24BIT196 -Shreya Nair

AIM: To implement Python programs using if conditions and functions for decision-making problems.

HARDWARE & SOFTWARE REQUIREMENTS: Hardware:16GB RAM, Intel Processor(i9), Software: Python (Version 3.x), Google Colab (Cloud-based)

SYSTEM CONFIGURATION: Operating System: Windows 11, IDE: Google Colab

THEORY: The programs use conditional statements (if, elif, else) and functions (def) to process inputs and return results.

REFERENCES: Geeks for Geeks, Python Documentation: https://docs.python.org/3/

1) Print largest and smallest values out of two.

```
a=40
b=50
if a>b:
  print("Largest is a")
  print("Smallest is b")
else:
  print("Largest is b")
  print("Smallest is a")
```

```
Largest is b
Smallest is a
```

2) Print largest and smallest values out of three.

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

```
Largest: 60 Smallest: 40
```

3) Check whether a given number is odd or even.

```
a=int(input("Enter number:"))
if a%2==0:
 print("Even")
else:
 print("Odd")
```

```
Enter number:4
Even
```

4) Check whether a given number is divisible by 10 or not.

```
a=int(input("Enter number:"))
if a%10==0:
 print("Divisible")
else:
 print("Not")
```

```
Enter number:100
Divisible
```

5) Accept age of a person. If age is less than 18, print minor otherwise Major.

```
age=int(input("Enter age:"))
if age<18:
 print("Minor")
```

```
else:
 print("Major")
```

```
Enter age:20
Major
```

6) Accept a number from the user. And print number of digits in it.

```
num=235
count=0
while num>0:
 num=num//10
 count+=1
print("Number of digits:",count)
```

```
Number of digits: 3
```

7) Accept a year value from the user. Check whether it is a leap year or not.

```
year=int(input("Enter year"))
if year%4==0:
 print("Leap year")
else:
 print("Not")
```

```
Enter year2004
Leap year
```

8) Check whether a triangle is valid or not, when the three angles of the triangle are entered through the keyboard. A triangle is valid if te sum of all the three angles is equal to 180 degrees.

```
a=int(input("First angle:"))
b=int(input("Second angle:"))
c=int(input("Third angle:"))
if a+b+c==180:
 print("Valid")
else:
 print("Not")
```

```
First angle:60
Second angle:70
Third angle:50
Valid
```

9) Print absolute value of a given number.

```
num=-40
if num>=0:
 abs=num
else:
 abs=-num
print(abs)
```

```
40
```

10) Given the length and breadth of a rectangle, write a program to find whether the area of the rectangle is greater than its perimeter.

```
L=5
B=6
per=2*(L+B)
are=L*B
if per>are:
 print("Perimeter is greater than area")
else:
 print("Area is greater than perimeter")
```

```
Area is greater than perimeter
```

11) Given three points (x1,y1), (x2,y2) and (x3,y3), check if all the three points fall on one straight line.

```
x1,y1=1,2
x2,y2=3,4
x3,y3=5,6
if(y2-y1)*(x3-x2)==(x2-x1)*(y3-y2):
 print("Collinear")
else:
 print("Not")
```

```
Collinear
```

12) Given the coordinates (x,y) of center of a circle and its radius, determine whether a point lies inside the circle, on the circle or outside the circle. (Hint: Use sqrt( ), pow( )

```
import math
Cx,Cy, r = 0, 0, 6
Px,Py = 4,5
dist = math.sqrt(math.pow(Px - Cx, 2) + math.pow(Py - Cy, 2))
if dist < r:
    print("Inside Circle")
elif dist == r:
    print("On Circle")
else:
    print("Outside Circle")
```

```
Outside Circle
```

13) Convert number 0 to 19 to its equivalent words. E.g. 0 → zero, 19→nineteen.

```
num=10
words=["zero","one","two","three","four","five","six","seven","eight","nine","ten","eleven","twelve","thirteen","fourteen","fifteen","sixtee
print(words[num])
```

```
ten
```

14) Accept marks of three subjects. Print total and average along with whether a candidate has passed or fail. If student secures <= 39 marks in any subject, consider him as fail. Also assigned a subject wise grade based on the following table:

```
sub1=int(input("Enter marks"))
sub2=int(input("Enter marks"))
sub3=int(input("Enter marks"))
total=sub1+sub2+sub3
avg=(sub1+sub2+sub3)/3
if sub1<=39 or sub2<=39 or sub3<=39:
 status="Fail"
 grade="F"
else:
 status="Pass"

if status=="Pass":
 if avg>=80:
  grade="O"
 elif avg>=70:
  grade="A+"
 elif avg>=60:
  grade="A"
 elif avg>=55:
  grade="B+"
 elif avg>=50:
  grade="B"
 elif avg>=45:
  grade="C"
 elif avg>=40:
  grade="P"

print("Total:",total,"Average:",avg,"Status:",status,"Grade:",grade)
```

```
Enter marks70
Enter marks80
Enter marks90
Total: 240 Average: 80.0 Status: Pass Grade: O
```