Murdoch University

Workshop 3

Part 1 – Mini Project

Interactive Quiz Game

Create a quiz game in Python that asks the user 10 multiple-choice questions and calculates their final score and percentage.

Requirements:

1. Store 10 questions along with their correct answers as variables.
   See the sample:

```
question1 = '\nQ1 What is the capital of Australia?\n  1. Melbourne\n  2. Canberra\n  3. Perth\n  4. Sydney'
answer1 = 2
```

   *Note: There is **NO NEED** to use lists, tuples or dictionaries at this stage, we'll optimize the code in coming lectures/workshops when these topics will be covered.*
2. Print and ask the user each question. Allow the user to enter the answer and compare their answer with the correct one.
3. Ensure that the user input is type-casted to integer.
4. Keep track of the user's score using a variable.
5. Display the final score and the percentage.
6. Display a preview of the attempt, which shows all the questions along with whether the answer entered was correct or incorrect.
7. Using the percentage determined from the final score, add a performance-based message (such as "Excellent!" or "Good job!").
   a) If the percentage is 100, print the message "Excellent! You got everything right!".
   b) If the percentage scored is 80 and above but less than 100, print the message "Good job! Keep it up!".
   c) If the percentage scored is 50 and above but less than 80 print the message "Not bad! But you can do better!".
   d) If the percentage scored is less than 50, print the message "Better luck next time! Keep practicing!".

Sample Output:

Q1: What is the capital of Australia?

1. Melbourne
2. Canberra
3. Perth
4. Sydney

Your answer: 2

Q2: What is 3 + 7?

1. 8
2. 9
3. 10
4. 11

Your answer: 3

.....(8 more questions) .....

Preview of the Attempt

Q1: Correct

Q2: Correct

Q3: Correct

Q4: Incorrect

Q5: Correct

Q6: Incorrect

Q7: Incorrect

Q8: Correct

Q9: Correct

Q10: Correct

Final Score: 7/10

Percentage: 70.0%

Not bad! But you can do better!

Part 2 – Practice Questions

1. Complete the following code snippets:

a)

```
# complete the code to print the even numbers

number = _______ input("Enter a number")
if _____________:
    print("The number entered is even")
```

b)

```
age = int(input("Enter your age: "))
day = input("Enter day of the week: ").lower()

if _____ and _____:      # Fill: Check if age is positive and day is not empty
    if age > _____:       # Fill: Age for adult ticket
        if day == "saturday" or day == "sunday":
            price = 12
        else:
            price = 10
    else:
        if _____:         # Fill: Condition for weekend (Saturday or Sunday)
            price = 8
        else:
            price = 6
    print(f"Ticket price: ${price}")
else:
    print("Invalid input")
```

2. Find and fix the errors in the following code snippet:

```
x = 0
if x = 0:
    print("x is Zero")
else x!=0:
    print("x is a non-zero number")
```

3. A year is a leap year if:

- It is divisible by 4, and not divisible by 100, or
- It is divisible by 400.

Write a program that allows the user to input a year.

Determine whether the year entered by the use is leap year or not.

Sample Output 1:

Enter the year: 2012
2012 is a leap year

Sample Output 2:

Enter the year: 2025
2025 is not a leap year

4. Write a program that takes the lengths of three sides of a triangle as input and checks whether the triangle is "Equilateral", "Isosceles", or "Scalene" and calculates the area of the triangle based on the given formulas.

- An "Equilateral" triangle has all sides the same length.

The formula to calculate the area of equilateral triangle is:

$$\boldsymbol{area} = \frac{\boldsymbol{side}^2 . \sqrt{\boldsymbol{3}}}{\boldsymbol{4}}$$

- An "Isosceles" triangle has two sides the same length.

The formula to calculate the area of Isosceles triangle is:

$$\boldsymbol{area} = \frac{\boldsymbol{b}}{\boldsymbol{4}} . \sqrt{\boldsymbol{4a^2 - b^2}}$$

*where **a** represent the sides of same length*

- A "Scalene" triangle has all sides of different lengths.

The formula to calculate the area of Scalene triangle is:

$$\boldsymbol{s} = \frac{\boldsymbol{a + b + c}}{\boldsymbol{2}}$$

where a, b, c represents all the three different sides of the triangle

$$\boldsymbol{area} = \sqrt{\boldsymbol{s(s-a)(s-b)(s-c)}}$$

5. Write a Python program using **nested if-else statements** that:

- Takes the marks of a student as input (integer between 0 and 100).
- Checks whether the marks are within the valid range (0–100).
- If the marks are **50 or above**, print "Pass" and also assign a grade according to the following:
    - 90–100 → Grade A+
    - 80–89 → Grade A
    - 70–79 → Grade B
    - 60–69 → Grade C
    - 50–59 → Grade D
- If the marks are **below 50**, print "Fail" and assign:
    - 40–49 → Grade E
    - Below 40 → Grade F
- If marks are outside the range 0–100, print "Invalid marks entered!"

Sample Output:

Enter your marks (0–100): 85
Pass
Grade: A

6. Write a program that asks the user for a number and prints its multiplication table up to 10. Use a while loop.

Sample Output:

Enter a number: 3

Multiplication table of 3:
3 x 1 = 3
3 x 2 = 6
3 x 3 = 9
3 x 4 = 12
3 x 5 = 15
3 x 6 = 18
3 x 7 = 21
3 x 8 = 24
3 x 9 = 27
3 x 10 = 30