Java Card Applet Basics

Michael Kuyper
Thorsten Kramp

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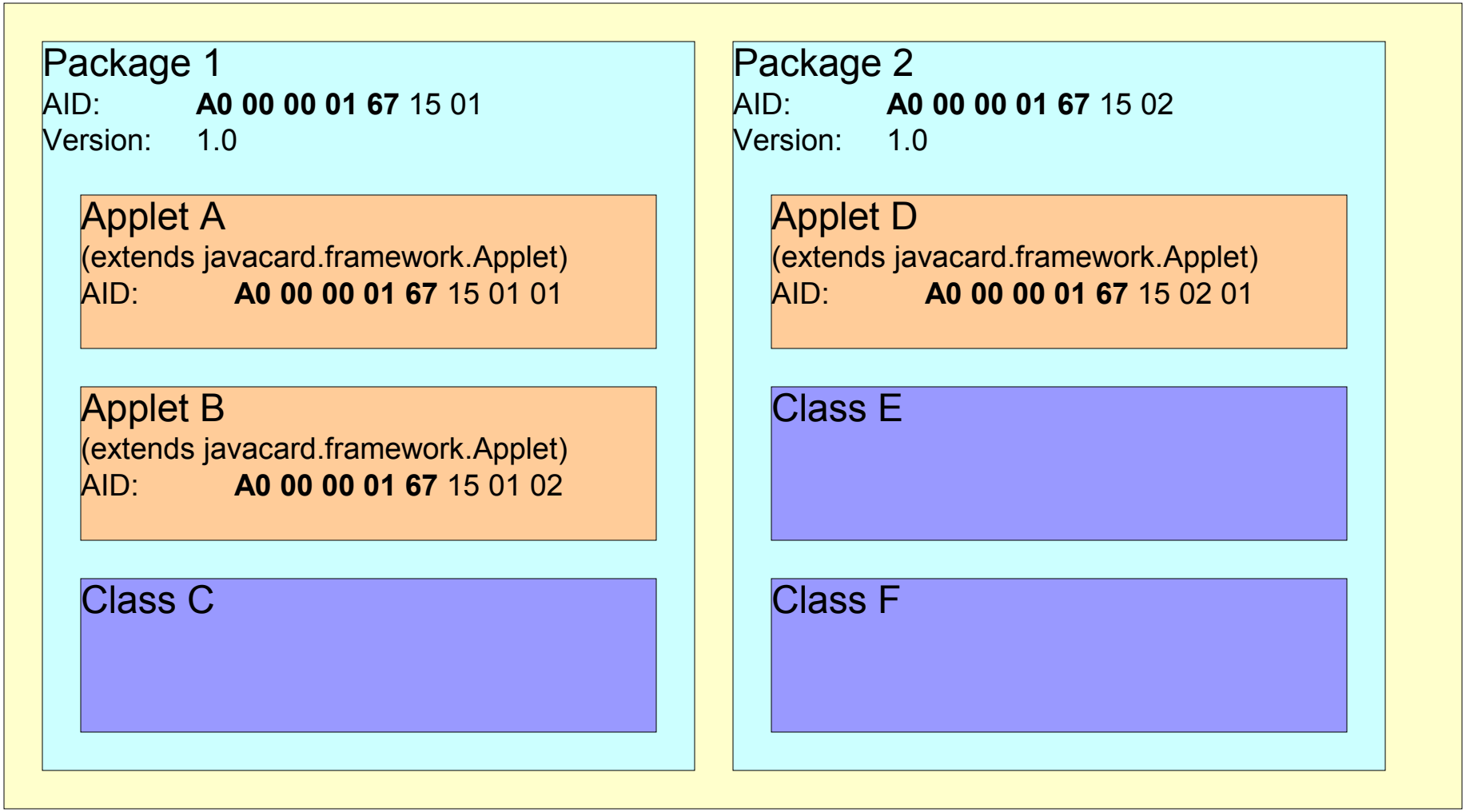
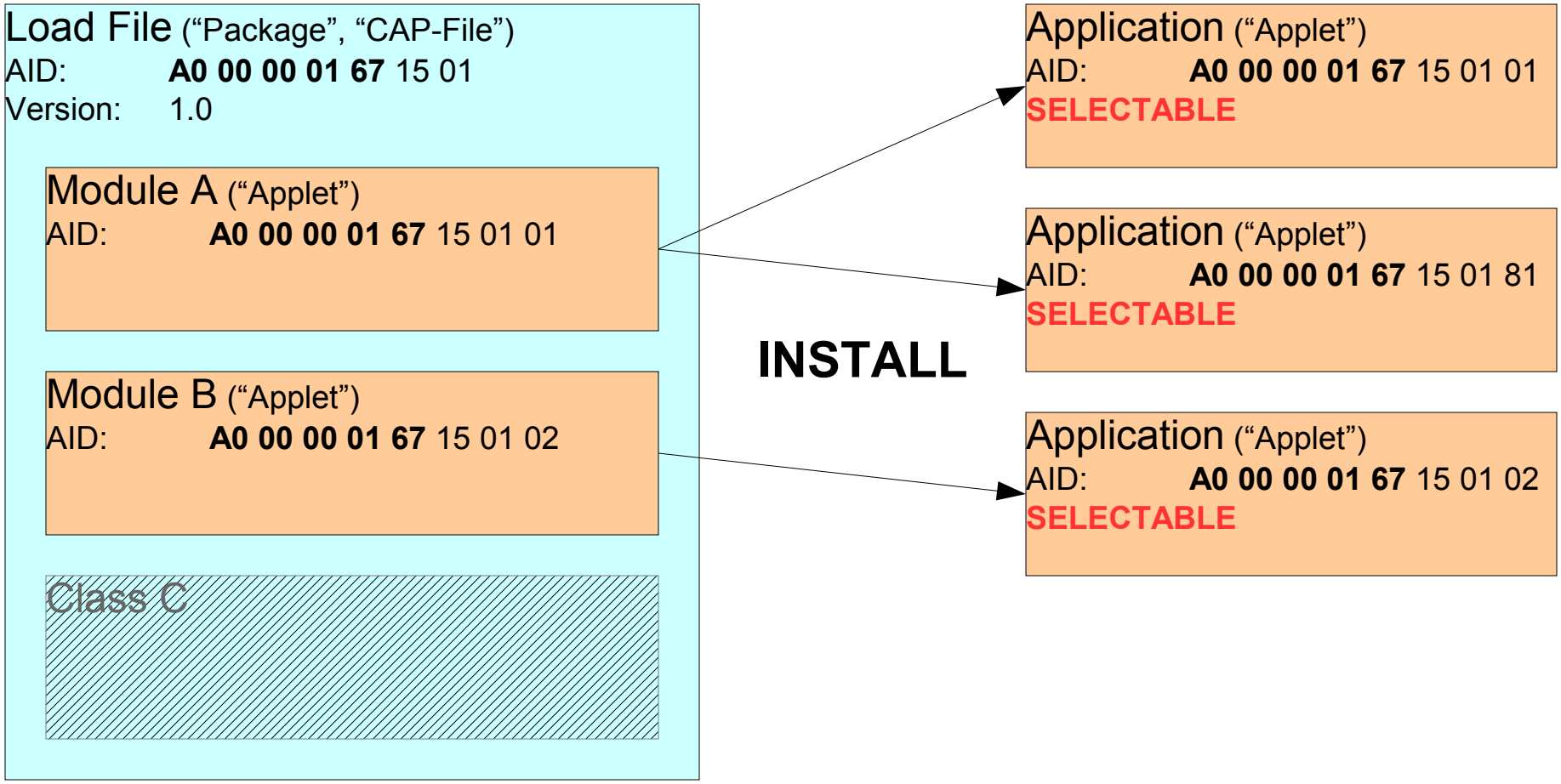
Java Card Application – Development



Java Card Application – On-card



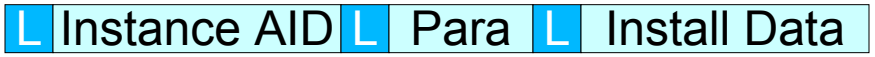
Java Card Applet – Basic Construct

- **`install()`** method (static)
  - Called during INSTALL process
  - Create a new Applet instance and call `register()`
- **`process()`** method
  - Called when applet is selected (including SELECT command)
  - Process command

The install() method

```
public static void install(byte[] bArray, short bOffset, byte bLength) {
    new PurseApplet().register(bArray, (short) (bOffset + 1), bArray[bOffset]);
}
```

- bArray contains install parameters in the following format:



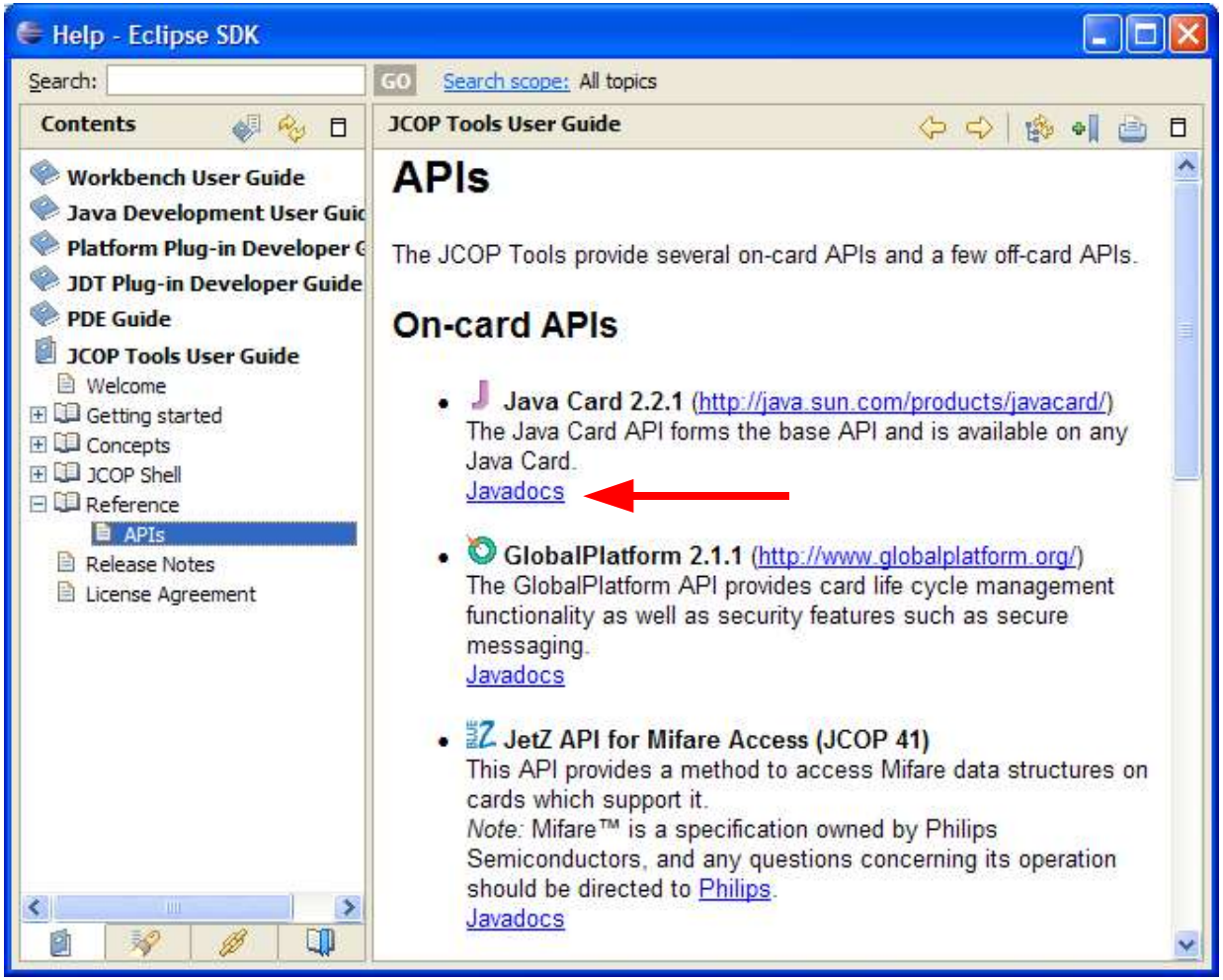
- Any exception thrown *after* a successful `register()` is ignored.
- If the function returns or aborts *before* a successful `register()`, everything is rolled back.

The process() method

```
public void process(APDU apdu) {
    byte[] buf = apdu.getBuffer();
}
```

- adpu contains the APDU object
  Note: *only the first 5 bytes (header) are received on process()!*
- Use `apdu.getBuffer()` to get the APDU buffer
- Check for selection using `selectingApplet()`
- Use `apdu.setIncomingAndReceive()` to receive entire APDU
  Note: *Returns Lc*
- Use `apdu.setOutgoingAndSend()` to send data.
- Use `apdu.setOutgoing()` to get Le
  Note: *You can't use setOutgoingAndSend afterwards!*
- Automatically returns SW 9000 on normal return.
- Use `ISOException.throwIt(ISO7816.SW_*)` to send error SW.

Use the Javadocs!



Loading – The Card Manager

- Management “Applet”
  - LOAD: Uploading of Load Files
  - INSTALL: Instantiating Modules into Applications
  - DELETE: Deleting of Applications and Load Files
- Operations protected by cryptographic keys
  - Authentication through challenge/response mechanism: INITIALIZE UPDATE / EXTERNAL AUTHENTICATE
- Usually the DEFAULT applet