

coreform.abaqus.job

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Source directory: `interop/abaqus/cf_app/coreform/abaqus/job`

Directory tree

- `job/`

1 errors.py

Module path: `coreform.abaqus.job.errors`

Available API members

Name	Kind	Description
<code>JobFileCollisionError.files</code>	Attribute	Existing output paths in deterministic reporting order.
<code>JobRuntimeError</code>	Class	A Coreform IGA job build/submit failure with a user-actionable message.
<code>JobFileCollisionError</code>	Class	Report recognized Abaqus output files that block Job submission.

1.1 JobRuntimeError

Object path: `coreform.abaqus.job.errors.JobRuntimeError`

A Coreform IGA job build/submit failure with a user-actionable message.

1.2 JobFileCollisionError

Object path: `coreform.abaqus.job.errors.JobFileCollisionError`

Report recognized Abaqus output files that block Job submission.

Call syntax

```
result = JobFileCollisionError(files=files)
```

Signatures

```
JobFileCollisionError(files: Union['JobFileCollisionError', Iterable[str]])
```

Parameters

Name	Type	Required	Default	Description
<code>files</code>	<code>Union['JobFileCollisionError', Iterable[str]]</code>	Yes	—	Existing output paths that would be overwritten by submission.

1.2.a Attributes

Name	Type	Value	Description
<code>files</code>	<code>Tuple[str, ...]</code>	<code>tuple(files)</code>	Existing output paths in deterministic reporting order.

2 records.py

Module path: `coreform.abaqus.job.records`

Available API members

Name	Kind	Description
<code>CoreformIGA.jobs</code>	Attribute	Persistent Coreform IGA Job records indexed by name.
<code>jobs[jobName].name</code>	Attribute	Repository key and Job name.
<code>jobs[jobName].model</code>	Attribute	Abaqus model used by the Job, when applicable.
<code>jobs[jobName].description</code>	Attribute	User-facing Job description.
<code>jobs[jobName].meshExecutable</code>	Attribute	Coreform IGA Mesh executable override.
<code>jobs[jobName].mpiexec</code>	Attribute	MPI launcher override for the Mesh stage.
<code>jobs[jobName].numIgaCpus</code>	Attribute	Number of CPUs assigned to the Mesh stage.
<code>jobs[jobName].interopExecutable</code>	Attribute	Abaqus interop executable override, when applicable.
<code>jobs[jobName].numCpus</code>	Attribute	Number of CPUs assigned to the solve stage.
<code>jobs[jobName].numGPUs</code>	Attribute	Number of GPUs assigned to an Abaqus solve stage.
<code>jobs[jobName].multiprocessingMode</code>	Attribute	Parallelization mode for an Abaqus solve stage.

Name	Kind	Description
<code>jobs[jobName].threadsPerProcess</code>	Attribute	Threads assigned to each Abaqus solver process.
<code>jobs[jobName].numDomains</code>	Attribute	Number of domains used by the Abaqus solver.
<code>jobs[jobName].memory</code>	Attribute	Memory limit for an Abaqus solve stage.
<code>jobs[jobName].memoryUnits</code>	Attribute	Units used to interpret the Abaqus solver memory limit.
<code>CoreformIGA.deleteJob</code>	Instance method	Delete a named persistent Job from this namespace.
<code>CoreformIGA.Job</code>	Instance method	Create and persist a Coreform IGA Job in the MDB namespace.
<code>CoreformIGA.renameJob</code>	Instance method	Rename a Job that has not been prepared or submitted.
<code>jobs[jobName].toSpec</code>	Instance method	Return the lossless portable specification for this Job record.
<code>jobs[jobName].setValues</code>	Instance method	Update this persistent Job through Abaqus-facing camelCase fields.
<code>jobs[jobName].buildMesh</code>	Instance method	Run the Mesh and interop stages for this Job.
<code>jobs[jobName].writeInput</code>	Instance method	Write the raw Abaqus input deck consumed by the interop stage.
<code>jobs[jobName].submit</code>	Instance method	Prepare and submit this Job through its configured pipeline.
<code>jobs[jobName].waitForCompletion</code>	Instance method	Block until a submitted Job finishes.

Name	Kind	Description
<code>jobs[jobName].kill</code>	Instance method	Terminate the running process associated with this Job.
<code>jobs[jobName].getRuntimeStatus</code>	Instance method	Return a snapshot of this Job's current runtime status.
<code>jobs[jobName].writeRunScript</code>	Instance method	Write this Job pipeline as a runnable script file.
<code>jobs[jobName].openOdb</code>	Instance method	Open and return this Job's Abaqus output database.
<code>CoreformIGA</code>	Class	The MDB-level Coreform IGA namespace (<code>mdb.customData.CoreformIGA</code>) that owns the <code>jobs</code> repository and the public <code>Job(...)</code> constructor.
<code>jobs[jobName]</code>	Class	Persistent job record: the nested spec is stored losslessly as JSON(<code>_spec_json</code> , the source of truth for <code>toSpec</code>), and the common scalarfields are loaded as read-only camelCase inspection attrs. Edits go through <code>setValues(...)</code> so validation, the stored spec, and journaling stay in step.

2.1 CoreformIGA

Public path: `mdb.customData.CoreformIGA`

Available API members

Name	Kind	Description
<code>jobs</code>	Attribute	Persistent Coreform IGA Job records indexed by name.

Name	Kind	Description
<code>deleteJob</code>	Instance method	Delete a named persistent Job from this namespace.
<code>Job</code>	Instance method	Create and persist a Coreform IGA Job in the MDB namespace.
<code>renameJob</code>	Instance method	Rename a Job that has not been prepared or submitted.

2.1.a Attributes

Name	Type	Value	Description
<code>jobs</code>	<code>object</code>	—	Persistent Coreform IGA Job records indexed by name.

2.1.b `deleteJob`

Defined on: `mdb.customData.CoreformIGA.deleteJob`

Description: Delete a named persistent Job from this namespace.

Call syntax

```
jobs.deleteJob(name=name)
```

Returns

Type	Description
<code>None</code>	—

Signatures

```
deleteJob(name: str) -> None
```

Parameters

Name	Type	Required	Default	Description
<code>name</code>	<code>str</code>	Yes	—	Repository key of the Job to delete.

2.1.c Job

Defined on: `mdb.customData.CoreformIGA.Job`

Description: Create and persist a Coreform IGA Job in the MDB namespace.

Call syntax

```
result = jobs.Job(spec=spec)
result = jobs.Job(name=name, model=model)
```

Returns

Type	Description
Job record	Newly created persistent Job record.

Signatures

```
Job(*, spec) -> object
Job(*,      name,      model,      description='',      meshExecutable='',
mpiexec='',      numIgaCpus=1,      interopExecutable='',      numCpus=1,
numGPUs=0, multiprocessingMode=ParallelMode.THREADS, threadsPerProcess=None,
numDomains=None, memory=90, memoryUnits=MemoryUnits.PERCENTAGE, queue=None,
meshQueue=None, interopQueue=None, solveQueue=None) -> object
```

Parameters

For `Job(*, spec) -> object`:

Name	Type	Required	Default	Description
spec	CoreformIGAJobSpec or Mapping[str, object]	Yes	—	Complete portable specification or serialized specification mapping.

For `Job(*, name, model, description='', meshExecutable='', mpiexec='', numIgaCpus=1, interopExecutable='', numCpus=1, numGPUs=0, multiprocessingMode=ParallelMode.THREADS, threadsPerProcess=None, numDomains=None, memory=90, memoryUnits=MemoryUnits.PERCENTAGE, queue=None, meshQueue=None, interopQueue=None, solveQueue=None) -> object`:

Name	Type	Required	Default	Description
name	str	Yes	—	Unique, non-empty Job name.
model	str	Yes	—	Abaqus model used by the solve pipeline.
description	str	No	''	Optional Job description.
meshExecutable	str	No	''	Coreform IGA Mesh executable override.
mpiexec	str	No	''	MPI launcher override for the Mesh stage.
numIgaCpus	int	No	1	Number of CPUs for the Mesh stage.
interopExecutable	str	No	''	Abaqus interop executable override.
numCpus	int	No	1	Number of CPUs for the solve stage.
numGPUs	int	No	0	Number of GPUs for the solve stage.
multiprocessingMode	ParallelMode or str	No	ParallelMode.THREADS	Abaqus solver parallelization mode.
threadsPerProcess	int or None	No	None	Threads allocated to each solver process.

Name	Type	Required	Default	Description
<code>numDomains</code>	<code>int</code> or <code>None</code>	No	<code>None</code>	Number of Abaqus solver domains.
<code>memory</code>	<code>int</code>	No	<code>90</code>	Abaqus solver memory limit.
<code>memoryUnits</code>	<code>MemoryUnits</code> or <code>str</code>	No	<code>MemoryUnits.PERCENTAGE</code>	Units used to interpret memory.
<code>queue</code>	<code>Local</code> , <code>RemoteQueue</code> , <code>Mapping[str, object]</code> , or <code>None</code>	No	<code>None</code>	Default submission settings for every stage.
<code>meshQueue</code>	<code>Local</code> , <code>RemoteQueue</code> , <code>Mapping[str, object]</code> , or <code>None</code>	No	<code>None</code>	Mesh-stage submission override.
<code>interopQueue</code>	<code>Local</code> , <code>RemoteQueue</code> , <code>Mapping[str, object]</code> , or <code>None</code>	No	<code>None</code>	Interop-stage submission override.
<code>solveQueue</code>	<code>Local</code> , <code>RemoteQueue</code> , <code>Mapping[str, object]</code> , or <code>None</code>	No	<code>None</code>	Solve-stage submission override.

Parameter rules

Rule	Requirement
Call forms	Use exactly one of these call forms: <code>spec</code> or <code>abaqus_definition</code> .

Raises

Type	Condition
<code>ValidationError</code>	If the specification, model, name, or execution settings are invalid.

2.1.d renameJob

Defined on: `mdb.customData.CoreformIGA.renameJob`

Description: Rename a Job that has not been prepared or submitted.

Call syntax

```
jobs.renameJob(fromName=fromName, toName=toName)
```

Returns

Type	Description
None	—

Signatures

```
renameJob(fromName: str, toName: str) -> None
```

Parameters

Name	Type	Required	Default	Description
<code>fromName</code>	<code>str</code>	Yes	—	Existing Job repository key.
<code>toName</code>	<code>str</code>	Yes	—	New unique Job name and repository key.

2.2 jobs[jobName]

Public path: `mdb.customData.CoreformIGA.jobs[jobName]`

Available API members

Name	Kind	Description
<code>name</code>	Attribute	Repository key and Job name.
<code>model</code>	Attribute	Abaqus model used by the Job, when applicable.
<code>description</code>	Attribute	User-facing Job description.
<code>meshExecutable</code>	Attribute	Coreform IGA Mesh executable override.
<code>mpiexec</code>	Attribute	MPI launcher override for the Mesh stage.

Name	Kind	Description
<code>numIgaCpus</code>	Attribute	Number of CPUs assigned to the Mesh stage.
<code>interopExecutable</code>	Attribute	Abaqus interop executable override, when applicable.
<code>numCpus</code>	Attribute	Number of CPUs assigned to the solve stage.
<code>numGPUs</code>	Attribute	Number of GPUs assigned to an Abaqus solve stage.
<code>multiprocessingMode</code>	Attribute	Parallelization mode for an Abaqus solve stage.
<code>threadsPerProcess</code>	Attribute	Threads assigned to each Abaqus solver process.
<code>numDomains</code>	Attribute	Number of domains used by the Abaqus solver.
<code>memory</code>	Attribute	Memory limit for an Abaqus solve stage.
<code>memoryUnits</code>	Attribute	Units used to interpret the Abaqus solver memory limit.
<code>toSpec</code>	Instance method	Return the lossless portable specification for this Job record.
<code>setValues</code>	Instance method	Update this persistent Job through Abaqus-facing camelCase fields.
<code>buildMesh</code>	Instance method	Run the Mesh and interop stages for this Job.
<code>writeInput</code>	Instance method	Write the raw Abaqus input deck consumed by the interop stage.
<code>submit</code>	Instance method	Prepare and submit this Job through its configured pipeline.

Name	Kind	Description
<code>waitForCompletion</code>	Instance method	Block until a submitted Job finishes.
<code>kill</code>	Instance method	Terminate the running process associated with this Job.
<code>getRuntimeStatus</code>	Instance method	Return a snapshot of this Job's current runtime status.
<code>writeRunScript</code>	Instance method	Write this Job pipeline as a runnable script file.
<code>open0db</code>	Instance method	Open and return this Job's Abaqus output database.

2.2.a Attributes

Name	Type	Value	Description
<code>name</code>	<code>str</code>	—	Repository key and Job name.
<code>model</code>	<code>Optional[str]</code>	—	Abaqus model used by the Job, when applicable.
<code>description</code>	<code>str</code>	—	User-facing Job description.
<code>meshExecutable</code>	<code>str</code>	—	Coreform IGA Mesh executable override.
<code>mpiexec</code>	<code>str</code>	—	MPI launcher override for the Mesh stage.
<code>numIgaCpus</code>	<code>int</code>	—	Number of CPUs assigned to the Mesh stage.
<code>interopExecutable</code>	<code>Optional[str]</code>	—	Abaqus interop executable override, when applicable.

Name	Type	Value	Description
<code>numCpus</code>	<code>int</code>	—	Number of CPUs assigned to the solve stage.
<code>numGPUs</code>	<code>Optional[int]</code>	—	Number of GPUs assigned to an Abaqus solve stage.
<code>multiprocessingMode</code>	<code>Optional[Union[ParallelMode, str]]</code>	—	Parallelization mode for an Abaqus solve stage.
<code>threadsPerProcess</code>	<code>Optional[int]</code>	—	Threads assigned to each Abaqus solver process.
<code>numDomains</code>	<code>Optional[int]</code>	—	Number of domains used by the Abaqus solver.
<code>memory</code>	<code>Optional[int]</code>	—	Memory limit for an Abaqus solve stage.
<code>memoryUnits</code>	<code>Optional[Union[MemoryUnits, str]]</code>	—	Units used to interpret the Abaqus solver memory limit.

2.2.b toSpec

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].toSpec`

Description: Return the lossless portable specification for this Job record.

Call syntax

```
result = job.toSpec()
```

Returns

Type	Description
<code>CoreformIGAJobSpec</code>	Return the lossless portable specification for this Job record.

Signatures

```
toSpec() -> CoreformIGAJobSpec
```

Parameters

None.

2.2.c setValues

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].setValues`

Description: Update this persistent Job through Abaqus-facing camelCase fields.

Call syntax

```
job.setValues(...)
```

Returns

Type	Description
<code>None</code>	The record is updated in place.

Signatures

```
setValues(*, model=..., description=..., meshExecutable=..., mpiexec=...,
numIgaCpus=..., interopExecutable=..., numCpus=..., numGPUs=...,
multiprocessingMode=..., threadsPerProcess=..., numDomains=..., memory=...,
memoryUnits=..., meshQueue=..., interopQueue=..., solveQueue=...) -> None
```

Parameters

Name	Type	Required	Default	Description
<code>model</code>	<code>str</code>	No	Current value	Replace the Abaqus model name.
<code>description</code>	<code>str</code>	No	Current value	Replace the Job description.

Name	Type	Required	Default	Description
<code>meshExecutable</code>	<code>str</code>	No	Current value	Replace the Mesh executable override.
<code>mpiexec</code>	<code>str</code>	No	Current value	Replace the MPI launcher override.
<code>numIgaCpus</code>	<code>int</code>	No	Current value	Replace the Mesh-stage CPU count.
<code>interopExecutable</code>	<code>str</code>	No	Current value	Replace the interop executable override.
<code>numCpus</code>	<code>int</code>	No	Current value	Replace the solve-stage CPU count.
<code>numGPUs</code>	<code>int</code>	No	Current value	Replace the solve-stage GPU count.
<code>multiprocessingMode</code>	<code>ParallelMode</code> or <code>str</code>	No	Current value	Replace the solver parallelization mode.
<code>threadsPerProcess</code>	<code>int</code> or <code>None</code>	No	Current value	Replace the threads-per-process setting.
<code>numDomains</code>	<code>int</code> or <code>None</code>	No	Current value	Replace the Abaqus solver domain count.
<code>memory</code>	<code>int</code>	No	Current value	Replace the solver memory limit.

Name	Type	Required	Default	Description
<code>memoryUnits</code>	<code>MemoryUnits</code> or <code>str</code>	No	Current value	Replace the solver memory units.
<code>meshQueue</code>	<code>Local</code> , <code>RemoteQueue</code> , <code>Mapping[str, object]</code> , or <code>None</code>	No	Current value	Replace the Mesh-stage submission settings.
<code>interopQueue</code>	<code>Local</code> , <code>RemoteQueue</code> , <code>Mapping[str, object]</code> , or <code>None</code>	No	Current value	Replace the interop-stage submission settings.
<code>solveQueue</code>	<code>Local</code> , <code>RemoteQueue</code> , <code>Mapping[str, object]</code> , or <code>None</code>	No	Current value	Replace the solve-stage submission settings.

Raises

Type	Condition
<code>ValidationError</code>	If an update is unsupported or produces an invalid Job.

2.2.d `buildMesh`

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].buildMesh`

Description: Run the Mesh and interop stages for this Job.

Call syntax

```
result = job.buildMesh()
```

Returns

Type	Description
<code>JobExecutionResult</code>	Run the Mesh and interop stages for this Job.

Signatures

```
buildMesh(workDirectory: object = None) -> JobExecutionResult
```

Parameters

Name	Type	Required	Default	Description
<code>workDirectory</code>	<code>object</code>	No	<code>None</code>	Existing operation directory, or <code>None</code> to use the Job default.

2.2.e writeInput

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].writeInput`

Description: Write the raw Abaqus input deck consumed by the interop stage.

Call syntax

```
job.writeInput()
```

Returns

Type	Description
<code>None</code>	—

Signatures

```
writeInput(workDirectory: object = None) -> None
```

Parameters

Name	Type	Required	Default	Description
<code>workDirectory</code>	<code>object</code>	No	<code>None</code>	Existing operation directory, or <code>None</code> to use the Job default.

2.2.f submit

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].submit`

Description: Prepare and submit this Job through its configured pipeline.

Call syntax

```
result = job.submit()
```

Returns

Type	Description
<code>JobExecutionResult</code>	Prepare and submit this Job through its configured pipeline.

Signatures

```
submit(workDirectory: object = None, overwriteExistingFiles: bool = False,
consistencyChecking: str = 'ON') -> JobExecutionResult
```

Parameters

Name	Type	Required	Default	Description
<code>workDirectory</code>	<code>object</code>	No	<code>None</code>	Existing operation directory, or <code>None</code> to use the Job default.
<code>overwriteExistingFiles</code>	<code>bool</code>	No	<code>False</code>	Whether recognized prior Job outputs may be replaced.
<code>consistencyChecking</code>	<code>str</code>	No	<code>'ON'</code>	Abaqus input-generation consistency-checking value.

2.2.g waitForCompletion

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].waitForCompletion`

Description: Block until a submitted Job finishes.

Call syntax

```
job.waitForCompletion()
```

Returns

Type	Description
None	—

Signatures

```
waitForCompletion() -> None
```

Parameters

None.

2.2.h kill

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].kill`

Description: Terminate the running process associated with this Job.

Call syntax

```
job.kill()
```

Returns

Type	Description
None	—

Signatures

```
kill() -> None
```

Parameters

None.

2.2.i getRuntimeStatus

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].getRuntimeStatus`

Description: Return a snapshot of this Job's current runtime status.

Call syntax

```
result = job.getRuntimeStatus()
```

Returns

Type	Description
<code>dict[str, object]</code>	Return a snapshot of this Job's current runtime status.

Signatures

```
getRuntimeStatus() -> dict[str, object]
```

Parameters

None.

2.2.j writeRunScript

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].writeRunScript`

Description: Write this Job pipeline as a runnable script file.

Call syntax

```
job.writeRunScript(fileName=fileName)
```

Returns

Type	Description
None	—

Signatures

```
writeRunScript(fileName: object, dialect: str = 'POWERSHELL', prepareInputs: bool = True) -> None
```

Parameters

Name	Type	Required	Default	Description
<code>fileName</code>	<code>object</code>	Yes	—	Destination script path accepted by the Abaqus file API.
<code>dialect</code>	<code>str</code>	No	<code>'POWERSHELL'</code>	Uppercase script dialect

Name	Type	Required	Default	Description
<code>prepareInputs</code>	<code>bool</code>	No	True	Whether to write required Abaqus inputs before rendering the script.

2.2.k openOdb

Defined on: `mdb.customData.CoreformIGA.jobs[jobName].openOdb`

Description: Open and return this Job's Abaqus output database.

Call syntax

```
result = job.openOdb()
```

Returns

Type	Description
<code>object</code>	Open and return this Job's Abaqus output database.

Signatures

```
openOdb() -> object
```

Parameters

None.