NAME - JATAN SAHU

STUDENT ID - 202218061

PYTHON_Lab 02_Operators and Decision Making Statements

1. Enter value and check it is less, equal or greater than zero.

```
a=int(input("Enter value to check less,equal or greater than zero: "))
if(a>0):
  print("Greater than zero")
elif(a==0):
  print("Equal to zero")
else:
  print("Value is less than zero")

  # OUTPUT


    Enter value to check less,equal or greater than zero: 5
    Greater than zero
```

2. Input 2 number and print the maximum among them.

```
a=int(input("Enter 1st number"))
b=int(input("Enter 2nd number"))
c=max(a,b)
print("Maximum number is : ",c)


  #OUTPUT

    Enter 1st number4
    Enter 2nd number54
    Maximum number is : 54
```

3. Input 2 number and print the maximum among them. (with conditional operator).

```
a=int(input("Enter 1st number "))
b=int(input("Enter 2nd number "))
max=a if a>b else b
print("Maximum number among : " + str(a) + " and " + str(b) +" is " + str(max))


  #OUTPUT

    Enter 1st number 6
```

```
    Enter 2nd number 4
    Maximum number among : 6 and 4 is 6
```

4. Input 2 number and print the minimum among them.

```python
a=int(input("Enter 1st number"))
b=int(input("Enter 2nd number"))
c=min(a,b)
print("Minimum number is : ",c)

#OUTPUT :
```

```
    Enter 1st number4
    Enter 2nd number65
    Minimum number is : 4
```

5. Input 2 number and print the minimum among them. (with conditional operator)

```python
a=int(input("Enter 1st number "))
b=int(input("Enter 2nd number "))
min = a if a<b else b
print("Minimum number among " + str(a) + " and " + str(b) +" is " + str(min))

  # OUTPUT
```

```
    Enter 1st number 4
    Enter 2nd number 6
    Minimum number among 4 and 6 is 4
```

6. Input 3 number and print the maximum among them.

```python
a=int(input("Enter 1st number :"))
b=int(input("Enter 2nd number :"))
c=int(input("Enter 3rd number :"))
d=max(a,b,c)
print("Maximum number is : ",d)

#OUTPUT
```

```
    Enter 1st number5
    Enter 2nd number6
    Enter 3rd number4
    Maximum number is : 6
```

7. Input 3 number and print the maximum among them. (with conditional operator)

```
a=int(input("Enter 1st number "))
b=int(input("Enter 2nd number "))
c=int(input("Enter 3rd number "))
max= (a if (a>b and a>c) else b if (b>a and b>c) else c )
print( " Maximum number among ",a ,b ,"and",c,"is", max)
 #OUTPUT
```

```
    Enter 1st number 4
    Enter 2nd number 6
    Enter 3rd number 88
     Maximum number among 4 6 and 88 is 88
```

8. Write a program that find minimum and maximum out of 3 values.

```
a=int(input("Enter 1st number "))
b=int(input("Enter 2nd number "))
c=int(input("Enter 3rd number "))
print("Maximum number is : ",max(a,b,c))
print("Minimum number is : ",min(a,b,c))
```

```
    Enter 1st number 1
    Enter 2nd number 2
    Enter 3rd number 3
    Maximum number is : 3
    Minimum number is : 1
```

9. Write a program that interchange or swap the values of 2 variables.

```
a=int(input("Type 1st value a :"))
b=int(input("Type 2nd value b :"))
swap=b
b=a
a=swap
print("Swapped value a :",a)
print("Swapped value b :",b)
```

```
    Type 1st value a :2
    Type 2nd value b :5
    Swapped value a : 5
    Swapped value b : 2
```

10. Write a program to interchange the value of 2 variable without using 3rd variable.

```
a=int(input("Type 1st value a :"))
b=int(input("Type 2nd value b :"))
a=a+b
```

```
b=a-b
a=a-b
print(" after swapping a=",a," and " " b= ",b)
```

```
    Type 1st value a :6
    Type 2nd value b :5
     after swapping a= 5 and b= 6
```

11. Write a program to check whether the entered no is odd or even.

```
a=int(input("Type any number to check number is odd or even :"))
if(a%2==0):
  print("Number is even")
elif(a==0):
  print("Number is zero")
else:
  print("Number is odd")
```

```
    Type any number to check number is odd or even :5
    Number is odd
```

12. Get a character in lower case form user and display it in upper case.

```
ch=input("Enter character in lower case : ")
print(ch.upper())
```

```
    Enter character in lower case : lower to upper case
    LOWER TO UPPER CASE
```

13. Get a character from user and print tell that is it vowel or consonant.

```
ch=input("Enter any alphabet to check character is vowel or consonent :") if(ch=='a' or
ch=='e' or ch=='i' or ch=='o' or ch=='u' or ch=='A' or ch=='E' or ch=='I' or
print("Entered alphabet is Vowel")
else:
  print("Entered alphabet is Consonant")
```

```
    Enter any alphabet to check character is vowel or consonent :K
    Entered alphabet is Consonant
```

14. Print & calculate area of circle, area of triangle & (f+g)*(f+g) & simple interest using user defined option

```python
opt = int(input("Enter option number : \n 1. for Area of circle \n 2. For area of traingle
import math
if(opt==1):
  r=int(input("Enter radius of a circle"))
  print("Area of circle ",circle= (math.pi)*r*r)
elif(opt==2):
  a=int(input("Enter 1st side of traingle"))
  b=int(input("Enter 2nd side of traingle"))
  c=int(input("Enter 3rd side of traingle"))
  s=(a+b+c)/2
  tri= math.sqrt(s*(s-a)*(s-b)*(s-c))
  print("Area of traingle ",tri)
elif(opt==3):
  f=int(input("f ="))
  g=int(input("g ="))
  formula =(f+g)*(f+g)
  print("(f+g)*(f+g) =",formula)
elif(opt==4):
  p=int(input("Principle ="))
  r=int(input("Rate ="))
  t=int(input("Time ="))
  si=(p*r*t)/100
  print("Simple interest ",si)
else:
  print('Option is not valid')
```

```
Enter option number :
 1. for Area of circle
 2. For area of traingle
 3. (f+g)*(f+g)
 4. Simple interest
4
Principle =1000
Rate =10
Time =1
Simple interest 100.0
```

15. Print & calculate addition, substraction, multiplication & division of two value in one program.

```python
a= int(input("Enter 1st number :"))
b= int(input("Enter 2nd number :"))
```

```
print("Addition =",a+b)
print("Subtraction =",a-b)
print("Multiplication =",a*b)
print("Division =",a/b)
```

```
    Enter 1st number :9
    Enter 2nd number :4
    Addition = 13
```

```
    Subtraction = 5
    Multiplication = 36
    Division = 2.25
```

16. Write a program that take input of 5 subjects marks. Count the percentage. Print the result for following condition

If student has 70% or more then 70% then DISTINCTION.

If student has percentage between 60 and 69 then FIRST CLASS.

If student has percentage between 50 and 59 then SECOND CLASS.

If student has percentage between 40 and 49 then PASS CLASS.

If student has percentage less then 40 then FAIL.

```
math=int(input("Enter maths sub marks out of 100 :"))
eng=int(input("Enter english sub marks out of 100 :"))
dbms=int(input("Enter dbms sub marks out of 100 86:"))
dsa=int(input("Enter dsa sub marks out of 100 :"))
stats=int(input("Enter stats sub marks out of 100 :"))
per= (math + eng + dbms + dsa + stats)/5
print(" Percentage % =",per)
if(per>=70):
  print("DISTINCTION")
elif(per>=60 and per<70):
  print("FIRST CLASS")
elif(per>=50 and per<60):
  print("SECOND CLASS")
elif(per>=40 and per<50):
  print("PASS CLASS")
else:
  print("FAIL")
```

```
    Enter maths sub marks out of 100 :86
    Enter english sub marks out of 100 :89
    Enter dbms sub marks out of 100 :95
    Enter dsa sub marks out of 100 :85
    Enter stats sub marks out of 100 :84
     Percentage % = 87.8
    DISTINCTION
```

17. Write a program that take input of 5 subjects marks. If student get 40 or more then 40 then

he is PASS in that subject otherwise FAIL print the result for following condition.

If student is pass in all subjects then declare PASS.

If student is fail in 1 or 2 subject then declare ATKT.

If student is fail in more then 2 subject then declare FAIL.

```python
math=int(input("Enter maths sub marks :"))
eng=int(input("Enter english sub marks :"))
dbms=int(input("Enter dbms sub marks :"))
dsa=int(input("Enter dsa sub marks :"))
stats=int(input("Enter stats sub marks :"))
if(math>=40 and eng>=40 and dbms>=40 and dsa>=40 and stats>=40 ):
  print("PASS")
else:
  if((math<40 or eng<40) and dbms>=40 and dsa>=40 and stats>=40 ):
    print("ATKT")
  elif((math<40 or dbms<40) and eng>=40 and dsa>=40 and stats>=40 ):
    print("ATKT")
  elif((math<40 or dsa<40) and dbms>=40 and eng>=40 and stats>=40 ):
    print("ATKT")
  elif((math<40 or stats<40) and dbms>=40 and dsa>=40 and eng>=40 ):
    print("ATKT")
  elif((eng<40 or dbms<40) and math>=40 and dsa>=40 and stats>=40 ):
    print("ATKT")
  elif((eng<40 or dsa<40) and dbms>=40 and math>=40 and stats>=40 ):
    print("ATKT")
  elif((eng<40 or stats<40) and dbms>=40 and dsa>=40 and math>=40 ):
    print("ATKT")
  elif((dbms<40 or dsa<40) and math>=40 and eng>=40 and stats>=40 ):
    print("ATKT")
  elif((dbms<40 or stats<40) and math>=40 and eng>=40 and dsa>=40 ):
    print("ATKT")
  elif((stats<40 or dsa<40) and math>=40 and eng>=40 and dbms>=40 ):
    print("ATKT")
  else:
    print("FAIL")
```

```
Enter maths sub marks :45
Enter english sub marks :65
Enter dbms sub marks :85
Enter dsa sub marks :12
Enter stats sub marks :96
ATKT
```

18. Write a program that count the area for circle, square, rectangle and triangle using user defined cases

```
case = (int(input("Choose cases : \n case 1: Area of circle \n case 2 : area of Square \n
import math
if(case==1):
  r=int(input("Radius : "))
  print("Area of circle :" ,(math.pi)*r*r)
elif(case==2):
  a=int(input("Side : "))
  print("Area of square : ",a*a)
```

```
elif(case==3):
  l=int(input("Length : "))
  b=int(input("Breath : "))
  print("Area of rectangle : ",(l*b))
elif(case==4):
  d=int(input("Enter 1st side of traingle"))
  e=int(input("Enter 2nd side of traingle"))
  f=int(input("Enter 3rd side of traingle"))
  s=(d+e+f)/2
  tri= math.sqrt(s*(s-d)*(s-e)*(s-f))
  print("Area of traingle ",tri)
else:
  print("Invalid case")
```

```
    Choose cases :
     case 1: Area of circle
     case 2 : area of Square
     case 3:Area of rectangle
     case 4:Area of traingle
    1
    Radius : 2
    Area of circle : 12.566370614359172
```

19. Write a program that take input of year in 4 digit. Determine whether the year is leap year or not.(try to solve this problem with && and or operator)

```
year=int(input("Enter year to check leap or not : "))
if(year%4==0 and year%100!=0 or year%400==0):
  print("Year is leap year")
else:
  print("Year is not a leap year")
```

```
    Enter year to check leap or not : 1990
    Year is not a leap year
```

20. Write a program that determine the grade of steel according to following condition.

Hardness must be greater than 50

Carbon must be less than 0.7

Tensile must be greater than 5500

Take the input for above qualities through keyboard from user Grades are decided as follows.

Grade A if all 3 conditions are met.

Grade B if condition (1) and (2) are met.

Grade C if condition (2) and (3) are met.

Grade D if condition (1) and (3) are met.

Grade E if only one condition met.

Grade F if none of conditions are met.

```
hn=int(input("Enter Hardness of steel : "))
c=float(input("Enter Carbon of steel : "))
t=int(input("Enter tensile of steel : "))
if(hn>50 and c<0.7 and t>5500):
  print("GRADE A")
elif(hn>50 and c<0.7 and t<=5500):
  print("GRADE B")
elif(hn<=50 and c<0.7 and t>5500):
  print("GRADE C")
elif(hn>50·and·c>=0.7·and·t>5500):
··print("GRADE·D")
elif(hn>50·or·c<0.7·or·t>5500):
··print("GRADE·E")
else:
··print("GRADE·F")
```

```
    Enter Hardness of steel : 46
    Enter Carbon of steel : 0.9
    Enter tensile of steel : 5400
    GRADE F
```

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