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**ANN (SL-II)**

**Practical 3  
Problem Statement:** Write a Python Program using Perceptron Neural Network to recognize even and odd numbers. Given numbers are in ASCII from 0 to 9

**Code:**

import numpy as np

j = int(input("Enter a Number (0-9): "))

step\_function = lambda x: 1 if x >= 0 else 0

training\_data = [

{'input': [1, 1, 0, 0, 0, 0], 'label': 1},

{'input': [1, 1, 0, 0, 0, 1], 'label': 0},

{'input': [1, 1, 0, 0, 1, 0], 'label': 1},

{'input': [1, 1, 0, 1, 1, 1], 'label': 0},

{'input': [1, 1, 0, 1, 0, 0], 'label': 1},

{'input': [1, 1, 0, 1, 0, 1], 'label': 0},

{'input': [1, 1, 0, 1, 1, 0], 'label': 1},

{'input': [1, 1, 0, 1, 1, 1], 'label': 0},

{'input': [1, 1, 1, 0, 0, 0], 'label': 1},

{'input': [1, 1, 1, 0, 0, 1], 'label': 0},

]

weights = np.array([0, 0, 0, 0, 0, 1])

for data in training\_data:

input = np.array(data['input'])

label = data['label']

output = step\_function(np.dot(input, weights))

error = label - output

weights += input \* error

input = np.array([int(x) for x in list('{0:06b}'.format(j))])

output = "odd" if step\_function(np.dot(input, weights)) == 0 else "even"

print(j, " is ", output)

**Output:**

