ASSIGNMENT 1 (PYTHON FOR DATA SCIENCE)

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1) What will be the output of the following code snippet?

```
greetings = ”Namaste”
greetings_1 = float(greetings)
print(type(greetings_1))
```

options:
a) int
b) float
c) str
d) code will throw an error

Ans: code will throw an error

2) Let *t1* = (1, 2, “tuple”, 4) and *t2* = (5, 6, 7). Which of the following will not give any error after the execution?

Options:

a)t1.append(5)

b) x = t2[t1[1]]

c) t3 = t1 + t2

d)t3 = (t1, t2)

e) t3 = (list(t1), list(t2))

Ans: options: b,c,d,e

Question (5 Marks):

1) Explain the rules for naming variables in Python with suitable examples.

Answer:

1) **Start with a letter or underscore**

- ✅ Valid: name, _value
- ❌ Invalid: 1value

2) **Can contain letters, numbers, and underscores**

- ✅ Valid: student_1, total_marks
- ❌ Invalid: student#, marks@

3) **Case-sensitive**

- Age and age are treated as two different variables.

4) **Cannot use Python keywords**

- ❌ Invalid: for, class, while

5) **Should be meaningful** (good practice, though not enforced)

- ✅ Prefer total_salary instead of ts for readability.

2) What will be the output of the following code snippet?

```
import numpy as np

a = np.array([[1, 2], [3, 4]])

b = np.array([[5, 6], [7, 8]])

c = np.dot(a, b)

print(c)
```

Answer:

1) **Initialization of arrays:**

a = [[1, 2], [3, 4]] → a 2×2 matrix.

b = [[5, 6], [7, 8]] → another 2×2 matrix.

2) **Operation performed:**

The function np.dot(a, b) performs **matrix multiplication** between a and b.

3) **Matrix multiplication rule:**

For two matrices A and B, the element at position (i, j) in the product matrix is:

$c[i][j]=a[i][0]*b[0][j]+a[i][1]*b[1][j]$

4) **Step-by-step calculation:**

First row, first column:
$1*5+2*7=5+14=19$1*5 + 2*7 = 5 + 14 = 19$1*5+2*7=5+14=19$

First row, second column:
$1*6+2*8=6+16=22$1*6 + 2*8 = 6 + 16 = 22$1*6+2*8=6+16=22$

Second row, first column:
$3*5+4*7=15+28=43$3*5 + 4*7 = 15 + 28 = 43$3*5+4*7=15+28=43$

Second row, second column:
$3*6+4*8=18+32=50$3*6 + 4*8 = 18 + 32 = 50$3*6+4*8=18+32=50$

5) **Final Result:**

The output of the code will be:

```
[[19 22]

[43 50]]
```