

# Java EE 7 Annotations

## Alternatives for management

CDI	JSF	EJB
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### CDI: javax.inject

CMF	<b>@Inject</b>
	<b>@Named</b> (value="")
	<b>@Singleton</b>

### CDI: javax.enterprise.context

TMF	<b>@ApplicationScoped</b>
TMF	<b>@SessionScoped</b>
TMF	<b>@ConversationScoped</b>
TMF	<b>@RequestScoped</b>
TMF	<b>@Dependent</b>

### CDI: javax.enterprise.inject

TMF	<b>@New</b> (value=Class.class)
TMF	<b>@Alternative</b>
TMF	<b>@Any</b>
MF	<b>@Produces</b> , <b>@Disposes</b>

### JSF management: javax.faces.bean

T	<b>@ManagedBean</b> (name="", eager=false)
T	<b>@CustomScoped</b> (value="")
T	<b>@NoneScoped</b>
T	<b>@ApplicationScoped</b>
T	<b>@SessionScoped</b>
T	<b>@ViewScoped</b>
T	<b>@RequestScoped</b>
F	<b>@ManagedProperty</b> (name="", value="")
T	<b>@ReferencedBean</b> (name="")

### EJB injection: javax.ejb

TMF	<b>@EJB</b> (name="", beanInterface=Interface.class, mappedName="", lookup=""   beanName="", description="")
T	<b>@EJBs</b> (@EJB[])

### Resource injection: javax.annotation

TMF	<b>@Resource</b> (name="", type=Class.class, authenticationType=[AuthenticationType.CONTAINER, APPLICATION], shareable=true, lookup="", mappedName="")
T	<b>@Resources</b> (@Resource[])

## EJB Types: javax.ejb

### Session beans

T	<b>@Stateless</b> (name="ClassName")
T	<b>@Stateful</b> (name="ClassName")
T	<b>@Singleton</b> (name="ClassName")
T	<b>@Local</b> (Class.class[]) on EJB, <b>@Local</b> on interface
T	<b>@Remote</b> (Class.class[]) on EJB, <b>@Remote</b> on interface
T	<b>@LocalBean</b>
TM	<b>@Asynchronous</b>
TM	<b>@Lock</b> ([LockType.WRITE, READ])
T	<b>@ConcurrencyManagement</b> ([CONTAINER, BEAN])
T	<b>@DependsOn</b> (String[])
T	<b>@Startup</b>

### Non-session beans

T	<b>@MessageDriven</b> (name="ClassName", activationConfig=@ActivationConfigProperty[])
	<b>@ActivationConfigProperty</b> (propertyName="", propertyValue="")
T	<b>@ManagedBean</b> (value="") [in javax.annotation.*]

## Timeouts: javax.ejb

TM	<b>@AccessTimeout</b> (value="0", unit=MILLISECONDS)
T	<b>@StatefulTimeout</b> (value="0", unit=MINUTES)
M	<b>@Timeout</b>
M	<b>@Schedule</b> (year="*", month="*", bimonthly="*", dayOfWeek="*", hour="0", minute="0", info="", persistent=true, timezone="")
M	<b>@Schedules</b> (@Schedule[])

## Transaction: javax.ejb

T	<b>@TransactionManagement</b> ([CONTAINER, BEAN])
TM	<b>@TransactionAttribute</b> ([TransactionAttributeType.MANDATORY, REQUIRED, REQUIRES_NEW, SUPPORTS, NOT_SUPPORTED, NEVER])
M	<b>@AfterBegin</b>
M	<b>@BeforeCompletion</b>
M	<b>@AfterCompletion</b>

## Lifecycle: javax.ejb

M	<b>@PostConstruct</b> [in javax.annotation.*]
M	<b>@PreDestroy</b> [in javax.annotation.*]
M	<b>@PostActivate</b>
M	<b>@PrePassivate</b>
M	<b>@Remove</b> (retainIfException=false)

## Interceptors: javax.interceptor

TM	<b>@Interceptors</b> (Class.class[])
TM	<b>@ExcludeDefaultInterceptors</b>
M	<b>@ExcludeClassInterceptors</b>
M	<b>@AroundInvoke</b>
M	<b>@AroundTimeout</b>
T	<b>@Interceptor</b> [only required with @InterceptorBinding]

## Security: javax.annotation.security

T	<b>@RunAs</b> (String rolename)
T	<b>@DeclareRoles</b> (String[])
TM	<b>@RolesAllowed</b> (String[])
TM	<b>@PermitAll</b>
TM	<b>@DenyAll</b>

```
-- Possible source file layout for web app -
1 lib/ [potentially copied to /lib/ inside an EAR]
  |-- extra.jar [jar shared between all modules]
2 src/java/ [potentially packaged as EJB-JAR inside EAR -
  |-- ValidationMessages.properties or under
  |-- JSFStrings.properties WEB-INF/classes/
  |-- META-INF/ inside WAR]
    |-- persistence.xml [for JPA config]
    |-- ejb-jar.xml [for deployment descriptors]
  -- com/
    |-- myBusiness/
      |-- entities/
      |-- Entities.java
      |-- EJBs.java
3 src/webapp/ [potentially packaged as a WAR inside an EAR]
  |-- WEB-INF/
    |-- beans.xml [for CDI config]
    |-- faces-config.xml [for JSF config]
    |-- web.xml [for Servlet 2.5 config]
  |-- resources/
    |-- css/
      |-- standard.css
    |-- javascript/
      |-- standard.js
  |-- jsfpages.xhtml
EAR
class
loader
levels
```

### Legend

TCMF Annotation for Type, Constructor, Method, Field  
VALUE Default Value

## Java EE 7 Annotations Cheat Sheet

Version 1.2 ©2005,2011 Philipp Meier

Version 1.5 (2013-06-27) by Chris Rennie, based on

Java EE 7 API Doc: EJB 3.2, JSF 2.2, JPA 2.1

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## Persistence provider: javax.persistence

TMF	<b>@PersistenceContext</b> (name="", unitName="", type=[PersistenceContextType. <i>TRANSACTION</i> , <i>EXTENDED</i> ], properties=@PersistenceProperty[])
T	<b>@PersistenceContexts</b> (@PersistenceContext[])
TMF	<b>@PersistenceUnit</b> (name="", unitName="")
T	<b>@PersistenceUnits</b> (@PersistenceUnit[])
	<b>@PersistenceProperty</b> (name="", value="")
T	<b>@Cacheable</b> (value=true)

## Object mapping: javax.persistence

T	<b>@Entity</b> (name="")
T	<b>@Table</b> (name="", schema="", catalog="", uniqueConstraints=@UniqueConstraint[])
T	<b>@SecondaryTable</b> (name="", schema="", catalog="", pkJoinColumns=@PrimaryKeyJoinColumn[], uniqueConstraints=@UniqueConstraint[])
T	<b>@SecondaryTables</b> (@SecondaryTable[])
	<b>@UniqueConstraint</b> (columnNames=String[], name="")
T	<b>@IdClass</b> (Class.class)
TMF	<b>@Access</b> (value=[AccessType.FIELD, PROPERTY])
TMF	<b>@AttributeOverride</b> (name="", column=@Column)

## Prop/Field mapping: javax.persistence

MF	<b>@Id</b>
MF	<b>@Column</b> (name="", table="", unique=false, nullable=true, insertable=true, updatable=true, columnDefinition="", length=255, precision=0, scale=0)
MF	<b>@Basic</b> (fetch=[ <i>LAZY</i> , <i>EAGER</i> ], optional=true)
MF	<b>@Enumerated</b> ([EnumType. <i>ORDINAL</i> , <i>STRING</i> ])
MF	<b>@Temporal</b> ([TemporalType.DATE, TIME, <i>TIMESTAMP</i> ])
MF	<b>@Transient</b> !! Near-redundancy:
MF	<b>@Lob</b> 'nullable' describes DB fields
MF	<b>@Version</b> 'optional' describes entity properties

## Relationship mapping: javax.persistence

MF	<b>@OneToOne</b> (targetEntity= <i>void.class</i> , cascade={CascadeType.ALL, DETACH, MERGE, PERSIST, REFRESH, REMOVE}, fetch=[FetchType. <i>LAZY</i> , <i>EAGER</i> ], optional=true, mappedBy="propOrField", orphanRemoval=false)
MF	<b>@OneToMany</b> (targetEntity= <i>void.class</i> , cascade={...}, fetch=[ <i>LAZY</i> , <i>EAGER</i> ], mappedBy="", orphanRemoval=false)
MF	<b>@ManyToOne</b> (targetEntity= <i>void.class</i> , cascade={...}, fetch=[ <i>LAZY</i> , <i>EAGER</i> ], optional=true)
MF	<b>@ManyToMany</b> (targetEntity= <i>void.class</i> , cascade={...}, fetch=[ <i>LAZY</i> , <i>EAGER</i> ], mappedBy="")

TMF	<b>@PrimaryKeyJoinColumn</b> (name=" <i>THIS_PK</i> ", columnDefinition="", referencedColumnName=" <i>OTHER_FK</i> ")
TMF	<b>@PrimaryKeyJoinColumns</b> (@PrimaryKeyJoinColumn[])
MF	<b>@JoinColumn</b> (name=" <i>THIS_FK</i> ", table="", unique=false, nullable=true, insertable=true, updatable=true, columnDefinition="", referencedColumnName=" <i>OTHER_PK</i> ")
MF	<b>@JoinColumns</b> (@JoinColumn[])
MF	<b>@JoinTable</b> (name="", schema="", catalog="", joinColumns={}, inverseJoinColumns={}, uniqueConstraints=@UniqueConstraint[])
TMF	<b>@AssociationOverride</b> (name="", joinTable=@JoinTable    joinColumns=@JoinColumn[])
MF	<b>@MapsId</b> (value="propOrField")
MF	<b>@OrderBy</b> (value="")
MF	<b>@OrderColumn</b> (name=" <i>FIELD_ORDER</i> ", nullable=true, insertable=true, updatable=true, columnDefinition="")

## Queries: javax.persistence

T	<b>@NamedQuery</b> (name="", query="JSQL...", hints=@QueryHint[], lockMode=...)
T	<b>@NamedQueries</b> (@NamedQuery[])
T	<b>@NamedNativeQuery</b> (name="", query="SQL...", resultClass= <i>void.class</i> , hints=..., lockMode=...)
T	<b>@NamedNativeQueries</b> (@NamedQuery[])
	<b>@QueryHint</b> (name="", value="")

## SqlResultSet mapping: javax.persistence

T	<b>@SqlResultSetMappings</b> (@SqlResultSetMapping[])
T	<b>@SqlResultSetMapping</b> (name="", entities=@EntityResult[], columns=@ColumnResult[])
	<b>@EntityResult</b> (entityResult=Class.class, discriminatorColumn="", fields=@FieldResult[])
	<b>@FieldResult</b> (name="", column="")
	<b>@ColumnResult</b> (name="")

## Inheritance: javax.persistence

T	<b>@MappedSuperclass</b>
T	<b>@Inheritance</b> ([InheritanceType. <i>SINGLE_TABLE</i> , <i>TABLE_PER_CLASS</i> , <i>JOINED</i> ])
T	<b>@DiscriminatorValue</b> (value="")
T	<b>@DiscriminatorColumn</b> (name=" <i>DTYPE</i> ", discriminatorType=[ <i>STRING</i> , <i>CHAR</i> , <i>INTEGER</i> ], columnDefinition="", length=31)

## Generators: javax.persistence

MF	<b>@GeneratedValue</b> (generator="", strategy=[GenerationType. <i>AUTO</i> , <i>IDENTITY</i> , <i>SEQUENCE</i> , <i>TABLE</i> ])
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TMF	<b>@SequenceGenerator</b> (name="", schema="", catalog="", sequenceName="", initialValue=0, allocationSize=50)
TMF	<b>@TableGenerator</b> (name="", table="", schema="", catalog="", pkColumnName="", valueColumnName="", pkColumnValue="", initialValue=0, allocationSize=50, uniqueConstraints=@UniqueConstraint[])

## Embedded objects: javax.persistence

T	<b>@Embeddable</b>
MF	<b>@EmbeddableId</b>
MF	<b>@Embedded</b>

## Collections and Maps: javax.persistence

MF	<b>@CollectionTable</b> (name="", schema="", catalog="", joinColumns={}, uniqueConstraints={})
MF	<b>@ElementCollection</b> (targetClass= <i>void.class</i> , fetch=[FetchType. <i>LAZY</i> , <i>EAGER</i> ])
MF	<b>@MapKeyColumn</b> (name=" <i>FK</i> ", table="", unique=false, nullable=true, insertable=true, updatable=true, columnDefinition="", length=255, precision=0, scale=0)
MF	<b>@MapKeyJoinColumn</b> (name=" <i>FK</i> ", table="", unique=false, nullable=true, insertable=true, updatable=true, columnDefinition="", referencedColumnName=" <i>OTHER_PK</i> ")
MF	<b>@MapKeyJoinColumns</b> (@MapKeyJoinColumn[])
MF	<b>@MapKey</b> ("propOrField")
MF	<b>@MapKeyClass</b> (Class.class)
MF	<b>@MapKeyEnumerated</b> ([EnumType. <i>ORDINAL</i> , <i>STRNG</i> ])
MF	<b>@MapKeyTemporal</b> ([TemporalType.DATE, TIME, <i>TIMESTAMP</i> ])

## JPA Lifecycle: javax.persistence

M	<b>@PrePersist</b>	[C]
M	<b>@PostPersist</b>	[C]
M	<b>@PostLoad</b>	[R]
M	<b>@PreUpdate</b>	[U]
M	<b>@PostUpdate</b>	[U]
M	<b>@PreRemove</b>	[D]
M	<b>@PostRemove</b>	[D]

## Listeners: javax.persistence

T	<b>@EntityListeners</b> (Class.class[])
T	<b>@ExcludeDefaultListeners</b>
T	<b>@ExcludeSuperclassListeners</b>

**See also** <http://www.oracle.com/technetwork/middleware/ias/top-link-jpa-annotations-096251.html>