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Python for Data Science

Assignment 1

I. Multiple Choose Questions (1 Mark)

1. What is the output of the following code?

```
x = [1, 2, 3]
print(x * 2)
```

A. [2, 4, 6]

B. [1, 2, 3, 1, 2, 3]

C. Error

D. [1, 2, 3, 2, 4, 6]

2. What will be the output?

```
a = [1, 2, 3]
b = a
a.append(4)
print(b)
```

A. [1, 2, 3]

B. [1, 2, 3, 4]

C. Error

D. None

II. Descriptive Questions

1. Explain mutable and immutable objects in Python with examples.

Answer:

- Mutable objects can be changed after creation (e.g., list, dict, set).

```
x = [1, 2, 3]   # mutable
x.append(4)     # changes original list
```

- Immutable objects cannot be changed after creation (e.g., tuple, str, int).

```
y = (1, 2, 3)   # immutable
# y[0] = 10 → Error
```

2. What is the difference between is and == in Python?

Answer:

- == checks **value equality** — whether two objects have the same content.
- is checks **identity** — whether two variables point to the same object in memory.

Example:

```
a = [1,2,3]
b = [1,2,3]
print(a == b)  # True  (values equal)
print(a is b)  # False (different objects)
```