How to Write an Adaptor

Kelly Davis

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AEI-MPG

Outline

- **Introduction**
- **Cpi Classes**
  - Bridge Design Pattern
  - File Management
  - Collection Management
  - Resource Management
  - Peer-to-Peer Interaction
  - Job Management
- **Implementing a Provider**
  - Implement the Cpi functions
  - Create a shared object
  - Create a Manifest
  - Jar the Manifest and shared object
  - Sign the jar
- **Integrating a Provider**
  - Install the signed jar
  - Off to the races!

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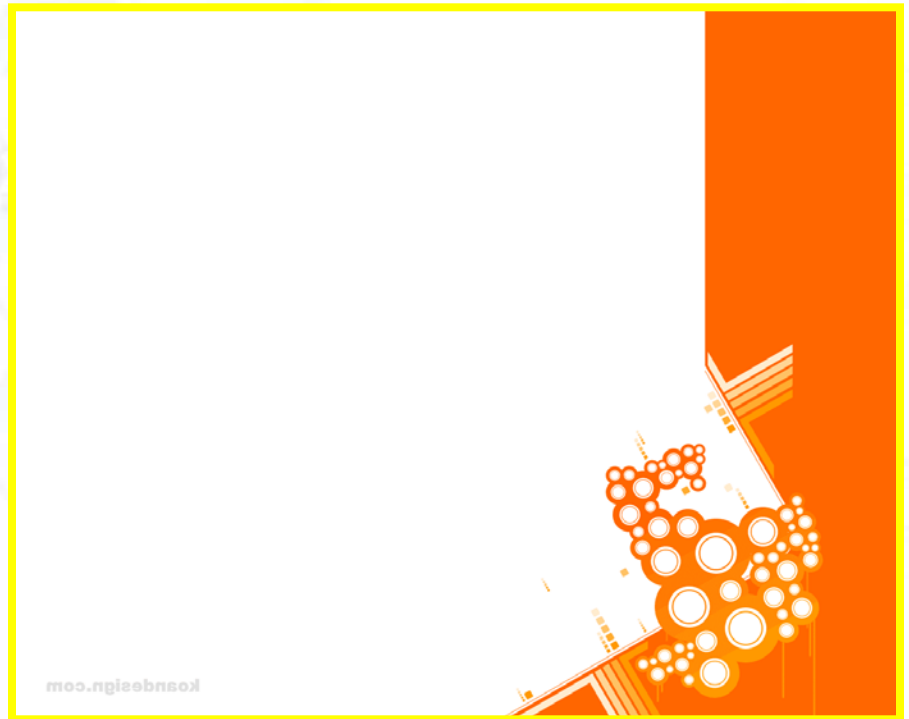 - Install the signed jar
  - Off to the races!

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Introduction

What is an Adaptor?

An *adaptor* is a software component which adapts the interface of one software component to the interface expected by a second software component.

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Introduction

What is an Adaptor?

An *adaptor* is a software component which adapts the interface of a one software component to the interface expected by a second software component.
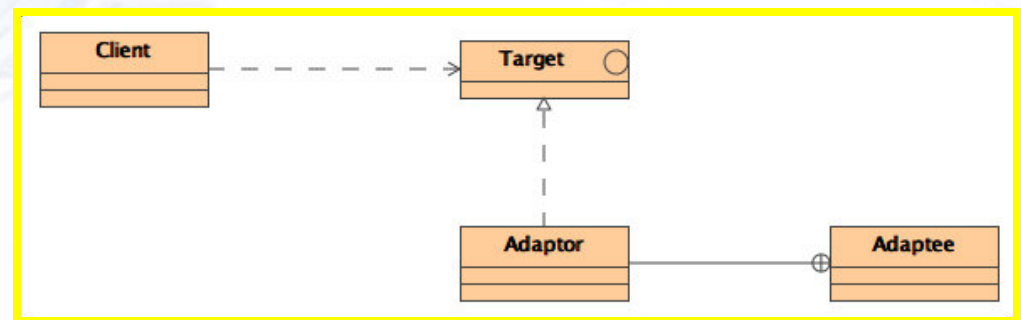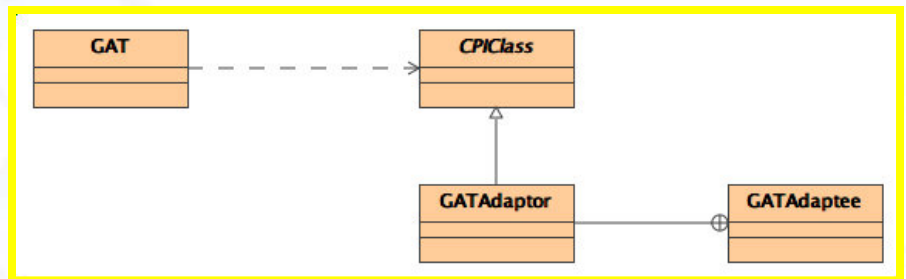

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Introduction

How are Adaptors used in GAT?

- GAT = Client
- CPIClass = Target
- GATAdaptor = Adaptor
- GATAdaptee = Adaptee

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Cpi Classes

What are Cpi Classes?

CpiClasses are abstract classes that present to GAT a well defined interface and thus allow for the existence of GATAdaptors

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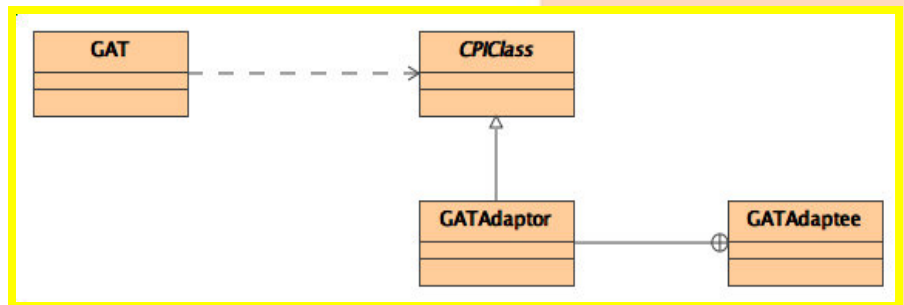 - Install the signed jar
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Bridge Design Pattern

Intent

Decouple an abstraction from its implementation so that the two can vary independently.

Applicability

- To avoid permanent binding of abstraction and implementation
- Abstraction and implementation should be sub-classable
- Changes in implementation should not effect clients
- Implementation should be completely hidden from clients
- Implementation may need to be shared among multiple clients

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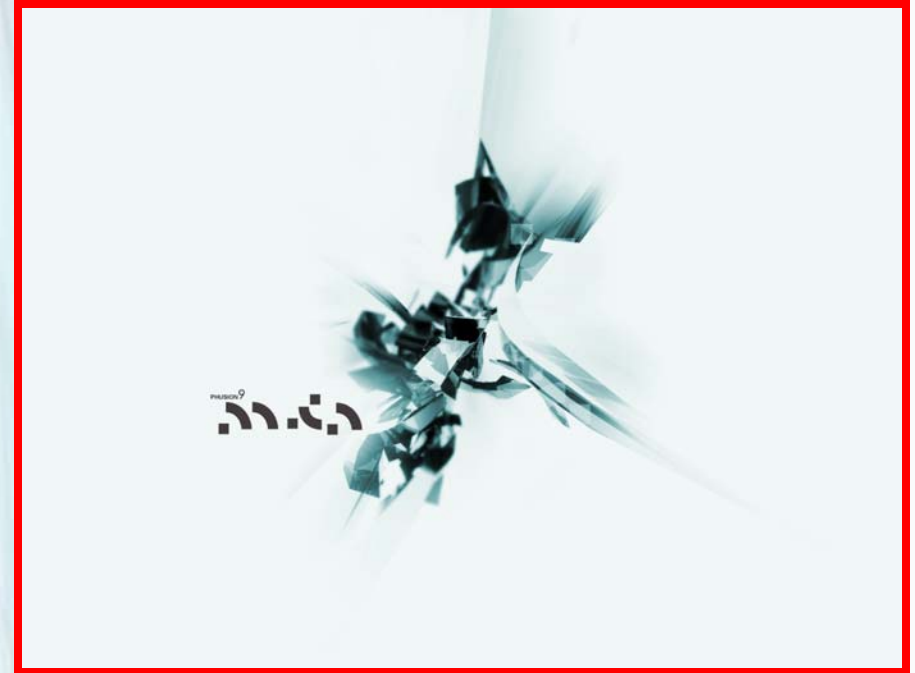
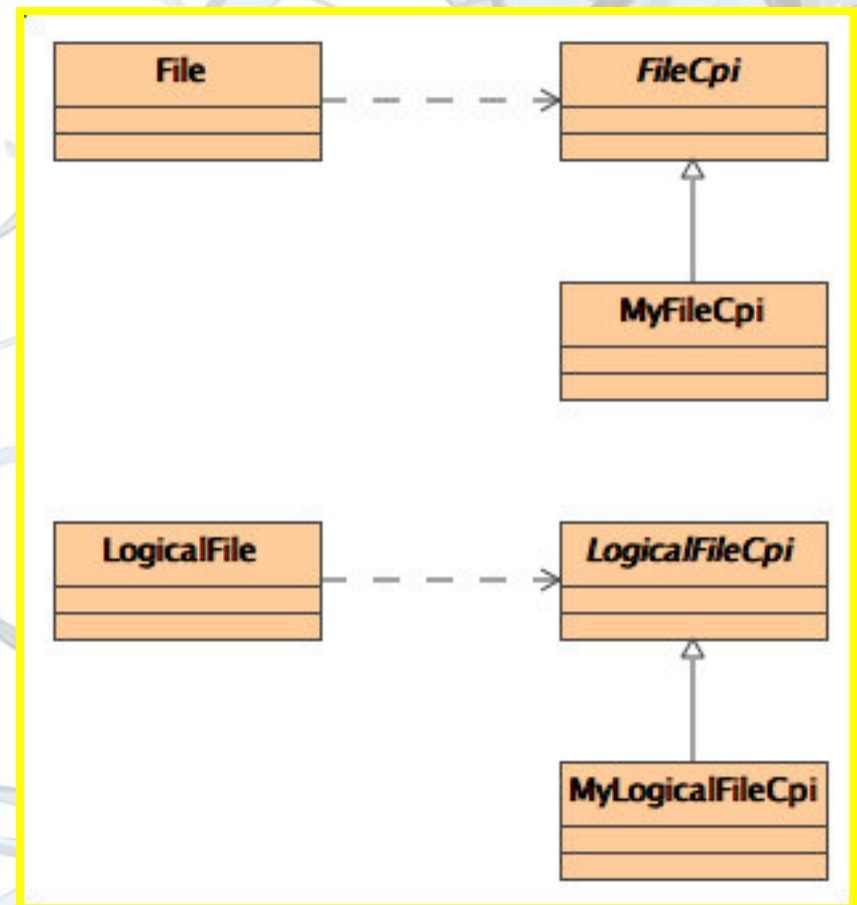# Bridge Design Pattern

- **Structure**
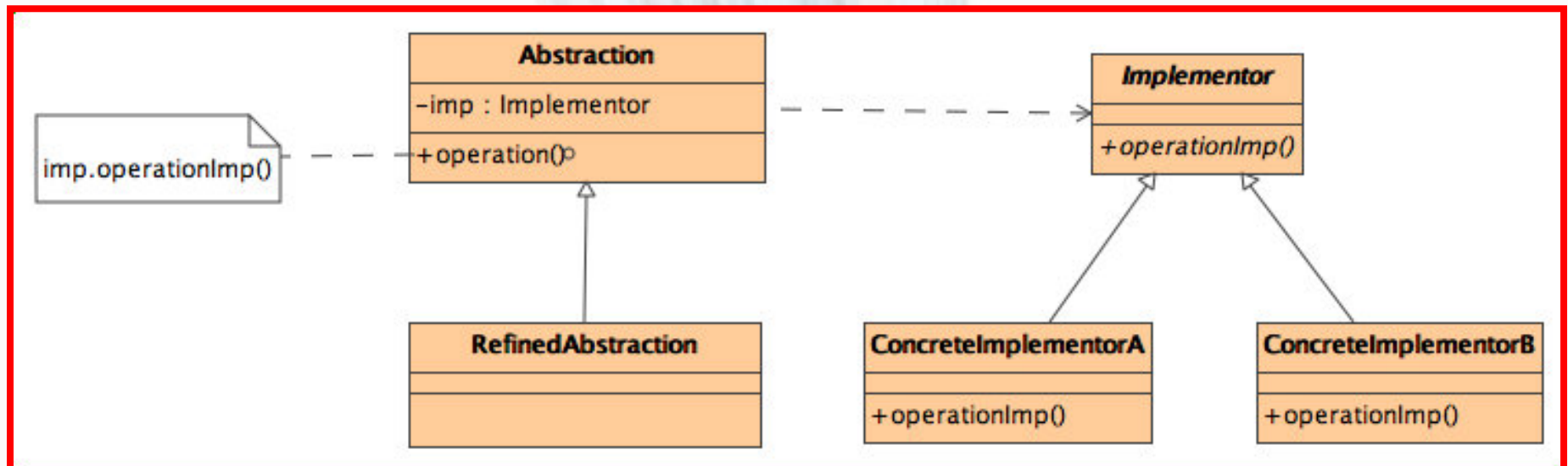
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File Management

FileCpi

FileCpi - Abstract class that one must extend to provide the *File* capability.

LogicalFileCpi

LogicalFileCpi - Abstract class that one must extend to provide the *LogicalFile* capability.

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Collection Management

● CollectionCpi

CollectionCpi - Abstract class that one must extend to provide the *Collection* capability.

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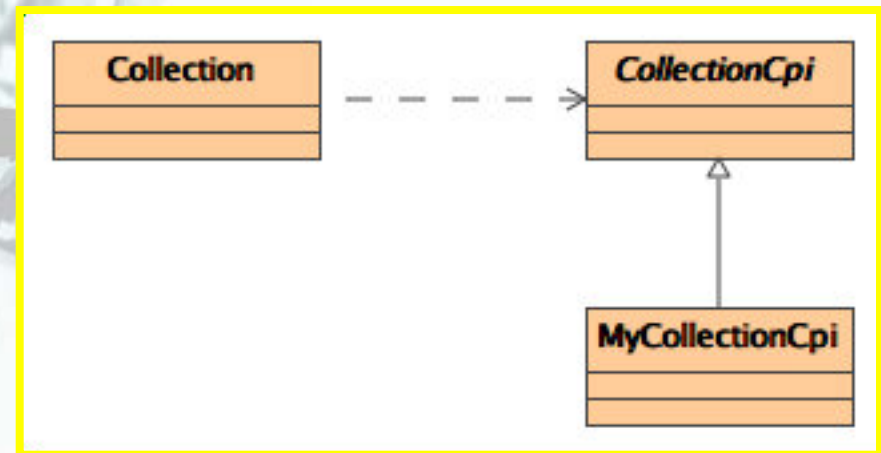 - Install the signed jar
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Resource Management

- **ResourceBrokerCpi**

ResourceBrokerCpi - Abstract class that one must extend to provide the *ResourceBroker* capability.

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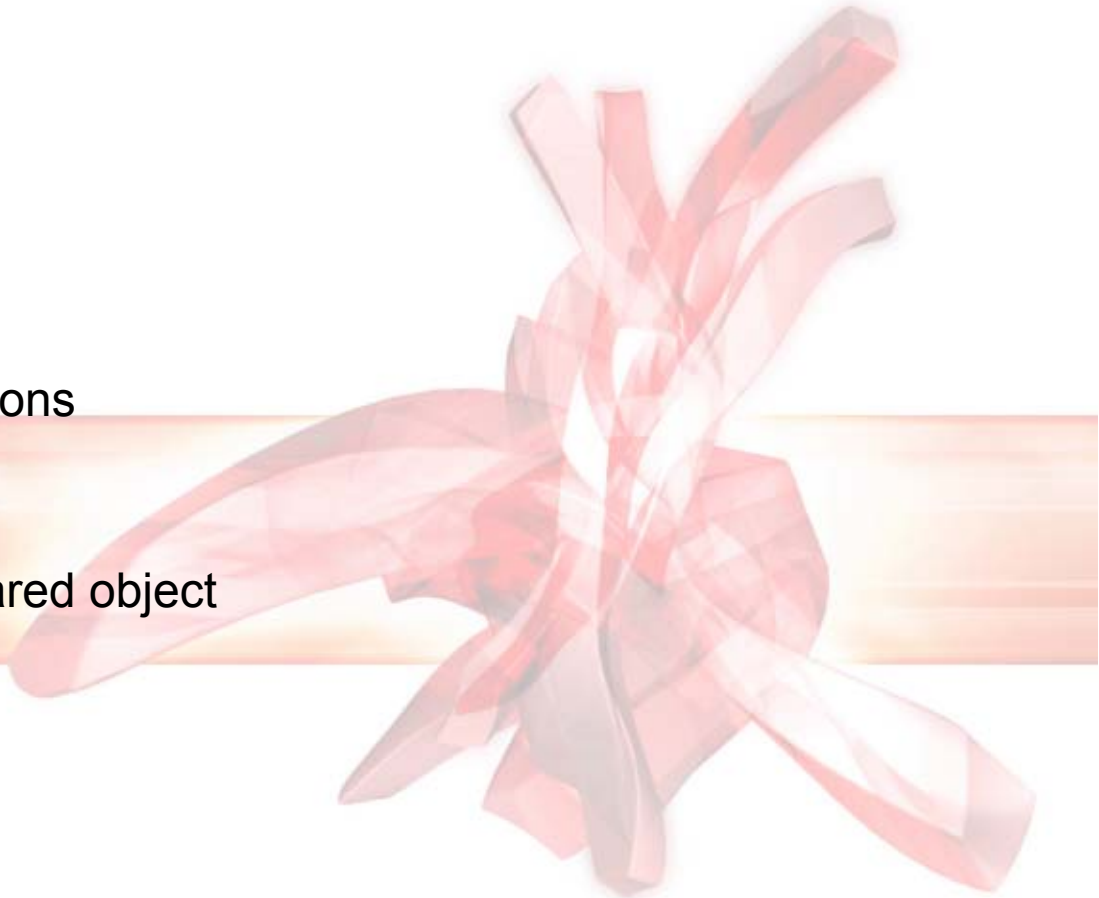
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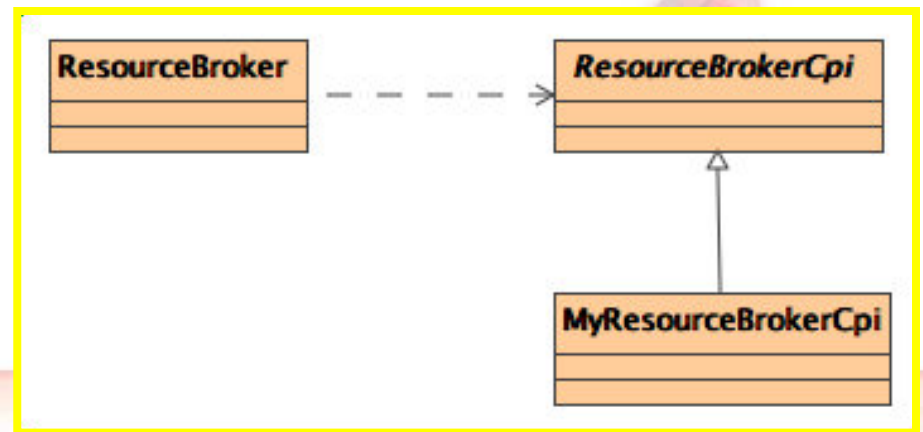   - Install the signed jar
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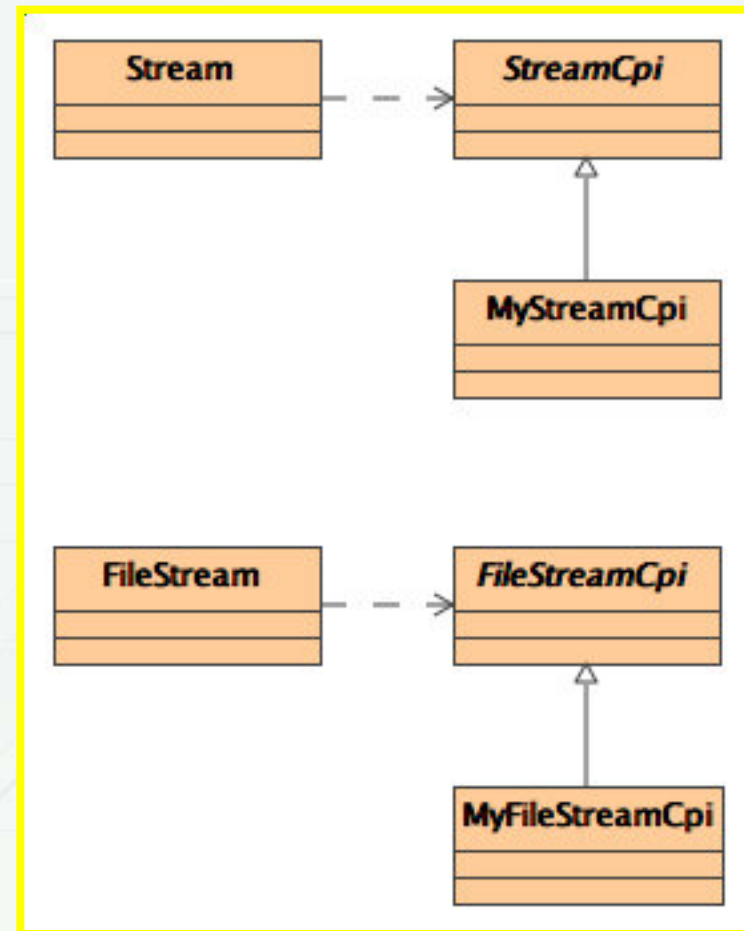
Peer-to-Peer Interaction

- **StreamCpi**

StreamCpi - Abstract class that one must extend to provide the *Stream* capability.

- **FileStreamCpi**

FileStreamCpi - Abstract class that one must extend to provide the *FileStream* capability.

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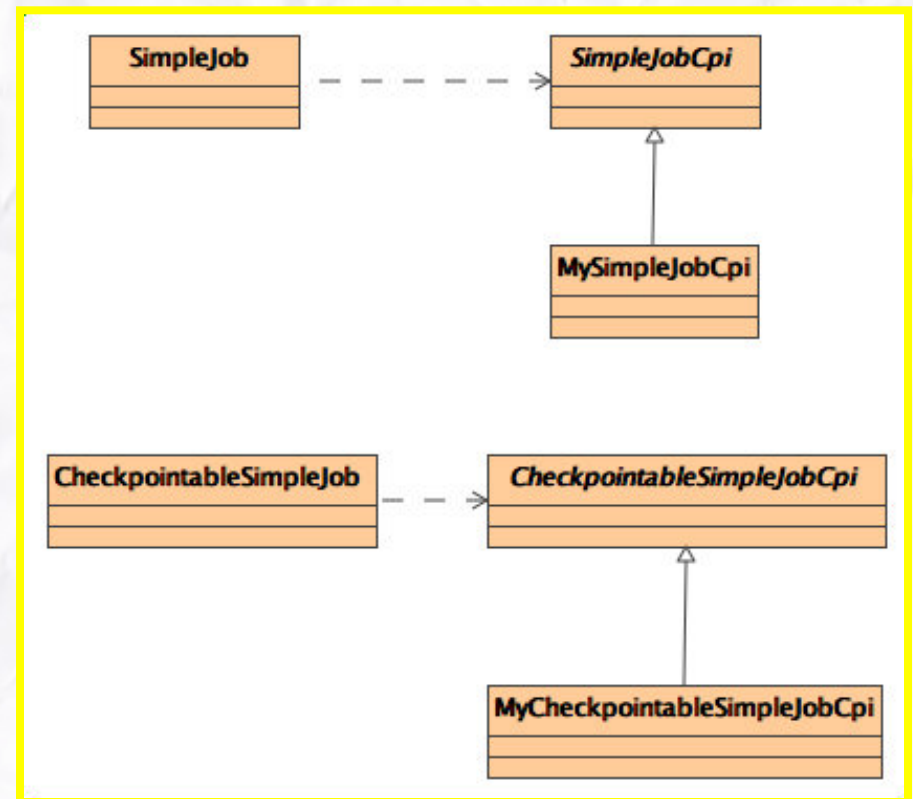 - Off to the races!

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Job Management

SimpleJobCpi

SimpleJobCpi - Abstract class that one must extend to provide the *SimpleJob* capability.

CheckpointableSimpleJobCpi

CheckpointableSimpleJobCpi - Abstract class that one must extend to provide the *CheckpointableSimpleJob* capability.

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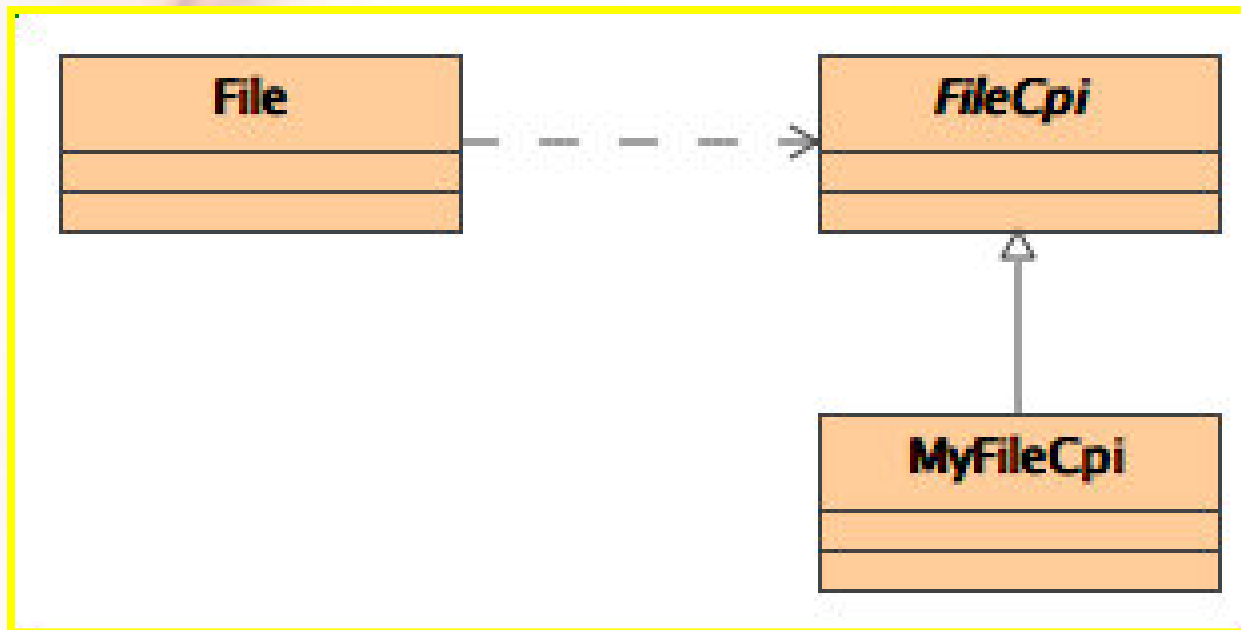# Implement the CPI Functions

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Create Manifest: Java

- ## Standard Attributes
  - Manifest-Version
  - Created-By
  - Extension-Name
  - Implementation-Title
  - …

- ## GAT Attributes
  - FileCpi-class
  - FileCpi-schema

```
Manifest-Version: 1.0
Created-By: 1.4.1_01 (Apple Computer, Inc.)
Extension-Name: org.gridlab.gat.io
Implementation-Title: DefaultFileAdaptor
Implementation-Version: 1.0
Implementation-Vendor: GridLab
Implementation-Vendor-Id: org.gridlab
Implementation-URL: http://www.gridlab.org/file.jar
Sealed: false
GATAdaptor: true
FileCpi-class: org.gridlab.gat.io.DefaultFileAdaptor
FileCpi-schema: file
```

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Jar Manifest and Shared Object

- Java

```
>ls
MANIFEST.MF org
>jar cmf MANIFEST.MF file.jar org/
```

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Sign the jar

- Java

```
>jarsigner file.jar kdavis
```

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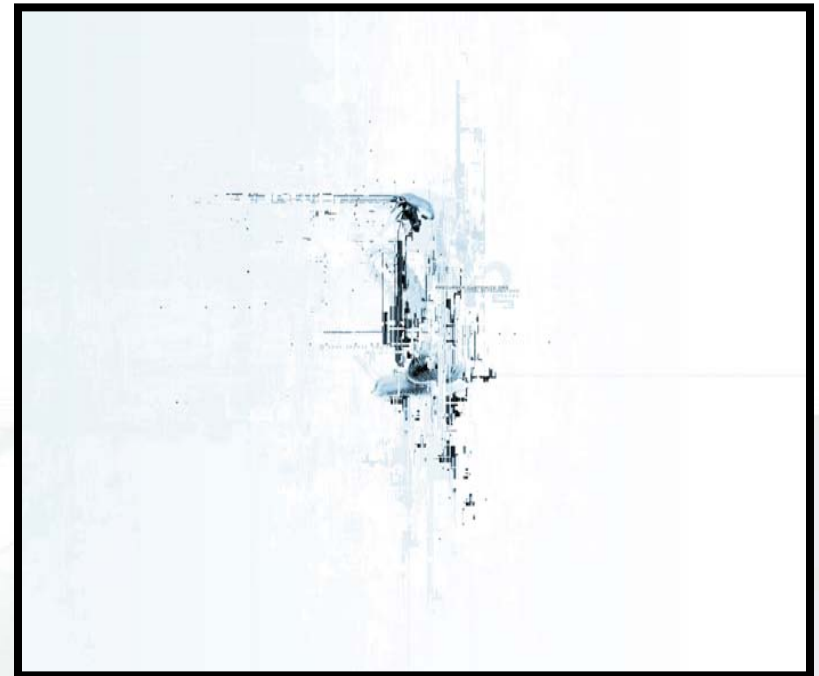 - Install the signed jar
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Install the Signed jar

- Java

$\{JAVA_HOME\}/lib/ext [in the JRE]

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Off to the races!

- ## Pre-Alpha Java GAT
  - http://www.gridlab.org/WorkPackages/wp-1/GAT.tgz

- ## Various default adaptors
  - http://www.gridlab.org/WorkPackages/wp-1/GATAdaptors.tgz

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Off to the races!

1. mkdir JavaGAT
2. cd JavaGAT
3. curl http://www.gridlab.org/WorkPackages/wp-1/GAT.tgz -o GAT.tgz
4. curl http://www.gridlab.org/WorkPackages/wp-1/GATAdaptors.tgz -o GATAdaptors.tgz
5. tar xfvz GAT.tgz
6. tar xfvz GATAdaptors.tgz
7. rm GAT.tgz
8. rm GATAdaptors.tgz
9. cd GAT
10. edit build.xml and change all xxxxx to your chosen alias in your keystore and change all yyyyy to your keystore password. You may need to change the type of key dependent upon your keystore.
11. ant
12. cp lib/GAT.jar to $JAVA_HOME/lib/ext
13. cd ../GATAdaptors/
14. edit build.xml and change all xxxxx to your chosen alias in your keystore and change all yyyyy to your keystore password. You may need to change the type of key dependent upon your keystore.
15. ant
16. cp lib/*.jar to $JAVA_HOME/lib/ext

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For more information…

- GridLab www.girdlab.org

- GAT mailing list gat@gridlab.org

- GAT-BoF at GGF9 in Chicago(October 7-9)

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