Homework 2

Software Engineering

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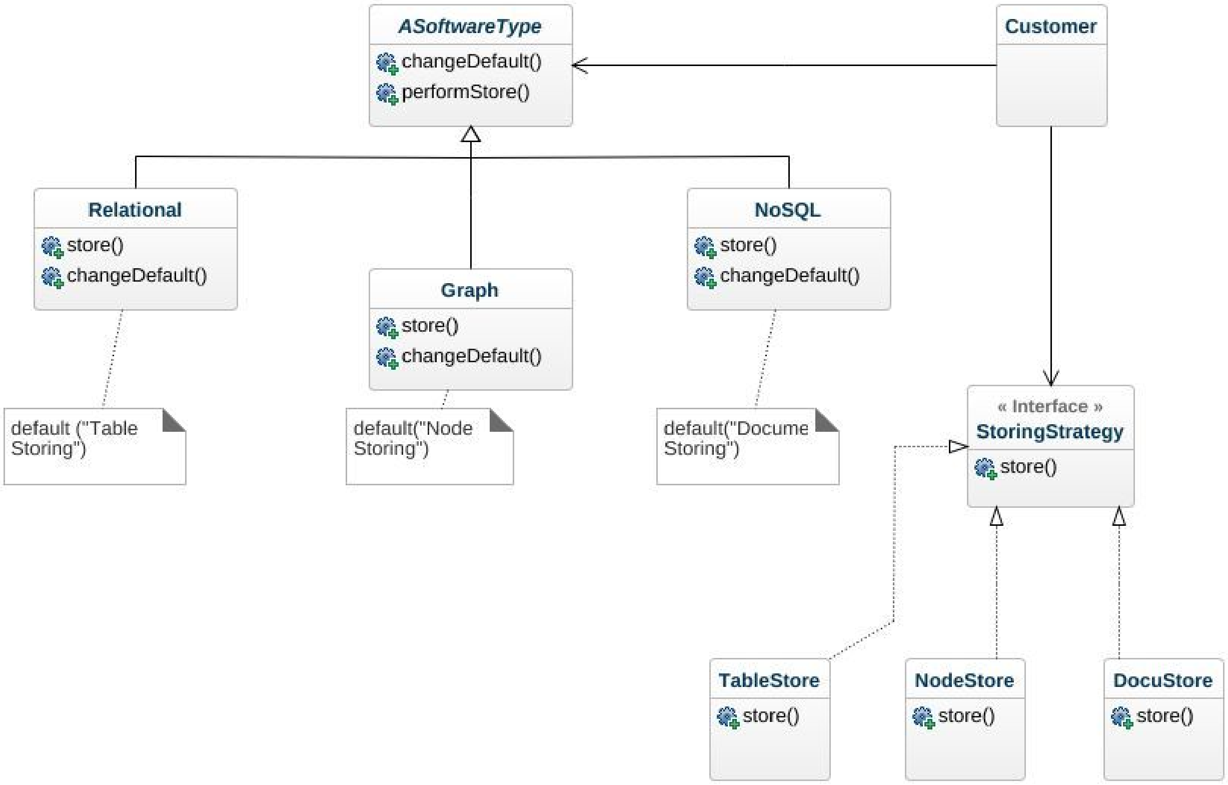
UML Diagram:



Java Program Code:

```
package esof322hw2strategymethod;
import java.util.Scanner;
/**
 *
 * @author William Roberts & Anna Jinneman
 *
 */
public class Esof322Hw2StrategyMethod {


    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {

        SoftwareType type;
        StoringStrategy storeType;
        Scanner scanner = new Scanner(System.in);


        //We start this program off by asking the client what software type they would like to utilize:
        type = useSoftwareType(scanner);



        type.performStore("hi"); //Then we perform the store() with the default method of their
softwareType


        //Now we want to ask the client what storing method they would like to change the default to:
        storeType = useStrategyMethod(scanner);

        type.changeDefault(storeType); //Then change the Default to the perscribed method!
        type.performStore("Hi"); //Final storing of data.


    }

    public static SoftwareType useSoftwareType(Scanner scanner)
    {
        SoftwareType type;
        System.out.println("What software type would you like to use (NoSQL, Relational, or Graph)?");
        String softwareType = scanner.nextLine();
        if ("Relational".equals(softwareType)) {
            type = new Relational();
            System.out.println("-You've chosen Relational.");
        }
        else if("NoSQL".equals(softwareType))
        {
            type = new NoSQL();
            System.out.println("-You've chosen NoSQL.");
        }
        else if("Graph".equals(softwareType))
        {
            type = new Graph();
            System.out.println("-You've chosen Graph.");
        }
        else
        {
            type = new NoSQL();
            System.out.println("-Okay, we've chosen NoSQL for you.");
        }
        return type;
    }

    public static StoringStrategy useStrategyMethod(Scanner scanner)
    {
        System.out.println("What storing method would you like to change to (TableStore,
DocumentStore, or NodeStore)?");
        String storingType = scanner.nextLine();
        StoringStrategy storeType;
        if ("TableStore".equals(storingType)) {
            storeType = new TableStore();
            System.out.println("-You've chosen TableStore.");
        }
        else if("DocumentStore".equals(storingType))
        {
            storeType = new DocuStore();
            System.out.println("-You've chosen DocuStore.");
        }
        else if("NodeStore".equals(storingType))
        {
            storeType = new NodeStore();
            System.out.println("-You've chosen NodeStore.");
        }
        else
        {
            storeType = new DocuStore();
            System.out.println("-Okay, we've chosen docuStore for you.");
        }
        return storeType;
```

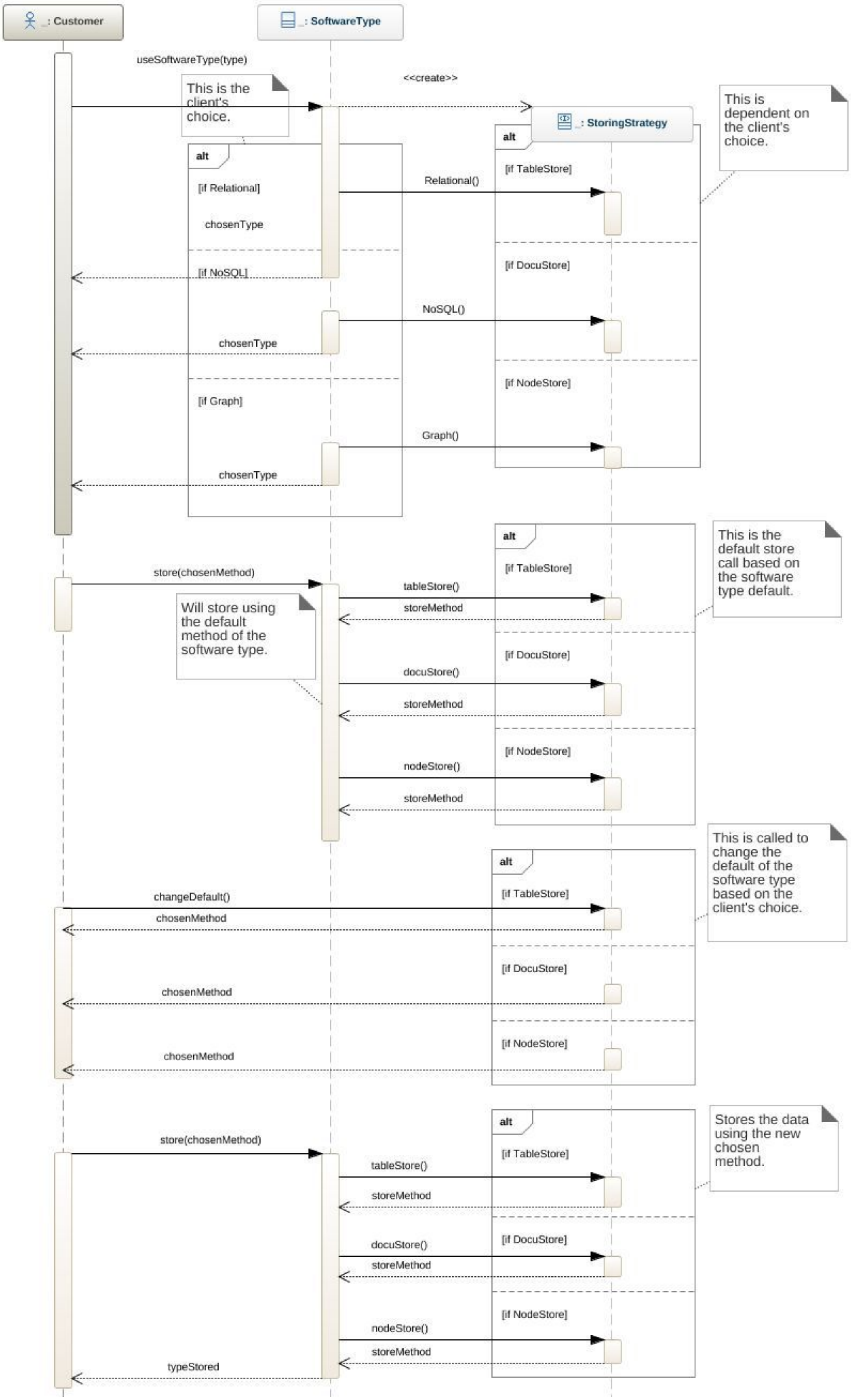
```
  }

  public interface StoringStrategy{ //The interface that controls all of our storing methods (like Node, Docu, or Table store
    public void store(String data);

  }

  public abstract class SoftwareType //The abstract class of software types, ensures that each software type has these things
  {
    public StoringStrategy storeMethod;
    public void performStore(String data){};
    public void changeDefault(StoringStrategy newOne){};
  }



  // The first Storage Strategy, it uses "Document Store Method" to store data.
  public static class NoSQL extends SoftwareType{
    public StoringStrategy storeMethod;

    NoSQL()
    {
      storeMethod = new DocuStore();
    }

    public void performStore(String data)
    {
        // Default to Document Store
      //System.out.println("Document Store Method");
      storeMethod.store(data);
    }


    public void changeDefault(StoringStrategy newOne){
      storeMethod = newOne;
    }

  }
  // Relational Storage Strategy uses "Table Store Method" to store the data.
  public static class Relational extends SoftwareType{
    public StoringStrategy storeMethod;
    Relational()
    {
      storeMethod = new TableStore();
    }
    public void performStore(String data)
```

```
        {
                //Table Store
            //System.out.println("Table Store Method");
            storeMethod.store(data);
        }
        public void changeDefault(StoringStrategy newOne){
            storeMethod = newOne;
        }

    }
    //The last of the storage strategies, it uses "Node Store Method" to store the data.
    public static class Graph extends SoftwareType{
        public StoringStrategy storeMethod;
        Graph()
        {
            storeMethod = new NodeStore();
        }
        public void performStore(String data)
        {
                //Node Store
            //System.out.println("Node Store Method");
            storeMethod.store(data);
        }
        public void changeDefault(StoringStrategy newOne){
            storeMethod = newOne;
        }

    }

    //Below are the different storing methods, they each override the interfaces store with their own
procedure. (THEY ARE DUMMY METHODS)
    public static class DocuStore implements StoringStrategy
    {
        public void store(String data){System.out.println("Document Store Method Call");}
    }

    public static class TableStore implements StoringStrategy
    {
        public void store(String data){System.out.println("Table Store Method Call");}
    }

    public static class NodeStore implements StoringStrategy
    {
        public void store(String data){System.out.println("Node Store Method Call");}
    }


}
```

Java Code Output: (Only one example shown in output)

```
Output:
What software type would you like to use (NoSQL, Relational, or Graph)?
Graph
-You've chosen Graph.
Node Store Method Call
What storing method would you like to change to (TableStore, DocumentStore, or NodeStore)?
TableStore
-You've chosen TableStore.
Table Store Method Call
```

UML Sequence Diagram:


_: Customer
_: SoftwareType
_: StoringStrategy
useSoftwareType(type)
This is the client's choice.
<<create>>
This is dependent on the client's choice.
alt
[if Relational]
chosenType
Relational()
[if TableStore]
[if NoSQL]
[if DocuStore]
NoSQL()
chosenType
[if NodeStore]
[if Graph]
Graph()
chosenType
alt
This is the default store call based on the software type default.
[if TableStore]
store(chosenMethod)
tableStore()
storeMethod
Will store using the default method of the software type.
[if DocuStore]
docuStore()
storeMethod
[if NodeStore]
nodeStore()
storeMethod
alt
This is called to change the default of the software type based on the client's choice.
[if TableStore]
changeDefault()
chosenMethod
[if DocuStore]
chosenMethod
[if NodeStore]
chosenMethod
alt
Stores the data using the new chosen method.
store(chosenMethod)
[if TableStore]
tableStore()
storeMethod
[if DocuStore]
docuStore()
storeMethod
[if NodeStore]
nodeStore()
storeMethod
typeStored