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Python for Data Science Assignment 1

MCQ Questions:

Question 1:
Which of the following variable names is VALID in Python?

A) 123var
B) my-variable
C) class
D) data_value

Answer: D) data_value

Question 2:
What is the output of the following code?

a = 7

b = 3

c = not (a < 5) and (b == 3) or (a == 10)

print(c)
A) True
B) False
C) None
D) 1

Answer: A) True

Descriptive Questions:

Question 1:

Given the list:

nums = [15, 8, 22, 8, 5, 30, 15]

(a) Write the output of the following operations:
i) nums[1:5]
ii) nums[::-1]
iii) nums.count(15)

(b) Write the code to:
i) Append the value 50 to the list.
ii) Remove the first occurrence of 8.
iii) Find the index of 30.

(c) Create a new list from nums that contains only the even numbers.

Answer:

(a)
i) [8, 22, 8, 5]
ii) [15, 30, 5, 8, 22, 8, 15]
iii) 2

(b)
i) nums.append(50)

Output: [15, 8, 22, 8, 5, 30, 15, 50]
ii) nums.remove(8)

Output: [15, 22, 8, 5, 30, 15, 50]
iii) nums.index(30)

Output: 4

(c)

```
evens = []

for n in nums:

    if n % 2 == 0:

        evens.append(n)

print(evens)
```

Output: [8, 22, 8, 30]

Question 2:

(a) Mention two differences between dynamic typing and static typing along with one example for each.

(b) There are two variables x = 25 and y = 8. Write the code to perform the following operations and also give the outputs.
i) Add x and y using an assignment operator.
ii) Check if x is greater than or equal to y.
iii) Evaluate (x > 10) and (y < 15).

(c) Use membership operators to check whether the value 12 is present in the list [5, 10, 12, 18, 20]. Write the code and the output.

Answer:

(a)

Dynamic Typing:

- Type of variable is decided at runtime.
- More flexible but errors may occur while running the program.

Example:

x = 10 # initially an integer

print(type(x)) # <class 'int'>

x = “hello” # now the same variable becomes a string

print(type(x)) # <class 'str'>

Static Typing:

- Type of variable is decided at compile time.
- Less flexible but errors can be found early on.

Example:

x: int = 10 # x is declared as an integer

print(x)

x = “hello” # this will give a type error

(b)

i)

```
x = 25
y = 8
x += y
print(x)
```

Output: 33

ii)

```
print(x >= y)
```

Output: True

iii)

```
print((x > 10) and (y < 15))
```

Output: True

(c)

```
nums = [5, 10, 12, 18, 20]
print(12 in nums)
```

Output: True

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