NPTEL - PYTHON FOR DATA SCIENCE

ASSIGNMENT 2 - SOLUTION

1. **The correct command(s) to install Jupyter Notebook through command prompt is/are__**

   Solution: a), b), d)

   pip install notebook, pip install jupyter and pip install jupyter notebook commands are used to install the Jupyter Notebook

1. **In Windows operating system, the command to clear the screen in command prompt is__**

   Solution: b) cls

   The command clear works for the linux system, whereas cls works for the Windows opearting system

2. **In Jupyter Notebook, the command to insert a new cell above the current cell is__**

   Solution: c) a

   In command mode, the command 'a' inserts a new cell above the current cell

3. **The Markdown cells in Jupyter Notebook allows you to add maximum of ___ hash (#) signs followed by a space in order to add section headers**

   Solution: b) 6

   The section headers can be added using the hash (#) sign along with a space between the # and the header text. Maximum of 6 # signs can be added to create a section header.

4. **Which of the following is /are container(s) for sequential data?**

   Answer: Lists and strings are containers for sequential data. Whereas dictionary and sets are containers for non sequential data

5. **Which of the following statements is/are TRUE with respect to lists in Python?**

   Solution: Lists are mutable sequence data type. Lists can contain elements with different data types. A list is created by placing all the elements inside square brackets [ ], separated by commas. Each element in the list has its own position and index

6. **Which of the following code is appropriate to create an array of float datatype (min 8 bytes)?**

In [1]:

```
from array import *
arrsample=array('d',[2.2,2,5,6])
```

In [2]:

```
print(arrsample)
```

```
array('d', [2.2, 2.0, 5.0, 6.0])
```

1. **Match the following column A (Data type) with Column B (Syntax)**

   Data type -------- Syntax

   I. List -------- A. ( )

   II. Dictionary -------- B. range( )

   III. Tuple -------- C. [ ]

   IV. Range -------- D. { }

   Solution: c)

   List - []; Dictionary - { }; Tuple - ( ), Range - range( )

2. **Create a dictionary “movie” with the following movie details:**

   Title: Pain and glory

   Director: Pedro Almodovar

   Year: 2019

   Rating:8.0

   The correct command to extract when the movie was first released

In [3]:

```
movie_A={"Title": "Pain and glory",
"Director": "Pedro Almodovar",
"Year": "2019",
"Rating": 8.0}
```

In [4]:

```
movie_A
```

Out[4]:

```
{'Title': 'Pain and glory',
 'Director': 'Pedro Almodovar',
 'Year': '2019',
 'Rating': 8.0}
```

In [5]:

```
movie_A[2019]
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
<ipython-input-5-1ea282c64bb0> in <module>
----> 1 movie_A[2019]

KeyError: 2019
```

In [6]:

```
movie_A[2]
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
<ipython-input-6-96183d5e2c0f> in <module>
----> 1 movie_A[2]

KeyError: 2
```

In [7]:

```
movie_A['Year']
```

Out[7]:

```
'2019'
```

In [8]:

```
movie_A[3]
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
<ipython-input-8-8b86b156fd6c> in <module>
----> 1 movie_A[3]

KeyError: 3
```

Create a dictionary 'employee_record' with the following details and answer the questions from 10 to 11

Salary: 10000; Age: 25; Name: Ram; Department: Sales

In [9]:

```
employee_record = {"Salary": 10000, "Age": 25, "Name": "Ram", "Department": "Sales"}
print(employee_record)
```

```
{'Salary': 10000, 'Age': 25, 'Name': 'Ram', 'Department': 'Sales'}
```

1. **The command to return the age of the employee__**

In [10]:

```
employee_record[1]
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call las
t)
<ipython-input-10-a60b9d49a7f9> in <module>
----> 1 employee_record[1]

KeyError: 1
```

In [11]:

```
employee_record[25]
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call las
t)
<ipython-input-11-0ac3b54cb346> in <module>
----> 1 employee_record[25]

KeyError: 25
```

In [12]:

```
print(employee_record["Age"])
```

```
25
```

In [13]:

```
employee_record[2]
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call las
t)
<ipython-input-13-78b166fc57b4> in <module>
----> 1 employee_record[2]

KeyError: 2
```

1. **The command to modify the salary of the employee as 15000: -**

   Solution: d)

In [14]:

```
employee_record[0] = 15000
print(employee_record)
```

```
{'Salary': 10000, 'Age': 25, 'Name': 'Ram', 'Department': 'Sales', 0: 1500
0}
```

In [15]:

```
employee_record["Salary"] = 15000
print(employee_record)
```

```
{'Salary': 15000, 'Age': 25, 'Name': 'Ram', 'Department': 'Sales', 0: 1500
0}
```

In [16]:

```
employee_record[1] = 15000
print(employee_record)
```

```
{'Salary': 15000, 'Age': 25, 'Name': 'Ram', 'Department': 'Sales', 0: 1500
0, 1: 15000}
```

In [17]:

```
employee_record.update("Salary"= 15000)
```

```
  File "<ipython-input-17-e3c5ed32fc77>", line 1
    employee_record.update("Salary"= 15000)
                           ^
SyntaxError: expression cannot contain assignment, perhaps you meant "=="?
```

12 **In Python ,indexing starts from**

Solution: c)
0 to n-1

1. **Create a sequence of numbers from 5 to 20 and increment by 3. What is the index of the value 11?**

In [18]:

```
sample = range(5,21,3)
```

In [19]:

```
for x in sample: print(x)
```

```
5
8
11
14
17
20
```

In [20]:

```
sample.index(11)
```

Out[20]:

```
2
```

1. **Create a set, "Age" with the set of values 20,30,40,50,60. The index value of the elemment 50 is**

   Solution: d)

   Since sets are unordered the items has no index.

In [21]:

```
Age={20,30,40,50,60}
```

In [22]:

```
Age[50]
```

```
---------------------------------------------------------------------------
-
TypeError                                 Traceback (most recent call las
t)
<ipython-input-22-7b08823d2756> in <module>
----> 1 Age[50]

TypeError: 'set' object is not subscriptable
```

1. **State whether the below statement is True or False**

   Numpy Arrays support both one dimensional and multi-dimensional

   Solution: a) True

   Numpy arrays supports both one dimensional and multi dimensional array

1. **Create a string called sample with the value as “Mathematics”. Which of the following code(s) is/are appropriate to slice the elements “ics”?**

   Solution: a) and c)

In [23]:

```
sample = "Mathematics"
```

In [24]:

```
sample[slice(8,12,1)]
```

Out[24]:

```
'ics'
```

In [25]:

```
sample[slice(1,12,1)]
```

Out[25]:

```
'athematics'
```

In [26]:

```
sample[slice(8,12)]
```

Out[26]:

```
'ics'
```

In [27]:

```
sample[slice(12,8,1)]
```

Out[27]:

```
''
```

In [28]:

```
sample[8:12]
```

Out[28]:

```
'ics'
```

1. **What will be the output of the following code?**

   Solution: c) A tuple is a collection which is ordered and immutable.

In [29]:

```
age=(20,30,40,50)
Employee_age=age
Employee_age[1]=50
Employee_age
```

```
---------------------------------------------------------------------------
-
TypeError                                 Traceback (most recent call las
t)
<ipython-input-29-dac49e012b3d> in <module>
      1 age=(20,30,40,50)
      2 Employee_age=age
----> 3 Employee_age[1]=50
      4 Employee_age

TypeError: 'tuple' object does not support item assignment
```

1. **State whether the below statement is True or False**

   I.Elements of one list can be concatenated to another list using + operator

   II.Array can be appended to a list

   Solution: a)

   I - True , II - True

   Example:

In [30]:

```
l1 = [1, 2, 3, 4, 'Python', 28.5]


from array import *
a = array('i', [10, 20, 30, 40])

l1.append(a)
print(l1)
```

```
[1, 2, 3, 4, 'Python', 28.5, array('i', [10, 20, 30, 40])]
```

In [31]:

```
l2 = [10, 20, 30, 40, 'Data', 5.5, 6.8]

import numpy as np
na = np.array([50, 60, 70, 80])

l2.append(na)
l2
```

Out[31]:

```
[10, 20, 30, 40, 'Data', 5.5, 6.8, array([50, 60, 70, 80])]
```

1. **Match the following**

I. capitalize( ).....A. returns the number of occurrences of the sub string in the given string

II. count( ).....B. Identify the index of the given letter in the string

III. find( ).....C. Capitalize the first character of each word

IV. title( ).....D. Returns the string with the first character capitalized and rest are lower

Answer:

I – D, II – A, III – B, IV – C

capitalize( ) - Returns a copy of the string with only its first character capitalized

count( ) - Returns the number of occurrences of a sub string in the given string

find( ) - Finds the first occurrence of the specified value

title( )- Returns a copy of the string in which first characters of all the words are capitalized

1. **Which of the following Python containers does not support clear() method?**

   Solution: c)

   Tuple

In [32]:

```
x = (7, 8, 9)
x.clear()
```

```
---------------------------------------------------------------------------
-
AttributeError                            Traceback (most recent call las
t)
<ipython-input-32-ac618c42bcdb> in <module>
      1 x = (7, 8, 9)
----> 2 x.clear()

AttributeError: 'tuple' object has no attribute 'clear'
```

1. **Given the two sets,**

   A= {21,2,67,85,96,63,58}

   B={58,63,67,12,69,96}

   The command to return a set with elements common to A & B is__

   Solution: a) and b)

In [33]:

```
A = {21,2,67,85,96,63,58}
B ={58,63,67,12,69,96}

print(A.intersection(B))
print(A&B)
print(A^B)
print(AnB)
```

```
{96, 58, 67, 63}
{96, 58, 67, 63}
{2, 69, 12, 85, 21}

---------------------------------------------------------------------------
-
NameError                                 Traceback (most recent call las
t)
<ipython-input-33-97770139cc9a> in <module>
      5 print(A&B)
      6 print(A^B)
----> 7 print(AnB)

NameError: name 'AnB' is not defined
```

1. **Which of the following package is used to create arrays in Python?**

   Solution: c) Numpy

1. **The command used to give a new shape to an array without changing its data is**

   Solution: d) numpy.reshape()

1. **Create an array 'a' with values 1 to 9. What is the command to extract the elements in the following sequence - array([7, 4, 1])?**

   Solution: b)

In [34]:

```
import numpy
a = numpy.arange(0,9); print(a); a[6::-3]
```

```
[0 1 2 3 4 5 6 7 8]
```

Out[34]:

```
array([6, 3, 0])
```

In [35]:

```
a = numpy.arange(1,10); print(a); a[6::-3]
```

```
[1 2 3 4 5 6 7 8 9]
```

Out[35]:

```
array([7, 4, 1])
```

In [36]:

```
a = numpy.arange(1,10); print(a); a[6::3]
```

```
[1 2 3 4 5 6 7 8 9]
```

Out[36]:

```
array([7])
```

In [37]:

```
a = numpy.arange(0,9); print(a); a[6::3]
```

```
[0 1 2 3 4 5 6 7 8]
```

Out[37]:

```
array([6])
```

1. **The method used to increase the length of the list by number of elements in its argument.**

   Solution: c) Extend method is used to increase the length of the list by number of elements in its argument

In [38]:

```
list_sample = [1, 2, 3, 'a']
print(list_sample)
```

```
[1, 2, 3, 'a']
```

In [39]:

```
list_sample.extend('extend')
print(list_sample)
```

```
[1, 2, 3, 'a', 'e', 'x', 't', 'e', 'n', 'd']
```