**Python OOP Practice Questions**

Instance Method, Class Method, Static Method

**Instance Method Questions**

1. 1. What is an instance method in Python? (Explain with a simple example.)

 Instance method is a function defined inside a class, it operates on instance i.e the object of the class.

Here self is used as first parameter

class name:

     def welcome(self):

         print(“Hi,Abhi”)

a=name()

a.welcome()

o/p: Hi,Abhi

1. 2. Write a class `Car` with an instance method `start\_engine` that prints "Engine started."

class car:

     def start\_engine(self):

        print("Engine Started")

a=car()

a.start\_engine()

o/p: Engine Started

1. 3. How do you call an instance method — with the class name or with the object? (Give example.)

We call instance method with the object

class person:

    def greet(self):

        print("Hello,Abhi!")

d = person()

d.greet()

o/p: Hello,Abhi!

1. 4. Create a class `Circle` that takes radius in `\_\_init\_\_` and has an instance method `area()` to calculate the area of the circle.

import math

class circle:

    def \_\_init\_\_(self,radius):

        self.radius=radius

    def area(self):

        return math.pi\*self.radius \*\*2

c=circle(8)

print("The area is:",c.area())

o/p:The area is: 201.06192982974676

1. 5. What will happen if you try to call an instance method without creating an object?

class A:

    def greet(self):

        print("Hello")

A.greet() #no object created

o/p: TypeError: A.show() missing 1 required positional argument: 'self'

**Class Method Questions**

1. 6. What is a class method? How is it different from an instance method? (Answer with example.)

We use @classmethod decorator to declare the class.

It uses cls.

This method it works with the class only and not with it’s instance or object.

class School:

    school\_name = "HOLY ANGELS HIGH SCHOOL"

    @classmethod

    def name(cls):

        print("School Name is:", cls.school\_name)

School.name()

o/p: School Name is: HOLY ANGELS HIGH SCHOOL

1. 7. Write a class `Employee` with a class variable `company = "TechCorp"` and a class method `get\_company\_name()`.

class Employee:

    company="TechCorp"

    @classmethod

    def get\_company\_name(cls):

        return cls.company

print(Employee.get\_company\_name())

o/p:  TechCorp

1. 8. How do you define a class method? (Which decorator is used?)

We define a class method using the @classmethod decorator.

1. 9. Create a class `Counter` with a class variable `count` and a class method `increment()` that increases the count by 1.

class Counter:

    count=0

    @classmethod

    def increment(cls):

        cls.count +=1

        print("count is:",cls.count)

Counter.increment()

Counter.increment()

Counter.increment()

o/p:

count is: 1

count is: 2

count is: 3

**Static Method Questions**

1. 10. What is a static method in Python? (Explain with example.)

Static method is the one which does’nt use cls or self, we used it when program logic does not depend on object/instance of class. Uses @staticmethod decorator to define a static method

class cal:

   @staticmethod

   def add(a,b):

       return a+b

print(cal.add(5, 4))

o/p: 9

1. 11. Write a static method `is\_even(num)` inside a class `MathUtils` that returns `True` if the number is even, else `False`.

class MathUtils:

   @staticmethod

   def is\_even(num):

       return num%2==0

print(MathUtils.is\_even(3))

print(MathUtils.is\_even(8))

o/p: False

True

1. 12. Which method type should you use when:  
   - 1.You want to access/modify class variables — (Instance/Class/Static)?  
   - 2.You don’t need class or instance data — (Instance/Class/Static)?

1.Class Method

2.Static Method