

## Assignment #5

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### Question#1

Answer:

```
public class Test {

    public static void main(String args[]) throws InterruptedException
    {

        System.out.println("Student Name: Kaichen Zhang");
        System.out.println("Student ID : 40000160");


        int[] var = {1, 2, 3, 4, 5 };
        Context ctxBS = new Context(new BubbleSort());
        ctxBS.arrange(var);

        Context ctxQS = new Context(new QuickSort());
        ctxQS.arrange(var);

        Context ctxSS = new Context(new SelectionSort());
        ctxSS.arrange(var);

    }

}

class Context {
    private final Strategy strategy;

    public Context(Strategy strategy) {
        this.strategy = strategy;
    }

    public void arrange(int[] input) {
        strategy.sort(input);
    }
}
```

```
interface Strategy {
    public void sort(int[] numbers);
}
```

```
class BubbleSort implements Strategy {

    @Override
    public void sort(int[] numbers) {
        System.out.println("sorting array using bubble sort
strategy");
    }

}
```

```
public class QuickSort implements Strategy {

    @Override
    public void sort(int[] numbers) {
        System.out.println("sorting array using quick sort strategy");
    }

}
```

```
public class SelectionSort implements Strategy {

    @Override
    public void sort(int[] numbers) {
        System.out.println("sorting array using selection sort
strategy");
    }

}
```

## Outputs:

```
Console x Declaration Search Progress Project Migration Debug Call Hierarchy
<terminated> Test (4) [Java Application] E:\2014MyEclipse\binary\com.sun.java.jdk7.win32.x86_1.7.0.u45\bin\javaw.exe (2017年4月6日 上午1:36:28)
Student Name: Kaichen Zhang
Student ID : 40000160
sorting array using bubble sort strategy
sorting array using quick sort strategy
sorting array using selection sort strategy
```

**Question#2**

The differences between client-server and SOA would be:

- 1) SOA is the evolution of traditional client-server architectural pattern
- 2) In the client-server architecture, the server is centralized, clients communicate with the server. In the SOA, components are more decentralized, services communicate with service consumers through the bus
- 3) In the client-server architecture, clients are highly coupled with the server. But in the SOA, services can be provided on demand, just like in the distributed system, it is language and platform independent.

**Question#3**

**Answer:**

1) Fat clients are networked computer with most resources installed locally. They are expensive and harder to deploy. A fat client is one that will perform the bulk of the processing in C/S applications

2) But thin clients are distributed on the network, they are network computers without hard disk drive. They act as a simple terminal to the server and require constant communication with the server as well. They are cheap and easy to deploy. A thin client is designed to be especially small so that the bulk of the data processing occurs on the server.

(From [http://www.webopedia.com/DidYouKnow/Hardware\\_Software/thin\\_client.asp](http://www.webopedia.com/DidYouKnow/Hardware_Software/thin_client.asp))

**Question#4**

**Answer:**

No. Maybe EAI could be used as part of SOA strategy, because SOA is an evolution of EAI, EAI is a centralized structure and it's the first step for the enterprise to evolve. But SOA is a more advanced solution for the enterprise to develop and inherit.

**Question#5**

**Answer:**

**a)**

- 1) The composite pattern is implemented in the employee part.
- 2) The observer pattern is implemented in the report generation part.
- 3) The façade pattern is implemented at the store manager class

b)

