**1. Arithmetic Operators:**

apples = 10

oranges = 5

fruit\_basket = apples + oranges # Adding apples and oranges

fruit\_juice = apples // oranges # Dividing apples by oranges (using floor division)

print(f"I have {fruit\_basket} fruits in my basket. That's enough for {fruit\_juice} rounds of fruit juice!")

**2. Comparison Operators:**

cookies\_in\_jar = 20

chocolates\_in\_box = 15

if cookies\_in\_jar > chocolates\_in\_box:

print("The cookie jar is winning! It's a sweet victory!")

else:

print("The chocolates are putting up a good fight, but the cookies might crumble.")

**3. Logical Operators:**

is\_sunny = True

has\_umbrella = False

if is\_sunny and not has\_umbrella:

print("Perfect weather to go outside and enjoy the sunshine!")

else:

print("Better stay indoors. Who needs an umbrella, anyway? It's just a passing cloud.")

### **4. Assignment Operators:**

current\_mood = "Happy"

previous\_mood = "Grumpy"

# Upgrade your mood!

current\_mood += " and Excited"

print(f"Today, I'm feeling {current\_mood}. That's a major mood assignment upgrade!")

5. Membership Operators:

grocery\_bag = ["apple", "banana", "carrot", "grape"]

if "chocolate" in grocery\_bag:

print("Found chocolate in the bag! This grocery shopping just got a whole lot sweeter.")

else:

print("No chocolate? Well, at least we have healthy snacks...")

### 6. Identity Operators:

x = ["coffee", "tea"]

y = ["coffee", "tea"]

if x is y:

print("Wow, these drinks are the same! Identity crisis averted.")

else:

print("Apparently, not all coffees and teas are created equal. This is a job for the taste buds!")

**If else exercise:**

1. username and password verification system

# this is a username and password verification system

# initiate variable for username and password

admin = "Sesame"

secret = "secret101"

# get user input for username and password

username = input("Enter your name: ")

password = input("Enter your password: ")

# Check if entered username and password matching

if username == admin and password == secret:

    print("Sesame door is opening. All the treasures are still here!")

else:

    print("Nothing here...")

1. Sunny, Coffee to go, mode:

# get user input for conditions

is\_sunny = input("Is it sunny today? (Y for yes, N for no)")

# Check if the person is in a good mood

if is\_sunny == "y":

    print("Enjoy your sunshine")

else:

    print("Don't forget to bring umbrella with you! Have a good day anyway")

# check if it is a weekend

is\_friday = input("Is it Friday Yet? (Y for yes, N for no) ")

if is\_friday and is\_sunny:

    print("Let's go to the beach!")

elif is\_friday:

    print("It's Friday! Plan something exciting for the weekend!")

else:

    print("Join us for a cuppa!")

# check if user want a coffee with nested if else

want\_coffee = input("Do you like a coffee? (Y for yes, N for no)")

if want\_coffee == "y" and is\_sunny:

    cold = input("Would you like it hot or cold? (h / c)").lower()

    if cold != "h":

        print("Here is your ice-coffee")

    else:

        print("Here is your warm coffee")

else:

    print("See you soon")

1. a simple number guessing game

# a simple number guessing game

guess = int(input("Guess the number (between 1 and 100): "))

secret\_number = 56

# Check if the guess is correct

if guess == secret\_number:

    print(f"Congratulations! You guessed the correct number: {secret\_number}")

else:

    # Provide a hint and let the user know if their guess was too high or too low

    if guess < secret\_number:

        print("Too low! Try again.")

    else:

        print("Too high! Try again.")

1. Roller Coastal – check min height, price base on age, also if they want to take photo  
     
   # minimum height 120cm

# under 12 years old ticket price $5

# under 18 years old ticket price $7

# over 18 years old ticket price $12

# photo take $3

print("Welcome to the roller costal")

height = float(input("Let's measure your height (cm): "))

if height >= 120:

    bill = 0

    print("Child ticket are $5 \nYouth ticket are $7 \nAdult tickets are $12 \n")

    age = int(input("How old are you? "))

    if age < 12:

        bill = 5

    elif age <= 18:

        bill = 7

    else:

        bill = 12

    photo\_taken = input("Do you want a photo taken? Y or N ")

    if photo\_taken.lower() == "y":

        bill += 3

    print(f"Your final bill is ${bill}")

else:

    print("You have to grow taller before you can take a ride ")

1. A school has following rules for grading system:  
   a. Below 25 - F  
   b. 25 to 45 - E  
   c. 45 to 50 - D  
   d. 50 to 60 - C  
   e. 60 to 80 - B  
   f. Above 80 - A  
   Ask user to enter marks and print the corresponding grade.

# Get user input for marks

marks = float(input("Enter your marks: "))

# Check and print the corresponding grade

if marks < 25:

    grade = "F"

elif 25 <= marks < 45:

    grade = "E"

elif 45 <= marks < 50:

    grade = "D"

elif 50 <= marks < 60:

    grade = "C"

elif 60 <= marks < 80:

    grade = "B"

elif marks >= 80:

    grade = "A"

print(f"Your grade is: {grade}.")

1. Take input of age of 3 people by user and determine oldest and youngest among them.

# Take input of age of 3 people by the user

age1 = int(input("Enter age of person 1: "))

age2 = int(input("Enter age of person 2: "))

age3 = int(input("Enter age of person 3: "))

# Determine oldest and youngest ages

oldest\_age = max(age1, age2, age3)

youngest\_age = min(age1, age2, age3)

# Display the results

print(f"Oldest person is {oldest\_age} years old.")

print(f"Youngest person is {youngest\_age} years old.")

1. Write a program to check if a year is leap year or not.  
   If a year is divisible by 4 then it is leap year but if the year is century year like 2000, 1900, 2100 then it must be divisible by 400.

# Take input of a year from the user

year = int(input("Enter a year: "))

# Check if the year is a leap year

if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):

print(f"{year} is a leap year.")

else:

print(f"{year} is not a leap year.")