24BIT167 - VANDITA NAWANI AIM - To implement Python programs using if conditions and function for descision-making problem

Hardware and Software Reqirements : Hardware:16GB RAM, Intel Processor(i9), software: Python (Version 3.x.), Google colab

System Configration : Operating System : Windows 11, IDE:Google Colab

Theory : The program use conditional statement (if, elif, else) and function (def) to process inputs and return results.

find the largest number of two numbers

```
a =50
b = 100
if a>b:
  print("A IS LARGEST")
  print("B is SMALLEST")

if b>a:
  print("B IS LARGEST")
  print("A IS SMALLEST")
```

```
B IS LARGEST
A IS SMALLEST
```

Largest smallest from three numbers

```
a = 40
b = 50
c =60
largest = a if (a>b and a>c) else(b if (b>a) else c)
smallest = a if (a<b and a<c ) else (b if b<c else c)
print("LARGEST", largest)
print("Smallest", smallest)
```

```
LARGEST 50
Smallest 40
```

number is even or odd

```
a = int(input("ENTER A NUMBER:"))
if (a%2==0):
  print("THE NUMBER IS EVEN")
else:
  print("THE NUMBER IS ODD")
```

```
ENTER A NUMBER:5
THE NUMBER IS ODD
```

number is divisible by 10

```
a = int(input("ENTER A NUMBER:"))
if (a%10==0):
  print("THE NUMBER IS DIVISIBLE BY 10")
else:
  print(" THE NUMBER IS NOT DIVISIBLE")
```

```
ENTER A NUMBER:100000
THE NUMBER IS DIVISIBLE BY 10
```

accept the age of a person and check if it is less than 18 hence print minor else major

```
age = int(input("ENTER YOUR AGE :"))
if(age>18):
  print("YOU ARE A MAJOR")
else:
  print("YOU ARE A MINOR")
```

```
ENTER YOUR AGE :17
YOU ARE A MINOR
```

accept a number from user and find the number of digits

```
num = int(input("ENTER THE NUMBER:"))
count=0
while num>0:
  num = num//10
  count+=1
print("THE NUMBER OF DIGITS:", count)
```

```
ENTER THE NUMBER:1233
THE NUMBER OF DIGITS: 4
```

check if the year leap or not

```
yr = int(input("ENTER THE YEAR: "))
if (yr%4==0):
  print("THE YEAR IS A LEAP YEAR")
else:
  print("THE YEAR IS NOT A LEAP YEAR")
```

```
ENTER THE YEAR: 2025
THE YEAR IS NOT A LEAP YEAR
```

check whether the triangle is valid or not, with input through user

```
a = int(input("ENTER THE FIRST ANGLE:"))
b = int(input("ENTER THE SECOND ANGLE:"))
c = int(input("ENTER THE THIRD ANGLE:"))
if (a+b+c==180):
  print("THE TRIANGLE IS VALID")
else:
  print("THE TRIANGLE IS NOT VALID")
```

```
ENTER THE FIRST ANGLE:40
ENTER THE SECOND ANGLE:50
ENTER THE THIRD ANGLE:60
THE TRIANGLE IS NOT VALID
```

Find absolute value of a number

```
num =int(input("ENTER A NUMBER:"))
if num>=0:
  abs = num
else:
  abs = -num
print(abs)
```

```
ENTER A NUMBER:-88
88
```

with given length, breadth find if perimeter is greater or area

```
len = int(input("ENTER THE LENGTH:"))
br = int(input("ENTER THE BREADTH:"))
ar =len*br
per = 2*(len+br)
if (ar>per):
  print("AREA IS GREATER THAN PERIMETER ")
else:
  print("PERIMETER IS GREATER THAN AREA")
```

```
ENTER THE LENGTH:5
ENTER THE BREADTH:6
AREA IS GREATER THAN PERIMETER
```

given three points (x1,y1) (x2,y2) and (x3, y3). check is they lie in same line

```
x1,y1=2,3
x2,y2=3,4
x3,y3 = 4,5
if (y2-y1)*(x3-x2)==(x2-x1)*(y3-y2):
  print("COLLINEAR")
else:
  print("NON-COLLINEAR")
```

```
COLLINEAR
```

given the coordinates (x,y) of a centre and its radius, determine if it is inside or outside the circle

```
import math
Cx, Cy, r = 0,0,4
Px, Py = 5,6
dist = math.sqrt(math.pow(Px-Cx, 2)/ math.pow(Py-Cy, 2))
if dist<r:
  print("INSIDE THE CIRCLE:")
elif dist>r:
  print("OUTSIDE THE CIRCLE")
else:
  print("ON THE CIRCLE")
```

```
INSIDE THE CIRCLE:
```

Accept marks of three subject. print total and average along whether a candidate has passed all subjects if secures>=39, assign subject wise grade

```
sub1 = int(input("ENTER THE MARKS OF FIRST SUBJECT:"))
sub2 = int(input("ENTER THE MARKS OF SECOND SUBJECT:"))
sub3 = int(input("ENTER THE MARKS OF THIRD SUBJECT:"))
total = sub1+sub2+sub3
avg = total/3
if (sub1<39 or sub2<39 or sub3<39):
  status = 'fail'
  print("FAIL")
else:
  status = 'pass'
  print("PASS")

if status == 'pass':
  if avg>=80:
    grade = 'O'
  elif avg>=70:
    grade = 'A+'
  elif avg>=60:
    grade = 'A'
  elif avg>=50:
    grade = 'B'
  elif avg>=40:
    grade = 'P'

  print("TOTAL MARKS :", total)
  print("AVERAGE :", avg)
  print("STATUS :", status)
  print("GRADE :", grade)
```

```
ENTER THE MARKS OF FIRST SUBJECT:70
ENTER THE MARKS OF SECOND SUBJECT:80
ENTER THE MARKS OF THIRD SUBJECT:90
PASS
TOTAL MARKS : 240
AVERAGE : 80.0
STATUS : pass
GRADE : O
```