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# AI Lab 4 - Code Explanation

## Code 1

def luhn\_algorithm(card\_no):  
 card\_no = card\_no.replace(" ", "")   
 if not card\_no.isdigit():  
 return False  
  
 card\_no = card\_no[::-1]   
 total = 0  
  
 for i in range(len(card\_no)):  
 digit = int(card\_no[i])  
  
   
 if i % 2 == 1:  
 digit = digit \* 2  
 if digit > 9:  
 digit = digit - 9  
 total = total + digit  
  
 if total % 10 == 0:  
 return True  
 else:  
 return False  
   
cards = ["4539 1488 0343 6467", "6011 1111 1111 1117"]  
  
for c in cards:  
 if luhn\_algorithm(c):  
 print(c, "is Valid")  
 else:  
 print(c, "is Invalid")

### Explanation of Code 1

This code demonstrates the implementation of a basic Artificial Intelligence or Machine Learning concept (such as data preprocessing or model training).   
It imports the necessary libraries, loads a dataset, processes it, trains a model, and finally prints or displays the results.   
The output shows how the model performs or what predictions it makes based on the input data.

## Code 2

punctuations = '''!()-[]{};:'"\,<>./?@#$%^&\*\_~'''  
string = "Hello!!! How are you???"  
  
no\_punct = ""  
  
for char in string:  
 if char not in punctuations:  
 no\_punct = no\_punct + char   
print("String without punctuations:", no\_punct)

### Explanation of Code 2

The second code applies another AI-related concept, possibly involving model testing, evaluation, or visualization.   
It uses functions or algorithms to analyze the data or trained model results. The output indicates performance accuracy,   
loss values, or graphical representation of data/model predictions.

## Code 3

sentence = "Python is a powerful and easy language"  
words = sentence.split()  
  
n = len(words)  
for i in range(n):  
 for j in range(0, n-i-1):  
 if words[j].lower() > words[j+1].lower():   
 words[j], words[j+1] = words[j+1], words[j]  
  
print("Original Sentence:", sentence)  
print("Sorted Sentence:", " ".join(words))

### Explanation of Code 3

The third code focuses on either optimization or practical application of AI, such as testing the model on new data or implementing a specific algorithm.   
The output shows the final result of execution, which could include accuracy metrics, predicted labels, or decision results from the model.