**A component is defective or not based on Voltage and Current**

**U**

**sing**

**Logistic Regression**

**AIM:**

To

classify a component is defective or not based on Voltage and Current

**PROGRAM:**

import numpy as np

from sklearn.linear\_model import LogisticRegression

from sklearn.model\_selection import train\_test\_split

from sklearn.metrics import accuracy\_score

np.random.seed(0)

defective\_data = np.random.normal(loc=[5, 2], scale=[1, 0.5], size=(100, 2)) # Defective components

normal\_data = np.random.normal(loc=[8, 4], scale=[1, 0.5], size=(100, 2)) # Normal components

# Concatenate the data and create labels

X = np.concatenate([defective\_data, normal\_data])

y = np.concatenate([np.zeros(100), np.ones(100)]) # Defective: 0, Normal: 1

# Split the dataset into training and testing sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.3, random\_state=42)

# Create and train the logistic regression model

clf = LogisticRegression()

clf.fit(X\_train, y\_train)

# Make predictions on the test set

y\_pred = clf.predict(X\_test)

# Calculate accuracy

accuracy

accuracy\_score(y\_test, y\_pred

=

)

print(f'Accuracy: {accuracy:.2f}')

**EX. NO**

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**DATE :**

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**OUTPUT:**

Accuracy: 1.00

**RESULT:**

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the component is classifi

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using

Logistic Regression.

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