Tutorial 4 – Conditionals

Comparison Operators

```
x != y                # x is not equal to y
x > y                 # x is greater than y
x < y                 # x is less than y
x >= y                # x is greater than or equal to y
x <= y                # x is less than or equal to y
x is y                # x is the same as y
x is not y            # x is not the same as y
```

Exercises

1) **Logical Operators – and, or, and not**

   Fill in the blanks:

```
# Logical Operators
# Check if a number is between 1 and 10
x = 7
print(x > __1__ and x < __10__)

# Check if a number is negative OR greater than 100
y = -5
print(y < 0 __or__ y > __100__)

# Use not to flip the result
print(__not__(x > 10))
```

2) **Conditional Execution – if, else**

   Fill in the blanks:

```
# Conditional Execution - if...else
# Ask the user for a number
# Print a message if it is positive, otherwise print a different message
x = int(input("Enter a number: "))

if x __>__ 0:                    # Fill in the comparison operator to check if x is greater than 0
    print("__positive__")        # Fill in the message that should appear if x is positive
__else__:
    print("__negative__")        # Fill in the message that should appear if x is negative
```

3) **Chained Condition – if, elif, else**

   Fill in the blanks:

```
# Chained Condition – if, elif, else
# This program categorizes a person's age group.

age = int(input("Enter your age: "))   # Ask the user for their age

if age <= 13 :                          # Check if the age is below 13
    print(" child ")                    # Print message for a child
elif age <= 20 :                       # Check if the age is below 20
    print(" teen ")                     # Print message for a teenager
else:
    print(" adult ")                    # Print message for an adult
```

4) Nested Conditions

```
# Nested Conditions
# This program checks if a temperature is within a comfortable range.

temp = int(input("Enter the temperature in °C: "))  # Ask the user for temperature

if temp >= 0:                           # Check if it's above freezing
    if temp <= 30 :                     # Check if it's below 30°C
        print("comfy")                  # Print that it's a comfortable temperature
    else :
        print(" hot ")                  # Print that it's hot
else:
    print("freeze")                     # Print that it's freezing
```

5) Try and Except

```
# Try and Except
# This program asks the user how much money they want to withdraw.
# It should handle unexpected input and give clear feedback.

try :                                                   # Begin a try block
    amount = float(input("Enter the amount to withdraw: "))   # Try to read the input as a number

    if amount >1000:                                    # Check if withdrawal exceeds 1000
        print("too large")                              # Message if too large
    elif amount > 0:                                   # Check if the amount is positive
        print("success")                                # Message for successful withdrawal
    else :                                              # If none of the above are True
        print(" invalid ")                              # Message for invalid (zero or negative) amount

expect:                                                 # Handle any error during input
    print("enter valid number")                         # Message asking for a valid number
```

6) Practice Questions

a. Grade Calculator

Ask for students result (e.g. 72) and give the associated letter grade:

- 90 and above -> A
- 80-89 -> B
- 70-79 -> C
- 60-69 -> D
- Below 60 -> F

else

b. Weather Suggestion App

Ask the user for the temperature in Celsius, then suggest what to wear:

- Below 10 °C -> “Wear a coat!”
- 10 – 20 °C -> “Take a jumper.”
- Above 20 °C -> “T-shirt weather.”

c. Cinema Tickets Price Calculator

Ask for customer’s age and if they are a student. Ticket prices are as follows:

- If under 12, ticket price is €5
- If 12 – 17, ticket price is €7
- If 18+ and a student, ticket price is €8
- If 18+ and not a student, ticket price is €12

d. Store Discount Calculator

- Ask user the total amount of purchase
- Ask if they are a store member (yes/no)
- Ask what day of the week it is
- Apply following discounts for the following rules:
    - Members on Wednesday: 20% discount
    - Members any other day: 10% discount
    - Non-members on Wednesday: 5% discount
    - Non-members any other day: no discount
- Calculate and print total price after discount is applied
- Round final price to 2 decimal places