Day 03

Conditional Statements, Logical operators, code Blocks and Scope.

- Conditional Statements

Sometime we want to execute the operation depending on the conditional.

If the condition is → True → Do Task 01

or, Do, Task 02.

If/Else Conditional statment

Syntax:

```
if Condition:
    do this
else:
    do This instead
```

e.g.

Let,

```
water_level = 50
if (water_level > 80:)
    print ("Drain water")
else:
    print ("continue")
```

Let's create a ticket system for a ride.

```
print ("Welcome to the Ride.")
height = int(input("what is your height in cm?"))

if {height >120}: → Condition.        # indented
    print("You can ride, hurray")} → Block of code
else:
    print("Sorry, You can't ride")
```

{Cool!!}

In the condition we have used >, greater than sign and that's a ~~logical operator~~. Comparison operator.

However, a person with 120cm height want to ran the ride the code gives me False - return.

Because we have the condition only for greater or not.

So, we can include some modification..../....

>=

- This logical operator means that either the number is greator or equal to.

So,

```
if height >= 120:
    print ("You can ride the rollercoaster!")
```

Comparison operators

Operator	Meaning.
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
==	Equal to
=!	Not equal to

Different between '=' & "=="

Single = is used for value Assigning (Assignment)

Double == is used for check if the value at right and left is equal to or not.

Coding Exercise 3.1

ODD OR EVEN EXERCISE

For detailed question chek Repos.

- Modulo operator

  '%' operator gives the remainder of the following division.

  like, 7%2 ⟶ '1'

  7%3 ⟶ 1.

Solution:-

We know that for every even number, there is one condition that it should be completely divisible by 2. if not, then the number is odd.

i.e,

```
if number % 2 == 0:
    print ("The number is even")
else:
    print ("The number is odd")
```

Final code:

we are using int() function with input() so that the str input get into int in the same line. Or. you can say that only integer are accepted as input for variable 'number'.

```
number = int(input("The number : "))
if number % 2 == 0:
    print ("The number is even")
else:
    print ("The number is odd")
```

Remember the ticket problem.

lets add additional condition for pricing

<= 18 ⟶ $7

> 18 ⟶ $12

So, how we do it; ⟶

Nested if/else

```
if conditions:
    do this
else:
    do This.
```

```
If condition:
    if another_condition:
        do this
    else:
        do this
else:
    do this
```

- we have nested another conditional statement in one conditional statement (Nested).

So, Let's code:-

```
height = int(input("Give me your height"))
if height >= 120:
    print("You can ride!")
    age = int(input("Give me your Age"))
    if age <=18:
        print("Fare : $7")
    else:
        print("Fare : $12")
else:
    print("You cannot ride")
```

Let's make it more complex! Hahaha

< 12 ⟶ 5$

12 – 18 ⟶ $7

> 18 ⟶ $12

Wait, how do we add three or more condition to a conditional statement??

If / Elif / Else Statement.

```
if condition1:
    do A
elif condition2:
    do B
    :
else:
    do this
```

→ you can add as much condition to your code using if/elif/else statements.

Lets code only the conditional part:

```
if height >= 120:
    print ("You can ride!")
    age = int(input("    "))
    if age < 12:
        print ("Fare : 5$)
    elif age <= 18:
        print ("Fare : $7)
    else:
        print ("Fare $12)
else:
    print("You can't ride!")
```

Coding Exercise 3.2

BMI 2.0

In addition to what we have did we are actually doing to interpret the bmi value and check that the person is normal weight, overweight, obese, clinically obese.

- under 18.5 → under weight
- Over 18.5 but below 25 → Normal weight
- Over 25 but below 30 → overweight
- Over 30 but below 35 → obese
- Above 35 → clinically obese.

Let's code:

```
height =
weight =
bmi = weight /(height**2)
bmi = round(bmi, 1)
if bmi<18.5:
    print(f"Your bmi is {bmi}, you are under weight")
elif bmi>18.5 bmi< 25:
    print(f"{bmi}, You are normal weight").
elif bmi < 30:
    print(f"{bmi}, You are overweight")
elif bmi < 35:
    print(f"{bmi}, You are obese")
elif bmi>
else:
    print(f"{bmi}, You are clinically obese")
```

You may wonder that why we are not checking for

① over 18.5 in 1st elif condition

② over 25 in 2nd " "

③ over 30 in 3rd " "

→ As earlier those lines we have checked the same condition and in if/else or if/elif/else statement ; whenever any one condition matches, the compiler goes inside the block/scope and donot iterate to other elif statement at the parent level.

* If you are still under confusion, try debugging.

Coding Exercise 3.3

Leap Year Exercise.

Write a program that works out whether if a given year is a leap year.

2020 1996 2000 2100

Let Try:

```
Year = int(input("      "))
# if Year % 4 ==
if Year % 4 == 0:
    if Year % 100 != 0:
        if Year % 400 == 0:
            print(f"{Year} is a leap year")
        else:
            print(f"{Year} is not a leap year")
    else:
        print(f"{Year} is not a leap year")
else:
    print(f"{Year} is not a leap year")
```

```
year =
if year % 4 == 0;
        if year % 100 == 0:
                if year % 400 == 0
                    Print ("Leap year")
                else:
                    print ("Not Leap")
        else:
            print ("Leap")
else:
    print ("Non-Leap")
```

"On every year that is evenly divisible by 4
Except every year that is mainly divisible by 100
unless the year is also evenly divisible by 400."

- The problem actualy states that if the ~~xxx~~ a year is % by 4 it is year leap Except years which are also divisible by 100 unless if the year is also divisible by 400 then, the year is a leap year.

↳ Is it % by 4
- True
  ↳ is it also divisible by 100
  - True
    ↳ check if the year is also divi visbble by 400.
    - True
      ↳ Leap ye
    - False
      ↳ Not a Leap
  - False
    ↳ Leap Year
- False
  ↳ Not a Leap ye

It was a difficult one!!

Refer to flow chart in Repository.

Multiple if

In Multiple if statement all the conditions are checked and whatever matches it's gonna Execute them

whereas in

if | elif | else Statement

only one condition that set to True is done and compiler do not look to other condition as elif statement only look for one True match (condition).

Let get back to ticket system and add a option for photo taking ride.

and here we are going to use multiple if statement ~~also~~ as its independent of the fare charge.

Code:-

```
height =
bill = 0
if height >= 120:
    print("You can ride")
    age = int
    .
    .
    .
else:
    print("Adult tickets are $12").
photo= input("Do you want a photo Y, N?")
if photo = "Y":
    print(f"{Your bill is {bill+5}")
else:
    print("Your bill is" bill)
```

Coding Exercise 3.4.

Pizza Order System.

→ If condition 1 & condition 2 & condition 3:
    do this

else
    do this.

Logical operators.

A and B

C or D

not E

- And operator
  ↳ Both the condition has to be True to the whole condition to be True.

  e.g. A → True and B → False → False
  A → False and B → False → False
  A → True and B → True → True

- Or operator
  ↳ Any one of the condition has to be True to to make the whole condition to be True.

  e.g. C → True or B → False → True
  C → False or B → False → False.

- Not Operator
  ↳ Not operator reverse the condition output {A is anycondition}

  e.g. A → True
  if used not A
  ↳ False
  and vice-versa

Coding Exercise 3.5

Love Calculator Exercise.

- .lower() → function changes all the letters in a string to lower case
- .count() → function will give you the number of times a letter occurs in a string.

Let's try.

```
name1 = input("what is your name?\n")
nam2 = input("what is their name?\n")

combined_string = name1 + nam2
lower_case_string = combined_string.lower()

T = lower_case_string.count("t")
R =  "  "  ("r")
U =  "  "  ("u")
E =  "  "  ("e")

True_sum = T+R+U+E

L = lower_case_string.count("l")
O =  "  "  ("o")
V =  "  "  ("v")
E =  "  "  ("e")

love_sum = L+O+V+E.
love_score
~~percentage~~ = str(True_sum) + str(love_sum).
print(~~percentage~~ love_score)
percentage = int(love_score).
```

Let's add the message.

```
if (percentage < 10) or (love_score > 90):
    print(f"Your score is {percentage}, You go together like coke and Mentos.")
elif (percentage >= 40) and (percentage <= 50):
    print(f"Your score is {percentage}, You are alright together.")
else:
    print("Your score is {percentage}")
```

Final Day Project #3.

Treasure Island.

A choice based game!

ascii.co.uk/art

Refers to the repository.