```
#---------------------------------#
### ==> 1_hello.py <== ###
#---------------------------------#
print ("Hello World!")


#---------------------------------#
### ==> 2_hello_2.py <== ###
#---------------------------------#
print ("Hello World!")
print ("你好!")
print ("Apple and banana")
print (3+4)


#---------------------------------#
### ==> 3_variable.py <== ###
#---------------------------------#
count = 10
x = 6; y = 3
x, y = 7, 9
s = "Hello!"
m = "4"
print (count)
print (x + 7)
print ("x= " + str(x))
print ("y= " + str(y))
print ("-------------")
print ("s is type: "+ str(type(s)))
print ("x is type: " + str(type(x)))
print ("m is type: "+ str(type(m)))
print ("m is type: "+ str(type(eval(m))))



#---------------------------------#
### ==> 4_input.py <== ###
#---------------------------------#
name = input("Name? ")
print ("Hello " + name)


#---------------------------------#
### ==> calc_1.py <== ###
#---------------------------------#
#This is where the program starts
print ("Welcome to calc :)")
print ("You can: sum, sub, muti, div, factor, compare")
action = input("what do you want to perform? ")

print (action)


#---------------------------------#
### ==> calc_2.py <== ###
#---------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
    return action

# this is where the program starts
action = welcomeMsg()
print (action)


#---------------------------------#
### ==> calc_3.py <== ###
```

```
#---------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
    return action

# this is where the program starts
action = welcomeMsg()

if (action != "compare"):
    pass
else:
    print ("do sth")


#---------------------------------#
### ==> calc_4.py <== ###
#---------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
    return action

# this is where the program starts
action = welcomeMsg()

if (action != "compare"):
    x = input("First number: ")
    y = input("Second number: ")

    print (x + y)

    # why is this wrong?
    # you need to 'eval'
    # https://docs.python.org/2/library/functions.html#eval
    '''
    x = eval(x)
    y = eval(y)
    print (x + y)
    '''

else:
    print ("do sth")


#---------------------------------#
### ==> calc_5.py <== ###
#---------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
    return action

# this is where the program starts
action = welcomeMsg()

if (action != "compare"):
    x = eval(input("First number: "))
    y = eval(input("Second number: "))

    if (action == "sum"):
        print (x + " + " + y + " = " + (x+y))

        # why wrong? again, type!
        # print (str(x) + " + " + str(y) + " = " + str(x+y))
```

```
else:
    print ("do sth")


#----------------------------------#
### ==> calc_6.py <== ###
#----------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
    return action

# this is where the program starts
action = welcomeMsg()

if (action != "compare"):
    x = eval(input("First number: "))
    y = eval(input("Second number: "))

    if (action == "sum"):
        print (str(x) + " + " + str(y) + " = " + str(x+y))

    elif (action == "sub"):
        print (str(x) + " - " + str(y) + " = " + str(x-y))

    elif (action == "muti"):
        print (str(x) + " * " + str(y) + " = " + str(x*y))

    elif (action == "div"):
        pass
        #practice, remember special case

    elif (action == "factor"):
        print ("do factor")

    else:
        print ("cannot define action.")

else:
    print ("do sth")


#----------------------------------#
### ==> calc_7.py <== ###
#----------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
    return action

# this is where the program starts
action = welcomeMsg()

if (action != "compare"):
    x = eval(input("First number: "))
    y = eval(input("Second number: "))

    if (action == "sum"):
        print (str(x) + " + " + str(y) + " = " + str(x+y))

    elif (action == "sub"):
        print (str(x) + " - " + str(y) + " = " + str(x-y))

    elif (action == "muti"):
        print (str(x) + " * " + str(y) + " = " + str(x*y))

    elif (action == "div"):
```

```
        #answer
        if (y == 0):
            print ("y cannot be 0")
        #print str(x) + " / " + str(y) + " = " + str(float(x)/float(y))
        print (str(x) + " / " + str(y) + " = " + str(x/y))

    elif (action == "factor"):
        print ("do factor")

    else:
        print ("cannot define action.")

else:
    print ("do sth")


#---------------------------------#
### ==> calc_8.py <== ###
#---------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
    return action

# this is where the program starts
action = welcomeMsg()

if (action != "compare"):
    x = eval(input("First number: "))
    y = eval(input("Second number: "))

    if (action == "sum"):
        print (str(x) + " + " + str(y) + " = " + str(x+y))

    elif (action == "sub"):
        print (str(x) + " - " + str(y) + " = " + str(x-y))

    elif (action == "muti"):
        print (str(x) + " * " + str(y) + " = " + str(x*y))

    elif (action == "div"):
        if (y == 0):
            print ("y cannot be 0")
        print (str(x) + " / " + str(y) + " = " + str(x/y))

    elif (action == "factor"):
        if (x % y == 0):
            print (str(y) + " is a factor of " + str(x))
        else:
            print (str(y) + " is not a factor of " + str(x))

    else:
        print ("cannot define action.")

else:
    print ("do sth")




#---------------------------------#
### ==> calc_9.py <== ###
#---------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
```

```
    return action

def calculation(action, x, y):
    if (action == "sum"):
        print (str(x) + " + " + str(y) + " = " + str(x+y))
        return (x+y)

    elif (action == "sub"):
        print (str(x) + " - " + str(y) + " = " + str(x-y))
        return (x-y)

    elif (action == "muti"):
        print (str(x) + " * " + str(y) + " = " + str(x*y))
        return (x*y)

    elif (action == "div"):
        if (y == 0):
            print ("y cannot be 0")
            return -1
        print (str(x) + " / " + str(y) + " = " + str(x/y))
        return (x/y)

    elif (action == "factor"):
        if (x % y == 0):
            print (str(y) + " is a factor of " + str(x))
            return -1
        else:
            print (str(y) + " is not a factor of " + str(x))
            return -1

    else:
        print ("cannot define action.")
        return -1

# this is where the program starts
action = welcomeMsg()

if (action != "compare"):
    x = eval(input("First number: "))
    y = eval(input("Second number: "))

    res = calculation(action, x, y)

else:
    act1 = input("First action: ")
    x1 = eval(input("First number: "))
    y1 = eval(input("Second number: "))
    act2 = input("Second action: ")
    x2 = eval(input("First number: "))
    y2 = eval(input("Second number: "))

    res1 = calculation(act1, x1, y1)
    res2 = calculation(act2, x2, y2)



#---------------------------------#
### ==> calc_final.py <== ###
#---------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
    return action

def calculation(action, x, y):
    if (action == "sum"):
        print (str(x) + " + " + str(y) + " = " + str(x+y))
        return (x+y)
```

```
    elif (action == "sub"):
        print (str(x) + " - " + str(y) + " = " + str(x-y))
        return (x-y)

    elif (action == "muti"):
        print (str(x) + " * " + str(y) + " = " + str(x*y))
        return (x*y)

    elif (action == "div"):
        if (y == 0):
            print ("y cannot be 0")
            return -1
        print (str(x) + " / " + str(y) + " = " + str(x/y))
        return (x/y)

    elif (action == "factor"):
        if (x % y == 0):
            print (str(y) + " is a factor of " + str(x))
            return -1
        else:
            print (str(y) + " is not a factor of " + str(x))
            return -1

    else:
        print ("cannot define action.")
        return -1

###################################
# this is where the program starts#
###################################

action = welcomeMsg()

if (action != "compare"):
    x = eval(input("First number: "))
    y = eval(input("Second number: "))

    res = calculation(action, x, y)

else:
    act1 = input("First action: ")
    x1 = eval(input("First number: "))
    y1 = eval(input("Second number: "))
    act2 = input("Second action: ")
    x2 = eval(input("First number: "))
    y2 = eval(input("Second number: "))

    res1 = calculation(act1, x1, y1)
    res2 = calculation(act2, x2, y2)

    if (res1 == -1 or res2==-1):
        print ("one of your action cannot be compared!")
    else: #Q: what happens if there is no else?
        if (res1 > res2):
            print (str(res1) + " is greater than " + str(res2))
        elif (res1 < res2):
            print (str(res1) + " is smaller than " + str(res2))
        else:
            print ("both operation equals " + str(res1))


#---------------------------------#
### ==> calc_while.py <== ###
#---------------------------------#
def welcomeMsg():
    print ("Welcome to calc :)")
    print ("You can: sum, sub, muti, div, factor, compare")
    action = input("what do you want to perform? ")
```

```
    return action

def calculation(action, x, y):
    if (action == "sum"):
        print (str(x) + " + " + str(y) + " = " + str(x+y))
        return (x+y)

    elif (action == "sub"):
        print (str(x) + " - " + str(y) + " = " + str(x-y))
        return (x-y)

    elif (action == "muti"):
        print (str(x) + " * " + str(y) + " = " + str(x*y))
        return (x*y)

    elif (action == "div"):
        if (y == 0):
            print ("y cannot be 0")
            return -1
        print (str(x) + " / " + str(y) + " = " + str(x/y))
        return (x/y)

    elif (action == "factor"):
        if (x % y == 0):
            print (str(y) + " is a factor of " + str(x))
            return -1
        else:
            print (str(y) + " is not a factor of " + str(x))
            return -1

    else:
        print ("cannot define action.")
        return -1

###################################
# this is where the program starts#
###################################

while True:
    action = welcomeMsg()

    if (action != "compare"):
        x = eval(input("First number: "))
        y = eval(input("Second number: "))

        res = calculation(action, x, y)

    else:
        act1 = input("First action: ")
        x1 = eval(input("First number: "))
        y1 = eval(input("Second number: "))
        act2 = input("Second action: ")
        x2 = eval(input("First number: "))
        y2 = eval(input("Second number: "))

        res1 = calculation(act1, x1, y1)
        res2 = calculation(act2, x2, y2)

        if (res1 == -1 or res2==-1):
            print ("one of your action cannot be compared!")
        else: #Q: what happens if there is no else?
            if (res1 > res2):
                print (str(res1) + " is greater than " + str(res2))
            elif (res1 < res2):
                print (str(res1) + " is smaller than " + str(res2))
            else:
                print ("both operation equals " + str(res1))

    if (input("Continue? (Y/N): ") != 'Y'):
        break
```