EXPERIMENT 4

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A PYTHON PROGRAM TO IMPLEMENT SINGLE LARGER PERCEPTION

AIM:

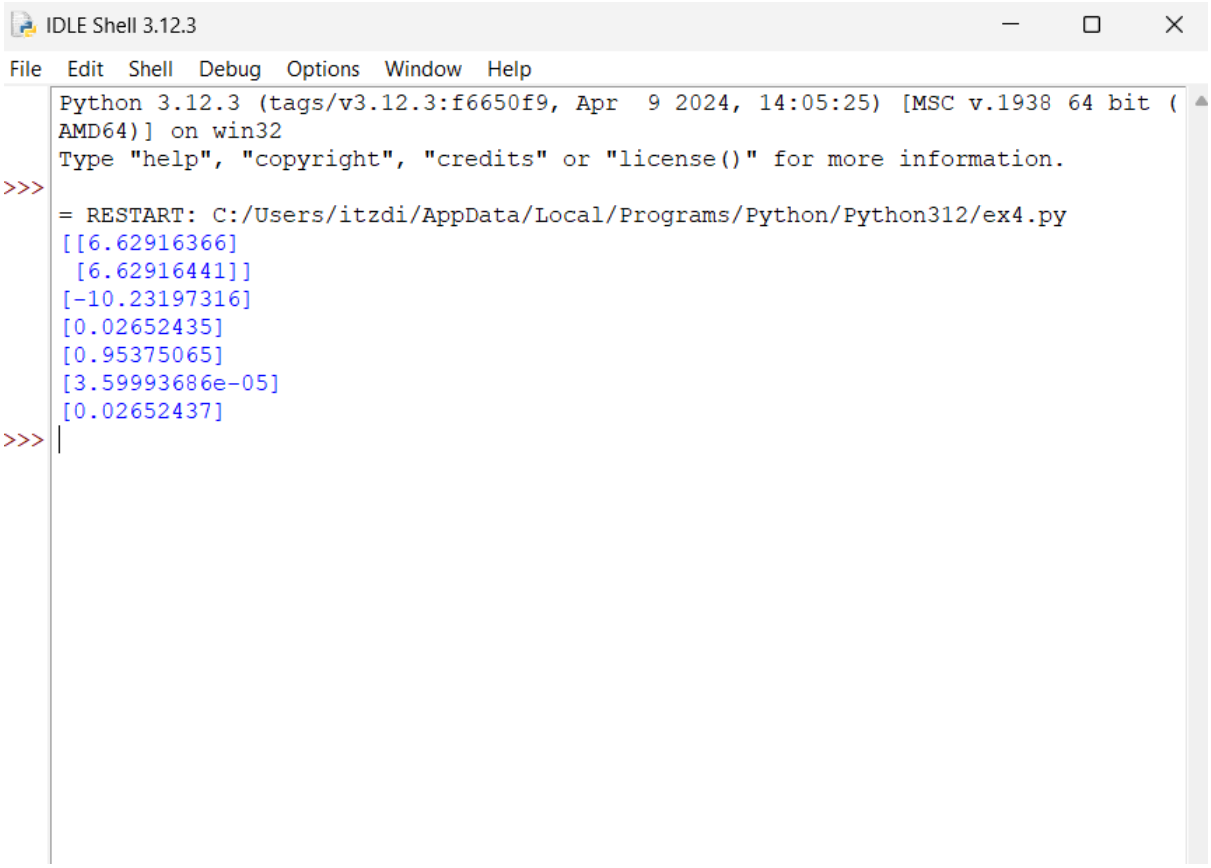
TO IMPLEMENT A PYTHON PROGRAM WITH SINGLE LARGER PERCEPTION

CODE:

```
import numpy as np
import pandas as pd
input_value=np.array ([[0,0] ,[0,1], [1,1], [1,0]])
input_value.shape
#(4,2)
output = np.array([0,0,1,0])
output = output.reshape(4,1)
output.shape
#(4,1)
weights=np.array([[0.1],[0.3]])
weights
#array ([[0.1], [0.3]])
bias = 0.2
def sigmoid_func(x):
  return 1/(1+np.exp(-x))
def der(x):
  return sigmoid_func(x)*(1 - sigmoid_func(x))
for epochs in range(15000):
  input_arr = input_value
  weighted_sum=np.dot(input_arr,weights)+bias
  first_output=sigmoid_func(weighted_sum)
  error=first_output - output
  total_error=np.square(np.subtract(first_output,output)).mean()
  first_der=error
  second_der=der(first_output)
  derivative=first_der*second_der
```

```
    t_input = input_value.T
    final_derivative=np.dot(t_input,derivative)
    weights=weights - (0.05 * final_derivative)
    for i in derivative:
        bias=bias-(0.05*i)
print(weights)
print(bias)
#[16.57299223]
#[16.57299223]]
#[-25.14783487]
pred=np.array([1,0])
result = np.dot(pred,weights)+bias
res = sigmoid_func(result)
print(res)
#[0.00018876]
pred=np.array([1,1])
result = np.dot(pred,weights)+bias
res = sigmoid_func(result)
print(res)
#[0.99966403]
pred=np.array([0,0])
result = np.dot(pred,weights)+bias
res = sigmoid_func(result)
print(res)
#[1.19793729e-11]
pred=np.array([0,1])
result = np.dot(pred,weights)+bias
res = sigmoid_func(result)
print(res)
#[0.00063036]
```

OUTPUT:



RESULT:

A PYTHON PROGRAM TO IMPLEMENT SINGLE LARGER PERCEPTION AS BEEN ANALYSED AND VERIFIED