

INF 102

CONCEPTS OF PROG. LANGS

INVERSION OF CONTROL

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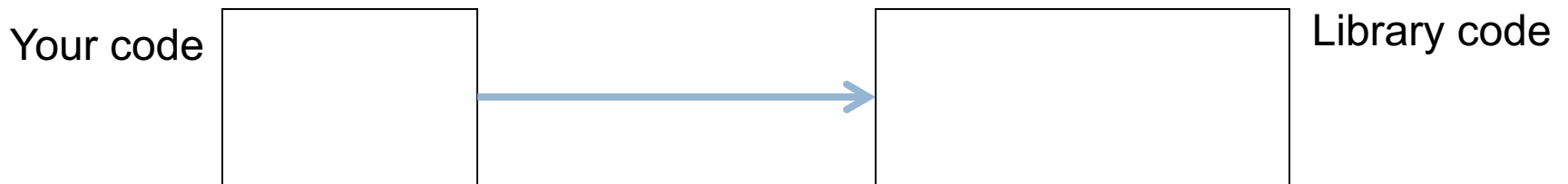
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Inversion of Control

Inversion of Control (IoC)

- Usually your code calls the library code



- IoC: Library code calls your code



IoC

- Accumulation of callbacks to be called at specific times
- Popularized in OOP frameworks in the 80s

IoC enablers

- Higher-order functions
- Objects

Callbacks

```
main() {  
    libraryFunction(myFunction);  
}  
  
myFunction(a, b) {  
    ...  
}
```

```
libraryFunction(func) {  
    ...  
    func(1, 2);  
    ...  
}
```

```
main() {  
    A myObj = new A();  
    lib.f(myObj);  
}  
  
class A {  
    m(a, b) { ... }  
}
```

```
class Lib {  
    f(A a) {  
        ...  
        a.m(1, 2);  
        ...  
    }  
}
```

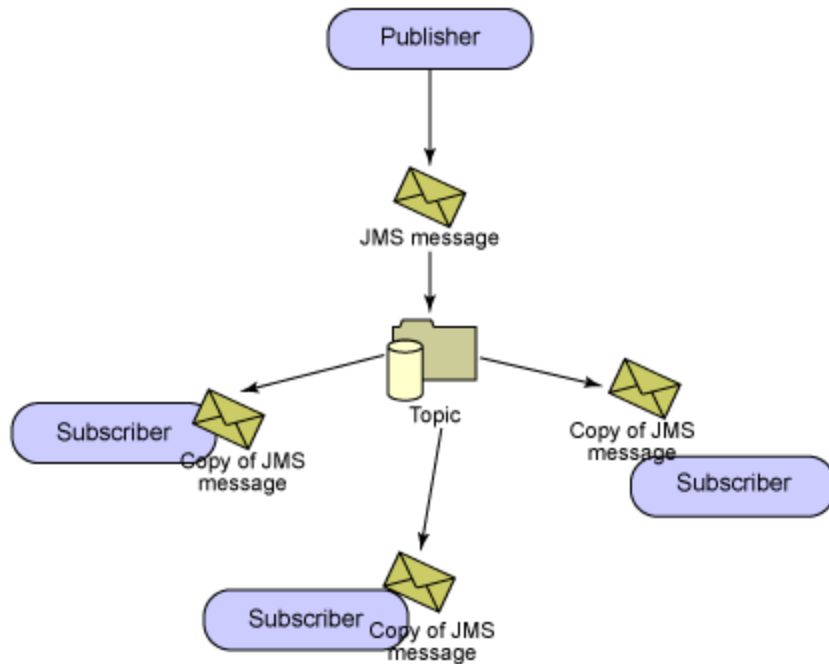
What is a framework?

- More than a library, a generic component or even application
- Parts of it are customized by user's code via inversion of control
- Allows developers to build complete components/applications, with small customizations on deployment sites

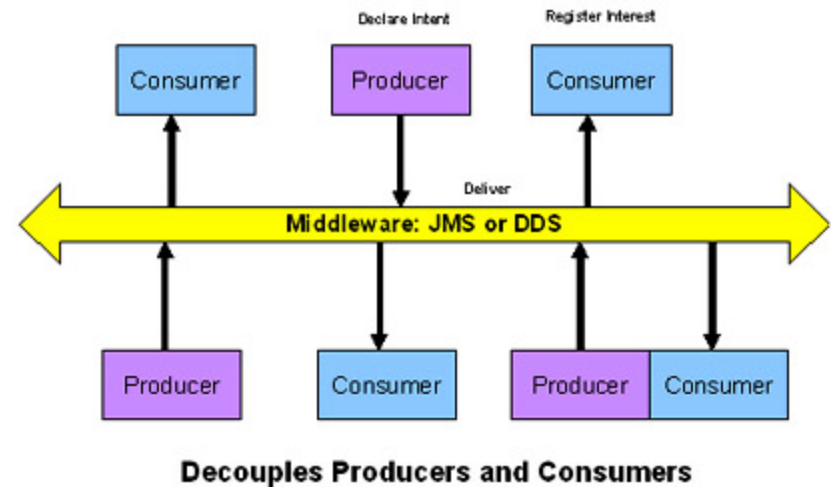


Publish-Subscribe

Publish Subscribe



Publish-Subscribe Middleware



Pub Sub

- Producers
 - ▣ Publish events
- Consumers
 - ▣ Register for events

- Decouples components