

## EXPERIMENT – 7

### PROGRAM:

```
import math

print("Enter number of samples:")
n = int(input())

print("Enter number of features:")
m = int(input())

print("Enter training data (features and target 0/1):")
X = []
y = []

for _ in range(n):
    data = list(map(float, input().split()))
    X.append(data[:-1])
    y.append(data[-1])

learning_rate = 0.01
epochs = 1000
weights = [0.0] * m
bias = 0.0

def sigmoid(x):
    return 1 / (1 + math.exp(-x))

for _ in range(epochs):
    for i in range(n):
        z = bias + sum(weights[j] * X[i][j] for j in range(m))
```

```
prediction = sigmoid(z)
```

```
error = y[i] - prediction
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bias += learning_rate * error
```

```
for j in range(m):
```

```
    weights[j] += learning_rate * error * X[i][j]
```

```
print("Enter test sample features:")
```

```
test = list(map(float, input().split()))
```

```
z = bias + sum(weights[j] * test[j] for j in range(m))
```

```
prediction = 1 if sigmoid(z) > 0.5 else 0
```

```
print("Prediction:", prediction)
```