. Ambedkar
   3. Indira Gandhi
   4. Jawaharlal Nehru
Correct Answer: Jawaharlal Nehru
```

```
--- Quiz 4 ---

Q1. Which festival is known as the festival of lights in India?
   1. Holi
   2. Pongal
   3. Eid
   4. Diwali
Correct Answer: Diwali

Q2. Who is known as the Father of the Nation in India?
   1. Jawaharlal Nehru
   2. Mahatma Gandhi
   3. Sardar Patel
   4. Subhash Chandra Bose
Correct Answer: Mahatma Gandhi

Q3. In which year did India gain independence?
   1. 1950
   2. 1935
   3. 1947
   4. 1965
Correct Answer: 1947

Q4. Which is the national animal of India?
   1. Lion
   2. Elephant
   3. Peacock
   4. Tiger
Correct Answer: Tiger

Q5. Which is the national bird of India?
   1. Crow
   2. Sparrow
   3. Eagle
   4. Peacock
Correct Answer: Peacock
```

```
--- Quiz 5 ---

Q1. Which is the longest river in India?
   1. Ganga
   2. Godavari
   3. Yamuna
   4. Brahmaputra
Correct Answer: Ganga

Q2. Which is the national bird of India?
   1. Crow
   2. Sparrow
   3. Peacock
   4. Eagle
Correct Answer: Peacock

Q3. What is the currency of India?
   1. Dollar
   2. Euro
   3. Indian Rupee
   4. Yen
Correct Answer: Indian Rupee

Q4. Which festival is known as the festival of lights in India?
   1. Diwali
   2. Pongal
   3. Holi
   4. Eid
Correct Answer: Diwali

Q5. Which is the national animal of India?
   1. Elephant
   2. Peacock
   3. Tiger
   4. Lion
Correct Answer: Tiger
```

5. Develop a program in Python to create a file, copy its content to another file. Count the number of characters and lines in the file.

```
with open("source.txt", "w") as source_file:
    source_file.write("Hello, this is a sample file.\n")
    source_file.write("It contains multiple lines of text.\n")
    source_file.write("Python is great for file handling!\n")

with open("source.txt", "r") as source_file, open("destination.txt", "w") as dest_file:
    content = source_file.read()
    dest_file.write(content)

with open("source.txt", "r") as source_file:
    lines = source_file.readlines()
    num_lines = len(lines)
    num_chars = sum(len(line) for line in lines)

print(f"Number of lines: {num_lines}")
print(f"Number of characters: {num_chars}")
```

```
Hello, this is a sample file.
It contains multiple lines of text.
Python is great for file handling!
```

Output 5

```
>>>
========== RESTART: C:/Users/18che/Code_Projects/PLC2/ABL1e.py ==========
Number of lines: 3
Number of characters: 101
>>>
```

THANK YOU