Assignment 1 Submission

Master SAP OOPs ABAP

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Assignment 1 – OOPs

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Q1. What are the different properties of OOPS ABAP?

- **Encapsulation.** – Data hiding. Wrapping up of data into single unit. Or, restriction on visibility of attributes and methods in the class (Class: Properties + behavior + events + interfaces). There are 3 levels of visibility:

    1. Private. - Methods or attributes defined as private are only visible and available to the class in which they are defined.
    2. Protected. - Methods or attributes defined as protected are visible to the class defined in and to the class which inherits from the class, they are defined in.
    3. Public. - Similarly, the methods or attributes defined as public are available to all.

- **Abstraction.** - Hiding the method implementation.

    Writing the code inside the method. Using the concept of ABSTRACT CLASS INTERFACE.

- **Inheritance.** - Code Reusability. Receiving the attributes and properties from Super Class (Father Class).

    1. Multilevel inheritance. (Supported by ABAP)
    2. Multiple inheritance. (Not supported by ABAP, (needs work around -Interfaces)

- **Polymorphism.** – Many Morphism (forms).

    In simple terms when you over write some functionality it's called polymorphism. In polymorphism, you can inherit methods from the parent class and can modify it by implementing it again (which is nothing but implementation of the inherited method).

    1. Overloading – It is not supported for OOPs.
    2. Overwriting – It is supported by OOPs.

Q2. Though Function Module is also a way of Modularization which gives flexibility of reusability. But still why Methods are preferred?

1. Robustness
2. Security
3. Encapsulate (Methods: modularization) -> Data + Behavior + Events + Alias.

4. Polymorphism (Different forms).
5. Design Patterns: Singleton, Factory, Abstract, and MVC (Model, View, Controller).
6. Inheritance.

Q3. **How would you define a Class?**

1. *----Old method----*

   ```
   DATA: go_demo1 TYPE REF TO zcl_ooabap_demo1.

   CREATE OBJECT go_demo1.
   ```

2. *----New method----*

   ```
   DATA(go _demo1) = NEW zcl_ooabap_demo2( ).
   ```

Q4. What is the Difference between Local and Global Class? Give one Example of each.

- Global is a Super or Parent Class, Attributes, Methods, Events can be visible in the whole session.
- Local class is a child or Subclass, only have visibility in the current instance.

Additional information

ABAP Access Control and Inheritance

- We know that a class can be defined as public, private, protected
- So, when a subclass inherits a superclass, there are certain rules that govern how the class can access objects and data of superclass
- The following table shows whether a derived class has access to base class, based on whether the base class is defined as public/protected/private:

ACCESS	SAME CLASS	DERIVED CLASS	OUTSIDE (NON-DERIVED CLASS)
PUBLIC	Yes	Yes	Available
PRIVATE	Yes	Yes	No
PROTECTED	Yes	No	No

The above table is explained as follows –

1. Public Inheritance:

- Public data and members of superclass become public data and members of subclass
- Protected members of superclass become protected members of subclass
- Private members of superclass cannot be accessed by subclass

2. Private Inheritance:

- Public members of superclass become private members of subclass
- Protected members of superclass become private members of subclass
- Private members of superclass cannot be accessed by subclass

3. Protected Inheritance:

- Public members of superclass become protected members of subclass
- Protected members of superclass become protected members of subclass
- Private members of superclass cannot be accessed by subclass

Redefining Methods in Sub Class in SAP ABAP

- We can redefine methods of superclass in subclass
- We usually do this so that we can have subclass-specific methods
- However, we must keep the section of redefinition of the method the same as the parent method
- We only need to use the name of the inherited method and can access its components using ‘super’ reference

Encapsulation in ABAP

- Encapsulation in object orientation means wrapping data and functions together
- This hides the data and function from the outside world, thus promoting data hiding
- Data hiding means obstructing the view of private data and functions from unwanted third parties, and data abstraction means showing users only what they need to see
- In ABAP, we can do encapsulation via access methods – public, private, protected.
- We can also perform encapsulation via interfaces (which are similar to classes, the only difference is that we do not implement anything in an interface, it has to be done via class inheriting the interface, as shown in example below)

Polymorphism in SAP ABAP

- It means using one thing for different operations
- It occurs usually in inheritance – for e.g. redefining methods which we saw under the concept of inheritance
- **Polymorphism** means redefining methods to either overload them or override them
- **Overloading methods** means when we use the same method name but use different parameters (It is not supported for OOPs.)
- **Overriding methods** means when we use the same method name and parameters, but the two methods are related via inheritance relationship