

Code Review Checklist - OAL Micro Services

This is an informal document to help give some insight into some of the things that **OAL Micro Services Code Review Team** looks for in Code Reviews. Obviously there are a class of things (which are design, best practice, architectural in nature) which cannot all be captured in a check list. However watching for the items below on all the code that we write ensures consistency across the teams and improves code quality. This also allows the code review team to focus on key items.

The check list is structured in such a way that the response to these questions is typically "Yes". If the response to any of these is "No", you may NOT submit a merge request without first reviewing with your manager and/or code review team.

Please note: If the response to ALL the questions is "Yes", this will still require approval from the code review team before the merge request can be merged to cn-development. However this code review is expected to be much faster and smoother.

- [Branching & Merge Requests](#)
- [DataTypes](#)
- [New Micro Service Setup](#)
- [Message Brokers \(Oracle Event Hub\)](#)
- [REST API](#)
- [Java](#)
- [XDF Files - DB Objects](#)
- [PL/SQL Files](#)
- [Datafix SQL Files](#)
- [BI Publisher Reports](#)
- [Tests](#)
- [Requests to add to check list](#)

Branching & Merge Requests

S. No	Check list	Expected Response	Additional Information
1	Branch name follows the established naming convention	Yes	Refer to section "GIT Branches" in this document - Git Development Workflow
2	The target branch to merge into is "cn-development"	Yes	This is true for any type of change, including data fixes.
3	Merge Request contains only the changes (files) that are specific to the bug or JIRA task being addressed	Yes	Tasks from different Stories are not recommended to be combined into a single branch. More than one merge request can be raised for a single feature to minimize the count of files being merged.
4	GIT commit messages: Is your GIT commit message subject less than 50 characters?	Yes	Ensure that the body when exists is descriptive and explains briefly about the changes being done to the files
5	Merge Request Introduction contains the links to the JIRA story and a brief description of what the merge request is about, and a recent hudson job to show that the project is building correctly	Yes	<p>Change the introduction that it is created as default in the merge request to contain the information required</p> <p>Sample Format:</p> <p>Introduction Short description about what the merge request is about</p> <p>Link to story: https://confluence.oraclecorp.com/confluence/pages/viewpage.action?pagelId=552200153 Link to feature: https://confluence.oraclecorp.com/confluence/pages/viewpage.action?pagelId=478731810</p> <p>Link to hudson job:http://hudsonci.oraclecorp.com/hudson/oal/view/GSIPaaS/job/GSIPaaS-OalcnScheduler-Build/244/console</p>

DataTypes

S. No	Check list	Expected Response	Additional Information
1	Flags and other boolean Datatypes in Java; should use primitive boolean datatype unless the associated DB column is nullable and doesn't come with a default value. DB columns should store Y/N.	Yes	

2	Use Instant for all transactional date attributes. DB columns should be defined with Date unless milliseconds is required (where Timestamp can be used). For cases where Time component is not required, use LocalDate . Validate with Domain Expert to understand/double check before using LocalDate as most if not all our Date requirements need a Time component.	Yes	
3	Prefer primitive types instead of Wrapper classes unless the associated DB column is nullable and doesn't come with a default value. E.g. long instead of Long . Used BigDecimal instead of double/Double .	Yes	
4	Prefer wrapper data type inside Builder class for all the entities to avoid NPE	Yes	

New Micro Service Setup

S. No	Check list	Expected Response	Additional Information
1	Have you followed the Guide to request for New Repository?	Yes	New Repository Creation from Template
2	Have you renamed the Template Service per the Guide?	Yes	New Repository Creation from Template#ChangestotheTemplate
3	Have you created and applied XDF and Datfixes required to any of the DEV environments?	Yes	
4	Have you tested the renamed Template in Local and PAAS environments?	Yes	New Repository Creation from Template#Testingchanges

Message Brokers (Oracle Event Hub)

S. No	Check list	Expected Response	Additional Information
1	If your micro service is producing just one event then does the topic you are publishing to have the format "corpssostage-oalcn-<appcode for the micro service>-<env> ?	Yes	As an exception do not include any updates produced for File Uploader or Scheduler.
2	If your micro service is producing more than one event, then are the following true? <ul style="list-style-type: none"> The first topic has the format "corpssostage-oalcn-<appcode for the micro service>-<env>" The subsequent topics have the format ""corpssostage-oalcn-<appcode for the micro service>-<one word describing event>-<env>"? 	Yes	As an exception do not include any updates produced for File Uploader or Scheduler.
3	Do all messages published/consumed to/from Kafka implement MessageEvent Interface?	Yes	
4	Does the Kafka Listener have a toggle for turning off message consumption?	Yes	
5	Does the Kafka Listener have consumer id specified with convention - spring.application.name-<feature> ? The value should be a lowercase of "spring.application.name" for applications that run in Weblogic. For OKE apps, they are lower case by default.	Yes	eg: spring.kafka.consumer.group-id = oal-ordersubextraction-service @KafkaListener(id = "#{spring.kafka.consumer.group-id}"+"-fusion", topics = "#{spring.kafka.consumer.group-id}"+"-fusion", topics = "#{spring.kafka.consumer.group-id}"+"-fusion") Note that group id (kafka consumer group id) need not be mentioned.
6	Are producers in your microservice following below standard ? All new producers should publish message headers - tenantCode, appCode, correlationId.	Yes	
7	Are consumers in your microservice following below standards ? <ul style="list-style-type: none"> All new consumers of new message events/ existing message events, should initialize request context through a Kafka header interceptor class instead of initializing it in the consumer class. For new consumers of existing events, interceptor should attempt to initialize via headers first before looking into the payload. 	Yes	

REST API

S. No	Check list	Expected Response	Additional Information
-------	------------	-------------------	------------------------

1	Are you using standard ReST API naming conventions?	Yes	https://restfulapi.net/resource-naming/
2	Are you using Jackson for all JSON serialization / de-serialization?	Yes	In other words, we do not want to write custom serialization / deserialization logic. Use a model so that we can leverage Jackson for serialization / deserialization
3	In case of a GET/PUT/POST request where no data or resource is found, are you setting the HTTP status to 404 and returning empty body?	Yes	
4	In case of a POST for creation of a single Resource, are you setting HTTP status to 201 and the location contains the link to the newly created Resource (response body is empty) in case of a successful processing?	Yes	
5	In case of a GET/PUT/POST/DELETE for creation of a single Resource, are you setting HTTP status to 400 (for any handled exception) or 500 (for unhandled exceptions) in case of a failure in processing? In addition, does the error response match the ErrorResponse.java class?	Yes	The ErrorResponse.java link points to the class in the template in cn-development branch. Folder where ErrorResponse.java is located is (oal/oracle/apps/ic/template/infrastructure/web/)
6	In case of POST for creation of more than 1 Resource and if you want partial commits (meaning some Resources may be committed and others may not) are you setting the HTTP status to 207 with the response body containing the details of which ones succeeded and which ones did not?	Yes	
6	In case of POST for creation of more than 1 Resource and if you do NOT want partial commits (meaning all Resources must be committed or rolled back) are you setting the HTTP status to 200 with the response body containing the details of which ones succeeded and which ones did not?	Yes	

Java

S. No	Check list	Expected Response	Additional Information
1	File has copyright and tomb stone included at the top	Yes	http://slc15ekv.us.oracle.com:8080/static/oal-copyright.txt The above link contains the copyright to be included.
2	Has the source code been formatted and verified using the published code formatter? (Hint: In JDeveloper, use Alt-Shift-F to reformat your source code prior to checking in)	Yes	http://slc15ekv.us.oracle.com:8080/static/oal-eclipse-formatter-v2.xml
3	Checkstyle: Have you run checkstyle on all of your files?	Yes	http://slc15ekv.us.oracle.com:8080/static/oal-checkstyle.xml
4	Sonar Lint - Have you run sonar lint on your code and ensure all violations are addressed?	Yes	
5	JavaDoc - Have you provided class level java docs providing an overview of what the class does including the author name?	Yes	Refer to the sample documentation here
6	JavaDoc - Do key methods in the class have java docs for the method explaining the purpose of the method, what it does, parameters used, return types? Any methods with business logic/conditional checks will need to be documented	Yes	
7	ADF: Does the portion of the code that creates the Application Module (AM) also release it (in all situations, typically by using a try, finally clause)?	Yes	
8	The file does not have any System.out.println statements	Yes	Use the @slf4j to log messages
9	JUnit - Does each Class (that has some logic) have an associated JUnit Test Class with the class name <ClassName>Test?	Yes	The classes/methods without any logic are exempted Derived query method in repositories should not get tested, but custom JPQL query-based methods should
10	Code does not have hard coded values but defines these as constants? Use Enum for Types having multiple values. Use static final constants for single values.	Yes	
11	Using @slf4j for Logging?	Yes	In other words you should not be defining your own Logger
12	Using parameterized logging and not string concatenation for log messages?	Yes	https://www.slf4j.org/faq.html#logging_performance
13	Service APIs - Are the service implementations returning Models (Aggregates) and not returning java.lang.Object?	Yes	
14	If any of your classes are dependent on variables defined in Config server, have you added @RefreshScope annotation, so that the variables obtained from the configserver are updated if they change?	Yes	

15	Extending from RuntimeException for custom exceptions and not from any checked exceptions?	Yes	
16	Checking validity of a Model (Entity, VO, Aggregate) during Object creation?	Yes	Order Model from Template
17	Methods not returning null from any method?	Yes	Prefer using empty Collection (Collections.emptyList etc. or using Optional)
18	Not using any public fields in classes?	Yes	Prefer accessors
19	Dto & Models are overriding Equals, hashCode & ToString?	Yes	Use @EqualsAndHashCode & Use @ToString
20	Using Executors instead of manually creating and managing Threads?	Yes	
21	Analyzed logs to ensure brevity and value added for support?	Yes	
22	Entity classes are extending from AbstractBaseEntity and implement sameIdentityAs	Yes	AbstractBaseEntity
23	Value Objects must implement ValueObject and implement sameValueAs. Value Objects have to be immutable.	Yes	ValueObject
25	Objects are created using Static Factory. Use Builders when dealing with more than 7 parameters	Yes	
26	Using LinkedList over ArrayList when access to elements by Index is not required?	Yes	
27	Passwords not stored in clear text?	Yes	
28	Are you not using any Reflection to create Objects?	Yes	If yes, please reach out to the code review team first
30	Are you using BooleanToStringConverter for all of your "flag" fields which are defined as VARCHAR2(1) in the database?	Yes	If you have any columns in the database which are used to store Y/N values (flags), they should be considered candidates for boolean in entity/models
31	Do your AllArgsConstructors and NoArgsConstructors have the right access level below? @AllArgsConstructor(access = AccessLevel.PRIVATE) @NoArgsConstructor(access = AccessLevel.PROTECTED)	Yes	Do not leave them as PUBLIC.
32	Do all of the fields with datatype String have the length of the string in the "@Column" annotation if defined in a Entity or Embedded Value Object?	Yes	
33	Do all of the fields representing not null columns have the "nullable" in the "@Column" annotation?	Yes	
34	Does your "@Table" annotation include "indexes" which contain all the indexes on the tables?	Yes	
35	Models have to expose behaviors and not setters	Yes	
36	Use @Autowire at constructor level.	Yes	Avoid attribute autowiring
37	Use a default allocationSize of 100 for a Sequence defined in an Entity	Yes	<pre>@SequenceGenerator(name = "OALCN_OSM_SEQ", sequenceName = "OALCN_OSM_SEQ", allocationSize = 100)</pre> <p>Note: Remember to change the sequence's INCREMENT to match the allocationSize.</p> <p>https://wiki.eclipse.org/EclipseLink/UserGuide/JPA/Basic_JPA_Development/Entities/Ids/SequenceGenerator</p>

XDF Files - DB Objects

For PL/SQL based objects (eg., Packages, Procedures, Functions, etc.), refer to the check list under PL/SQL Files as well.

	Check list	Expected Response	Additional Information
1	Object Name prefix is OALCN, OALEPM or OALOKSIB (unless it is a legacy object, which was created before we came up with this prefix)	Yes	
2	Every table has a primary key?	Yes	
3	Each table has atleast one unique index (for primary key)?	Yes	
4	SELECT,UPDATE,INSERT access to the OALXX tables and views has been granted to OALXX_RUNTIME schema.	Yes	
5	For OALCN CPT objects, only SELECT access has be granted to ROLE_FCN_SUPPORT	Yes	
6	For OALCN non CPT Objects, only SELECT access to be granted to ROLE_OIC_SUPPORT	Yes	

7	For all OALCN objects, no access is granted to OAL_READ_ONLY (In other words the only way to access these objects for OAL support folks is using their own native accounts and not via generic read only accounts)	Yes	
8	For all OKSIB objects, only SELECT access to be granted to ROLE_OKSIB_SUPPORT. Specifically no access is to be granted to OAL_READ_ONLY users	Yes	
9	For all EPM objects, only SELECT access to be granted to ROLE_EPM_SUPPORT. Specifically no access is to be granted to OAL_READ_ONLY users	Yes	

PL/SQL Files

S. No	Check list	Expected Response	Additional Information
1	File has copyright and tomb stone included at the top	Yes	
2	The history section contains information on the JIRA task # or bug # and a brief description of the change (avoid a 2 or 3 word description). Preferably 1 to 3 sentences.	Yes	
3	Exception Handling: The code does not trap "When Others" and suppress the error. There are some rare and genuine cases where this is done - where we trap the exception and handle it at a higher level. But in general we should not suppress this error. The recommended way is to handle the planned errors (eg., NO_DATA_FOUND, TOO_MANY_ROWS, etc.,) and not suppress WHEN OTHERS.	Yes	

Datafix SQL Files

S. No	Check list	Expected Response	Additional Information
1	File has copyright and tomb stone included at the top	Yes	http://slc15ekv:8080/static/oal-copyright.txt The above link contains the copyright to be included.
2	The history section contains information on the JIRA task # or bug # and a brief description of the change (avoid a 2 or 3 word description). Preferably 1 to 3 sentences.	Yes	
3	Exception Handling: The code does not trap "When Others" and suppress the error. There are some genuine cases where this is done - where we trap the exception and handle it at a higher level.	Yes	
4	The CREATED_BY and LAST_UPDATED_BY values are set to SEEDDATA (CPT only) or <micro service user name> (for all micro services based scripts) to allow us to distinguish it from any data that was updated through the UI.	Yes	
5	The script is re runnable.	Yes	During the development and testing process, the same script might be applied multiple times to Dev and UAT environments. So, this needs to be re-runnable. In essence, the file should delete the setup data prior to inserting data into the tables.
6	Each table has its own data fix script (with the exception of oalcn_config table - see #7 below)	Yes	If there are multiple tables where the data fix needs to be applied and there is a relationship between the data in these tables, then use the phase code to structure these scripts to run correctly.
7	For OALCN_CONFIG table only - create a microservice specific script (e.g. oalcn_scheduler_config_properties.sql)	Yes	
8	The script does not use hard coded values for id columns but derives these from a sequence.	Yes	

BI Publisher Reports

S. No	Check list	Expected Response	Additional Information
1	Does the BI Publisher report follow established naming conventions?	Yes	CPT: The report always starts with "CPT" and has a suffix of a unique report number. The list of BI Publisher reports are available at the confluence location - CPT BI Publisher Reports
2	Do the roles have access to read only (schedule and view the report online) and do not have access to write or delete the report?	Yes	Review the file security.xml and search for "write" or "delete" to identify these scenarios.
3	None of the private folders are included in patching	Yes	The private folders are represented as ~<user> in the security.xml file
4	The sample data file does not contain any sensitive data	Yes	The sample data file is required to create reports. We need to ensure that this does not contain any sensitive data at all
5	None of the reports that contain sensitive and/or HR data are available to any of the OAL roles (even in UAT/production). These are available only to business roles which OAL team members are not expected to have	Yes	
6	"Caching" is not turned on for the report.	Yes	Caching will result in incorrect data being reported. Turn off caching to ensure that the report data matches what is in the database

Tests

S. No	Check list	Expected Response	Additional Information
1	Does a Test class exist in src/test/* package for every class created in /src/main/* package?	Yes	
2	Testing a class which doesn't have any dependency (e.g. Model, DTO etc.) must use @RunWith(Junit4.class)	Yes	Review the file security.xml and search for "write" or "delete" to identify these scenarios.
3	Testing a class with dependency must use @RunWith(MockitoJUnitRunner.class)	Yes	The private folders are represented as ~<user> in the security.xml file
4	@RunWith(SpringRunner.class) is used only for component tests (Spring Autowiring /Configuration). e.g. simulating Integration with Broker, Database, Mock Web Service etc.	Yes	Component tests should represent around 10% of the tests written with the remaining being a part of #2 and #3.
5	Ignore @ToString test coverage	Yes	
6	All data objects (DTO, Domain Models etc.) should have @EqualsAndHashCode and should be tested	Yes	
7	Prefer to use @WebMvcTest for testing the Web Layer (Controllers)	Yes	https://spring.io/guides/gs/testing-web/ https://docs.spring.io/spring-boot/docs/current/reference/html/boot-features-testing.html
8	Prefer to use @DataJpaTest for testing the Persistence Layer (Repositories)	Yes	https://docs.spring.io/spring-boot/docs/current/reference/html/boot-features-testing.html https://docs.spring.io/spring-boot/docs/current/reference/html/boot-features-testing.html

Requests to add to check list

If you have any items that you think would be useful to add to the check list, please include them here. Periodically the code review team can review these and add it to the checklist. Do not update the above checklist directly. The Code review team would do that.

S. No	Requester	Date Requested	Category (or Sub section)	Check list question	Comments	Code Review Team Status
-------	-----------	----------------	---------------------------	---------------------	----------	-------------------------

0 (Sample)	Developer email (raju.v.krishnamoorthy@oracle.com>	Dec 6th, 2017	Java Files	Using @Slf4j for Logging?	You do not need to define your own logger explicitly. Use annotation "@Slf4j" instead to have the logger defined for you.	Pending review by Code review team
1	Saurabh Surendra	14 Dec 2017	XDF Files - DB Objects	If a not null column is being added to an existing table then it must have a default value. Expected response is Yes		Pending review by Code review team
2	Saurabh Surendra	02 Feb 2018	XDF Files - DB Objects	Tables do not have a PRIMARY key constraint but instead there is a unique index defined on the primary key column? The expected response should be changed to Yes		Pending review by Code review team
3	Raju Krishnamoorthy	02 Feb 2018	Datafix - SQL Files	The file data-h2.sql does not have any DDL statements in them. Expected Response should be Yes.	data-h2.sql is a test data setup script. DDLs are always generated by JPA automatically. These are generated based on the entity classes. Hence explicit DDL is not required in this file.	Pending review by Code review team
4	Raju Krishnamoorthy	07 Feb 2018	Models	If this is a shared model, is the Merge method implemented? Expected Response should be Yes		Pending review by Code review team
5	Raju Krishnamoorthy	07 Feb 2018	Models	If this is a shared model, does it contain the changeNumber field? Expected Response should be Yes		Pending review by Code review team
6	Raju Krishnamoorthy	07 Feb 2018	Models	If there is date serialization required, it is done in the DTO and not in the Model? Expected Response should be Yes	In other words,	Pending review by Code review team
7	Raju Krishnamoorthy	07 Feb 2018	Model	If this is a shared model, it does not have a builder as only merge is needed? Expected Response should be Yes	If this is a shared model, then we will just be consuming updates to the model. Hence we do not need to validate and build. The Merge method should take care of <ul style="list-style-type: none"> • Checking to see if record exists and if so, update, else insert • Checking to see if incoming changeNumber >= existing changeNumber. If so, update, else ignore 	Pending review by Code review team
8	Luis Gutierrez	28 Jan 2019	Java	Unless providing a value other than name(), the toString() method on an enum class should not be overridden.	An enum's default toString() implementation is to return this.name(). There have been several cases where this method is overridden to perform this default behavior, which is not only redundant but adds an additional hand-written method that must be tested. This should be avoided. Reference answer: https://stackoverflow.com/a/18031576	Pending review
9	Shuchismita Upadhyay	20 May 2021	Naming convention	Do variable and constant names reflect their intent rather than their values? Expected Response should be Yes	Examples: MAX_RETRY_COUNT = 10 instead of TEN = 10 POLICY_CUTOFF_DATE = 1-Jan-2020 instead of ONE_JAN_TWENTYTWENTY = 1-Jan-2020 validClosureStatusFlag instead of processedOrFilteredFlag	Pending review by Code review team
10	Manikandan Krishnamurthy Vembu	18 Aug 2022	Pipeline Files	Code reviewers to make sure all the required artifacts are called in the install.pipeline files	Example: If there are changes made to a table (lets say, adding a column), then the changed file may be a part of the MR. An additional check to make sure the xdf is executed from install.pipeline should be reviewed. This would ensure that all the required code are executed during the build/deploy process.	Pending review by Code Review Team
11	Shuchismita Upadhyay	23 Aug 2022	DB Grants	Does the grant XDF have the required grants for the object, and nothing additional?	Standard DB object grants in different schemas should be documented and available to developers / code reviewers for review.	Pending review
12	Jagan Malla	05 Sep 2022	Config	Have profile-specific configuration properties been set up for EACH profile correctly?	Config setup SQL, if profile-specific, should not miss any environment profile. Every time a profile specific config is added, it should be added for all profiles.	Pending review

13	Shuchismita Upadhyay	06 Sep 2022	Models	Do model attributes mapped to DATE DB columns have the appropriate datatype: Instant / LocalDate, depending on whether the columns need the time component or not?		Pending review by Code Review Team
----	--------------------------------------	-------------	--------	--	--	------------------------------------