

CODE AT THE WRONG LEVEL OF ABSTRACTION

@ferosekhanj



CODE AT THE WRONG LEVEL OF ABSTRACTION

- Separate the higher level general concepts from the lower level implementation concepts.



WHAT IS AN ABSTRACTION?

“An abstraction denotes the essential characteristics of an object that distinguish it from all other kinds of objects and thus provide crisply defined **conceptual boundaries**, relative to the perspective of the viewer.”

- Grady Booch



EXAMPLE

- Let us look at some fictional printer software development.



REQUIREMENTS ITERATION 1



- We are entering printer market with a new printer.
- User can use this printer for home office.
- It uses a dot matrix printing technology.
- Users have to buy ribbon cartridge as consumable.
- We need to develop the printer driver.



INITIAL INTERFACE DEFINITION

```
public interface IPrinter
{
    void PowerOn( );
    void PowerOff( );
    int Submit(PrintJob job);
    bool Cancel(int jobId);
}
```



REQUIREMENTS ITERATION 2



- We hear lot of feedback from users about the cartridge exhaustion error.
- We would like to give a notification to users that the cartridge is empty.
- Basically user wants to know when the cartridge is empty so that he can replace it. And avoid printer error.



DOTMATRIX IMPLEMENTATION

```
bool IsCartridgeEmpty() => cartridge.IsEmpty();
```



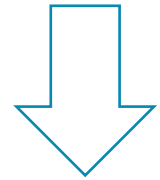
UPDATED IPRINTER

```
public interface IPrinter
{
    void PowerOn( );
    void PowerOff( );
    int Submit(PrintJob job);
    bool Cancel(int jobId);
    bool IsCartridgeEmpty( );
}
```



CODE AT THE WRONG LEVEL OF ABSTRACTION

```
public interface IPrinter
{
    void PowerOn( );
    void PowerOff( );
    int Submit(PrintJob job);
    bool Cancel(int jobId);
    bool IsCartridgeEmpty( );
}
```



REQUIREMENTS ITERATION 3



- We are adding a new printer to our product line.
- It is based on ink jet technology.
- Users have to buy Color & Black Cartridges.
- Since time to market is important, we will reuse the driver with minimal changes.



INKJET IMPLEMENTATION OF IPINTER

```
bool IsCartridgeEmpty()=>cmy.IsEmpty() ||  
black.IsEmpty();
```



REQUIREMENTS ITERATION 4



- We are adding a new printer to our product line.
- This is for our volume customers.
- Users have to refill the ink tank.
- Again time to market is important, we will reuse the driver with minimal changes.



INKTANK IMPLEMENTATION

```
public bool IsCartridgeEmpty()=> false;
```



LESSON TO LEARN

- Be careful with your abstractions
- Avoid code at the wrong level of abstraction



THANKS

