Python Programming Basics

Assignment Questions

1. Create a matrix with three rows A, B and C and four columns with names Q, W, E and R. Fill the matrix with any numbers between 1 and 10.

2. x = 24, y =”Hello World”, z = 93.65.
   Identify the class of x, y and z and convert all three into factor.

3. q = 65.9836
   a) Find square root of q and round it up to 3 digits.
   b) Check if log to the base 10 of q is less than 2.

4. x = c(“Intelligence”, “Knowledge”, “Wisdom”, “Comprehension”)
   y = “I am”
   z = “intelligent”
   a) Find first 4 letters of each word in x.
   b) Combine y and z to form a sentence “I am intelligent”
   c) Convert all the words in x to upper case.

5. a = c(3,4,14,17,3,98,66,85,44)
   Print “Yes” if the numbers in ‘a’ are divisible by 3 and “No” if they are not divisible by 3 using **ifelse()**.

6. b = c(36,3,5,19,2,16,18,41,35,28,30,31)
   List all the numbers less than 30 in b using **for loop**.

7. Date = “01/06/2018”
   a) Convert Date into standard date format (yyyy-mm-dd) and name it as Date_new.
   b) Extract **day of week** and **month** from Date_new.
   c) Find the difference in the current system date and Date_new.

Assignment Solutions

#Q1. Create a matrix with three rows A, B and C and four columns with names Q, W, E and R. Fill the matrix with any numbers between 1 and 10.

##A.

```
import pandas as pd

import numpy as np

x = pd.DataFrame(np.array([1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 1, 2]).reshape(3,4),
index=["A","B","C"], columns=["Q","W","E","R"])

x
```

#Q2. Identify the class of x, y and z and convert all three into factor.

##A.

```
x=24
y="Hello World"
z=93.65

type(x)
type(y)
type(z)

x=pd.Categorical(x)
y=pd.Categorical(y)
z=pd.Categorical(z)



#Q3A Find square root of q and round it up to 3 digits.
##A.

import math
q=65.9836
round(math.sqrt(q),3)



#Q3B Check if log to the base 10 of q is less than 2.
##A.

math.log10(q) < 2



#4A Find first 4 letters of each word in x
##A.

x = ["Intelligence", "Knowledge", "Wisdom", "Comprehension"]
y = "I am"
z = "intelligent"
[sub[0:4] for sub in x]
```

#4B Combine y and z to form a sentence "I am intelligent"

##A.

```
y+" "+z
```

#4C Convert all the words in x to upper case

##A.

```
[w.upper() for w in x]
```

#5 Print "Yes" if the numbers in 'a' are divisible by 3 and "No" if they are not divisible by 3 using if else conditions

##A.

```
a = [3,4,14,17,3,98,66,85,44]
print([("YES" if x%3 == 0 else "NO") for x in a])
```

#6 List all the numbers less than 30 in b using for loop

##A.

```
b = [36,3,5,19,2,16,18,21,35,28,30,31]
for i in b:
    if i<30:
        print(i)
```

#6A Convert Date into date format and name it as Date_new

##A.

```
from datetime import datetime

Date = "01/06/18"
```

```
Date_new = datetime.strftime(datetime.strptime(Date, '%m/%d/%y'),'%Y/%m/%d')
```

#6B Extract month and day of week from Date_new

##A.

```
datetime.strptime(Date_new, '%Y/%m/%d').strftime('%A')
```

```
datetime.strptime(Date_new, '%Y/%m/%d').strftime('%B')
```

#6C Find the difference in the current system date and Date_new

##A.

```
from datetime import date
date.today()-datetime.date(datetime.strptime(Date_new,'%Y/%m/%d'))
```