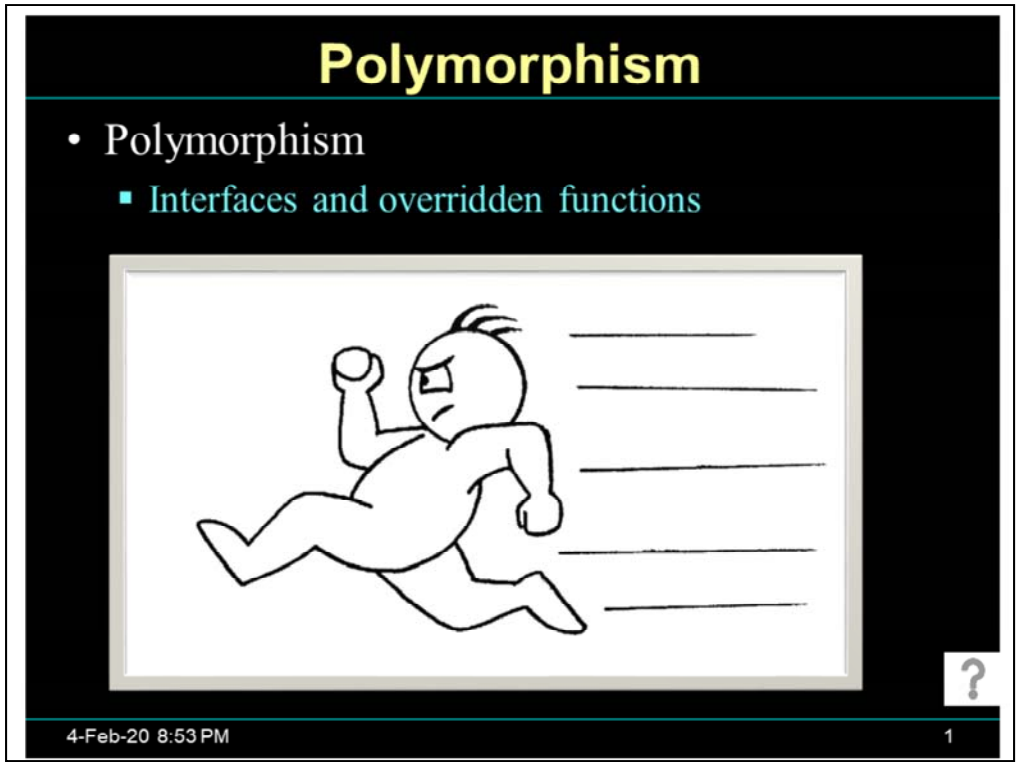
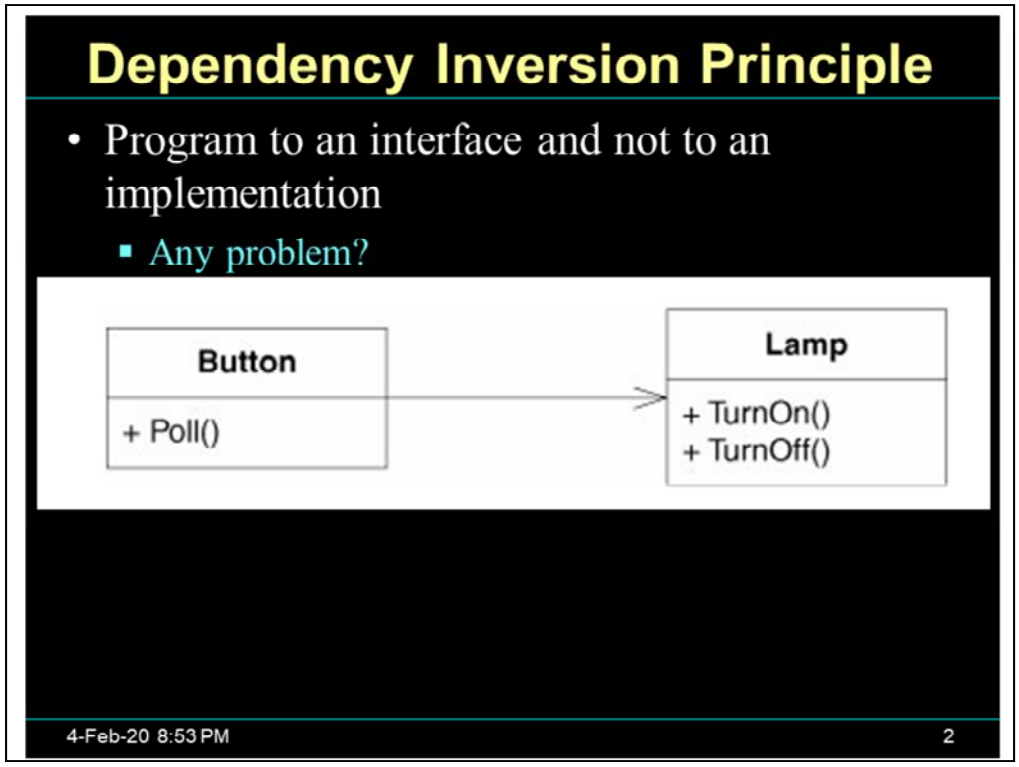


Q30 – Shape; Q40Smell: Courses weekly, range, list; Q43smell: home address / work address

Q36 – USD, RMB; Q41 – Session (This can be used with Composite Design Pattern)



“HIGH LEVEL MODULES SHOULD NOT DEPEND UPON LOW LEVEL MODULES, BOTH SHOULD DEPEND UPON ABSTRACTIONS.

ABSTRACTIONS SHOULD NOT DEPEND UPON DETAILS. DETAILS SHOULD DEPEND UPON ABSTRACTIONS.”

No variable should hold a reference to a concrete class.

No class should derive from a concrete class.

No method should override an implemented method of any of its base classes.

It is OK to depend on stable classes like String, Integer, JPanel, etc.

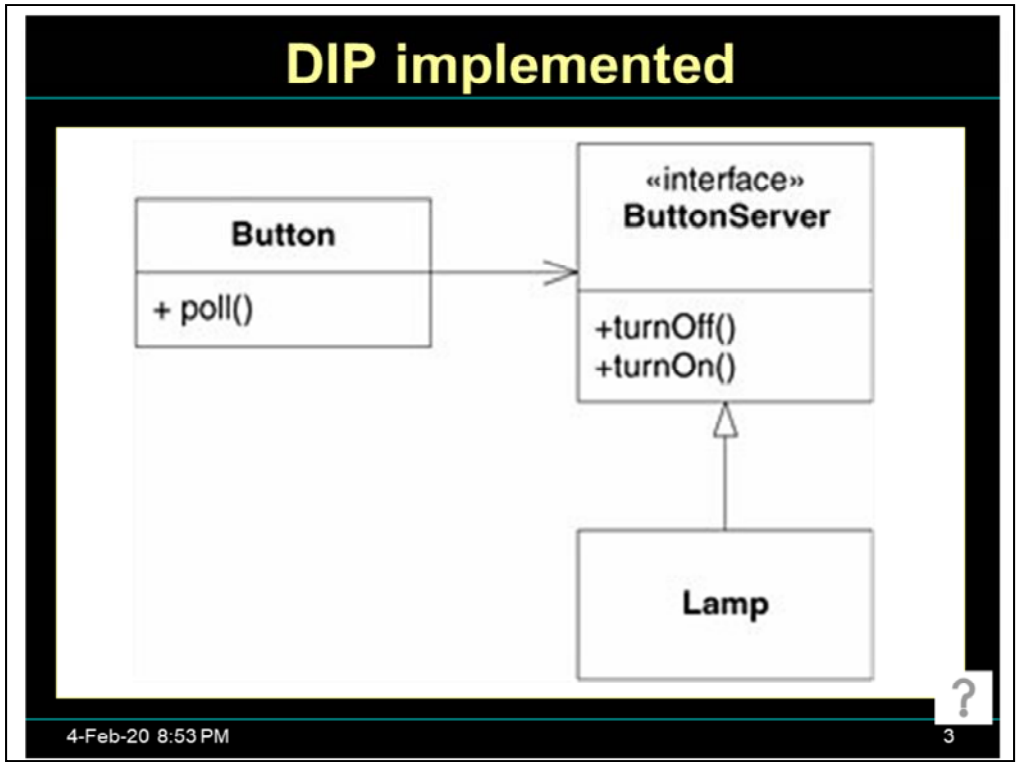
Avoids designs that are rigid, Fragile and Immobile.

Example: We have a classes: Copy, Keyboard, Printer. The Copy reads from keyboard and prints to the printer. If we use DIP, we have an abstraction for Keyboard and Printer. So we can add input and output devices later on.

Example: Collections in Java.

Example: Customer is a class. Employee is a class. Employees are now allowed to purchase on credit. We need an interface Buyer.

For every variable use the maximum abstract type possible.



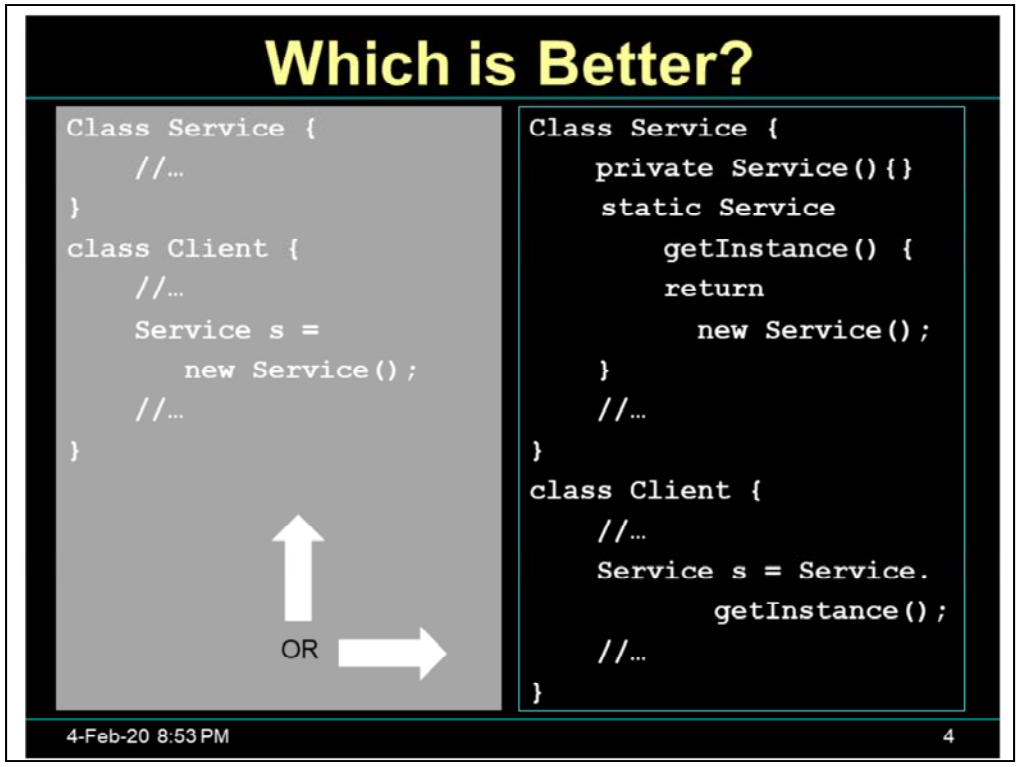
Advantages

- Clients are unaware of the specific class of the object they are using
- One object can be easily replaced by another
- Object connections need not be hardwired to an object of a specific class, thereby increasing flexibility
- Loosens coupling
- Increases likelihood of reuse
- Improves opportunities for composition since contained objects can be of any class that implements a specific interface

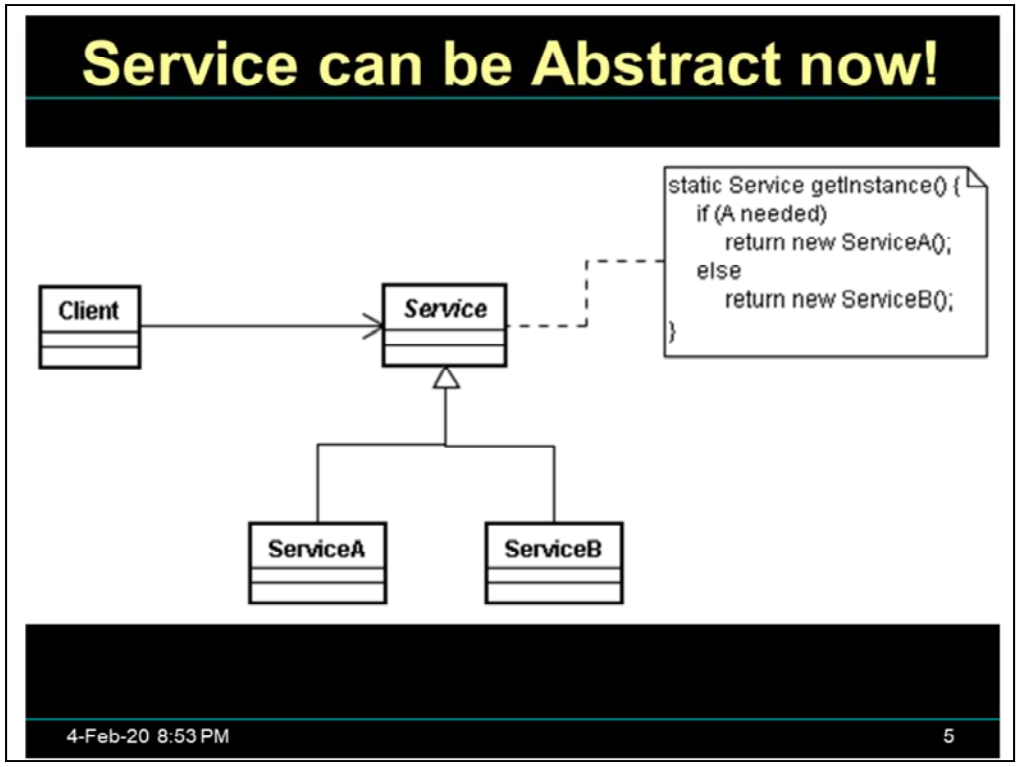
Disadvantages

- Modest increase in design complexity

Q96, Q94, Q93, Q91 - DIP



The right side is better. Service class can be made abstract tomorrow.



The main advantages of using Static function for construction instead of constructor directly is:

1. Static methods have a name. This serves as documentation e.g. BigInteger(int, int, Random) is not clear but BigInteger.getProbablePrime(int, int, Random) is more clear.
2. The static method can return the same object for multiple calls e.g. if the object is immutable e.g. Boolean class has two objects TRUE and FALSE. For repeated calls, the same object can be returned.
3. Last, the static function can return a subtype object.
4. Instead of writing “Map<String,Integer>m=new Hashmap<String,Integer>();” we can write

   “Map<String,Integer>m=Hashmap.newInstance();”