Encapsulation

Assignment Solution

Q1 What is Encapsulation in Java?
Why it is called Data hiding?

Ans.1 Binding of data and corresponding methods into a single unit is called "Encapsulation".

If any Java class follows data hiding and abstraction then such class is referred as "Encasulated Class".

Encapsulation = Data hiding + abstraction.

Every data member inside the class should be declared as private, and to access this private have getter and setter method.

Encapsulation is often refered to as data hiding because:

- Restricted Access: By making the fields of a class 'private', encapsulation hides the internal state of the object from direct access by external code. this ensures that the data can not be modified directly, which can prevent unintended interference and misuse.

Q.2 What are the importfunt featuries of the Encapsulation?

Ans.2 Encapsulation in Java is a powerful mechanism that provides several Importtant features, which Contributes to the robustness, security and Maintainability of a software application. Here are the key features of encapsulation

- Data Hiding
- Improve Security
- Modularity
- Flexibility and maintainability
- Reusability
- Readability and Manageability

Q.3 What are the getter and Setter Methods in Java Explain with an example.

Ans.3 Setter methods are used to set the value to the instance variables of the Class.

Syntax of setter method

a. Complusory the method name

should start with set.
(b) it should be public
(c) Return type should be avoid.
(d) Compulsorily it should have some argument.

Getter Methods are used to get the value from the instance variables of the Class

Syntax of getter Method

(a) Compulsory the method name should start with get.

(b) It should be public
(c) Return type should not be void
(d) Compulsorily it should not have any argument.

program

```
Class Student
{
    private string name;
    private Integer id;
    private string address;
    //setter
public void setName(String name){
        this.name = name;
}
```

```
public void setId(Integer id){
    this.id=id;
}
public void setAddress(String addre
 {
       this.address=address;
 }
   //getters
public Integer getId(){
       return id;
}
public String getName(){
       return name;
 }
 public String getAddress(){
       return address;
  }
}
public class Demo
{
  public static void main(String[]
   Student std = new Student();
   std.setId(1);
```

```
    Std.setName("Ajay");
    Std.setAddress(" Gorakhpur");

System.out.println("id is :: "+Std.getId());
System.out.println("Name is::"+Std.getName());
System.out.println("Address is::"+Std.getAddress()
                                              );
  }
}
```

output

```
Name is :: Ajay
Id is   :: 10
Address is :: Gorakhpur
```

Q.4 What is the use of this keyword explain with an example.

Ans 4 In Java "this" keyword is a reference to the current object - the object whose method or Constructor is being called. It is a commonly used in various scenarious to improve code clarity and functionality.

Example

```
public Class Employee {
    private String name;
     private int age;
  // Constructor
public Employee(String name, int age)
{
      this.name = name;
       this.age = age;
}
   public void display() {
  system.out.println("Name: "+ this
 system.out.println("Age: "+this.age);
}
  public static void main(String[] args)
    Employee emp = new Employee
                   ("Ajay", 100);
    emp.display();
  }
}
```

output

```
Ajay
100
```

Q5 What is the advantages of Encapsulation ?

Ans Advantages of Encapsulation

(a) we can achieve security
(b) Enhancement becomes easy
(c) Maintainability and Modularity becomes easy.
(d) It provides flexibility to the user the system very easily.

Q6 How to achieve Encapsulation in Java ? Give an example.

Encapsulation in Java is achieved by following steps:

(1) Declare the variables of a class as private. this restrict direct access to the field of the class from outside the class.

(2) provide public getter and setter method: this method allow Controlled access to the private fields. the getter method are used to retrieve the fields values, and the setter methods are used to modify the fields values.

```
public class person {
    private String name;
    private int age;

  public person (String name, int age) {
     this.name = name;
     this.age = age;
  }
      public string getName() {
          return name;
     }

      public int getAge () {
          return age;
      }

      public void setAge (int age) {
            if (age>0) {
               this.age = age;
           }
            else {
          System.out.println ("Age mu
                     be positive");
          }
     }

    public void display () {
    System.out.println ("Name: " + this.n
   System.out.println (" Age : " + this.age
}
public static void main(String [] args) {
    person person = new person("AJ", 100);
  System.out.println("Initial Details");
   person.display();
   person.setName("SJ");
   person.setAge(40);
  System.out.println("updated Details");
     person.display();
 }
}
```

);