



System i
Programming
Developer Kit for Java commands

Version 6 Release 1





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Developer Kit for Java commands

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Note

Before using this information and the product it supports, be sure to read the information in "Notices," on page 17.

This edition applies to version 6, release 1, modification 0 of IBM Developer Kit for Java (product number 5761-JV1) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CICS models.

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Run Java Program (JAVA)

Where allowed to run: All environments (*ALL)
 Threadsafte: No

Parameters
 Examples
 Error messages

The Run Java Program (JAVA) command runs the Java program associated with the specified Java class. If no Java program exists, one is created and associated with the class file.

This command can operate on files in any file system that supports the integrated file system APIs.

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Parameters

Keyword	Description	Choices	Notes
CLASS	Class file or JAR file	<i>Path name</i> , *VERSION	Required, Positional 1
PARM	Parameters	Single values: *NONE Other values (up to 200 repetitions): <i>Character value</i>	Optional, Positional 2
CLASSPATH	Classpath	<i>Path name</i> , *ENVVAR	Optional
CHKPATH	Classpath security check level	*WARN, *SECURE, *IGNORE	Optional
OPTIMIZE	Optimization	*JIT, *INTERPRET, 10, 20, 30, 40	Optional
INTERPRET	Interpret	*OPTIMIZE, *YES, *NO, *JIT	Optional
PROP	Properties	Single values: *NONE Other values (up to 200 repetitions): <i>Element list</i>	Optional
	Element 1: Property name	<i>Path name</i>	
	Element 2: Property value	<i>Character value</i> , *NONE	
GCHINL	Garbage collect initial size	256-240000000, *DFT	Optional
GCHMAX	Garbage collect maximum size	256-240000000, *DFT, *NOMAX	Optional
GCFRQ	Garbage collection frequency	0-100, <u>50</u>	Optional
GCPTY	Garbage collection priority	<u>20</u> , 10, 30	Optional
OPTION	Option	Values (up to 4 repetitions): *NONE, *VERBOSE, *DEBUG, *VERBOSEGC, *NOCLASSGC	Optional
JOB	Job name	<i>Name</i> , <u>QJVACMDSRV</u> , *GEN	Optional
AGTPGM	Agent program	Single values: *NONE Other values: <i>Qualified object name</i>	Optional
	Qualifier 1: Agent program	<i>Name</i>	
	Qualifier 2: Library	<i>Name</i> , *LIBL, *CURLIB	
AGTOPTIONS	Agent options	<i>Character value</i> , *NONE	Optional
OUTPUT	Output	Single values: *PRINT, *NONE Other values: <i>Element list</i>	Optional
	Element 1: Destination	*	
	Element 2: Program end action	*PAUSE, *CONTINUE	

Top

Class file or JAR file (CLASS)

Specifies the class name or jar file to be run. The class name may be qualified by one or more package names. Each package name must be followed by a period. For example, CLASS('pkg1.pkg2.myclass') identifies a class qualified by two package names.

A jar file name may be specified only when running JDK 1.2 or higher. The start up class must be indicated by the Main-Class in the manifest header.

class-name

Specify the name of the class to be run.

jar-name

Specify the name of the jar file with the Main-Class specified in the manifest.

***VERSION**

The build version information for the Java Development Kit (JDK) and the Java Virtual Machine (JVM) is displayed. No Java program is run.

Top

Parameters (PARM)

Specifies one or more parameter values that are passed to the Java program. A maximum of 200 parameter values can be passed.

***NONE**

There are no input parameters to the Java program.

parameter-value

Specify the parameter value to be passed to the Java program.

Top

Classpath (CLASSPATH)

Specifies the path used to locate classes. Directories are separated by colons.

***ENVVAR**

The class path is determined by the environment variable CLASSPATH.

class-path

Path used to locate classes. An example class path is '/directory1/directory2:/QIBM/ProdData/Java400'.

Top

Classpath security check level (CHKPATH)

Specifies the level of warnings given for directories in the CLASSPATH that have public write authority. A directory in the CLASSPATH that has public write authority is a security exposure because it may contain a class file with the same name as the one you want to run. Whichever class file is found first is run.

***WARN**

A warning message is sent for each directory in the CLASSPATH that has public write authority.

***SECURE**

A warning message is sent for each directory in the CLASSPATH that has public write authority. If one or more warning messages are sent, an escape message is sent and the Java program is not run.

***IGNORE**

Ignore the fact that directories in the CLASSPATH may have public write authority. No warnings messages are sent.

Top

Optimization (OPTIMIZE)

Specifies how to treat class files if no Java program is associated with the file, or if the associated Java program is not up to date with the contents of the class file.

Beginning with Version 5 Release 5 Modification 0, Java programs do not contain machine instructions. Therefore values 10, 20, 30 and 40 are no longer supported. The value OPTIMIZE(*JIT) will be used instead.

***JIT** The Java program created does not contain machine instructions. The class is run using the Just In Time compiler (JIT).

***INTERPRET**

The Java program created does not contain machine instructions. If the INTERPRET(*OPTIMIZE) parameter is also specified, all of the classes that run will be interpreted.

10, 20, 30, 40

These parameter values are no longer supported and only exist for compatibility with releases prior to V6R1M0. The value OPTIMIZE(*JIT) is used instead.

Top

Interpret (INTERPRET)

Specifies how the Java class files should be run.

***OPTIMIZE**

Whether all Java classes are run interpretively depends on the value specified for the OPTIMIZE parameter. If OPTIMIZE(*INTERPRET) was specified, all Java classes will be run interpretively. If any other value was specified for the OPTIMIZE parameter, all Java class files will be run using the Just In Time compiler.

***YES** All Java classes will be run interpretively.

***NO** This value exists only to maintain compatibility with releases prior to V6R1M0. The value INTERPRET(*JIT) is used instead.

***JIT** All Java class files will be run using the Just In Time compiler (JIT), regardless of what OPTIMIZE value was used when the associated Java program was created.

Top

Properties (PROP)

Specifies a list of values to assign to Java properties. Up to 200 properties can have a value assigned.

Single values

***NONE**

No properties are specified.

Element 1: Property name

property-name

Specify the name of the property to be changed.

Element 2: Property value

property-value

Specify the value to be assigned to the property.

Top

Garbage collect initial size (GCHINL)

Specifies the initial size, in kilobytes, of the garbage collection heap. This is used to prevent garbage collection from starting on small programs.

***DFT** The default initial size is 16384 kilobytes unless it is overridden by a property.

256-24000000

Specify the initial size, in kilobytes, of the garbage collection heap. It is recommended that the initial heap size be set to 16384 kilobytes (the default) or larger.

Top

Garbage collect maximum size (GCHMAX)

Specifies the maximum size, in kilobytes, that the garbage collection heap can grow to. This is used to prevent runaway programs that consume all of the available storage. Normally, garbage collection runs as an asynchronous thread in parallel with other threads. If the maximum size is reached, all other threads are stopped while garbage collection takes place. This may adversely affect performance.

***DFT** The default for the parameter is used. The default maximum is determined by the system unless a property is specified. The heap will grow until all system resources are depleted. Then a synchronous garbage collection is started to reclaim resources no longer in use.

***NOMAX**

The maximum size is not specified by the user. The maximum is determined by the system. The heap will grow until all system resources are depleted. Then a synchronous garbage collection is started to reclaim resources no longer in use.

256-24000000

Specify the size, in kilobytes, that the garbage collection heap can grow to.

Top

Garbage collection frequency (GCFRQ)

Specifies the relative frequency that garbage collection runs.

This parameter is no longer supported. It exists solely for compatibility with the releases earlier than Version 4 Release 3 Modification 0.

Top

Garbage collection priority (GCPTY)

Specifies the priority of the tasks running garbage collection.

This parameter is no longer supported. It exists solely for compatibility with the releases earlier than Version 4 Release 3 Modification 0.

Top

Option (OPTION)

Specifies special options used when running the Java class.

*NONE

No special options are used when running the Java class.

*VERBOSE

A message is displayed each time a class file is loaded.

*DEBUG

Allows the system debugger to be used for this Java program. This value cannot be used with the JIT compiler. That is, *DEBUG is mutually exclusive with INTERPRET(*JIT). Also, *DEBUG cannot be used when a JAR file is specified for the CLASS keyword.

*VERBOSEGC

A message is displayed for each garbage collection sweep.

*NOCLASSGC

Unused classes are not reclaimed when garbage collection is run.

Top

Job name (JOB)

Specifies the name that is associated with the batch immediate (BCI) job that is started when this command is run. The BCI job is where the Java program will be run.

QJVACMDSRV

The job name for the BCI job will be QJVACMDSRV.

***GEN** The job name is generated from the class name.

name Specify the name to be used for the BCI job that is used to run the Java program.

Top

Agent program (AGTPGM)

Specifies an ILE service program or i5/OS PASE program that contains a virtual machine (VM) agent. For example, a VM agent can be a remote debugger or profiler. The VM loads the agent program and looks for the entry point:

```
jint JNICALL JVM_OnLoad(JavaVM *jvm, char *options, void *reserved);
```

The VM calls the JVM_OnLoad function, passing a pointer to the JavaVM instance as the first argument, and the character string specified in the AGTOPTIONS parameter as the second argument. The third argument to JVM_OnLoad is reserved and set to NULL.

Single values

*NONE

No VM agent program is specified.

Qualifier 1: Agent program

name Specify the name of the VM agent program.

Qualifier 2: Library

*LIBL All libraries in the library list for the current thread are searched until the first match is found. If the VM agent is an i5/OS PASE program, the directories contained in the LIBPATH and PASE_LIBPATH environment variables are used to locate the program.

*CURLIB

The current library for the thread is searched. If no library is specified as the current library for the thread, the QGPL library is searched.

name Specify the name of the library to be searched.

Top

Agent options (AGTOPTIONS)

Specifies a character string of the virtual machine (VM) agent options. A pointer to this character string will be passed as the second argument to the JVM_OnLoad function in the VM agent program specified in the AGTPGM parameter. The format of the options string is determined by the agent program.

*NONE

No options are specified. A NULL options argument will be passed to the JVM_OnLoad function.

character-value

Specify the options string to be passed to the VM agent program on start-up.

Top

Output (OUTPUT)

Specifies where output from the Java program should be sent and, if output is directed to the Java shell display, whether the shell display panel should go away when the Java program ends.

Single values

*PRINT

The Java program output is sent to a spooled file through the QPRINT printer device file.

*NONE

The Java program output is discarded.

Element 1: Destination

*
- A Java shell display panel will be used to display output if the Java program is run from an interactive job. If the Java program is run in a batch job, the Java program output is sent to a spooled file through the QPRINT printer device file.

Element 2: Program end action

*PAUSE

The Java shell display panel is shown until the F3, F12, or Enter key is pressed.

*CONTINUE

The Java shell display panel is closed (goes away) when the Java program ends.

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Examples

Example 1: Run a Java Program

```
JAVA CLASS('projectA.myJavaclassname')
```

This command will run the i5/OS Java program associated with the class *myJavaclassname*. The job name of the batch immediate (BCI) job where the Java program will run will be QJVACMDSRV.

Example 2: Generate the Job Name for the Java Program

```
JAVA CLASS('projectA.myJavaclassname') JOB(*GEN)
```

This command will run the i5/OS Java program associated with the class *myJavaclassname*. The job name of the batch immediate (BCI) job where the Java program will run will be MYJAVACLAS.

Top

Error messages

*ESCAPE Messages

JVAB534

Unable to complete Java program "&1".

JVAB535

Unmonitored exception received.

JVAB537

Java shell already active in job.

JVAB538

Error occurred when running Java shell.

JVAB539

Unable to start system debugger.

JVAB53A

Unable to start Java shell, reason code &1.

JVAB53B

Java processing canceled.

JVAB53D

Java Development Kit could not be found.

JVAB546

Error detected while running java in batch mode.

Top

Run Java Program (RUNJVA)

Where allowed to run: All environments (*ALL)
 Threadsafte: No

Parameters
 Examples
 Error messages

The Run Java Program (JAVA) command runs the Java program associated with the specified Java class. If no Java program exists, one is created and associated with the class file.

This command can operate on files in any file system that supports the integrated file system APIs.

Top

Parameters

Keyword	Description	Choices	Notes
CLASS	Class file or JAR file	<i>Path name</i> , *VERSION	Required, Positional 1
PARM	Parameters	Single values: *NONE Other values (up to 200 repetitions): <i>Character value</i>	Optional, Positional 2
CLASSPATH	Classpath	<i>Path name</i> , *ENVVAR	Optional
CHKPATH	Classpath security check level	*WARN, *SECURE, *IGNORE	Optional
OPTIMIZE	Optimization	*JIT, *INTERPRET, 10, 20, 30, 40	Optional
INTERPRET	Interpret	*OPTIMIZE, *YES, *NO, *JIT	Optional
PROP	Properties	Single values: *NONE Other values (up to 200 repetitions): <i>Element list</i>	Optional
	Element 1: Property name	<i>Path name</i>	
	Element 2: Property value	<i>Character value</i> , *NONE	
GCHINL	Garbage collect initial size	256-240000000, *DFT	Optional
GCHMAX	Garbage collect maximum size	256-240000000, *DFT, *NOMAX	Optional
GCFRQ	Garbage collection frequency	0-100, <u>50</u>	Optional
GCPTY	Garbage collection priority	<u>20</u> , 10, 30	Optional
OPTION	Option	Values (up to 4 repetitions): *NONE, *VERBOSE, *DEBUG, *VERBOSEGC, *NOCLASSGC	Optional
JOB	Job name	<i>Name</i> , <u>QJVACMDSRV</u> , *GEN	Optional
AGTPGM	Agent program	Single values: *NONE Other values: <i>Qualified object name</i>	Optional
	Qualifier 1: Agent program	<i>Name</i>	
	Qualifier 2: Library	<i>Name</i> , *LIBL, *CURLIB	
AGTOPTIONS	Agent options	<i>Character value</i> , *NONE	Optional
OUTPUT	Output	Single values: *PRINT, *NONE Other values: <i>Element list</i>	Optional
	Element 1: Destination	*	
	Element 2: Program end action	*PAUSE, *CONTINUE	

Top

Class file or JAR file (CLASS)

Specifies the class name or jar file to be run. The class name may be qualified by one or more package names. Each package name must be followed by a period. For example, CLASS('pkg1.pkg2.myclass') identifies a class qualified by two package names.

A jar file name may be specified only when running JDK 1.2 or higher. The start up class must be indicated by the Main-Class in the manifest header.

class-name

Specify the name of the class to be run.

jar-name

Specify the name of the jar file with the Main-Class specified in the manifest.

***VERSION**

The build version information for the Java Development Kit (JDK) and the Java Virtual Machine (JVM) is displayed. No Java program is run.

Top

Parameters (PARM)

Specifies one or more parameter values that are passed to the Java program. A maximum of 200 parameter values can be passed.

***NONE**

There are no input parameters to the Java program.

parameter-value

Specify the parameter value to be passed to the Java program.

Top

Classpath (CLASSPATH)

Specifies the path used to locate classes. Directories are separated by colons.

***ENVVAR**

The class path is determined by the environment variable CLASSPATH.

class-path

Path used to locate classes. An example class path is '/directory1/directory2:/QIBM/ProdData/Java400'.

Top

Classpath security check level (CHKPATH)

Specifies the level of warnings given for directories in the CLASSPATH that have public write authority. A directory in the CLASSPATH that has public write authority is a security exposure because it may contain a class file with the same name as the one you want to run. Whichever class file is found first is run.

***WARN**

A warning message is sent for each directory in the CLASSPATH that has public write authority.

***SECURE**

A warning message is sent for each directory in the CLASSPATH that has public write authority. If one or more warning messages are sent, an escape message is sent and the Java program is not run.

***IGNORE**

Ignore the fact that directories in the CLASSPATH may have public write authority. No warnings messages are sent.

Top

Optimization (OPTIMIZE)

Specifies how to treat class files if no Java program is associated with the file, or if the associated Java program is not up to date with the contents of the class file.

Beginning with Version 5 Release 5 Modification 0, Java programs do not contain machine instructions. Therefore values 10, 20, 30 and 40 are no longer supported. The value OPTIMIZE(*JIT) will be used instead.

***JIT** The Java program created does not contain machine instructions. The class is run using the Just In Time compiler (JIT).

***INTERPRET**

The Java program created does not contain machine instructions. If the INTERPRET(*OPTIMIZE) parameter is also specified, all of the classes that run will be interpreted.

10, 20, 30, 40

These parameter values are no longer supported and only exist for compatibility with releases prior to V6R1M0. The value OPTIMIZE(*JIT) is used instead.

Top

Interpret (INTERPRET)

Specifies how the Java class files should be run.

***OPTIMIZE**

Whether all Java classes are run interpretively depends on the value specified for the OPTIMIZE parameter. If OPTIMIZE(*INTERPRET) was specified, all Java classes will be run interpretively. If any other value was specified for the OPTIMIZE parameter, all Java class files will be run using the Just In Time compiler.

***YES** All Java classes will be run interpretively.

***NO** This value exists only to maintain compatibility with releases prior to V6R1M0. The value INTERPRET(*JIT) is used instead.

***JIT** All Java class files will be run using the Just In Time compiler (JIT), regardless of what OPTIMIZE value was used when the associated Java program was created.

Top

Properties (PROP)

Specifies a list of values to assign to Java properties. Up to 200 properties can have a value assigned.

Single values

***NONE**

No properties are specified.

Element 1: Property name

property-name

Specify the name of the property to be changed.

Element 2: Property value

property-value

Specify the value to be assigned to the property.

Top

Garbage collect initial size (GCHINL)

Specifies the initial size, in kilobytes, of the garbage collection heap. This is used to prevent garbage collection from starting on small programs.

***DFT** The default initial size is 16384 kilobytes unless it is overridden by a property.

256-24000000

Specify the initial size, in kilobytes, of the garbage collection heap. It is recommended that the initial heap size be set to 16384 kilobytes (the default) or larger.

Top

Garbage collect maximum size (GCHMAX)

Specifies the maximum size, in kilobytes, that the garbage collection heap can grow to. This is used to prevent runaway programs that consume all of the available storage. Normally, garbage collection runs as an asynchronous thread in parallel with other threads. If the maximum size is reached, all other threads are stopped while garbage collection takes place. This may adversely affect performance.

***DFT** The default for the parameter is used. The default maximum is determined by the system unless a property is specified. The heap will grow until all system resources are depleted. Then a synchronous garbage collection is started to reclaim resources no longer in use.

***NOMAX**

The maximum size is not specified by the user. The maximum is determined by the system. The heap will grow until all system resources are depleted. Then a synchronous garbage collection is started to reclaim resources no longer in use.

256-24000000

Specify the size, in kilobytes, that the garbage collection heap can grow to.

Top

Garbage collection frequency (GCFRQ)

Specifies the relative frequency that garbage collection runs.

This parameter is no longer supported. It exists solely for compatibility with the releases earlier than Version 4 Release 3 Modification 0.

Top

Garbage collection priority (GCPTY)

Specifies the priority of the tasks running garbage collection.

This parameter is no longer supported. It exists solely for compatibility with the releases earlier than Version 4 Release 3 Modification 0.

Top

Option (OPTION)

Specifies special options used when running the Java class.

*NONE

No special options are used when running the Java class.

*VERBOSE

A message is displayed each time a class file is loaded.

*DEBUG

Allows the system debugger to be used for this Java program. This value cannot be used with the JIT compiler. That is, *DEBUG is mutually exclusive with INTERPRET(*JIT). Also, *DEBUG cannot be used when a JAR file is specified for the CLASS keyword.

*VERBOSEGC

A message is displayed for each garbage collection sweep.

*NOCLASSGC

Unused classes are not reclaimed when garbage collection is run.

Top

Job name (JOB)

Specifies the name that is associated with the batch immediate (BCI) job that is started when this command is run. The BCI job is where the Java program will be run.

QJVACMDSRV

The job name for the BCI job will be QJVACMDSRV.

***GEN** The job name is generated from the class name.

name Specify the name to be used for the BCI job that is used to run the Java program.

Top

Agent program (AGTPGM)

Specifies an ILE service program or i5/OS PASE program that contains a virtual machine (VM) agent. For example, a VM agent can be a remote debugger or profiler. The VM loads the agent program and looks for the entry point:

```
jint JNICALL JVM_OnLoad(JavaVM *jvm, char *options, void *reserved);
```

The VM calls the JVM_OnLoad function, passing a pointer to the JavaVM instance as the first argument, and the character string specified in the AGTOPTIONS parameter as the second argument. The third argument to JVM_OnLoad is reserved and set to NULL.

Single values

*NONE

No VM agent program is specified.

Qualifier 1: Agent program

name Specify the name of the VM agent program.

Qualifier 2: Library

*LIBL All libraries in the library list for the current thread are searched until the first match is found. If the VM agent is an i5/OS PASE program, the directories contained in the LIBPATH and PASE_LIBPATH environment variables are used to locate the program.

*CURLIB

The current library for the thread is searched. If no library is specified as the current library for the thread, the QGPL library is searched.

name Specify the name of the library to be searched.

Top

Agent options (AGTOPTIONS)

Specifies a character string of the virtual machine (VM) agent options. A pointer to this character string will be passed as the second argument to the JVM_OnLoad function in the VM agent program specified in the AGTPGM parameter. The format of the options string is determined by the agent program.

*NONE

No options are specified. A NULL options argument will be passed to the JVM_OnLoad function.

character-value

Specify the options string to be passed to the VM agent program on start-up.

Top

Output (OUTPUT)

Specifies where output from the Java program should be sent and, if output is directed to the Java shell display, whether the shell display panel should go away when the Java program ends.

Single values

*PRINT

The Java program output is sent to a spooled file through the QPRINT printer device file.

*NONE

The Java program output is discarded.

Element 1: Destination

*
- A Java shell display panel will be used to display output if the Java program is run from an interactive job. If the Java program is run in a batch job, the Java program output is sent to a spooled file through the QPRINT printer device file.

Element 2: Program end action

*PAUSE

The Java shell display panel is shown until the F3, F12, or Enter key is pressed.

*CONTINUE

The Java shell display panel is closed (goes away) when the Java program ends.

Top

Examples

Example 1: Run a Java Program

```
JAVA CLASS('projectA.myJavaclassname')
```

This command will run the i5/OS Java program associated with the class *myJavaclassname*. The job name of the batch immediate (BCI) job where the Java program will run will be QJVACMDSRV.

Example 2: Generate the Job Name for the Java Program

```
JAVA CLASS('projectA.myJavaclassname') JOB(*GEN)
```

This command will run the i5/OS Java program associated with the class *myJavaclassname*. The job name of the batch immediate (BCI) job where the Java program will run will be MYJAVACLAS.

Top

Error messages

*ESCAPE Messages

JVAB534

Unable to complete Java program "&1".

JVAB535

Unmonitored exception received.

JVAB537

Java shell already active in job.

JVAB538

Error occurred when running Java shell.

JVAB539

Unable to start system debugger.

JVAB53A

Unable to start Java shell, reason code &1.

JVAB53B

Java processing canceled.

JVAB53D

Java Development Kit could not be found.

JVAB546

Error detected while running java in batch mode.

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Appendix. Notices

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