

# Program 8 : Write a program to demonstrate Multiple Linear Regression

In [2]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.datasets import make_regression
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error

# Generate random regression dataset with multiple features
X, y = make_regression(n_samples=100, n_features=3, noise=10, random_state=42)

# Split the dataset into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_stat

# Instantiate and fit the multiple linear regression model
model = LinearRegression()
model.fit(X_train, y_train)

# Make predictions on the test data
y_pred = model.predict(X_test)

# Calculate and print the Mean Squared Error
mse = mean_squared_error(y_test, y_pred)
print("Mean Squared Error:", mse)

# Plot actual values
plt.scatter(range(len(y_test)), y_test, label='Actual values')
plt.xlabel("Index")
plt.ylabel("Actual values")
plt.title("Actual Values")
plt.legend()
plt.show()

# Plot predicted values
plt.scatter(range(len(y_test)), y_pred, color='red', label='Predicted values')
plt.xlabel("Index")
plt.ylabel("Predicted values")
plt.title("Predicted Values")
plt.legend()
plt.show()
```

Mean Squared Error: 123.84680824798083

