“””This script allows the user to verify whether the given IP Address is a valid IPv4 or IPv6 or not”””

This script requires re module for carrying out the necessary tasks. Do I need to install re Python?NO, Python already comes with builtin re module for regular expressions. There is no need to further install anything.We only need to import it in our script.”””

**import re**

“””This is the check\_ip function

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Parameter

IP : str

The IP address which needs to be verified.

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Returns

Whether the given IP address is a valid IPv4 or IPv6 or whether it is neither neither IPv4 or IPv6, in this case returns Invalid.”””

**def check\_ip(IP):**

**“””**

**IPv4**

To match IPv4 address format, you need to check for numbers [0-9]{1,3} three times {3} separated by periods \. and ending with another number.

^(?:[0-9]{1,3}\.){3}[0-9]{1,3}$

**IPv6**

IPv6 addresses take the form of 8 16-bit hex words delimited with the colon (:) character. In this case, we check for 7 words followed by colons, followed by one that is not. If a word has leading zeroes, they *may* be truncated, meaning each word may contain between 1 and 4 hex digits.

^(?:[0-9a-fA-F]{1,4}:){7}[0-9a-fA-F]{1,4}$ “””

**# Regex expression for validating IPv4**

**regex\_ipv4 = "(([0-9]|[1-9][0-9]|1[0-9][0-9]|"\**

**"2[0-4][0-9]|25[0-5])\\.){3}"\**

**"([0-9]|[1-9][0-9]|1[0-9][0-9]|"\**

**"2[0-4][0-9]|25[0-5])"**

**# Regex expression for validating IPv6**

**regex\_ipv6 = "((([0-9a-fA-F]){1,4})\\:){7}"\**

**"([0-9a-fA-F]){1,4}"**

**“””**We can combine a regular expression pattern into pattern objects, which can be used for pattern matching. It also helps to search a pattern again without rewriting it.So here we are using the compile function of re module.”””

**reg1 = re.compile(regex\_ipv4)**

**reg2 = re.compile(regex\_ipv6)**

**“””checking whether the given IP address matches the criteria of a valid IP Address or not”””**

**#Check whether it is a valid IPv4 addresses**

**if (re.search(reg1, IP)):**

**return "Valid IPv4"**

**#Check Whether it is a valid IPv6 addresses**

**elif (re.search(reg2, IP)):**

**return "Valid IPv6"**

**# If the given IP is invalid**

**return "Invalid IP"**

“””The python Interpreter is running our script as the main program, so , it sets the special \_\_name\_\_ variable to have a value **“\_\_main\_\_”**. Here our interpreter finds the \_\_name\_\_ is \_\_main\_\_ so the flow of control proceeds”””

**#Driver code**

**if \_\_name\_\_ == "\_\_main\_\_":**

**print("Enter the IP Address")**

**ip\_address = input()**

**print(check\_ip(ip\_address))**