In [4]:
```
# python : 1.  programming lauguage .

# language : way of communction  .

# programming language :  way of commuction with computer/machine .


# input    ------->   machine/computer   ----------> output


# question : what are you doing ?   # input
# anwser  : I am doing work in Oracle .  # output


 # 2 . python is interpreter language  .
# interpreter                                          compiler
# interpreter execute code line by line .              entire source code high level language to machine language (binary lan
# interpreter slower                                     faster

# 3 . python is high level programming language .
# source code : english : high level programming language :
# mahcine can not understand directly  .

# 4 . python is open source language .
# cost free
# suggestion provide .

# 5 .python is script programming lanauage .

# 6 . python is plateform independent language  .
#  os : same code
# id's : juypyter notebook
# pycharm
# google colab
# python
# vscode . visual studio code
```

In [ ]:
```
# how to set jupyuter notebook
# download python anaconda .
```

```
# core python
# keywords and variables .
# datatypes .
# typecasting .
# operators .
# conditions
# loops
# data structure
# function
# oops
# file handling
# exception handling
# strings
# regular expressions
# modules
# databasec connectivity
# formatting .
```

In [ ]:
```
# In which field we use python   .
# data science  : alogrithms generate .
# ML , DL , NLP, AI
# data analyitcs  : data anlysis .
# python , python libaries  .
# ai    : learn from past things and create new things .
# full stack development  : backend  .
# iot  : arudino , rasberry pi  .
# desktop  : desktop application .
```

keywords

In [ ]:
```
# keywords and variables :
# keywords :
# These are the reserve words .
# These are the predefined words .
# We can not redefined these words .
# eg : if , else , for , while , continue , pass  .
```

variables

In [ ]:
```
# variables :
# These are the userdefined words .
# we can re defined variables .
# These are the used to store values of different different data types .
# These are the called container .
```

DataTypes

In [ ]:
```
# datatypes :
# data : collection of information .

# visit :
# us :
# visitor_name , visitor_address , visitor_age , visitor_phone ,visitor_aadhar_no

# visitor_name="sunil sharma "    , string .
# visitor_address="alwar rajasthan", string ,
# visitor_age=23       , number , int .
# visitor_phone=345678,  number , int
# visitor_aadhar_no=4565789765 , number , int
# visitor_state_up = no
```

In [ ]:
```
# int  :  number , withoutpoint value that's called your integer .
# float  :  decimal , point values called float values .
# string  : sequence of characters ,'',""(single line string),""" """(multi line string )
# boolean  : true , false
# complex : real + imagnary .
```

In [ ]:
```
# print() : it is used to print the data .
```

In [ ]:
```
# comments : these are the used in program only for showoff .
# these are not compile in the program .
# comments represented by # .
```

In [1]:
```
num=10
# num is a variable . # = : it is a operator  . it assign right side values in left side .
# 10 is a literal  .  it's type is int .
```

In [2]:
```
print(num)
```

```
10
```

In [3]:
```
# type() : it is used to find the type of a literal .
# type(variable_name)
```

In [5]:
```
visitor_name="prashant"
visitor_address="alwar , Rajasthan"
visitor_age=25
visitor_phone=56789
```

In [6]:
```
print(visitor_name)
```

```
prashant
```

In [ ]:
```
# difference between a variable and a string .
```

In [7]:
```
print("tca")   # it is string . # it is inside " " .
```

```
tca
```

In [8]:
```
print(visitor_age)   # it is a variable .
```

```
25
```

In [9]:
```
print("visitor_age")   # it is a string .
```

```
visitor_age
```

In [10]:
```
print(visitor_phone)
```

```
56789
```

In [11]:
```
visitor_name="prashant"
visitor_address="alwar , Rajasthan"
```

```
visitor_age=25
visitor_phone=56789
```

In [12]:
```
print(visitor_name)
print(visitor_address)
print(visitor_age)
print(visitor_phone)
```

```
prashant
alwar , Rajasthan
25
56789
```

In [13]:
```
print(type(visitor_name))
```

```
<class 'str'>
```

In [14]:
```
print(type(visitor_address))
```

```
<class 'str'>
```

In [15]:
```
print(type(visitor_age))
```

```
<class 'int'>
```

In [16]:
```
print(type(visitor_phone))
```

```
<class 'int'>
```

In [17]:
```
visitor_challan=550.5
print(visitor_challan)
```

```
550.5
```

In [18]:
```
print(type(visitor_challan))
```

```
<class 'float'>
```

In [19]:
```
# if is a keyword  .

# kf=10   # kf is not keyword .
# print(kf)
```

```
10
```

In [21]:
```
# if=20     # if is keyword we can not redefined it .
# print(if)  # error .
```

In [22]:
```
b=True
print(b)
print(type(b))
```

```
True
<class 'bool'>
```

In [24]:
```
c=4+5j   # real + imagnary
print(c)
print(type(c))
```

```
(4+5j)
<class 'complex'>
```

In [25]:
```
d=3.4+5.7j
print(d)
print(type(d))
```

```
(3.4+5.7j)
<class 'complex'>
```

In [1]:
```
# keywords  : predefined words .
# it's meaning already defined in programming language .
# it's cannot use like a variable   .

# variables :
# user define words .
# it is used to store multiple values of different different data types .
# it is called container .

# datatypes :
# data : collection of information .
# university_student :
# student_name : prashant
# student_age   : 20
# student_id : 4567gts
# student_department : CSE
```

```
# student_current_year : 2
# student_cgpa:7.5

# data types :
# int : without point values ,  numbers ,
# float : point values ,
# string : collection of  characters , sequenece of characters , combination of
# characters , " ",'',""" """
# boolean  : True and false
# complex : real + imagnary combination .
```

In [ ]:
```
# software : jupyter notebook .
# search python anaconda  on your browser .
# click on python anaconda distribution .
# here you will get a form fill the form and submit it  .
# it will send you a message on your email id here you will get a link .
# click on the link it will redirect on download page .
# click on the download and anaconda will download in your machine .
# installed it  .
# after installation go to search bar search anacond navigator .
# here you will get jupyter notebook .
# launch jypter notebook from here .
# it will redirect you on notebook page .
```

In [6]:
```
student_name="prashant"
print(student_name)

# studnet_name and "prashant"
# student_name : outside double quotes .
# "prashant" : it is inside double quotes .
# student_name : it is a variable
# "prashant"  : literal : type : string ,
# = : it is operator : it assign right side value in left side .
```

```
prashant
```

In [ ]:
```
# comments : it is used only for showoff in the program .
# it does not compile .
# it is used for understand the code .
```

In [3]:
```
print("tca")
#print("gurgaon")
```

```
tca
```

In [9]:
```
student_age=20
print(student_age)
```

```
20
```

In [8]:
```
print("student_age")
```

```
student_age
```

In [ ]:
```
# variable : value print .
# string : exact print .
```

In [10]:
```
student_cgpa=4.5
print(student_cgpa)
```

```
4.5
```

In [11]:
```
print("student_cgpa")
```

```
student_cgpa
```

In [12]:
```
student_name="tapash kumar"
student_address="""
       sector-14 , sundar singh marg
       gurgoan, haryana
       India
"""
```

In [13]:
```
# run   : shift + enter , run

print(student_name)
```

```
tapash kumar
```

In [14]:
```
print(student_address)
```

```
sector-14 , sundar singh marg
gurgoan, haryana
India
```

In [16]:
```
student_department="CSE"
print(type(student_department))
```

```
<class 'str'>
```

In [ ]:
```
# type(variable_name)
```

In [17]:
```
student_current_year=2
print(type(student_current_year))
```

```
<class 'int'>
```

In [19]:
```
student_cgpa=7.87
print(student_cgpa)
print(type(student_cgpa))
```

```
7.87
<class 'float'>
```

In [22]:
```
# keywords : if ,else , for , while  , do while  .

f=10
print(f)
```

```
10
```

In [26]:
```
product_name="puma shoes"
old_price=3450.45
new_price=4004.5
print(product_name)
print(old_price)
print(new_price)
```

```
puma shoes
3450.45
4004.5
```

In [1]:
```
b=True
print(b)
```

```
True
```

In [2]:
```
print(type(b))
```

```
<class 'bool'>
```

In [3]:
```
c=False
print(type(c))
```

```
<class 'bool'>
```

In [5]:
```
print(c)
```

```
False
```

In [7]:
```
# complex : real + imagnary numbers
var=5+7j   # 5 : it represent real number  .
# 7j : it represent imagnary numbers .
print(var)
```

```
(5+7j)
```

In [ ]:

In [ ]:
```
# complex number : real + imagnary .
# negative values underroot .
# real
```

In [10]:
```
# j represent imagenary value .
c=4+9j
print(c)
```

```
(4+9j)
```

In [11]:
```
# user choice values in python .
# run time values .

# string : input("message")
```

```
name=input("enter a name")
print(name)
```

```
prashant
```

In [ ]:
```
# int : int(input("enter message"))
# float : float(input("enter message"))
```

In [13]:
```
age=int(input("enter age"))
print(age)
```

```
20
```

In [15]:
```
a=input()
print(a)
```

```
10
```

In [17]:
```
a=input()
b=input()
print(a)
print(b)
```

```
1
1
```

In [20]:
```
# why we are entering message inside input : for specify what we have to enter inside input .
print("Name")
name=input()   # string .
print("Age")
age=int(input())   #int values only  .
```

```
Name
Age
```

In [ ]:
```
# input : function predefined  . it is used to take values inside python .
```

In [21]:
```
student_address=input("enter student address")
student_year=int(input("enter student current pursuing year"))
student_cgpa=float(input("enter student cgpa in last semester "))
```

In [22]:
```
print(type(student_address))
```

```
<class 'str'>
```

In [23]:
```
print(type(student_year))
```

```
<class 'int'>
```

In [24]:
```
print(type(student_cgpa))
```

```
<class 'float'>
```

In [25]:
```
student_address=input("enter student address")
student_year=input("enter student current pursuing year")
student_cgpa=input("enter student cgpa in last semester ")
```

In [26]:
```
print(type(student_address))
```

```
<class 'str'>
```

In [27]:
```
print(type(student_year))
```

```
<class 'str'>
```

In [28]:
```
print(type(student_cgpa))
```

```
<class 'str'>
```

In [29]:
```
a=10
a='20'
print(a)
```

```
20
```

In [30]:
```
print(type(a))
```

```
<class 'str'>
```

In [31]:
```
a=10
a=20
print(a)
```

```
20
```

In [32]:
```
print(type(a))
```

```
<class 'int'>
```

In [36]:
```
# input() : it represent string .
# int(input()) : it represent int .
# float(input()) : it represent float .
```

In [38]:
```
# complex :
c=complex(3,4)
print(c)
```

```
(3+4j)
```

In [40]:
```
c=complex(int(input("enter real value")),int(input("enter imagnary value cofficient")))
print(c)
```

```
(10+5j)
```

In [41]:
```
# complex(num1,num2)
# num1 : it represent value real value .
# num2 : it represent imagnary value cofficient
```

In [42]:
```
c=complex(int(input("enter real value")),float(input("enter imagnary value cofficient")))
print(c)
```

```
(3+4.5j)
```

In [43]:
```
c=complex(float(input("enter real value")),float(input("enter imagnary value cofficient")))
print(c)
```

```
(3.4+4.5j)
```

In [46]:
```
# c=complex(input("enter real value"),float(input("enter imagnary value cofficient")))
# print(c)   # error : number can not string .
```

Typecasting

In [ ]:
```
# typecasting : changing the  datatype of variable .
```

In [1]:
```
a='10' # str
```

In [2]:
```
b=10  # int
```

In [3]:
```
c=10.0 # float
```

In [4]:
```
print(type(a))
```

```
<class 'str'>
```

In [5]:
```
print(type(b))
```

```
<class 'int'>
```

In [6]:
```
print(type(c))
```

```
<class 'float'>
```

In [8]:
```
# number :
n="30"
m=n
print(int(n))
print(type(m))
```

```
30
<class 'str'>
```

In [9]:
```
n="30"
m=int(n)
print(int(n))
print(type(m))
```

```
30
<class 'int'>
```

In [11]:
```
n="30"  # str
n=int(n)  # int
print(int(n))
print(type(n))
```

```
30
<class 'int'>
```

In [ ]:
```
# keynotes :
              # type          #value
# int("int") : int             int
# int(float) : int             int value without anypoint
# int("float_value") : error
# int("str")  :error
# int(int) :int
```

In [14]:
```
a="30"  # str
print(type(a))
a=int(a) # int
print(type(a))
```

```
<class 'str'>
<class 'int'>
```

In [17]:
```
a=30.45
print(type(a))
a=int(a)
print(a)  # 30
print(type(a))
```

```
<class 'float'>
30
<class 'int'>
```

In [24]:
```
# a="23.45"
# print(type(a))
# a=int(a)
# print(a)   # error
# print(type(a))
```

In [23]:
```
# a="tca"
# print(type(a))
# a=int("tca")
# print(a)    # error
```

In [ ]:
```
# keynotes :      type        value
# float("int") : float         value will be point zero
# float("float") : float       float
# float(int)    : float         float will be point zero
# float("str")  : error         error
```

In [28]:
```
a=34
print(type(a))
a=float(a)
print(type(a))
print(a)
```

```
<class 'int'>
<class 'float'>
34.0
```

In [29]:
```
a=45
print(float(a))
```

```
45.0
```

In [32]:
```
a="54"
print(type(a))
a=float(a)
print(a)
print(type(a))
```

```
<class 'str'>
54.0
<class 'float'>
```

In [36]:
```
c="23.34"
print(c)
print(type(c))
c=float(c)
print(c)
print(type(c))
```

```
23.34
<class 'str'>
23.34
<class 'float'>
```

In [41]:
```
# d="2.3t"
# print(d)
# d=float(d)
# print(type(d))
# print(d)
```

In [42]:
```
a=int(float("3.45"))
# process :
# float("3.45") : 3.45  : float
# int(3.45) : 3
print(a)
```

```
3
```

In [45]:
```
a=int(3.45)
print(a)
```

```
3
```

In [46]:
```
a="2.34"
b=float(int(float(a)))
# process :
# float("2.34") : 2.34
# int(2.34) : 2
# float(2) : 2.0
print(b)
```

```
2.0
```

In [ ]:
```
# Operators :
# arithmetic operators   : +,-,/,%,*,//,**
# assignment operators   : =,+=,-=,/=,*=,//=,%=,**=
# logical operators  : and , or , not
# relative operators  : >,<,>=,<=,==,!=
# bitwise operators  : and gate(&) , or gate(|) , xor gate(^)
# unary operators  : <<(left shift),>> (right shift)
```

In [47]:
```
# + : addition , merge .

# int and float  : addition (add)
# str  and str : merge (concate )
# int and float  with str : error

10+20
```

Out[47]: 30

In [48]:
```
"tca"+"gurgaon"
```

Out[48]: 'tcagurgaon'

In [49]:
```
'10'+'20'
```

Out[49]: '1020'

In [51]:
```
# '10'+10  # error
```

In [52]:
```
a=20
b=30
print(a+b)
```

```
50
```

In [1]:
```
a=int(input("enter first number "))
b=int(input("enter second number"))
c=a+b
print("addition of both numbers is : ",c)
```

```
addition of both numbers is :  30
```

In [3]:
```
a=int(input("enter first number "))
b=int(input("enter second number"))
c=a+b
print("addition of both numbers is : ",c)
```

```
addition of both numbers is :  3
```

In [4]:
```
name=input("enter your name")
print("my name is : ",name)
```

```
my name is :  tanish
```

In [5]:
```
name=input("enter your name")
print("my name is : "+name)
```

```
my name is : prashant
```

In [6]:
```
a=int(float('3.45'))  # float('3.45') : 3.45   , int(3.45) : 3
b=2
c=a+float(b) # 3+2.0
print(c)
```

```
5.0
```

In [7]:
```
a=30
b=20
c="10"+"5"  # "105"
d=a+b+int(c)
print(d)
```

```
155
```

In [10]:
```
print(type(int("10"+"5")))
```

```
<class 'int'>
```

In [12]:
```
a="105"
a=int(a)
print(type(a))
print(a)
```

```
<class 'int'>
105
```

In [13]:
```
a='10'
b=str(float('23'))+str(float(4.5))
c='44'
print(a+b+c)# 1023.04.544
```

```
1023.04.544
```

In [14]:
```
print('10'+'23.0'+'4.5'+'44')
```

```
1023.04.544
```

In [15]:
```
# subtraction : minus :
# int and float : minus
# int and float with str  : error
# str and str : error

50-20
```

Out[15]: 30

In [16]:
```
2.3-4.5
```

Out[16]: -2.2

In [17]:
```
1.2-9
```

Out[17]: -7.8

In [19]:
```
# '20'-'tca'   # error
```

In [20]:
```
# multiplication :

# int and float : multiply
# int (n) and single str : str repeat(n times)
# str * str = error
# float * str : error

10*20
```

Out[20]: 200

In [25]:
```
'10'*5
```

Out[25]: '1010101010'

In [23]:
```
# '10'*'5' # error
```

In [24]:
```
a=20
b='2'*3  # '222'
c=30
d=a+int(b)+c
print(d)
```

```
272
```

In [26]:
```
a='10'+('3'*2)  # 1033
b='4'*2   # 44
c=int(a)+int(b)
print(c)
```

```
1077
```

In [27]:
```
a='10'+'33'   # 1033 (merge )
print(a)
```

```
1033
```

In [28]:
```
a=2*('1'+'0')  # 2*('10')  # 1010
print(a)
```

```
1010
```

In [29]:
```
"tca "*5
```

Out[29]:
```
'tca tca tca tca tca '
```

In [30]:
```
34*3
```

Out[30]:
```
102
```

In [31]:
```
# division , modulus , floor division

# / , % , //
# / : it divide completely
# % : it give remainder
# // : it give before point value in divide .
```

```
a=30
b=7
print(a/b)
```

```
4.285714285714286
```

In [32]:
```
a=30
b=7
print(a%b)
```

```
2
```

In [33]:
```
a=30
b=7
print(a//b)
```

```
4
```

In [34]:
```
a=45
b=11
print(a/b)  # 4.something
print(a//b) # 4
print(a%b)  # 1
```

```
4.090909090909091
4
1
```

In [35]:
```
a=80
b=13
print(a/b)
print(a//b)
print(a%b)
```

```
6.153846153846154
6
2
```

In [36]:
```
# ** : it used for giving the power .
2**3
```

Out[36]: 8

In [37]:
```
4**2
```

Out[37]: 16

In [38]:
```
5**3
```

Out[38]: 125

In [39]:
```
7**2
```

Out[39]: 49

In [40]:
```
a=int(input("enter first number"))
b=int(input("enter second number "))
print(a**b)
```

```
81
```

In [ ]:
```
# assignment :
# find the area of square .
# find the area of triangle .
# find the perimeter of triangle.
# find the perimeter of rectangle  .
# find the area of rectangle .
# find the volume of cuboid .
# find the last digit of a number .
# find the square of 20 to 30 .
# find the cube of 5 to 15 .
# implement (a+b)**2
```

In [41]:
```
# find the perimeter of square .

side=int(input("enter the side of square "))

perimeter=4*side
print("perimeter of square is : ",perimeter)
```

```
perimeter of square is :  40
```

In [1]:
```
# / ,%,//

a=40
b=11
print(a/b)  # 3.something .
```

```
3.6363636363636362
```

In [2]:
```
a=40
b=11
print(a//b)
```

```
3
```

In [3]:
```
a=40
b=11
print(a%b)
```

```
7
```

In [4]:
```
a=11
b=20
print(a/b)
```

```
0.55
```

In [5]:
```
print(a//b)
```

```
0
```

In [6]:
```
print(a%b)
```

```
11
```

In [7]:
```
# ** : it is used for giving the power .

a=5
b=7
print(a**b)
```

```
78125
```

In [8]:
```
a=4
b=3
print(a**b)  # 4**3 : 4*4*4
```

```
64
```

In [10]:
```
2**5  # 2*2*2*2*2
```

Out[10]: 32

In [11]:
```
2*5
```

Out[11]: 10

In [ ]:
```
# assignment operators :
# =,+=,-=,/=,*=,%=,//=,**=
```

In [ ]:
```
# =  : it assign right side value in left side .
# in right side always there will be values or defined variables  .
# left side there will be only defined variables or not defined variables .

# right side : not-defined-variables are not allowed .
# left side : values are not allowed .

# == : it is relative operator .
# it compare right side values with left side .
# it give always true and false result . (boolean result )
# In both sides non defined variables are not allowed .
```

In [22]:
```
name="tca"
location=" gurgaon"

company=name+location+" bus stand"
print(company)
```

```
tca gurgaon bus stand
```

In [25]:
```
total_student=1000
print(total_student)
```

```
1000
```

In [26]:
```
a=30
b=20
print(a==b)
```

```
False
```

In [27]:
```
print(a==b+10)
```

```
True
```

In [29]:
```
a=50
b=70
c=20
print(a+c==b)
```

```
True
```

In [31]:
```
# += , -= , *=,/=,//=,**=,%=

num=50
num=num+10
print(num)
```

```
60
```

In [32]:
```
num=50
num+=10  # num=num+10
print(num)
```

```
60
```

In [33]:
```
num=100
b=num+10
print(b)
```

```
110
```

In [34]:
```
company_name="tca gurgaon"
location="bus stand gurgaon ,Haryana"
company_name=company_name+location
print(company_name)
```

```
tca gurgaonbus stand gurgaon ,Haryana
```

In [35]:
```
company_name="tca gurgaon"
location="bus stand gurgaon ,Haryana"
company_name+=location
print(company_name)
```

```
tca gurgaonbus stand gurgaon ,Haryana
```

In [36]:
```
var=400
var=var-150
print(var)
```

```
250
```

In [37]:
```
var=340
var-=120
print(var)
```

```
220
```

In [38]:
```
var=130
var=var*10
print(var)
```

```
1300
```

In [39]:
```
num2=5.5
num2*=2.5
print(num2)
```

```
13.75
```

In [42]:
```
num3=50
num3/=13
print(num3)
```

```
3.8461538461538463
```

In [43]:
```
num3=50
num3%=13
print(num3)
```

```
11
```

In [44]:
```
num3=50
num3//=13
print(num3)
```

```
3
```

In [45]:
```
num=5
num**=4
print(num)
```

```
625
```

In [46]:
```
# condition statement : control flow statement .
# if else statement .

day=input("enter day")
if(day=="sunday"):
    print("today will be holiday")   # dependent statement  .
else:
    print("today is not holiday")   # dependent statement .
```

```
today will be holiday
```

In [ ]:
```
# if(condition):
#      statements  , indentation : 4 alphabats space .
# else:
#     statements
```

In [48]:
```
# if condition result is true then if statements execute .
# if condition result is false then else statemetns execute .

# if will take condition always inside it .
# else never take condition inside it .

# either if statements will execute or else statements will execute .
# both never execute together .

time=input("enter exact time ")
if(time=="1pm"):
    print("it is lunch time")
```

```
else:
    print("it will be work time")
```

```
it is lunch time
```

In [49]:
```
time=input("enter exact time ")
if(time=="1pm"):
    print("it is lunch time")
else:
    print("it will be work time")
```

```
it will be work time
```

In [50]:
```
# find a given number is odd or even .
num=int(input("enter a number"))
if(num%2==0):
    print("even")
else:
    print("odd")
```

```
odd
```

In [54]:
```
# 10 : 0 to 9

print(10%10)
print(11%10)
print(12%10)
print(13%10)
print(14%10)
print(15%10)
print(16%10)
print(17%10)
print(18%10)
print(19%10)
print(20%10)
```

```
0
1
2
3
4
5
6
7
8
9
0
```

In [58]:
```
# n : possible remaninder values : 0 to n-1
# eg : n=10 , 0 to 9
# eg  : n=2 , 0 to 1   : 0,1


print(9%2)
print(10%2)
print(11%2)
print(12%2)
```

```
1
0
1
0
```

In [59]:
```
print(9/2)
```

```
4.5
```

In [60]:
```
print(9//2)
```

```
4
```

In [1]:
```
# if(condition):
#        statements   ,dependent statements
# else:
#       statements  , dependent statements .

# when condition result is true then if execute
# when condition result is false then else execute  .
```

```
# find a  number which is divided from 7 .

num=int(input("enter a number "))

# modules values :
# if n=7 ,
# possible values of modulus .
# 0 to 6
if(num%7==0):
    print("number is divided by 7")
else:
    print("number is not divided by 7 ")
```

```
number is divided by 7
```

In [5]:
```
num=int(input("enter a number"))
print(num%7)
```

```
0
```

In [6]:
```
num=int(input("enter a number "))
if(num%7==0):
    print("number is divided by 7")
else:
    print("number is not divided by 7")
```

```
number is divided by 7
```

In [7]:
```
# find a number is divided by 29

num=5676898765
if(num%29==0):
    print("divide")
else:
    print("not divide")
```

```
not divide
```

In [17]:
```
num=5676898766
print(num%29)
```

```
25
```

In [18]:
```
num1=int(input("enter first number "))
num2=int(input("enter second number "))
# find the maximum number between these two numbers .
if(num1>num2):
    print("num1 is greater")
else:
    print("num2 is greater")
```

```
num1 is greater
```

In [21]:
```
age=int(input("enter age"))
if(age>21):
    print("you are eligible for marriage")
else:
    print("you are not eligible ")
```

```
you are not eligible
```

In [25]:
```
age=int(input("enter age"))
if(age>18):
    print("you can give vote")
else:
    print("you can not give vote ")
```

```
you can not give vote
```

In [26]:
```
age=int(input("enter age"))
if(age>=18):
    print("you can give vote")
else:
    print("you can not give vote ")
```

```
you can give vote
```

In [28]:
```
exam_marks=int(input("enter marks of your exam "))
cuttoff_marks=int(input("enter cuttoff_marks "))
if(exam_marks>cuttoff_marks):
    print("you are selected in jee exam")
else:
    print("you are disqualified")
```

```
you are selected in jee exam
```

In [30]:
```
weight=float(input("enter your weight in kg "))
if(weight<=50):
    print("you are eligible for match ")
else:
    print("diqualified")
```

```
diqualified
```

In [44]:
```
# relative operators : >,<,>=,<=,==,!=

# data filteration .


import pandas as pd

file_path=r"C:\Users\Admin\Downloads\archive (82)\Shopping Mall Customer Segmentation Data .csv"
a=pd.read_csv(file_path)
a=a.drop(["Customer ID"],axis=1)
a
```

Out[44]:

	Age	Gender	Annual Income	Spending Score
0	30	Male	151479	89
1	58	Female	185088	95
2	62	Female	70912	76
3	23	Male	55460	57
4	24	Male	153752	76
...	...	...	...	...
15074	29	Female	97723	30
15075	22	Male	73361	74
15076	18	Female	112337	48
15077	26	Female	94312	5
15078	19	Male	78045	2

15079 rows × 4 columns

In [ ]:

In [45]:
```
a[a["Spending Score"]==70]
```

Out[45]:

	Age	Gender	Annual Income	Spending Score
168	48	Female	92981	70
192	40	Male	44192	70
392	73	Male	81323	70
486	83	Female	113215	70
545	25	Male	170959	70
...	...	...	...	...
14749	36	Male	54632	70
14796	58	Female	110854	70
14808	29	Female	132406	70
14868	64	Male	32794	70
15026	42	Female	21674	70

163 rows × 4 columns

In [46]:
```
a[a["Spending Score"]>90]
```

Out[46]:

	Age	Gender	Annual Income	Spending Score
1	58	Female	185088	95
13	32	Female	159892	96
17	89	Male	38708	97
31	39	Female	135748	95
33	79	Male	164259	96
...	...	...	...	...
15031	74	Male	149697	99
15038	88	Male	28464	94
15049	69	Female	83955	97
15053	33	Male	31512	96
15063	55	Male	150652	91

1528 rows × 4 columns

In [47]:
```
a[a["Gender"]=="Female"]
```

Out[47]:

	Age	Gender	Annual Income	Spending Score
1	58	Female	185088	95
2	62	Female	70912	76
6	27	Female	163501	37
9	62	Female	63448	3
11	63	Female	89355	80
...	...	...	...	...
15072	35	Female	105107	49
15073	70	Female	108936	6
15074	29	Female	97723	30
15076	18	Female	112337	48
15077	26	Female	94312	5

7484 rows × 4 columns

In [1]:
```
# logical operators : and, or ,not

# relative operator  and logical operators  : data filteration .

# logical : and , or  , not

if(True and True  and True ):
    print("yes")
else:
    print("no")
```

yes

In [2]:
```
# if() :if can store only one boolean result of all conditions .

print(True and True  and True)
```

```
True
```

In [3]:
```
print(True and True  and False)
```

```
False
```

In [ ]:
```
# and : if provide mutliple conditions inside if and all contitions reuslt is true then and give true result .
# if any one condition result is false then and give false result .

# relative (comparison operators): >,<,<=,>=,==,!= : boolean result provide (true and false )
# if (condition result is true ) :
#          statements
# else:
#          statements .
```

In [5]:
```
# find a given number is greater than 90 .

num=int(input("enter a number "))
if(num > 90):
    print("number is greater than 90")  # dependent statement(true )
else:
    print("number is less than 90")   # dependent statment (false )
```

```
number is less than 90
```

In [10]:
```
month_day=int(input("enter day of august month"))
if(month_day==15):
    print("Today is independance of india")
else:
    print("Today is normal day")
```

```
Today is independance of india
```

In [ ]:
```
# = :  it assign right side value in left side .
# == : it compare right side value with left side .
```

In [ ]:
```
# input('message') : string
# int(input("message")) : int
```

In [13]:
```
month_day=input("enter day of august month")
if(month_day==15):
```

```
    print("Today is independance of india")
else:
    print("Today is normal day")
```

```
Today is normal day
```

In [15]:
```
month_day=input("enter day of august month")  # string
month_day==15
```

Out[15]:
```
False
```

In [19]:
```
month="15"
month=="15"
```

Out[19]:
```
True
```

In [20]:
```
 #find a given number is greater than 100 and it is odd number .

num=int(input("enter a number "))
if(num>100 and num%2==1):
    print("number is greater than 100 and number is odd number ")
else:
    print("number does not fullfilled the condition")
```

```
number is greater than 100 and number is odd number
```

In [21]:
```
hindi_marks=int(input("enter hindi marks"))
math_marks=int(input("enter math marks "))
english_marks=int(input("enter english marks"))
science_marks=int(input("enter science marks "))

if(hindi_marks > 33 and math_marks > 33 and english_marks > 33 and science_marks > 33):
    print("pass")
else:
    print("fail")
```

```
pass
```

In [22]:
```
hindi_marks=int(input("enter hindi marks"))
math_marks=int(input("enter math marks "))
english_marks=int(input("enter english marks"))
```

```
science_marks=int(input("enter science marks "))

if(hindi_marks > 33 and math_marks > 33 and english_marks > 33 and science_marks > 33):
    print("pass")
else:
    print("fail")
```

```
fail
```

In [23]:
```
print(hindi_marks > 33 and math_marks > 33 and english_marks > 33 and science_marks > 33)
```

```
False
```

In [24]:
```
name=input("enter student name")
cgpa=float(input("enter studnet cgpa "))
age=int(input("enter student age"))

if(cgpa > 7.0 and age > 18):
    print("you are allowed for placements ")
else:
    print("you are not allowed for placements ")
```

```
you are not allowed for placements
```

In [25]:
```
name=input("enter student name")
cgpa=float(input("enter studnet cgpa "))
age=int(input("enter student age"))

if(cgpa > 7.0 and age > 18):
    print("you are allowed for placements ")
else:
    print("you are not allowed for placements ")
```

```
you are allowed for placements
```

In [5]:
```
# special case only for two conditions :

# result1   result2       final_result
# true      true            true
# true      false          false
# false      true          false
# false      false         false
```

```
#  or operators :
# if we provide mutliple conditions inside if  and anyone condition result is true then 'or' give true result .
# if all the conditions result false then 'or' give false result .

# find a given number is divided by 7 or 5 .

num=int(input("enter a number "))

if(num%7==0 or num%5==0):
    print("number is divided by 7 or 5")
else:
    print("number is not divided by both ")
```

```
number is not divided by both
```

In [10]:
```
# find a given alphabat is vowel or consonant .

alp=input("enter an alphabat")
if(alp=='a' or alp=='e' or alp=='i' or alp=='o' or alp=='u' or alp=='A' or alp=='E' or alp=='I' or alp=='O' or alp=='U'):
    print("vowel")
else:
    print("consonant")
```

```
consonant
```

In [15]:
```
state=input("enter your state name").lower()
print(state)
if(state=="punjab" or state=="haryana"):
    print("you are eligible for this exam ")
else:
    print("you are not eligible")
```

```
haryana
you are eligible for this exam
```

In [16]:
```
"atul".upper()
```

Out[16]:
```
'ATUL'
```

In [17]:
```
"PRASHANT".lower()
```

Out[17]: 'prashant'

In [19]:
```
"Haryana".upper()
```

Out[19]: 'HARYANA'

In [20]:
```
"Haryana".lower()
```

Out[20]: 'haryana'

In [26]:
```
# multiple conditions :
# elif  :It is used for giving the multiple conditions .
#find a given number is positive , negative , zero .
num=int(input("enter a number "))
if(num>0):
    print("positive")
elif(num<0):
    print("negative")
else:
    print("zero")
```

```
zero
```

In [29]:
```
# p :
# p>90 : A
# p>80 : B
# p>70  :C
# p>60 : D
# p>50 : E
# p<50 : fail

p=int(input("enter percentage "))
if(p>90):
    print("A")
elif(p>80):
    print("B")
elif(p>70):
    print("C")
elif(p>60):
    print("D")
```

```
elif(p>50):
    print("E")
else:
    print("F")
```

```
D
```

In [32]:
```
# find the greatest of three numbers . (all three numbers are distinguish(different different ))

num1=int(input("enter first number "))
num2=int(input("enter second number "))
num3=int(input("enter third number "))

if(num1>num2 and num1 >num3):
    print("num1 is greatest")
elif(num2>num1 and num2>num3):
    print("num2 is greatest")
else:
    print("num3 is greatest")
```

```
num3 is greatest
```

In [34]:
```
# if numbers are equal .
num1=int(input("enter first number "))
num2=int(input("enter second number "))
num3=int(input("enter third number "))

if(num1>=num2 and num1 >=num3):
    print("num1 is greatest")
elif(num2>=num1 and num2>=num3):
    print("num2 is greatest")
else:
    print("num3 is greatest")
```

```
num1 is greatest
```

In [38]:
```
# all three numbers are equal .
# from three numbers two are equal and greater  .


num1=int(input("enter first number "))
num2=int(input("enter second number "))
```

```
num3=int(input("enter third number "))

if(num1==num2 and num2==num3):
    print("all three numbers are equal")
elif(num1==num2 and num1>num3):
    print("num1 and num2 is equal and greater than num3")
elif(num2==num3 and num2>num1):
    print("num2 and num3 is equal and greater than num1")
elif(num1==num3 and num1>num2):
    print("num1 and num3 is equal and greater than num2")
elif(num1>num2 and num1 >num3):
    print("num1 is greatest")
elif(num2>num1 and num2>num3):
    print("num2 is greatest")
else:
    print("num3 is greatest")
```

```
all three numbers are equal
```

In [13]:

```
# multiple conditions .
# if more than two results is available then we use multiple conditions .

salary=int(input("enter a number "))

if(salary>50000):
    bonus=(salary*10)/100
    print(bonus)
    salary+=bonus
elif(salary>35000):
    bonus=(salary*13)/100
    print(bonus)
    salary+=bonus
elif(salary>25000):
    bonus=(salary*15)/100
    print(bonus)
    salary+=bonus
else:
    bonus=(salary*20)/100
    print(bonus)
    salary+=bonus
```

```
print(salary)
```

```
7500.0
82500.0
```

In [5]:
```
45000*13/100
```

Out[5]: 5850.0

In [9]:
```
if True:
    z=10
else:
    Y=30
print(z)
# print(Y)
```

```
10
```

In [19]:
```
# nested conditions : condition inside condition .

# find a given number is divided from 7 and odd number .

num=int(input("enter a number "))
if(num%7==0 and num%2==1):
    print("num is divided by 7 and num is odd ")
else:
    print("num is not divided by 7 or num is even ")
```

```
num is divided by 7 and num is odd
```

In [23]:
```
num=int(input("enter a number "))
if(num%7==0):
    if(num%2==1):
        print("num is divided by 7 and num is odd")
    else:
        print("num is divided by 7 and num is even")
else:
    if(num%2==1):
        print("num is not divided by 7 or num is odd")
```

```
    else:
        print("num is not divided by 7 or num is even")
```

```
num is not divided by 7 or num is odd
```

In [24]:
```
salary=int(input("enter salary"))
bonus=salary*10/100
salary+=bonus
print(salary)
```

```
50245.8
```

In [27]:
```
num=int(input("enter a number "))
if(num%7==0): # true
    if(num%2==1):  # true                          # true   true
        print("num is divided by 7 and odd")
    else: # false                                  # true    false
        print("num is divided by 7 and even")
else: # false
    if(num%2==1):  # true                          # false    true
        print("num is not divided by 7 and odd")
    else:  # false                                # false      false
        print("num is not divided by 7 and even")
```

```
num is not divided by 7 or odd
```

In [29]:
```
num=int(input("enter a number "))
if(num%7==0 and num%2==1):
    print("num is divided by 7 and odd")
elif(num%7==0 and num%2==0):
    print("num is divide by 7 and even")
elif(num%7!=0 and num%2==1):
    print("num is not divide by 7 and odd ")
elif(num%7!=0 and num%2==0):
    print("num is not divided by 7 and even ")
```

```
num is divide by 7 and even
```

In [33]:
```
# !=   not equal to

age=int(input("enter age "))
if(age!=20):
```

```
    print("you are elgibile")
else:
    print("you are not eligible")
```

```
you are elgibile
```

In [36]:
```
num=int(input("enter a number "))
if(num%7!=0):
    print("number is not divided by 7")
else:
    print("number is divided by 7")
```

```
number is not divided by 7
```

In [ ]:
```
# assignment questions .

#1. find a given year is leap year or not .

#2. three sides is given of a triangle find from these side triangle is possible or not  and check type of triangle
# 1. equilateral
# 2 . scalene
# 3 . isoscles .

# multiple conditions .
# nested conditions .
```