

Medicare Severity Diagnosis Related Groups (MS-DRG) Software

Java API guide

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

If this product includes UB-04 information: Copyright 2021, American Hospital Association ("AHA"), Chicago, Illinois. Reproduced with permission. No portion of this publication may be reproduced, sorted in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior express, written consent of AHA.

Table of Contents

Medicare Severity Diagnosis Related Groups (MS-DRG) Software Java API Guide	5
System requirements	5
Dependency information.....	5
Calling the MS-DRG Java jar.....	7
Sample code	7
Class and enum information.....	9
Class Runtime Options	9
Enum MsdrgAffectDrgOptionFlag	10
Enum MsdrgMarkingLogicTieBreakerOptionFlag	10
Enum MsdrgHospitalStatusOptionFlag	11
Class MsdrgRuntimeOption	11
Class MsdrgComponent	11
Class MsdrgClaim	12
Class MsdrgInput.....	16
Class MsdrgOutput.....	17
Class MsdrgGrouperResult.....	20
Class MsdrgGrouperFlags.....	21
MsdrgProcedureFlag.....	22
MsdrgDiagnosisFlag	23
MsdrgHac	24
Enum MsdrgHacStatus	24
Enum MsdrgCodeSeverityFlag	25
Enum MsdrgPoaErrorCode	25
Enum MsdrgGroupingImpact.....	26
Enum GfcPOA.....	26
Enum MsdrgSex	27
Enum MsdrgMedSurgType	27
Enum MsdrgSeverity.....	27
Enum MsdrgGrouperFlagHacStatus.....	28
Enum MsdrgAdmitDxGrouperFlag.....	28
Enum MsdrgGrouperReturnCode	28
Enum MsdrgDischargeStatus	29
Class MsdrgDiagnosisCode	30
Class MsdrgProcedureCode	31

Medicare Severity Diagnosis Related Groups (MS-DRG) Software Java API Guide

This document describes how to call the MS-DRG Software from a Java® application. It also notes the necessary dependencies required to execute the MS-DRG Software. Suggested system requirements are also provided. The use of MS-DRG software outside of a Java calling program is also possible but outside the scope of this document. There is also an included sources jar for MS-DRG.

System requirements

Oracle®, OpenJDK, or other Java® Version 8 or greater.

Dependency information

Table 1. 3M open source dependencies

Jar name	Version	Purpose	Information
gfc-base-api	3.4.9	Grouper Foundation Class Common grouper calling framework and common business objects to standardize grouper development https://github.com/3mcloud/GFC-Grouper-Foundation-Classes	3M created open source binary
farser	3.3.0	A set of utilities, parsers, and lexers that are used in conjunction with Diagnosis Related Group (DRG) logical formulas https://github.com/3mcloud/farser	3M created open source binary

Table 2. Third party open source Dependencies

Third party software name	Version	Are the distributed binaries modified by 3M?	Purpose	Licensing
Jackson Distributables: Jackson-annotations.jar URL: https://github.com/FasterXML/jackson	2.9.5	No modification / Not a derivative work; only aggregated with 3M software.	JSON serialization/deserialization	Copyright (c) 2007-Tatu Saloranta, tatu.saloranta@iki.fi License type: Apache License Version 2.0 URL: http://www.apache.org/licenses/LICENSE-2.0
Google Protocol Buffers Distributables: protobuf-java.jar URL: https://developers.google.com/protocol-buffers	4.0.0-rc-2	No modification / Not a derivative work; only aggregated with 3M software.	Embedded content storage/processing speed optimization	Copyright 2021 Google Inc. All rights reserved License Type: New BSD License URL: https://ptolemy.berkeley.edu/ptolemyII/ptII1.0/ptII/lib/protobuf-license.htm
SLF4J API Distributables: slf4j-api.jar URL: http://www.slf4j.org/	1.7.26	No modification / Not a derivative work; only aggregated with 3M software.	Logging	Copyright (c) 2004-2017 QOS.ch License Type: SLF4j (MIT License) URL: http://www.slf4j.org/license.html

Table 3. 3M Dependencies

Jar name	Version	Purpose	Information
msdrg-proto-generator	1.0-SNAPSHOT	Provide access to component core binary data necessary for proper run-time processing.	3M created jar

Calling the MS-DRG Java jar

The MS-DRG Java jar can be called using the following steps:

1. Initialize `MsdrgRuntimeOption` to set the component grouping configurations (see Class `MsdrgRuntimeOption` (page [11](#))).
2. Initialize and populate `RuntimeOptions` to set the individual runtime configuration options (see Class `RuntimeOptions` (page [9](#))).
3. Set `RuntimeOptions` on `MsdrgRuntimeOption`.
4. Create and populate class `MsdrgClaim` to set patient demographic and claim information (see Class `MsdrgClaim` (page [12](#))).
5. Initialize `MsdrgComponent` and pass in `MsdrgRuntimeOption` as a parameter to create a new instance of the component (see Class `MsdrgComponent`) (page [11](#)).
6. Use the `process()` method on `MsdrgComponent` and pass in `MsdrgClaim` as a parameter to group the claim.
7. Use the `.getOutput()` method on `MsdrgClaim` to get the results of grouping (see Class `MsdrgClaim` (page [12](#))).

Sample code

This sample code illustrates the prior steps using hardcoded claim information.

```
import com.mmm.his.cer.foundation.model.GfcPoa;
import gov.agency.msdrg.model.enumeration.MsdrgSex;
import gov.agency.msdrg.MsdrgOption;
import gov.agency.msdrg.MsdrgRuntimeOption;
import gov.agency.msdrg.model.MsdrgDiagnosisCode;
import gov.agency.msdrg.model.MsdrgProcedureCode;
import gov.agency.msdrg.model.RuntimeOptions;
import gov.agency.msdrg.model.enumeration.MsdrgAffectDrgOptionFlag;
import gov.agency.msdrg.model.enumeration.MsdrgDischargeStatus;
import gov.agency.msdrg.model.enumeration.MsdrgHospitalStatusOptionFlag;
import
gov.agency.msdrg.model.enumeration.MsdrgMarkingLogicTieBreakerOptionFlag
;
import gov.agency.msdrg.v381.MsdrgComponent;
import gov.agency.msdrg.transfer.MsdrgClaim;
import java.util.ArrayList;
import java.util.List;
```

```
public class Main {
    public static void main (String args[]) {
        //Initialize MsdrgruntimeOption
        MsdrgruntimeOption runtimeOptions = new MsdrgruntimeOption();
        //Initialize RuntimeOptions
        RuntimeOptions options = new RuntimeOptions();
        //Set the three enums on RuntimeOptions

options.setPoaReportingExempt (MsdrgrHospitalStatusOptionFlag.NON_EXEMPT);
options.setComputeAffectDrg (MsdrgrAffectDrgOptionFlag.COMPUTE);

options.setMarkingLogicTieBreaker (MsdrgrMarkingLogicTieBreakerOptionFlag.
CLINICAL_SIGNIFICANCE);
//Put RuntimeOptions on the MsdrgruntimeOption map
runtimeOptions.put (MsdrgrOption.RUNTIME_OPTION_FLAGS, options);
//Initialize a claim
MsdrgrClaim claim = new MsdrgrClaim();
//Set Sex
claim.setInputSex (MsdrgrSex.FEMALE);
//Set Discharge Status

claim.setInputDischargeStatus (MsdrgrDischargeStatus.HOME_SELF CARE_ROUTINE
);
//Set Admission Diagnosis Code
claim.setInputAdmissionDiagnosisCode (new MsdrgrDiagnosisCode ("A000"));
//Set Principal Diagnosis Code and asociated POA values
claim.setInputPrincipalDiagnosisCode (new MsdrgrDiagnosisCode ("A000",
GfcPoa.Y));
//Create list of diagnosis codes and associated POA values
List<MsdrgrDiagnosisCode> dxCodes = new ArrayList<MsdrgrDiagnosisCode>();
dxCodes.add (new MsdrgrDiagnosisCode ("A001", GfcPoa.Y)); dxCodes.add (new
MsdrgrDiagnosisCode ("I10", GfcPoa.N));
//Set list of diagnosis codes on the claim
claim.setInputSecondaryDiagnosisCodes (dxCodes);
//Create list of procedure codes to the claim
List<MsdrgrProcedureCode> procedureCodes = new
ArrayList<MsdrgrProcedureCode>();
procedureCodes.add (new MsdrgrProcedureCode ("0FHB7DZ"));
procedureCodes.add (new MsdrgrProcedureCode ("0FPB7DZ"));
//Set list of procedure codes on the claim
claim.setInputProcedureCodes (procedureCodes);

//Initialize the component and pass in the runtime options (This only needs
to be done the first time, subsequent claims can use the same component)
MsdrgrComponent component = new MsdrgrComponent (runtimeOptions);
//Pass in claim to be processed
component.process (claim);
}
```



```
//Get a value off the processed claim.
int initialDrg = claim.getOutputInitialGrouperResultDrg();
System.out.println("Initial DRG: " + initialDrg);

}

}
```

Class and enum information

Class Runtime Options

Package gov.agency.msdrg.model

public class RuntimeOptions

Constructors

RuntimeOptions()

RuntimeOptions(drgOptionFlag, tieBreakerOptionFlag, hospitalStatusOptionFlag)

Table 4. Method summary - RuntimeOptions

Return type	Method	Description
MsdrgAffectDrgOptionFlag	getComputeAffectDrg()	Get enum value for computing if a code affects DRG
MsdrgMarkingLogicTieBreakerOptionFlag	getMarkingLogicTieBreaker()	Get enum value for how to break ties in marking logic
MsdrgHospitalStatusOptionFlag	getPoaReportingExempt()	Get enum for hospital status on whether they are exempt from reporting POA
void	setComputeAffectDrg(MsdrgAffectDrgOptionFlag computerAffectDrg)	Set enum value whether to compute
void	setMarkingLogicTieBreaker(MsdrgMarkingLogicTieBreakerOptionFlag markingLogicTieBreaker)	Set enum value for how to break ties in marking logic. Related to which code will get marked as effecting DRG assignment.

Return type	Method	Description
void	setPoaReportingExempt(MsdrghospitalStatusOptionFlag poaReportingExempt)	Set enum value whether the hospital is exempt from POA (present on admission) reporting

Enum MsdrghAffectDrgOptionFlag

Package gov.agency.msdrgh.model.enumeration

public enum MsdrghAffectDrgOptionFlag

Table 5. Enum constant - Msdrgh Affecting DRG Option Flag

Enum constant	Description
COMPUTE	(Default) Compute which codes affect DRG
DO_NOT_COMPUTE	Do not compute if codes affect DRG

Enum MsdrghMarkingLogicTieBreakerOptionFlag

Package gov.agency.msdrgh.model.enumeration

public enum MsdrghMarkingLogicTieBreakerOptionFlag

Table 6. Enum constant - Msdrgh Marking Logic Tie Breaker Option Flag

Enum constant	Description
CLINICAL_SIGNIFICANCE	(Default) Will use codes in clinical significance order to break ties in calculating which codes affect DRG assignment.
CODE_ORDER	Will use the order codes are entered on the claim to break ties in calculating which codes affect DRG assignment.

Enum MsdrghospitalStatusOptionFlag

Package gov.agency.msdrgh.model.enumeration

public enum MsdrghospitalStatusOptionFlag

Table 7. Enum constant - Msdrgh Hospital POA Reporting Status Option Flag

Enum constant	Description
EXEMPT	Hospital is exempt from reporting POA (present on admission)
NON_EXEMPT	Hospital is not exempt from reporting POA (present on admission)
UNKNOWN	(Default) Unknown

Class MsdrghRuntimeOption

Package gov.agency.msdrgh

public class MsdrghRuntimeOption extends
com.mmm.his.cer.foundation.ComponentRuntime<MsdrghOption>

Constructor

MsdrghRuntimeOption()

Class MsdrghComponent

Package gov.agency.msdrgh.v381

public class MsdrghComponent

Constructor

MsdrghComponent(MsdrghRuntimeOption options)

Table 8. Method summary - MsdrghComponent

Return type	Method	Description
void	close()	Close
RuntimeOptions	getOptions()	Getter for runtime options.

Return type	Method	Description
protected void	initialize()	Set up MSDRG component.
void	process(MsdrGClaim claim)	Process a claim.
void	reconfigure(MsdrGRuntimeOption option)	Change the runtime options for a different claim

Class MsdrGClaim

Package gov.agency.msdrG.transfer

public class MsdrGClaim extends com.mmm.his.cer.foundation.transfer.Claim

Fields inherited from class com.mmm.his.cer.foundation.transfer.Claim

claimId, codes, type

Constructor

MsdrGClaim()

Methods inherited from class com.mmm.his.cer.foundation.transfer.Claim

getClaimId, setClaimId

Table 9. Method summary - MsdrGClaim

Return type	Method	Description
int	getGrouperVersion()	Get grouper version
MsdrGInput	getInput()	Get input object on the claim
int	getInputAgeDaysAdmit()	Get int value for age in days on admission
int	getInputAgeDaysDischarge()	Get int value for age in days on discharge
int	getInputAgeInYears()	Get int value for age in years
MsdrGDischargeStatus	getInputDischargeStatus()	Get enum value for discharge status
gov.agency.msdrG.model.enumeration.MsdrGSex	getInputSex()	Get enum value for sex
MsdrGDiagnosisCode	getInputPrincipalDiagnosisCode()	Get principal diagnosis code object

Return type	Method	Description
java.lang.String	getInputPrincipalDiagnosisCodeValue()	Get string value of principal diagnosis code (ie "A000")
java.util.List<MsdrgProcedureCode>	getInputProcedureCodes()	Get list of all procedure code objects
java.util.List<MsdrgDiagnosisCode>	getInputSecondaryDiagnosisCodes()	Get list of all secondary diagnosis code objects
MsdrgOutput	getOutput()	Get output object - contains results of grouping
MsdrgGrouperResult	getOutputFinalGrouperResult()	Get enum result for final grouping
int	getOutputFinalGrouperResultBaseDrg()	Get int value for final grouping base DRG
int	getOutputFinalGrouperResultDrg()	Get int value for final grouping DRG
int	getOutputFinalGrouperResultMdc()	Get int value for final grouping MDC
MsdrgMedSurgType	getOutputFinalGrouperResultMedSurg()	Get enum value for final grouping Medical or Surgical value
MsdrgGrouperReturnCode	getOutputFinalGrouperResultReturnCode()	Get enum value for final grouping return code
MsdrgSeverity	getOutputFinalGrouperResultSeverity()	Get enum value for final grouping result severity
MsdrgGrouperFlags	getOutputGrouperFlags()	Get object containing values for grouper result flags
MsdrgGrouperResult	getOutputInitialGrouperResult()	Get initial grouper results
int	getOutputInitialGrouperResultBaseDrg()	Get initial grouping base DRG
int	getOutputInitialGrouperResultDrg()	Get initial grouping DRG
int	getOutputInitialGrouperResultMdc()	Get initial grouping MDC
MsdrgMedSurgType	getOutputInitialGrouperResultMedSurg()	Get initial grouping Medical/Surgical value
MsdrgGrouperReturnCode	getOutputInitialGrouperResultReturnCode()	Get initial grouping return code
MsdrgSeverity	getOutputInitialGrouperResultSeverity()	Get initial grouping severity level

Return type	Method	Description
java.util.List<java.lang.String>	getOutputSdxCodesOnClaimThatAreExclusions()	Get sdx codes on the claim that are exclusions
boolean	hasDischargeStatus()	Check if claim has a discharge status
void	setGrouperVersion(int grouperVersion)	Set grouper version
void	setInput(MsdrInput input)	Set input object
void	setInputAgeDaysAdmit(int ageDaysAdmit)	Set age in days on admission
void	setInputAgeDaysDischarge(int ageDaysDischarge)	Set age in days on discharge
void	setInputAgeInYears(int ageInYears)	Set age in years
void	setInputDischargeStatus(MsdrDischargeStatus dischargeStatus)	Set discharge status
void	setInputSex(gov.agency.msdr.model.enumeration.MsdrSex;)	Set sex
void	setInputPrincipalDiagnosisCode(MsdrDiagnosisCode principalDiagnosisCode)	Set principal diagnosis code
void	setInputProcedureCodes(java.util.List<MsdrProcedureCode> procedureCodes)	Set list of procedure code objs
void	setInputSecondaryDiagnosisCodes(java.util.List<MsdrDiagnosisCode> secondaryDiagnosisCodes)	Set list of secondary diagnosis code objs
void	setOutput(MsdrOutput output)	Set output obj
void	setOutputFinalGrouperResult(MsdrGrouperResult finalGrouperResult)	Set final grouping result
void	setOutputFinalGrouperResultBaseDrg(int initialGrouperResultBaseDrg)	Set final grouping base DRG
void	setOutputFinalGrouperResultDrg(int initialGrouperResultDrg)	Set final grouping DRG

Return type	Method	Description
void	setOutputFinalGrouperResultMdc(int finalGrouperResultMdc)	Set final grouping MDC
void	setOutputFinalGrouperResultMedSurg(MsdrGMedSurgType initialGrouperResultMedSurg)	Set final grouping Medical/Surgical value
void	setOutputFinalGrouperResultReturnCode(MsdrGrouperReturnCode finalGrouperResultReturnCode)	Set final grouping return code
void	setOutputFinalGrouperResultSeverity(MsdrGSeverity severity)	Set final grouping severity
void	setOutputGrouperFlags(MsdrGrouperFlags grouperFlags)	Set grouper flags
void	setOutputInitialGrouperResult(MsdrGrouperResult initialGrouperResult)	Set initial grouper result
void	setOutputInitialGrouperResultBaseDrg(int initialGrouperResultBaseDrg)	Set initial grouping base DRG
void	setOutputInitialGrouperResultDrg(int initialGrouperResultDrg)	Set initial grouping DRG
void	setOutputInitialGrouperResultMdc(int initialGrouperResultMdc)	Set initial grouping MDC
void	setOutputInitialGrouperResultMedSurg(MsdrGMedSurgType initialGrouperResultSurgical)	Set initial grouping Medical/Surgical value
void	setOutputInitialGrouperResultReturnCode(MsdrGrouperReturnCode initialGrouperResultReturnCode)	Set initial grouping return code
void	setOutputInitialGrouperResultSeverity(MsdrGSeverity severity)	Set Initial grouping claim severity
void	setOutputSdxCodesOnClaimThatAreExclusions(java.util.List<java.lang.String> sdxCodesOnClaimThatAreExclusions)	Set Sdx Codes on Claim that are exclusions

Class MsdrgrInput

Package gov.agency.msdrgr.transfer

public class MsdrgrInput

Constructor

MsdrgrInput()

Table 10. Method summary - MsdrgrInput

Return type	Method	Description
MsdrgrDiagnosisCode	getAdmissionDiagnosisCode()	Get diagnosis code object for admission diagnosis
int	getAgeDaysAdmit()	Get age in days on admission
int	getAgeDaysDischarge()	Get age in days on discharge
int	getAgeInYears()	Get age in years
MsdrgrDischargeStatus	getDischargeStatus()	Get enum for discharge status
gov.agency.msdrgr.model.enumeration.MsdrgrSex;	getSex()	Get enum for sex
MsdrgrDiagnosisCode	getPrincipalDiagnosisCode()	Get diagnosis code object for the principal dx
List<MsdrgrProcedureCode>	getProcedureCodes()	Get list of procedure code objects
List<MsdrgrDiagnosisCode>	getSecondaryDiagnosisCodes()	Get list of diagnosis code objects for secondary dx
void	setAdmissionDiagnosisCode(MsdrgrDiagnosisCode admissionDiagnosisCode)	Set admission diagnosis
void	setAgeDaysAdmit(int ageDaysAdmit)	Set age in days on admission
void	setAgeDaysDischarge(int ageDaysDischarge)	Set age in days on discharge
void	setAgeInYears(int ageInYears)	Set age in years
void	setDischargeStatus(MsdrgrDischargeStatus dischargeStatus)	Set discharge status
void	setSex(gov.agency.msdrgr.model.enumeration.MsdrgrSex)	Set sex

Return type	Method	Description
void	setPrincipalDiagnosisCode(Msdr gDiagnosisCode principalDiagnosisCode)	Set principal diagnosis code
void	setProcedureCodes(List<MsdrP rocedureCode> procedureCodes)	Set list of procedure code objects
void	setSecondaryDiagnosisCodes(List <MsdrgDiagnosisCode> secondaryDiagnosisCodes)	Set list of secondary diagnosis code objects

Class MsdrgOutput

Package gov.agency.msdrg.transfer

public class MsdrgOutput

Constructor

MsdrgOutput()

Table 11. Method summary - MsdrgOutput

Return type	Method	Description
int	getFinalBaseDrg()	Get final grouping base DRG
int	getFinalDrg()	Get final grouping DRG
MsdrgSeverity	getFinalDrgSecondaryDxCcMcc()	Get enum for whether a secondary diagnosis code was a MCC or CC in final grouping
MsdrgGrouperResult	getFinalGrouperResult()	Get final grouping result object
MsdrgGrouperReturnCode	getFinalGrouperReturnCode()	Get final grouping return code
int	getFinalMdc()	Get final MDC
MsdrgMedSurgType	getFinalMedicalOrSurgical()	Get Medical or Surgical value of final DRG
MsdrgGrouperFlags	getGrouperFlags()	Get grouper flags object
MsdrgGrouperFlagHacStatus	getHacStatus()	Get HAC status
int	getInitialBaseDrg()	Get initial base DRG
int	getInitialDrg()	Get initial DRG

Return type	Method	Description
MsdrgSeverity	getInitialDrgSecondaryDxCcMcc()	Get if secondary diagnosis code in initial grouping is an MCC or CC
MsdrgGrouperResult	getInitialGrouperResult()	Get initial grouper result object
MsdrgGrouperReturnCode	getInitialGrouperReturnCode()	Get initial grouper return code
int	getInitialMdc()	Get initial MDC
MsdrgMedSurgType	getInitialMedicalOrSurgical()	Get if initial DRG is Medical or Surgical
int	getNumHacCategoriesSatisfied	Get the number of HAC categories satisfied
java.util.List<java.lang.String>	getSdxCodesOnClaimThatAreExclusions	Get the codes on the claim that are exclusions
void	setFinalBaseDrg(int baseDrg)	Set final base DRG
void	setFinalDrg(int drg)	Set final DRG
void	setFinalDrgSecondaryDxCcMcc(MsdrgSeverity value)	Set if secondary diagnosis code in final grouping was MCC or CC
void	setFinalGrouperResult(MsdrgGrouperResult finalGrouperResult)	Set final grouper result object
void	setFinalGrouperReturnCode(MsdrgGrouperReturnCode returnCode)	Set final grouper return code
void	setFinalMdc(int mdc)	Set final MDC
void	setFinalMedicalOrSurgical(MsdrgMedSurgType type)	Set if final DRG is Medical or Surgical
void	setGrouperFlags(MsdrgGrouperFlags grouperFlags)	Set grouper flags
void	setHacStatus(MsdrgGrouperFlagHacStatus hacStatusValue)	Set HAC status
void	setInitialBaseDrg(int baseDrg)	Set initial base DRG
void	setInitialDrg(int drg)	Set initial DRG
void	setInitialDrgSecondaryDxCcMcc(MsdrgSeverity value)	Set if initial grouping a secondary diagnosis code was MCC or CC
void	setInitialGrouperResult(MsdrgGrouperResult initialGrouperResult)	Set initial grouper result

Return type	Method	Description
void	setInitialGrouperReturnCode(Msdr gGrouperReturnCode returnCode)	Set initial grouper return code
void	setInitialMdc(int mdc)	Set initial MDC
void	setInitialMedicalOrSurgical(Msdr gMedSurgType type)	Set if initial DRG is Medical or Surgical
void	setNumHacCategoriesSatisfied(int numCat)	Set number of HAC categories satisfied
void	setSdxCodesOnClaimThatAreExclu sions(java.util.List<java.lang.String > sdxCodesOnClaimThatAreExclusion s)	Set a list of secondary diagnosis codes that are exclusions on the claim
Map<String, Msdr gDiagnosisFlag>	getDiagnosisFlagMap()	Get the diagnosis flags for a diagnosis code, the map key is the diagnosis code value
void	setDiagnosisFlagMap(Map<String, Msdr gDiagnosisFlag> diagnosisFlagMap)	Set the diagnosis flag map
Map<String, Msdr gProcedureFlag>	getProcedureFlagMap()	Get the procedure flags for a procedure code, the map key is the procedure code value
void	setProcedureFlagMap(Map<String, Msdr gProcedureFlag> procedureFlagMap)	Set the procedure flag map

Class MsdrgGrouperResult

Package gov.agency.msdrg.transfer

public class MsdrgGrouperResult

Constructor

MsdrgGrouperResult()

Table 12. Method summary - MsdrgGrouperResult

Return type	Method	Description
int	getBaseDrg()	Get base DRG
int	getDrg()	Get DRG
int	getMdc()	Get MDC
MsdrgMedSurgType	getMedicalOrSurgical()	Get if DRG is Medical or Surgical
MsdrgGrouperReturnCode	getReturnCode()	Get return code
MsdrgSeverity	getSeverity()	Get severity level of claim
void	setBaseDrg(int baseDrg)	Set base DRG
void	setDrg(int drg)	Set DRG
void	setMdc(int mdc)	Set MDC
void	setMedicalOrSurgical(MsdrgMedSurgType medSurg)	Set med surg type of DRG
void	setReturnCode(MsdrgGrouperReturnCode returnCode)	Set return code
void	setSeverity(MsdrgSeverity severity)	Set severity of claim

Class MsdrGrouperFlags

Package gov.agency.msdr.model

public class MsdrGrouperFlags

Constructor

MsdrGrouperFlags()

Table 13. Method summary - MsdrGrouperFlag

Return type	Method	Description
MsdrAdmitDxGroup erFlag	getAdmitDxGrouperFlag()	Get enum for admission diagnosis grouper flag
MsdrSeverity	getFinalDrgSecondaryDxCcMcc()	Get enum for if a secondary diagnosis code is a MCC or DX in final grouping grouper flag
MsdrGrouperFlagHac cStatus	getHacStatusValue()	Get enum for HAC status grouper flag
MsdrSeverity	getInitialDrgSecondaryDxCcMcc	Get enum
int	getNumHacCategoriesSatisfied()	Get number of HAC categories satisfied on the claim
MsdrSeverity	isFinalDrgSecondaryDxCcMcc()	Get if a secondary diagnosis code during final grouping was an MCC or CC
MsdrSeverity	isInitialDrgSecondaryDxCcMcc()	Get if a secondary diagnosis code during initial grouping was an MCC or CC
void	setAdmitDxGrouperFlag(MsdrAdmitDxGrouperFlag admitDxGrouperFlag)	Set admission diagnosis grouper flag
void	setFinalDrgSecondaryDxCcMcc(MsdrSeverity finalDrgSecondaryDxCcMcc)	Set if secondary diagnosis code during final grouping was an MCC or CC
void	setHacStatusValue(MsdrGrouperFlagHacStatus hacStatusValue)	Set HAC status
void	setInitialDrgSecondaryDxCcMcc(MsdrSeverity initialDrgSecondaryDxCcMcc)	Set if secondary diagnosis code during initial grouping was an MCC or CC
void	setNumHacCategoriesSatisfied(int numHacCategoriesSatisfied)	Set number of HAC categories satisfied

MsdrgProcedureFlag

Package gov.agency.msdrg.model

Public class MsdrgProcedureFlag

Table 14. Method summary - MsdrgProcedureFlag

Return type	Method	Description
boolean	isProcedureRecognizedByGrouper()	Is the procedure code a valid code
void	setProcedureCodeRecognizedByGrouper(boolean procedureRecognizedByGrouper)	Set whether the proc code is valid
MsdrgGroupingImpact	getProcedureAffectsDrg()	See if the procedure code affecting DRG grouping
void	setProcedureAffectsDrg(MsdrgGroupingImpact procedureAffectsDrg)	Set the procedure affecting DRG enum
boolean	isProcedureIsOperatingRoomProcedure	Check if procedure code is an operating room procedure
void	setProcedureIsOperatingRoomProcedure(boolean procedureIsOperatingRoomProcedure)	Set if a procedure code is an operating room procedure
Set<Integer>	getHacUsage()	If the procedure code was used in evaluation of any HACs
void	setHacUsage(Set<Integer> hacUsage)	Set if the procedure code was involved in evaluation of HAC

MsdrgDiagnosisFlag

Package gov.agency.msdrg.model

Public class MsdrgDiagnosisFlag

Table 15. Method summary - MsdrgDiagnosisFlag

Return type	Method	Description
boolean	isDiagnosisRecognizedByGrouper()	Is the diagnosis code valid
void	setDiagnosisCodeRecognizedByGrouper(boolean diagnosisRecognizedByGrouper)	Set whether the diagnosis code is valid
MsdrgGroupingImpact	getDiagnosisAffectsDrg()	Code's impact on DRG assignment
void	setDiagnosisAffectsDrg(MsdrgGroupingImpact diagnosisAffectsDrg)	Set code's impact on DRG assignment
MsdrgCodeSeverityFlag	getInitialSeverityUsage()	Code's severity in initial grouping
void	setInitialSeverityUsage(MsdrgCodeSeverityFlag initialSeverityUsage)	Set code's severity in initial grouping
MsdrgCodeSeverityFlag	getFinalSeverityUsage()	Code's severity in final grouping
void	setFinalSeverityUsage(MsdrgCodeSeverityFlag finalSeverityUsage)	Set code's severity in final grouping
MsdrgPoaErrorCode	getPoaErrorCode()	Enum for diagnosis codes POA error code
void	setPoaErrorCode(MsdrgPoaErrorCode poaErrorCode)	Set enum for diagnosis code POA error code
List<MsdrgHac>	getHacs()	Diagnosis code's hospital acquired conditions
void	setHacs(List<MsdrgHac> hacs)	Set diagnosis code's hospital acquired conditions

MsdrgHac

Package gov.agency.msdrg.model

public class MsdrgHac

Table 16. Method summary - MsdrgHac

Return type	Method	Description
MsdrgHacStatus	getHacStatus()	For this HAC get the status
void	setHacStatus(MsdrgHacStatus hacStatus)	Set the HAC status
String	getHacList()	Get the HAC list name
void	setHacList(String hacList)	Set the HAC list name
int	getHacNumber()	Get the HAC number
void	setHacNumber(int hacNumber)	Set the HAC number

Enum MsdrgHacStatus

Package gov.agency.msdrg.model.enumeration

public enum MsdrgHacStatus

Table 17. Enum constant - Msdrg Hospital Acquired Condition Status

Enum constant	Description
HAC_UNKNOWN	HAC is unknown
HAC_CRITERIA_MET	HAC's formula has been met
HAC_CRITERIA_NOT_MET	HAC's formula has not been met
HAC_NOT_APPLICABLE_EXCLUSION	HAC's not applicable because the code is an exclusion
HAC_NOT_APPLICABLE_EXEMPT	HAC not applicable due to hospital exemption

Enum MsdrCodeSeverityFlag

Package gov.agency.msdr.model.enumeration

public enum MsdrCodeSeverityFlag

Table 18. Enum constant - Msdr Code Severity Flag

Enum constant	Description
MCC	Code was a MCC
CC	Code was a CC
MCC_EXCLUDED	Code was a MCC but ignored due to exclusions
CC_EXCLUDED	Code was a CC but ignored due to exclusions
NEITHER	Code was NCC

Enum MsdrPoaErrorCode

Package gov.agency.msdr.model.enumeration

public enum MsdrPoaErrorCode

Table 19. Enum constant - Msdr Present On Admission Error Code

Enum constant	Description
POA_NOT_CHECKED	POA not checked
POA_NOT_RECOGNIZED	POA is not recognized
POA_RECOGNIZED_NOT_POA	POA is a valid value meaning "NO"
POA_RECOGNIZED_YES_POA	POA is a valid value meaning "YES"
HOSPITAL_EXEMPT	Hospital is exempt from reporting POA
BLANK_DX_NOT_CONSIDERED	Diagnosis code not considered

Enum MsdrgrGroupingImpact

Package gov.agency.msdrgr.model.enumeration

public enum MsdrgrGroupingImpact

Table 20. Enum constant - Msdrgr Grouping Impact

Enum constant	Description
INITIAL	Code impacted DRG assignment only in initial grouping
FINAL	Code impacted DRG assignment only in final grouping
BOTH	Code impacted DRG assignment in both initial and final grouping
NONE	Code did not impact DRG assignment

Enum GfcPOA

Package com.mmm.his.cer.foundation.model

public enum GfcPoa

Table 21. Enum constant - Gfc Present on Admission

Enum constant	Description
Y	Yes
N	No
U	Insufficient documentation to determine if present on admission
W	Clinically unable to determine a time of admission
ONE	Exempt from POA reporting/Unreported/ Not used
E	Exempt from POA reporting/ Unreported/Not used
BLANK	Exempt from POA reporting/ Unreported/Not used
INVALID	Invalid

Enum MsdrgSex

Package gov.agency.msdrg.model.enumeration

public enum MsdrgSex

Table 22. Enum constant - MsdrgSex

Enum constant	Description
UNKNOWN	Unknown
MALE	Male
FEMALE	Female

Enum MsdrgMedSurgType

Package gov.agency.msdrg.model.enumeration

public enum MsdrgMedSurgType

Table 23. Enum constant - Msdrg Medical Surgical Type

Enum constant	Description
MEDICAL	DRG is Medical
NONE	DRG is neither
SURGICAL	DRG is Surgical

Enum MsdrgSeverity

Package gov.agency.msdrg.model.enumeration

public enum MsdrgSeverity

Table 24. Enum constant - Msdrg Severity

Enum constant	Description
CC	Complication or comorbidity
MCC	Major complications or comorbidities
NON_CC	No complications or comorbidities

Enum MsdrgGrouperFlagHacStatus

Package gov.agency.msdrg.model.enumeration

Table 25. Enum constant - Msdrg Grouper Flag Hospital Acquired Condition Status

Enum constant	Description
FINAL_DRG_CHANGES	Final DRG changes after processing HACs(hospital acquired conditions) (HAC processing only occurs during final grouping)
FINAL_DRG_NO_CHANGE	No change between initial and final grouping due to HACs
FINAL_DRG_UNGROUPABLE	When processing HAC's the claim is ungroupable
NOT_APPLICABLE	N/A

Enum MsdrgAdmitDxGrouperFlag

Package gov.agency.msdrg.model.enumeration

Table 26. Enum constant - Msdrg Admit Diagnosis Grouper Flag

Enum constant	Description
DX_INVALID	Admission diagnosis is invalid
DX_NOT_GIVEN	No admission diagnosis on claim
DX_VALID	Admission diagnosis is valid

Enum MsdrgGrouperReturnCode

Package gov.agency.msdrg.model.enumeration

Table 27. Enum constant - Msdrg Grouper Return Code

Enum constant	Description
DX_CANNOT_BE_PDX	Grouping stopped due to invalid principal diagnosis
HAC_MISSING_ONE_POA	HAC processing stopped due to a missing POA value

Enum constant	Description
HAC_STATUS_INVALID_MULT_HA CS_POA_NOT_Y_W	Hospital Status is invalid or missing and there are multiple HACs that have different HAC POA values that are not Y or W
HAC_STATUS_INVALID_POA_INVA LID_OR_1	Hospital Status is invalid or missing and at least one POA is invalid or missing or 1
HAC_STATUS_INVALID_POA_N_O R_U	Hospital Status is invalid or missing and at least one POA is N or U
INVALID_DISCHARGE_STATUS	Invalid discharge status
INVALID_PDX	Invalid principal diagnosis
INVALID_SEX	Invalid sex
OK	DRG successfully assigned

Enum MsdrgDischargeStatus

Package gov.agency.msdrg.model.enumeration

public enum MsdrgDischargeStatus

Enum constant

CANC_CHILD_HOSP
 CANC_CHILD_HOSP_W_PLANNED_READMISSION
 COURT_LAW_ENFRC
 COURT_LAW_ENFRC_W_PLANNED_READMISSION
 CRIT_ACC_HOSP
 CRIT_ACC_HOSP_W_PLANNED_READMISSION
 CUST_SUPP_CARE
 CUST_SUPP_CARE_W_PLANNED_READMISSION
 DESIGNATED_DISASTER_ALTERNATIVE_CARE_SITE
 DIED
 FEDERAL_HOSPITAL
 FEDERAL_HOSPITAL_W_PLANNED_READMISSION
 HOME_HEALTH_SERVICE
 HOME_HEALTH_SERVICE_W_PLANNED_READMISSION
 HOME_SELF_CARE_W_PLANNED_READMISSION
 HOME_SELF_CARE_ROUTINE
 HOSPICE_HOME
 HOSPICE_MEDICAL_FACILITY
 LEFT_AGAINST_MEDICAL_ADVICE
 LONG_TERM_CARE_HOSPITAL

LTCH_W_PLANNED_READMISSION
 NONE
 NURSG_FAC_MEDICAID_CERT_W_PLANNED_READMISSION
 NURSING_FACILITY_MEDICAID_CERTIFIED
 OTH_INSTITUTION
 OTH_INSTITUTION_W_PLANNED_READMISSION
 PSYCH_HOSP_UNIT
 PSYCH_HOSP_UNIT_W_PLANNED_READMISSION
 REHAB_FACILITY_REHAB_UNIT
 REHAB_FACILITY_UNIT_W_PLANNED_READMISSION
 SHORT_TERM_HOSPITAL
 SHORT_TERM_HOSPITAL_W_PLANNED_READMISSION
 SNF
 SNF_W_PLANNED_READMISSION
 STILL_A_PATIENT
 SWING_BED
 SWING_BED_W_PLANNED_READMISSION

Class MsdrgDiagnosisCode

Package gov.agency.msdrg.model

public class MsdrgDiagnosisCode extends com.mmm.his.cer.foundation.model.DiagnosisCode
implements MsdrgCode

Fields inherited from class com.mmm.his.cer.foundation.model.Code

value

Fields inherited from class com.mmm.his.cer.foundation.model.DiagnosisCode

presentOnAdmission

Table 28. Method summary - MsdrgDiagnosisCode

Constructor	Description
MsdrgDiagnosisCode()	Empty constructor
MsdrgDiagnosisCode(String value)	Constructor with just diagnosis code
MsdrgDiagnosisCode(String value, com.mmm.his.cer.foundation.model.GfcPoa poa)	Constructor with diagnosis code and POA value

Class MsdrProcedureCode

Package gov.agency.msdr.model

```
public class MsdrProcedureCode extends com.mmm.his.cer.foundation.model.ProcedureCode  
implements MsdrCode
```

Fields inherited from class com.mmm.his.cer.foundation.model.Code

value

Table 29. Method summary - MsdrProcedureCode

Constructor	Description
MsdrProcedureCode(String code)	Constructor with procedure code
MsdrProcedureCode(String value, int daysAfterAdmissionPerformed)	Constructor with procedure code and days after admission performed value