

Ques: Given following Python class definitions show C3 linearization.

```
class Type(type):
    def __repr__(cls):
        return cls.__name__

class O(object, metaclass=Type):
    pass

class X(O):
    pass

class Y(O):
    pass

class A(X, Y):
    pass

class B(Y):
    pass

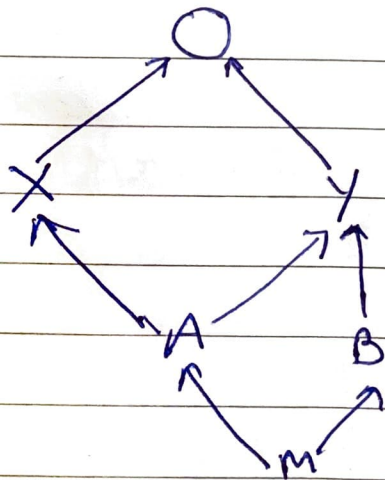
class M(B, A):
    pass
```

Ans:

Step: 1.

class	O		
class	X	extends	O
class	Y	extends	O
class	A	extends	X, Y
class	B	extends	Y
class	M	extends	B, A

Step: 2.





Step: 3. $L(O) := [O]$

$$\begin{aligned} L(X) &:= \cancel{[X]} + \text{merge}(L(O), [O]) \\ &= \cancel{[X]} + \text{merge}([O], [O]) \\ &= \cancel{[X, O]} \end{aligned}$$

$$\begin{aligned} L(Y) &:= [Y] + \text{merge}(L(O), [O]) \\ &= [Y] + \text{merge}([O], [O]) \\ &= [Y, O] \end{aligned}$$

$$\begin{aligned} L(A) &= [A] + \text{merge}(L(X), L(Y), [X, Y]) \\ &= [A] + \text{merge}([X, O], [Y, O], [X, Y]) \\ &= [A] + \text{merge}([X, O], [Y, O], [X, Y]) \\ &= [A, X] + \text{merge}([O], [Y, O], [Y]) \\ &= [A, X, Y] + \text{merge}([O], [O], [O]) \\ &= [A, X, Y, O] \end{aligned}$$

$$\begin{aligned} L(B) &= [B] + \text{merge}(L(Y), [Y]) \\ &= [B] + \text{merge}([Y, O], [Y, O]) \\ &= [B, Y] + \text{merge}([O], [O]) \\ &= [B, Y, O] \end{aligned}$$

$$\begin{aligned} L(M) &= [M] + \text{merge}(L(B), L(A), [B, A]) \\ &= [M] + \text{merge}([B, Y, O], [A, X, Y, O], [B, A]) \\ &= [M, B] + \text{merge}([Y, O], [A, X, Y, O], [A]) \\ &= \cancel{[M, B]} + \text{merge}([Y, O], [A, X, Y, O], [A]) \\ &= [M, B, A] + \text{merge}([Y, O], [X, Y, O], [O]) \\ &= [M, B, A, X] + \text{merge}([O], [\cancel{X}, O], [O]) \\ &= [M, B, A, X, Y] + \text{merge}([O], [O], [O]) \\ &= [M, B, A, X, Y, O] \end{aligned}$$

$$= [M, B, A, X, Y, O] \text{ Ans}$$

$$= [M, B, A, X, Y, O] \text{ Ans}$$