Eclipse 4 Goes Formal: API You Can Rely On

- Eric Moffatt
  - Platform UI and e4 comitter
  - Eclipse 4 Dev Lead
  - “Pixel Pusher” I focus on the UI bits; renderers, Min/Max...

What do we use API for anyway ?

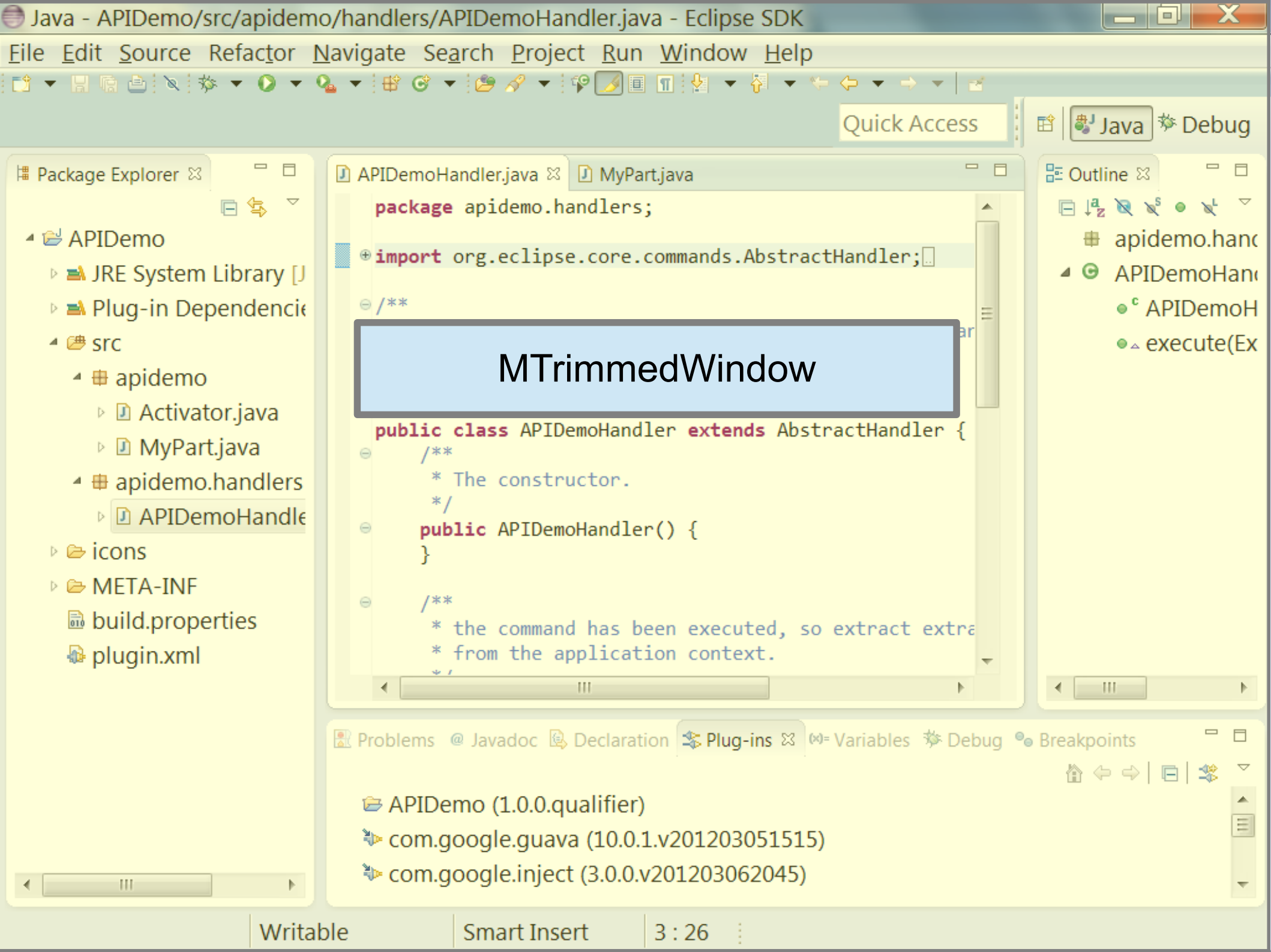
- Getting new stuff into the UI...
  - Views / Editors
  - Menus / Toolbars and their Items
  - Trim Controls
  - Perspectives
- … and getting it to work
  - Accessing services
  - Listening for changes in UI state

Eclipse 3 API (aka 'Old School')

- Organically grown over many years
- Single points of access means inheriting lots of dependencies you really didn't need
  - IWorkbench[Window | Page] are used as access points meaning that while you only want to consume one service you end up dragging in *every* type referenced.
- Uses singletons (i.e. PlatformUI)
  - Bad for multi-instance apps...

Eclipse 4 API

- Two general mechanisms cover everything
  - UI Model (How you talk to us)l
    - Defines what you see on the screen
    - Sends events for *all* model changes
  - Dependency Injection (How we talk to you)
    - You just describe what you need
    - How you access services
    - Dynamic re-injection (replaces most listeners)
    - You describe what you require using annotations...but only what you need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/**
* The constructor.
*/
public APIDemoHandler() {
}
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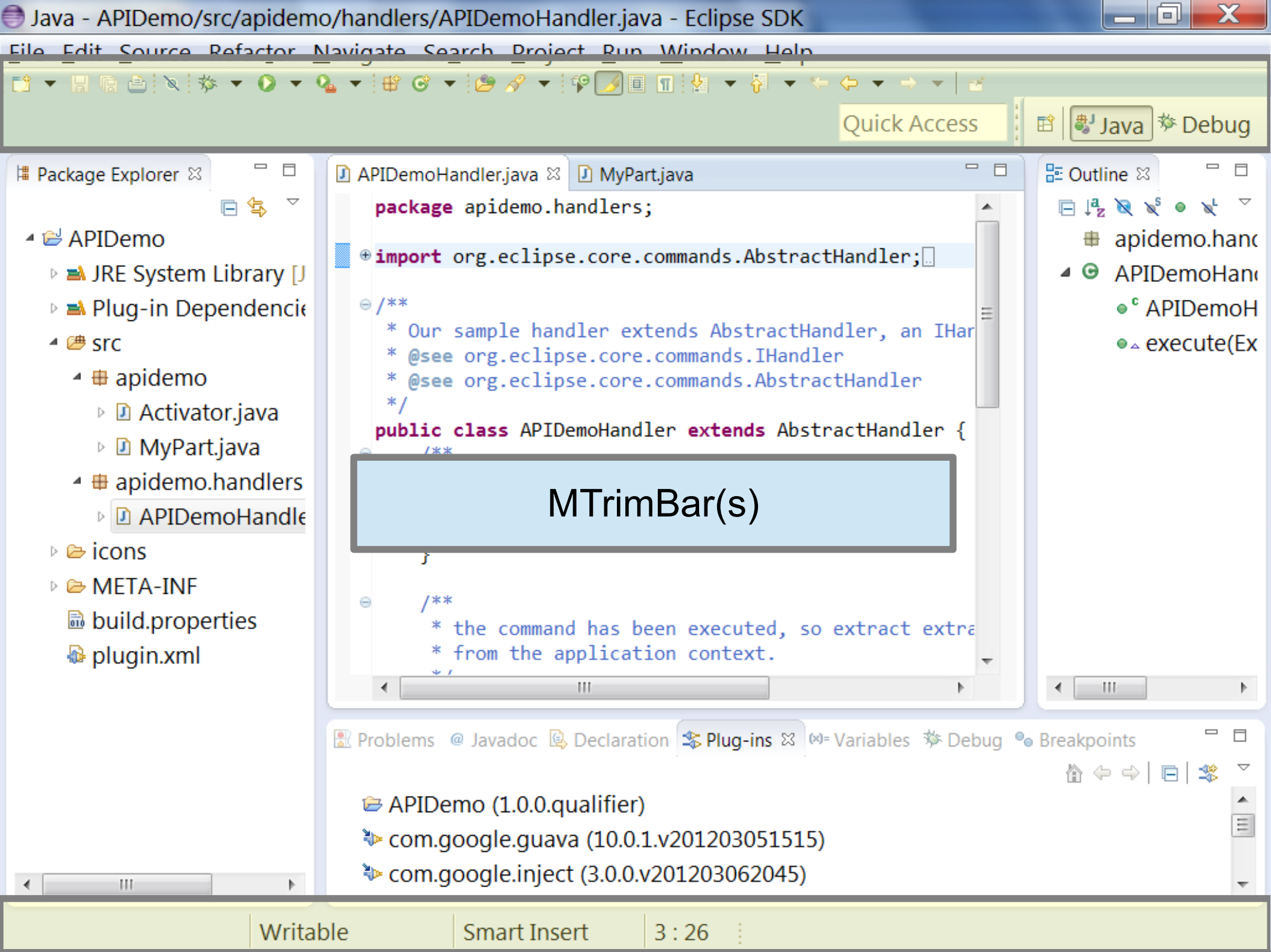
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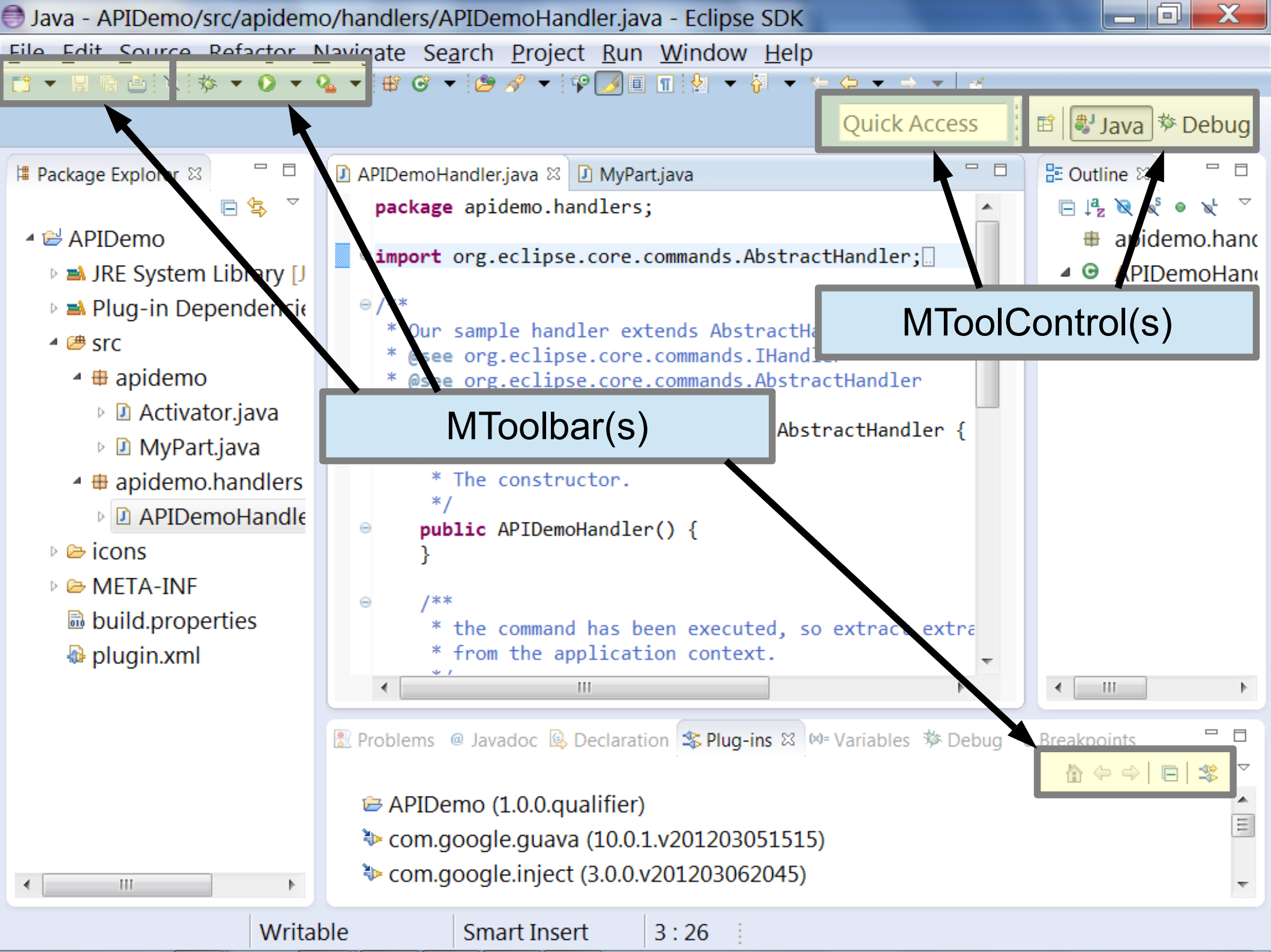
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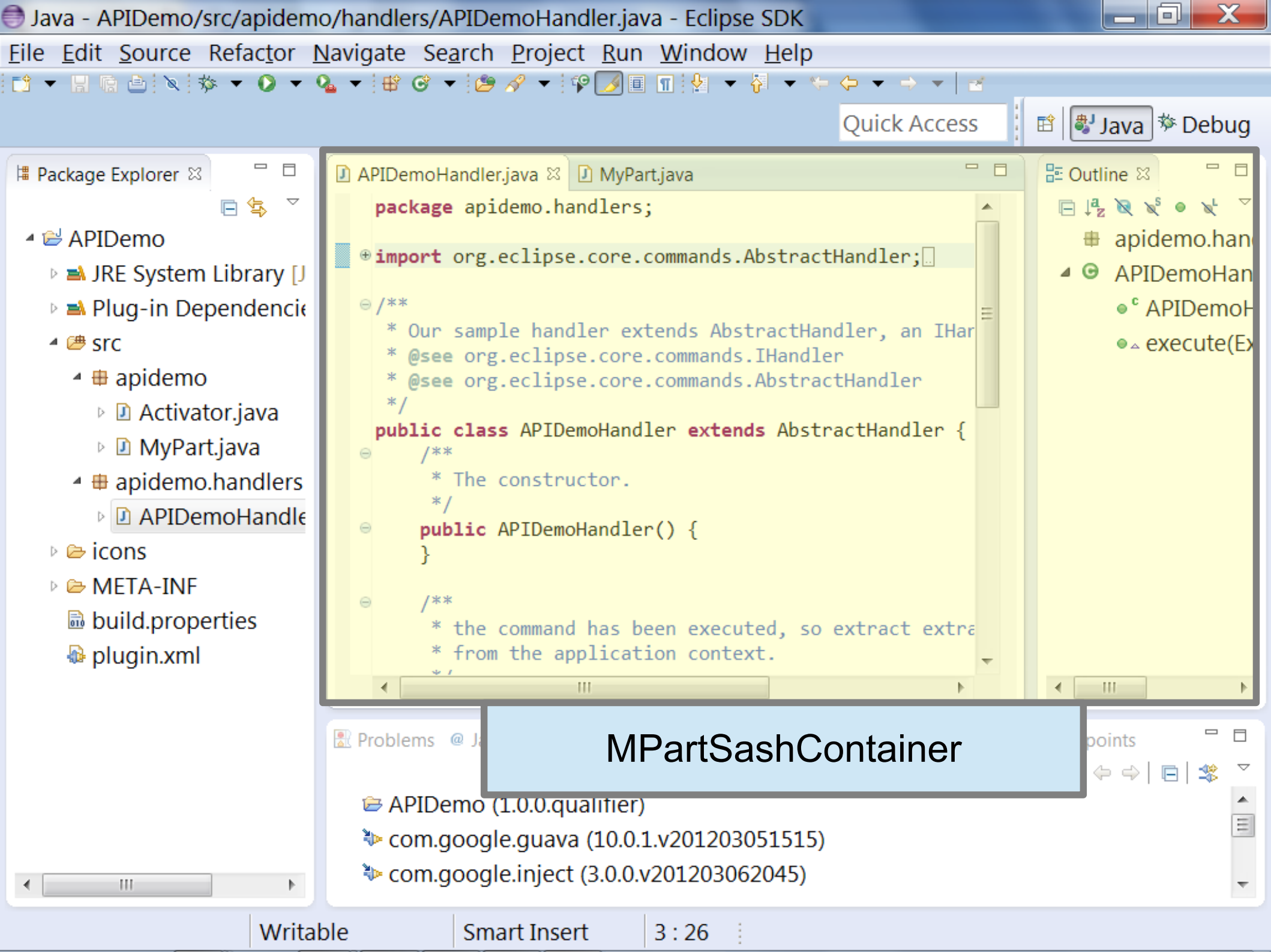
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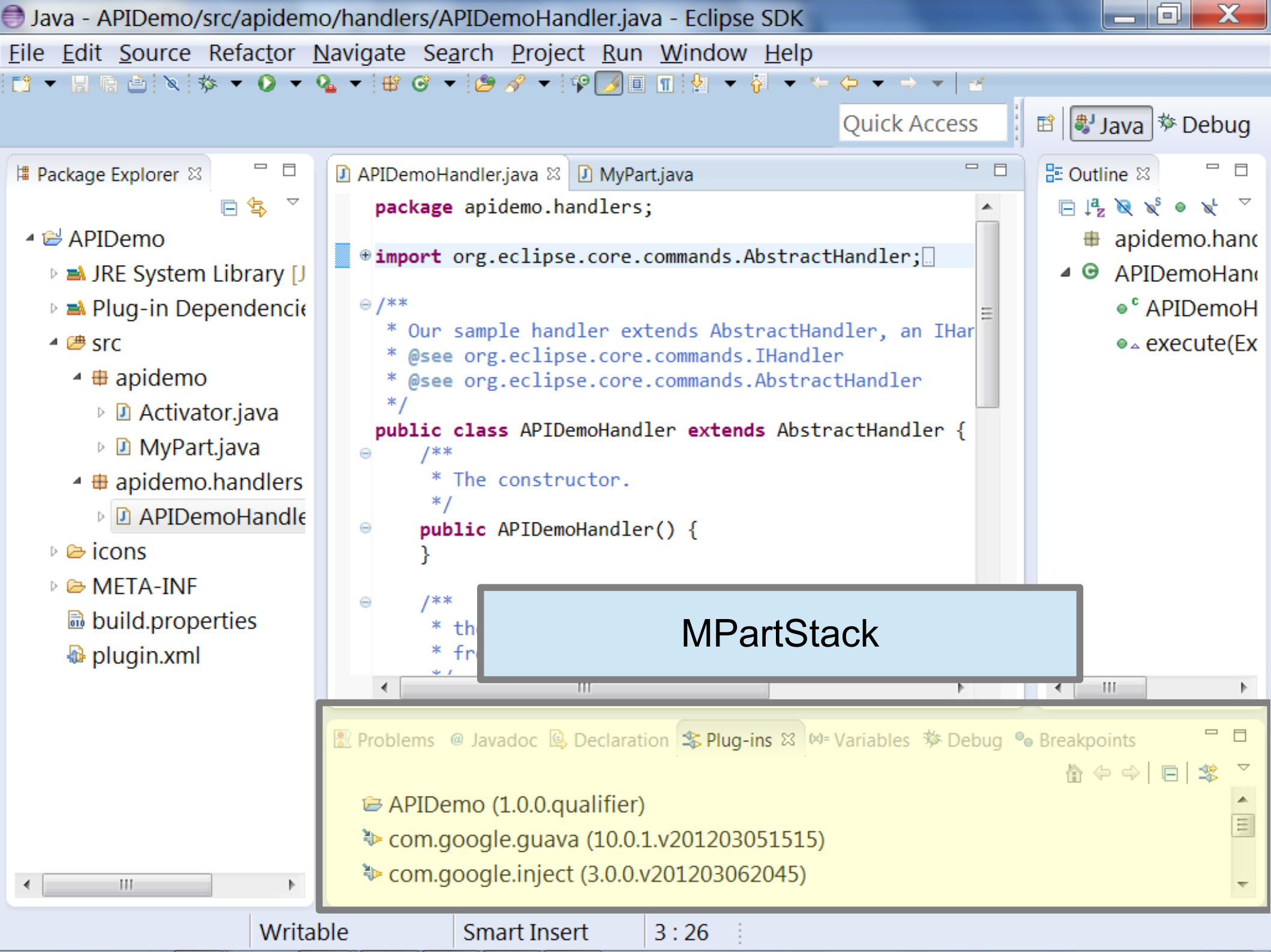
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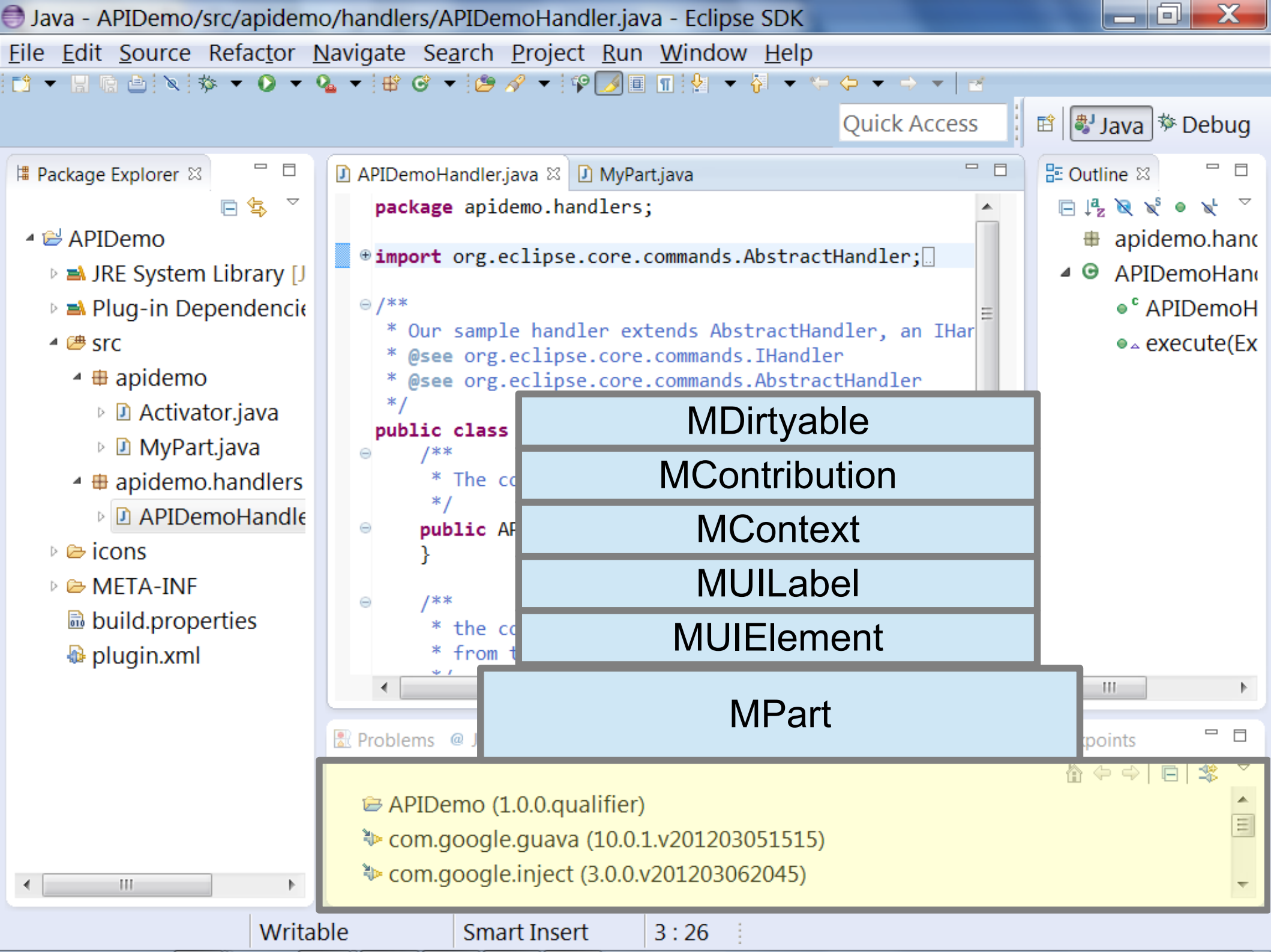
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Simple Scenario Demo

- Standard (3.x) Command to add a new view to the 'bottom' stack
  - Uses new API to manipulate the model
  - New MyPart is an e4 part
    - It's a POJO
    - Gets its info through DI
    - Listens to both model and preference changes

What's Next ?

- Docs...Docs...Docs !!
- Loosen up extension point 'class' restrictions
- Finish up LifeCycle events
- Start blurring the Eclipse 4 / E4 boundary
  - Start breaking some Views and services away from depending on the Workbench

A Start on the Docs

- http://wiki.eclipse.org/Eclipse4/API
- http://wiki.eclipse.org/Eclipse4/RCP/Dependency_Injection

Questions ?

A Start on the Docs

- http://wiki.eclipse.org/Eclipse4/API
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```java
public class APIDemoHandler extends AbstractHandler {
    /**
     * The constructor.
     */
    public APIDemoHandler() {
    }

    /**
     * the command has been executed, so extract extract the needed information
     * from the application context.
     */
    public Object execute(ExecutionEvent event) throws ExecutionException {
        IWorkbenchWindow window = HandlerUtil.getActiveWorkbenchWindowChecked(event);
        MApplication theApp = (MApplication) window.getService(MApplication.class);
        if (theApp != null) {
            MWindow activeWin = theApp.getSelectedElement();
            EModelService ms = activeWin.getContext().get(EModelService.class);
            MPartStack btmStack = (MPartStack) ms.find("bottom", activeWin);
            MPart curPart = (MPart) ms.find("APIDemo.myPart", btmStack);
            if (curPart == null) {
                curPart = ms.createModelElement(MPart.class);
                curPart.setElementId("APIDemo.myPart");
                curPart.setCloseable(true);
                curPart.setLabel("API Demo");
                curPart.setContributionURI("bundleclass://APIDemo/apidemo.MyPart");
                btmStack.getChildren().add(curPart);
            }

            EPartService ps = activeWin.getContext().get(EPartService.class);
            ps.activate(curPart);
        }
        return null;
    }
}
```

```
@Focus void setFocus() {
    label.setFocus();
}

@Inject @Optional
void tbrHandler(@UIEventTopic(UIEvents.UIElement.TOPIC_WIDGET) Event eventData) {
    Object changedElement = eventData.getProperty(UIEvents.EventTags.ELEMENT);

    if (!(changedElement instanceof MPart))
        return;

    visCount = countVisibleElements();
    updateMessage();
}

@Inject
void animationsPrefChanged(@Preference(nodePath="org.eclipse.ui",
                                       value="SHOW_MEMORY_MONITOR") String value) {
    showHeapValue = value == null ? "false" : value;
    updateMessage();
}

@Inject
void activePartChanged(@Named(IServiceConstants.ACTIVE_PART) MPart newPart) {
    apLabel = newPart == null ? null : newPart.getLabel();
    updateMessage();
}

@Inject
void selChanged(@Optional @Named(IServiceConstants.ACTIVE_SELECTION) Object newSel) {
    selCount = 0;
    if (newSel instanceof IStructuredSelection) {
        selCount = ((IStructuredSelection)newSel).size();
    }
    updateMessage();
}
```