



Quickly Create Powerful IBM i System Commands with Java and CL





Presenter





Richard Schoen Director of Document Management 26+ years of multi-platform development





- Why use Java and CL Together
- Review development environments for Java
- Code, compile and build
- Work through sample commands

No Hamburger Flipping





Why Use Java with CL?



- Functionality not easily available in CL or RPG by themselves
- JT400 for IBM i local and remote service access
 DB, Commands, Program Calls, Data Queues, Etc.
- Access to network shares (send and receive files via Netbios)
- Read and modify XML, XLS and Text files
- PDF manipulation iText. (create, read, write, merge, etc.)
- Excel manipulation Apache POI
- Submit jobs to remote systems and return data from the calls
- My samples help make Java accessible from 5250 environment

What are CL Commands ?

- CL commands front end calls to CL, RPG or COBOL programs.
- Takes prompted input parameters.
- Can return parameters.
- Can be embedded in other CL programs.
- Entered data values are padded to parm length.
- Simple or complex parameters lists can be passed to a command.
- Parameter valued can be validated.
- Validity checking and prompt override programs.

of CODOL progr	anns.			
29 Session A - [24 x 80]		1 CO. 🗰 1	C. Dama has	
File Edit View Communication Actions Window Help				
Host: 10.60.72.40 Port: 23	Workstation ID:	Discor	vnect	
Compile Java Pr	ogram Source	(IBMIJVABLD))	
Turne all all and the factors				
Type choices, press Enter.				
Java IFS source file >	<u>'/javacmds/IE</u>	BMiSamples/H	HelloWorld.j	ava'
Java class path	· ·			
Java virtual machine to use	6032	4064, 503	2, 5064, 603	32, 6064
Display standard output result >	*YES	*NO, *YES		
Delete standard output result .	*YES	*NO, *YES		
Prt java std output on errors .	*NO	*NO, *YES		
				Bottom
F3=Exit F4=Prompt F5=Refresh	F12=Cancel	F13=How to	use this di	splay
F24=More keys				
MH A				08/037
(5)* 1902 - Session successfully started				1





Traditional CL Command Process Structure

Session A = [24 x 80]	the second se		
File Edit View Communication	Actions Window Help		
🛯 FL 🗛 🛤 🔳		• 🖉	
Hest: 10.60.72.40	Port: 23	Workstation ID:	Disconnect
	Compile	Java Program Source (I	BMIJVABLD)
Type choices, p	ress Enter.		
Java IFS source	file	> <u>'/javacmds/IBM</u>	liSamples/HelloWorld.java
Java class path			
Java virtual ma	chine to use	<u>6032</u>	4064, 5032, 5064, 6032, 6064
Display standar	d output res	ult > <u>*YES</u>	*NO, *YES
Delete standard	loutput resu	lt . <u>*YES</u>	*NO, *YES
Prt java std ou	tput on erro	rs . <u>*NO</u>	*ND, *YES
			Bottom
F3=Exit F4=Pr	ompt F5=Re	fresh F12=Cancel F	13=How to use this display
F24=More keys			
MEL A			08/03
33" 1902 - Session successfully started			
The Cashien A The DOL	a second second	and the second s	
Dig Session A - [24 x 80] File Edit View Communication	Actions Window Help	Sector Street	- 0 ×
File Edit View Communication	Actions Window Help	10	
20 Session A - [24 x 80] File Edit View Communication (a) (b) (c) (c) (c) Host: 10.60.72.40 (c) (c) (c)	Actions Window Help	Workstation ID:	Disconnect
Image: Session A - [24 x 80] File Edit Image: Session A - [24 x 80] File Edit Image: Session A - [24 x 80] Image: Sessi	Actions Window Help	Werkstation ID:	Disconnect
Columns : SEU==>	Actions Window Help	Worksteien ID: Browse	Disconnect RJSJAVACMD/SOURCE IBMTJVPBLC
Tession A - DA x R0] File Edit View Communication Image: Second and the se	Actions Window Help	Workstation ID: Browse	Clisconnect RJSJAVACMD/SOURCE IBMIJVABLC
The Edit View Communication Market 1000-72-40 Columns	Actions Window Help Port 23 1 71 1+2	Workstation ID: Browse	Disconnect RJSJAVACMD/SOURCE IBMIJVABLC +5
20) Sesion A - (24 × 80) File Edit View Communication → Heat 10/072-0 Columns : SEU==> FMT **	Actions Window Help Port 23 1 71 1+2 PGM	Workstelien ID: Browse 	
20 Cestion A - [24 K0) File 548 Vece Communication B C Columns : SEU==> FMT **	Actions Window Help Pert 23 1 71 1+ 2 ******* Begin PGM	Workstation ID: Browse * 3+ 4 . nning of data ******** PARM (& JAVASOURCE &. &DSPSTDOUT & DLTS	RJSJAVACMD/SOURCE IBMIJVABLC
Cestion A - [24:80] File Set Yees Communication Hots Hots SEU=> FMT 0001.00 0002.00	Actions Window Help Port 23 1 71 1+ 2 ****** Begin PGM	Workstation ID: Browse 	Cisconnect RJSJAVACMD/SOURCE IBHIJVABLC +5+8+7 JAVACLASS &JAVAJVM + TDOUT &PRTSTDOUT)
20 (seion A - [24 K0) File 542 (vec communication Columns : SEU=> FMT **	Actions Window Help Port 23 1 71 1+2 FGM DCL	Workstation ID: Browse * 3+ 4 . nning of data ******** PARM (&JAVASOURCE & &DSPSTDOUT &DLTS VAR (&JAVASOURCE) T	Cisconnex RJSJAVACMD/SOURCE IBMIJVABLC +5+67 JAVACLASS &JAVAJVM + TOOUT &PRTSTDOUT) YPE (*CHAR) LEN (255)
20 Cestion A - [24 K0) Tel: 647 Veve communication B C 20 L 20 20 20 20 Heat: [300022.40 Columns : SEU==> FMT **	Actions Wondow Help Pert 23 1 71 1+ 2 ******** Begin PGM DCL DCL	Wetstates ID: Browse * 3* 4 . nning of data ******** PARM (&JAVASOURCE & &DSPSTDUUT &DLTS VAR (&JAVASOURCE) TY VAR (&JAVASOURCE) TY	
2 Cestion A - [24 K0] The 647 Vex Communication	Adices Window Help Pert 23 1 71 1+ 2 FGM DCL DCL DCL	Workdation ID. Browse * 3+ 4 . mning of data ******** PARM (&JAVASOURCE & & &DSPSTDOUT &DLTS VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVALDES) TY VAR (&JAVAJVM) TYPE	Disconnect RJSJAVACMD/SOURCE IBMIJVABLC + 5+ 6+ 7 JAVACLASS &JAVAJVM + TDOUT &PRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (5000) (*CHAR) LEN (10)
20 Cesion A - [24 K0] File Set Yees Communication Place 200 22-40 Columns : SEU==> FMT **	Actions Window Help Port 23 1 71 1+. 2 ****** Begin PGM DCL DCL DCL DCL	Workstation Ib: Browse 	Disconnext RJSJAVACMD/SOURCE IBHIJVABLC +5+6 JAVACLASS &JAVAJVM + JOUL &PRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (5000) (*CHAR) LEN (100) CHARJ LEN (100)
2 Cestion A - [24 K0) Tel: 647 Veve Communication 2 Columns : SEU=3 FMT **	Actions Wondow Help Pert 23 1 71 1+ 2 ******* Begin PGM DCL DCL DCL DCL DCL	Wetstate ID: Browse * 3* 4 . park (& JAVASOURCE & &DSPSTDUUT &DLTS VAR (& JAVASOURCE) T VAR (& JAVASOURCE) T VAR (& JAVASOURCE) TY VAR (& JAVASOURCE) TY VAR (& JAVAJVM) TYPE VAR (& PARM2) TYPE VAR (& PARM2) TYPE	Disconnext RJSJAVACMD/SOURCE IBMIJVABLC JAVACLASS &JAVAJVM + TOOUT &PRTSTDOUT) YPE (*CHAR) LEN (265) PE (*CHAR) LEN (5000) (*CHAR) LEN (100) (*CHAR) LEN (100) (*CHAR) LEN (100) (*CHAR) LEN (4)
2 Cestion A - [24 K0) Tel: 647 Veve Communication Columns : SEU==> FMT ** 4 0002.00 0003.00 0005.00 0005.00 0006.00 0009.00 0009.00	Actions Window Help Pert 23 1 71 1+ 2 ******* Begit PGM DCL DCL DCL DCL DCL DCL DCL	Worklation ID: Browse * 3+ 4 . mning of data ******** PARM (&JAVASOURCE & & &DSPSTDOUT & DLTS VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVASOURCE) TYPE VAR (&JAVASURCE) TYPE VAR (&JAVASURCE) TYPE VAR (&JAVASURCE) TYPE VAR (&JAVASURCE) TYPE VAR (&JAVASURCE) TYPE VAR (&JAVASURCE) TYPE	Obcomed RJSJAVACMD/SOURCE IBMIJVABLC IBMIJVABLC JAVACLASS & JAVAJVM + TDOUT & APRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (2600) (*CHAR) LEN (10) CHAR) LEN (10) (*CHAR) LEN (10) (*CHAR) LEN (10) (*CHAR) LEN (10) (*CHAR) LEN (10) (*DEC) LEN (5 0)
2 Cestion A - [24 K0] The 645 Vec Communication B C R R R R R R R R R R R R R R R R R R	Actions Window Help Pert 23 1 71 1+ 2 ******* Begin PGM DCL DCL DCL DCL DCL DCL DCL DCL	Workstation ID: Browse 	Oteconect RJSJAVACMD/SOURCE IBHIJVABLC +5 JAVACLASS &JAVAJVM + TDOUT &PRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (5000) (*CHAR) LEN (5000) (*CHAR) LEN (100) (*CHAR) LEN (100) (*CHAR) LEN (100) (*DEC) LEN (50) E (*CHAR) LEN (5)
20 Cestion A - [24 K0) The 647 Veve Communication 20 Columns : SEU=3> FMT **	Actions Wordow Help Pert 23 1 71 1+ 2 ******* Begin PGM DCL DCL DCL DCL DCL DCL DCL DCL	Workstation Ib: Browse + 3+ 4 nning of data ******** PARM (&JAVASOURCE & & &DSPSTDUT & &DLTS VAR (&JAVASOURCE) TY VAR (&JAVASOURCE) TY VAR (&JAVASOURCE) TYPE VAR (&JAVARTN) TYPE VAR (&JAVARTNC) TYPI VAR (&JAVARTNC) TYPI VAR (&JAVARTNC) TYPI VAR (&JAVARTNC) TYPI	Disconnext RJSJAVACMD/SOURCE IBMIJVABLC IBMIJVABLC JAVACLASS &JAVAJVM + DOUT &PRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (5000) (*CHAR) LEN (100) CHAR) LEN (100) (*CHAR) LEN (50) E(*CHAR) LEN (50) (*CHAR) LEN (50) (*CHAR) LEN (50) (*CHAR) LEN (50) (*DEC) LEN (5) *CHAR) LEN (200)
	Actions Window Help Pert 23 1 71 1+ 2 ******* Begin PGM DCL DCL DCL DCL DCL DCL DCL DCL	Worklation ID: Browse * 3+ 4 . PARM (&JAVASOURCE &. &DSPSTOOUT &DLTS VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVARLSS) TYI VAR (&JAVARLSS) TYI VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&MSGOTA) TYPE (VAR (&MSGOTA) TYPE (Disconnect RJSJAVACMD/SOURCE IBMIJVABLC IBMIJVABLC JAVACLASS &JAVAJVM * JOUT APRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (5000) (*CHAR) LEN (100) (*CHAR) LEN (100) (*CHAR) LEN (100) (*CHAR) LEN (50) E (*CHAR) LEN (50) CHAR) LEN (5) *CHAR) LEN (5) *CHAR) LEN (5) *CHAR) LEN (6) (*CHAR) LEN (6) (*CHAR) LEN (6)
2 Cestion A - [24 K0] The dat Vece Communication Columns : SEU==> FMT **	Actions Window Help Pert 23 1 71 1+ 2 ******* Begit PGM DCL DCL DCL DCL DCL DCL DCL DCL	Workdation Ib. Browse * 3* 4 parkm (&JAVASOURCE &. & &DSPSTDOUT & &DLTS VAR (&JAVASOURCE) T VAR (&JAVACLASS) TY VAR (&JAVACLASS) TY VAR (&JAVACLASS) TY VAR (&JAVACLASS) TY VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&SDTA) TYPE VAR (&CPFID) TYPE (*	Otecomed RJSJAVACMD/SOURCE IBMIJVABLC IBMIJVABLC JAVACLASS &JAVAJVM + TDOUT &PRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (256) PE (*CHAR) LEN (10) (*CHAR) LEN (10) (*CHAR) LEN (10) (*CHAR) LEN (10) (*CHAR) LEN (5) *CHAR) LEN (5) *CHAR) LEN (200) (*CHAR) LEN (5) *CHAR) LEN (200) (*CHAR) LEN (200)
20 Cestion A - [04 K0) The 647 Veve Communication 20 Columns : SEU=3> FMT **	Actions Window Help Pert 23 1 71 1, + 2 ******* Begin PGM DCL DCL DCL DCL DCL DCL DCL DCL	Workstation Ib: Browse 	Clicomext RJSJAVACMD/SOURCE IBHIJVABLC +5+6 JAVACLASS &JAVAJVM + JOUT &PRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (5000) (*CHAR) LEN (5000) (*CHAR) LEN (10) CHAR) LEN (10) CHAR) LEN (10) (*CHAR) LEN (50) (*CHAR) LEN (5) *CHAR) LEN (5) *CHAR) LEN (200) (*CHAR) LEN (200) (*CHAR) LEN (5) *CHAR) LEN (7) YPE (*CHAR) LEN (9999) YPE (*CHAR) LEN (9999)
Columns Heat Columns Heat Columns Fir (#r vec Columns Fir (#r vec Columns Fir Fir Fir Columns Fir Columns Column	Actions Window Help Pert 23 1 71 1+ 2 ******* Begin PGM DCL DCL DCL DCL DCL DCL DCL DCL	Worklation ID: Browse * 3+ 4 . PARM (&JAVASOURCE & & & BOSPSTOOUT & DLTS VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVACMOLIN) T VAR (&STOUTIFS) TYVE	Disconnect RJSJAVACMD/SOURCE IBMIJVABLC IBMIJVABLC JAVACLASS &JAVAJVM + JOUT APRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (5000) (*CHAR) LEN (10) CHAR) LEN (10) CHAR) LEN (10) (*CHAR) LEN (5000) (*CHAR) LEN (50) E (*CHAR) LEN (5) *CHAR) LEN (5) *CHAR) LEN (5) *CHAR) LEN (5) *CHAR) LEN (200) (*CHAR) LEN (255) PE (*CHAR) LEN (255) PE (*CHAR) LEN (255)
2 Cestion A - [JA K0] The dat Vece Communication Columns : SEU=3 FMT **	Actions Window Help Pert 23 1 71 1+ 2 ******* Begit PGM DCL DCL DCL DCL DCL DCL DCL DCL	Worklation Ib. Browse * 3* 4 parm (&Javasource &. & &DSPSTDOUT & DLTS VAR (&JAVASOURCE) T VAR (&JAVASOURCE) T VAR (&JAVASOURCE) TYPE VAR (&JAVACLASS) TYI VAR (&JAVACLASS) TYI VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVARTNC) TYPE VAR (&JAVACMDLIN) TYRE (* VAR (&STDOUTFS) TYI VAR (&STDOUTFS) TYI VAR (&STDOUTFILE) TYI	Disconnect RJSJAVACMD/SOURCE IBMIJVABLC IBMIJVABLC *7 JAVACLASS &JAVAJVM + TDOUT &PRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (255) PE (*CHAR) LEN (100) (*CHAR) LEN (200) (*CCHAR) LEN (200) (*CHAR) LEN (255) YPE (*CHAR) LEN (255) YPE (*CHAR) LEN (255)
Creation A - [04 K0) The data Vece Communication	Adices Window Help Pert 23 1 71 1+ 2 ******* Begin PGM DCL DCL DCL DCL DCL DCL DCL DCL	Workstation Ib. Browse 	Oteconect RJSJAVACMD/SOURCE IBHIJVABLC
Creation A - [04 K0) The data Vece Communication Columns Form I = 1 + +	Actions Wondow Help Pert 23 1 71 1+ 2 ******* Begin PGM DCL DCL DCL DCL DCL DCL DCL DCL	Workladden ID: Browse + 3+ 4 . PARM (& JAVASOURCE & & & DSPSTDOUT & & DLTS VAR (& JAVASOURCE) TY VAR (& JAVASOURCE) TY VAR (& JAVASOURCE) TYPE VAR (& JAVASOURCE) TYPE VAR (& JAVARTNC) TYPE VAR (& JAVARTNC) TYPE VAR (& JAVARTNC) TYPE VAR (& MSGDTA) TYPE (VAR (& MSGDTA) TYPE (VAR (& MSGDTA) TYPE (VAR (& JAVACMDLIN) T VAR (& STDOUTFILE) TY VAR (& STDOUTFILE) TYPE trieve F10=Cursor	Dkcowed RJSJAVACMD/SOURCE IBMIJVABLC
2 Cesion A - [A + R0] The dat Vec communication Columns : SEU==> FMT ** + 0001.00 0002.00 0003.00 0004.00 0005.00 0005.00 0008.00 0010.00 0012.00 0013.00 0014.00 0012.00 0013.00 0014.00 0015.00 0015.00 0016.00 F3=Exit F5=Re F16=Repeat find	Actions Window Help Pert 23 1 71 1+ 2 ******* Begin PGM DCL DCL DCL DCL DCL DCL DCL DCL	Worklation ID: Browse * 3* 4 . PARM (& JAVASOURCE &. & &DSPSTOOUT & DLTS: VAR (& JAVASOURCE) T VAR (& JAVASOURCE) T VAR (& JAVASOURCE) TYPE VAR (& JAVARCLASS) TYY VAR (& JAVARCLASS) TYYE VAR (& JAVARCHLOS) TYPE VAR (& JAVARTNC) TYPE VAR (& JAVARTNC) TYPE VAR (& JAVARTNC) TYPE VAR (& JAVARTNC) TYPE VAR (& STODUTIS) TYYE VAR (& STODUTIFS) TYYE VAR (& STODUTFS) TYYE CONSTRUCTION TYPE (Disconsist RJSJAVACMD/SOURCE IBMIJVABLC IBMIJVABLC *5 JAVACLASS & JAVAJVM + TDOUT & APRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (255) PE (*CHAR) LEN (100) (*CHAR) LEN (10) (*CHAR) LEN (200) (*CHAR) LEN (255) PFE (*CHAR) LEN (255) YPE (*CHAR) LEN (255) FI1=Toggle F12=Cancel IDMT IPM COPP 1001
2 Casin A - [A + R0] The 48 Yee Communication	Actions Window Help Pert 23 1 71 1+ 2 PGM DCL DCL DCL DCL DCL DCL DCL DCL	Workdation Ib. Browse * 3* 4 parkm (&Javasource &. & &DSPSTDOUT & &DLTS VAR (&JAVASOURCE) T VAR (&JAVACLOS) TY VAR (&JAVACLOS) TY VAR (&JAVACLOS) TY VAR (&JAVACLOS) TYPE VAR (&JAVARTNC) TYPE VAR (&STOULTIS) TY VAR (&STOULTIS) TY VAR (&STOULTIS) TY VAR (&STOULTIS) TY VAR (&STOULTILE) T etrieve F10=Cursor More keys (C) COPYR	Otecomed RJSJAVACMD/SOURCE IBMIJVABLC IBMIJVABLC JAVACLASS &JAVAJVM + JOUT &PRTSTDOUT) YPE (*CHAR) LEN (255) PE (*CHAR) LEN (2600) (*CHAR) LEN (10) CHAR) LEN (10) (*CHAR) LEN (200) (*CHAR) LEN (255) YPE (*CHAR) LEN (255) F11=Toggle F12=Cancel IGHT IBM CORP. 1981, 2007.

Type CL Command or Embed in a CL Program

CL Command

Command Processing Program CL, RPG, COBOL

Parameters or Data Returned to Calling CL Program or to Command Line as CPF Messages

helpsystems

CL Command Process Structure using Java

File Edit View Commun	the second second second								
	ication Actions Window Help								
🖻 ĐÈ 🚛 🛢	1 🖬 🖬 🐚 🖬 🕷 🔳								
Hest: 10.60.72	40 Port: 23	Workstation ID: Disconnect							
	Compile	Java Program Source (IBMIJVABLD)							
Type choices	Type choices, press Enter.								
Java IFS sou	unce file	> <u>'/javacmds/IBMiSamples/HelloWorld.java'</u>							
Java class p	bath	· · · · > <u>* * * · · · · · · · · · · · · · · · · </u>							
l									
l									
Java vietual	l machine to use	6022 4064 5022 5064 6022 6064							
Display star	adard output rec								
Delete star	dand output resu	1+ *YES *NO *YES							
Prt java sto	d output on erro	re *NO *NO *YES							
Pre java se	a output on erro								
		Bottom							
E3=Evit E4	4=Promot E5=Re	fresh El2=Cancel El3=How to use this display							
F24=More key	is is in the second	fiesh fie builder fits how to use this display							
124-Nore Reg	g -								
		09/037							
xiii 1002 - Sattion suscentful	lu stastad	08/03							
20 Session A - [24 x 80]	y states								
File Edit View Communi	ication Actions Window Help	Carlos and a second and a second second							
0 6 6 A 8 0	18 s 5 5 4 5 4	₽ <i>₽</i>							
Host: 10.60.72	40 Port: 23	Workstation ID: Disconnect							
Columns	. : 1 71	Browse RJSJAVACMD/SOURCE							
SEU==>		IBMIJVABLC							
FMT **+		+ 3+ 4+ 5+ 8+ 7							
****	********** Begin	nning of data **********************************							
0001.00	PGM	PARM (& JAVASOURCE & JAVACLASS & JAVAJVM +							
0002.00		&DSPSTDOUT &DLTSTDOUT &PRTSTDOUT)							
0003.00									
0004.00	DCL	VAR (&JAVASOURCE) TYPE (*CHAR) LEN (255)							
0005,00	DCL	VAR (& JAVACLASS) TYPE (*CHAR) LEN (5000)							
0008 00									
0000.00	DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10)							
0007.00	DCL DCL	VAR(&JAVAJVM) TYPE(*CHAR) LEN(10) VAR(&PARM2) TYPE(*CHAR) LEN(100)							
0007.00	DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&REPLACE) TYPE (*CHAR) LEN (4)							
0007.00 0008.00 0009.00	DCL DCL DCL DCL	VAR(&JAVAJVM) TYPE(*CHAR) LEN(10) VAR(&PARM2) TYPE(*CHAR) LEN(100) VAR(&REPLACE) TYPE(*CHAR) LEN(4) VAR(&JAVARTN) TYPE(*DEC) LEN(5 0)							
0007.00 0008.00 0009.00 0010.00	DCL DCL DCL DCL DCL	VAR(&JAVAJVM) TYPE(*CHAR) LEN(10) VAR(&PARM2) TYPE(*CHAR) LEN(100) VAR(&REPLACE) TYPE(*CHAR) LEN(4) VAR(&JAVARTN) TYPE(*DEC) LEN(5 0) VAR(&JAVARTNC) TYPE(*CHAR) LEN(5)							
0007.00 0008.00 0009.00 0010.00 0011.00	DCL DCL DCL DCL DCL DCL	VAR(&JAVAJVM) TYPE(*CHAR) LEN(10) VAR(&PARM2) TYPE(*CHAR) LEN(100) VAR(&REPLACE) TYPE(*CHAR) LEN(4) VAR(&JAVARTN) TYPE(*CHAR) LEN(5) VAR(&JAVARTNC) TYPE(*CHAR) LEN(5) VAR(&MSGDTA) TYPE(*CHAR) LEN(200)							
0007.00 0008.00 0009.00 0010.00 0011.00 0012.00	DCL DCL DCL DCL DCL DCL DCL	VAR(&JAVAJVM) TYPE(*CHAR) LEN(10) VAR(&PARM2) TYPE(*CHAR) LEN(100) VAR(&REPLACE) TYPE(*CHAR) LEN(4) VAR(&JAVARTN) TYPE(*CHAR) LEN(5) VAR(&JAVARTNC) TYPE(*CHAR) LEN(5) VAR(&MSGDTA) TYPE(*CHAR) LEN(200) VAR(&MSGDTA) TYPE(*CHAR) LEN(4)							
0007.00 0008.00 0009.00 0010.00 0011.00 0012.00 0013.00	DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&REPLACE) TYPE (*CHAR) LEN (10) VAR (&JAVARTN) TYPE (*CHAR) LEN (5) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&MSGDTA) TYPE (*CHAR) LEN (200) VAR (&MSGDTA) TYPE (*CHAR) LEN (4) VAR (&CPFID) TYPE (*CHAR) LEN (7)							
0007.00 0008.00 0009.00 0010.00 0011.00 0012.00 0013.00 0014.00	DCL DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&REPLACE) TYPE (*CHAR) LEN (100) VAR (&JAVARTN) TYPE (*CHAR) LEN (4) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&MSGDTA) TYPE (*CHAR) LEN (200) VAR (&MSGDTA) TYPE (*CHAR) LEN (200) VAR (&JAVACHDLIN) TYPE (*CHAR) LEN (9999) VAR (&JAVACHDLIN) TYPE (*CHAR) LEN (9999)							
0007.00 0008.00 0009.00 0010.00 0011.00 0012.00 0013.00 0014.00	DCL DCL DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&REPLACE) TYPE (*CHAR) LEN (100) VAR (&JAVARTN) TYPE (*CHAR) LEN (4) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&MSGDTA) TYPE (*CHAR) LEN (50) VAR (&MSGDTA) TYPE (*CHAR) LEN (200) VAR (&CPFID) TYPE (*CHAR) LEN (1999) VAR (&STDOUTIFS) TYPE (*CHAR) LEN (1999) VAR (&STDOUTIFS) TYPE (*CHAR) LEN (255)							
0007.00 0007.00 0008.00 0010.00 0011.00 0012.00 0013.00 0013.00 0015.00	DCL DCL DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (10) VAR (&REPLACE) TYPE (*CHAR) LEN (10) VAR (&JAVARTN) TYPE (*CHAR) LEN (4) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&MSGDTA) TYPE (*CHAR) LEN (20) VAR (&SGDTA) TYPE (*CHAR) LEN (4) VAR (&CPFID) TYPE (*CHAR) LEN (7) VAR (&JAVACMDLIN) TYPE (*CHAR) LEN (9999) VAR (&STDOUTFS) TYPE (*CHAR) LEN (255) VAR (&STDOUTFILE) TYPE (*CHAR) LEN (255)							
0007.00 0007.00 0008.00 0010.00 0011.00 0012.00 0013.00 0013.00 0015.00 0016.00	DCL DCL DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&JAVARTN) TYPE (*CHAR) LEN (4) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&MSGDTA) TYPE (*CHAR) LEN (200) VAR (&MSGDTA) TYPE (*CHAR) LEN (4) VAR (&CPFID) TYPE (*CHAR) LEN (4) VAR (&JAVACMDLIN) TYPE (*CHAR) LEN (9999) VAR (&STDOUTIFS) TYPE (*CHAR) LEN (255) VAR (&STDOUTFILE) TYPE (*CHAR) LEN (255)							
0007.00 0008.00 0008.00 0010.00 0011.00 0012.00 0013.00 0015.00 0015.00 F3=Exit F5	DCL DCL DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&REPLACE) TYPE (*CHAR) LEN (100) VAR (&JAVARTN) TYPE (*CHAR) LEN (10) VAR (&JAVARTNC) TYPE (*CHAR) LEN (10) VAR (&MSGDTA) TYPE (*CHAR) LEN (100) VAR (&MSGDTA) TYPE (*CHAR) LEN (200) VAR (&MSGDTA) TYPE (*CHAR) LEN (100) VAR (&GPFID) TYPE (*CHAR) LEN (100) VAR (&STDOUTFILE) TYPE (*CHAR) LEN (100) VAR (&STDOUTFILE) TYPE (*CHAR) LEN (255) VAR (&STDOUTFILE) TYPE (*CHAR) LEN (255)							
0007.00 0008.00 0008.00 0010.00 0011.00 0012.00 0013.00 0014.00 0015.00 0016.00 F3=Exit F5 F16=Repeat f	DCL DCL DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&PARM2) TYPE (*CHAR) LEN (100) VAR (&JAVARTN) TYPE (*CHAR) LEN (4) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&MSGDTA) TYPE (*CHAR) LEN (20) VAR (&SGDTA) TYPE (*CHAR) LEN (4) VAR (&JAVACMDLIN) TYPE (*CHAR) LEN (9999) VAR (&STDOUTIFS) TYPE (*CHAR) LEN (255) VAR (&STDOUTFILE) TYPE (*CHAR) LEN (255) C) COPYRIGHT IBM CORP. 1981, 2007.							
0007.00 0003.00 0008.00 0010.00 0012.00 0013.00 0014.00 0015.00 0016.00 F3=Exit F5 F16=Repeat f	DCL DCL DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (10) VAR (&FPARM2) TYPE (*CHAR) LEN (10) VAR (&JAVARTN) TYPE (*CHAR) LEN (4) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&MSGDTA) TYPE (*CHAR) LEN (5) VAR (&MSGDTA) TYPE (*CHAR) LEN (4) VAR (&CPFID) TYPE (*CHAR) LEN (4) VAR (&JAVACMDLIN) TYPE (*CHAR) LEN (9999) VAR (&STDOUTFIS) TYPE (*CHAR) LEN (255) VAR (&STDOUTFILE) TYPE (*CHAR) LEN (255) etrieve F10=Cursor F11=Toggle F12=Cancel More keys (C) COPYRIGHT IBM CORP. 1981, 2007. 02/009							
0007.00 0008.00 0009.00 0010.00 0011.00 0012.00 0013.00 0014.00 0014.00 0015.00 0016.00 F3=Exit F5 F16=Repeat f	DCL DCL DCL DCL DCL DCL DCL DCL DCL DCL	VAR (&JAVAJVM) TYPE (*CHAR) LEN (10) VAR (&PARM2) TYPE (*CHAR) LEN (10) VAR (&REPLACE) TYPE (*CHAR) LEN (10) VAR (&JAVARTN) TYPE (*CHAR) LEN (4) VAR (&JAVARTNC) TYPE (*CHAR) LEN (5) VAR (&JAVARTNC) TYPE (*CHAR) LEN (20) VAR (&MSGDTA) TYPE (*CHAR) LEN (20) VAR (&SGDTA) TYPE (*CHAR) LEN (4) VAR (&CPFID) TYPE (*CHAR) LEN (20) VAR (&STDOUTFS) TYPE (*CHAR) LEN (255) VAR (&STDOUTFILE) TYPE (*CHAR) LEN (255) etrieve F10=Cursor F11=Toggle F12=Cancel More Keys (C) COPYRIGHT IBM CORP. 1981, 2007. 02/009							

Type CL Command or Embed in a CL Program

CL Command

Command Processing Program CL

Run Java Class/Program via QSH Command



Parameters Returned in STDOUT IFS file from Java code

Parameters or Data Returned to Calling CL Program or to Command Line as CPF Messages STDOUT can be Processed by RPG

helpsystems

© 2014 HelpSys

Benefits of Java Approach



- JVM startup time is very fast (especially 32-bit)
- Wide range of open source Java APIs available
- Don't have to deal with oddities of embedding Java in RPG
 Mapping methods, single instance of JVM per job, classpath oddities and debugging.
- Can switch JVM between Java calls if needed
- Can do some useful/re-usable IBM i CL command development
- Adds to your marketable skillset

Potential Drawbacks of Java Approach



- Qshell runs a new JVM instance for each call
- Java is invisibly spawned in a new process
- May want to write NEP style Java app to read data queue or table if performance is an issue
- You DO have to learn some Java
- Need to benchmark if you plan to do thousands of calls per day
- You may want to compile CL as CLP, not CLLE
 ** I've had odd unexplainable data corruptions over the years that were fixed by simply changing source type from CLLE to CLP

Installing RJSJAVACMD Library & IFS Objects



Download library from RJS and run exe to unzip and install library

http://downloads.rjssoftware.com/files/classes/2015/rjsjavacmd.exe

Build objects after restore

// Run the following commands to build CL/RPG programs

ADDLIBLE RJSJAVACMD

CRTCLPGM PGM(RJSJAVACMD/IBMIBUILDC) SRCFILE(RJSJAVACMD/SOURCE) SRCMBR(IBMIBUILDC) REPLACE(*YES)

// Build CL and RPG

CALL IBMIBUILDC

// Call program to restore IFS objects /javacmds/ibmisamples

CALL RSTIFS1

// Call java build CL program to build java source

CALL JAVABUILD1

Slides

http://downloads.rjssoftware.com/files/classes/2015/rjsjavacmd.pdf





- Why use Java and CL Together
- Review development environments for Java.
- Code, compile and build
- Work through sample commands

Development Environments for Java



- Rational Developer for i or any Eclipse editor Best
- Green screen editing via WRKLNK and EDTF / Qshell compile
- Green screen via SEU / Qshell compile
- Notepad ++ or other PC Editor and Copy to IFS and compile
- Other odd combinations perhaps ?

Developing Java Programs from Green Screen helpsystems

- Familiar with 5250 green screen
- Edit via EDTF or SEU
- Compile and test in IFS
- Deploy .class files to IFS
- Practical ?

Editing Java with 5250 WRKLNK and EDTF



- Work with IFS Source WRKLNK OBJ('/javacmds/ibmisamples/*')
- Use **Option 2** to edit the **hello1.java** file via the EDTF command.
- Compile java program
 STRQSH
 cd /javacmds/ibmisamples
 javac hello1.java
- Run java program (Don't specify hello1.class)
 java hello
- Java standard output
 START: Program Start
 Test1
 Test2
 OK: This was a successful program run
 END: Program End
 \$

Editing Java with 5250 SEU



- Copy source from IFS to source file in library.
- Edit source member with SEU.
- Copy source from source file back to IFS
- Build and compile the java from IFS
- Not pretty but it works for those who won't use RDI or Eclipse

Copy Java Source File from IFS to Library



CPYFRMSTMF FROMSTMF('/javacmds/ibmisamples/hello1.java') TOMBR('/qsys.lib/rjsjavacmd.lib/source.file/hello1.mbr') MBROPT(*REPLACE) CVTDTA(*AUTO) STMFCCSID(*STMF) DBFCCSID(*STMF) DBFCCSID(*FILE) ENDLINFMT(*ALL) TABEXPN(*YES) STMFCODPAG(*STMF)

Edit and Save Java Source with SEU



2 Session A - [24 x 80]		
Eile Edit View Communication Actions Winde	ow <u>H</u> elp	
Host: 10.60.72.40	Port: 23 Workstation ID:	Disconnect
Columns : 1 71	Edit	RJSJAVACMD/SOURCE
SEU==>		HELL01
FMT **+ 1+	. 2 + 3 + 4 +	$5 \dots + \dots - 6 \dots + \dots - 7$
*******************	eginning of data **********************************	*******
0001.00 /* Program/Java U	lass: nellol	
0002.00 * Desc: Inis pro	gram is a nello world sample.	
0003.00 * INIS Java prog	he TRM i job co that the calling	
0004.00 * Dack data to t	ne Ibri i job so that the catting	
0005.00 * CL program car	or other message	
0000.00 * with an escape	or other message.	
0008.00 */		
0009.00 public class hell	01 {	
0010.00		
0011.00 /**		
0012.00 * @param	n args	
0013.00 */		
0014.00 public st	<pre>catic void main(String[] args) {</pre>	
0015.00	7/ TODO Auto-generated method st	ub
0016.00		
F3=Exit F4=Prompt F5	=Refresh F9=Retrieve F10=Cu	rsor F11=Toggle
F16=Repeat find F1	.7=Repeat change F24=Moi	re keys
MA		02/000
59 1902 - Session successfully started		027009
Date session successionly started		

Copy Java Source File from Library to IFS



CPYTOSTMF FROMMBR('/qsys.lib/rjsjavacmd.lib/source.file/hello1.mbr') TOSTMF('/javacmds/ibmisamples/hello1.java') STMFOPT(*REPLACE) CVTDTA(*AUTO) DBFCCSID(*FILE) STMFCCSID(*FILE) STMFCCSID(437) ENDLINFMT(*CRLF) AUT(*DFT)

Compiling Java Source from IFS



- Compile java program
 STRQSH
 cd /javacmds/ibmisamples
 javac hello1.java
- Run java program (Don't specify hello1.class)
 java hello1
- Java standard output
 START: Program Start
 Test1
 Test2
 OK: This was a successful program run
 END: Program End
 \$

Compiling Java from Green Screen Helper



🔊 Session A - [24 x 80]	
<u>File Edit View Communication Actions Window H</u> elp	
Host: 10.60.72.40 Port: 23 Workstation ID:	Disconnect
Compile Java Program Source (IBMIJV	ABLD)
Type choices, press Enter.	
Java IFS source file <u>'/javacmds/IBMiSamp</u>	les/HelloWorld.java'
Java class path	
Java virtual machine to use 6032 4064.	5032, 5064, 6032, 6064
Display standard output result > *YES *NO,	*YES
Delete standard output result . *YES *NO,	*YES
Prt java std output on errors . <u>*NO</u> *NO,	*YES
	Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=Ho	w to use this display
F24=More keys	
M <u>A</u> A	05/037
1902 - Session successfully started	

Compiling Java with Jar API References



B Session A - [24 x 80]		
<u>File Edit View Communication Actions Window Help</u>		
Host: 10.60.72.40 Port: 23	Workstation ID: Disconne	et
Compile Java Pr	ogram Source (IBMIJVABLD)	
Type choices, press Enter.		
Java IFS source file	'/iavacmds/ibmisamples/IBMiSam	nple2.java'
Java class path	<u>'/javacmds/ibmisamples:/javacn</u>	nds/ibmisamples
Java virtual machine to use	6032 4064, 5032, 5064	4, 6032, 6064
Display standard output result \rightarrow	<u>*YES</u> *NO, *YES	
Delete standard output result .	<u>*YES</u> *NO, *YES	
Prt java std output on errors .	<u>*N0</u> *N0, *YES	
		Bottom
F3=Exit F4=Prompt F5=Refresh	F12=Cancel F13=How to use th	nis displau
F24=More keys		
M£ A		05/037
🗊 1902 - Session successfully started		11.

Compiling Java from Green Screen Helper



- Compile java programs to /javacmds/IBMiSamples
- Select JVM to use 6032 means Java 1.6 32-Bit
- Use DSPSTDOUT to view any errors.
- Use PRTSTDOUT to view any errors.
- Use DLTSTDOUT to delete STDOUT IFS file from /rjstemp
- IBMIJVABLD JAVASOURCE('/javacmds/IBMiSamples/hello1.java')
 CLASSPATH(' ') JVM(6032) DSPSTDOUT(*YES) DLTSTDOUT(*YES)
 PRTSTDOUT(*NO)

Running via RUNJVA Command or Qshell



- Run from regular command line
- RUNJVA CLASS('hello1') CLASSPATH('/javacmds/ibmisamples')
- Run from QSHELL.

STRQSH

cd /javacmds/ibmisamples

java hello1

- Qshell compile and run preferred More control
- Our CL examples will all use Qshell

IBMISETJVM - Set JAVA_HOME to Select JVM

Session A	- [24 x 80]									0 %
File Edit	View Communication	n Actions	Window Help							
	à 🛃 🛼 🔜 🔳	🖬 b		۲						
	Host: 10.60.72.40		Port: 23		Workstation ID	:		Disconnect		
			IBMi	Set	Java Home (II	BMISETJVM)				
Type	choices, p	ress E	Enter.							
Java	virtual ma	chine	to use		> <u>6032</u>	4064, 5	5032,	5064,	6032, 0	6064
									В	ottom
F3=Ex	it F4=Pro	ompt	F5=Refi	resh	F12=Cancel	F13=How	to us	se this	displa	ay
	ore keys									
MA	A								(95/037
🗇 🛛 1902 - S	ession successfully start	ed								11.

helpsystems

IBMIFSSHR - Set Up NetServer Dir Share



		X
File Edit View Communication Actions Window Help		
Host: 10.60.72.40 Port: 23	Workstation ID: Disconnect	
Add/Remove I	IFS Share (IBMIFSSHR)	
Type choices, press Enter.		
Share name	<u>JAVACMDS</u> Character value <u>*ADD</u> *ADD, *REMOVE <u>'/javacmds'</u>	
Text description for the Share	_	
Permissions on the Share > 2 Max number of concurrent users 2 CCSID encoding of path name 2	<pre>*READWRITE *READONLY, *READWRITE *NOMAX Number, *NOMAX *JOB Number, *JOB</pre>	
F3=Exit F4=Prompt F5=Refresh F F24=More keys	Bot F12=Cancel F13=How to use this display	tom
M <u>A</u> A	09/	/037
1902 - Session successfully started		_//,

Viewing Available Shares in IBM i Navigator





Editing from IFS Share with Notepad++



Open							23		
Vetwork	▶ 10.60.72.40 ♦ javacmds ♦ ibmisamples			- 47	Search ibmisample	5	P		
Organize 👻 New fold	ler)E •	• 🗇	0		
Documents	Name	Date modified	Туре	Size					
J Music	hello1.class	5/19/2015 2:38 AM	CLASS File	1 KE					
E Pictures	D hello1.java	5/19/2015 1:29 AM	JAVA File	2 KE					
Subversion	HelloWorld.class	5/18/2015 10:28 AM	CLASS File	1 KE					
Videos	D HelloWorld.java	5/19/2015 12:57 AM	JAVA File	2 KE					
	IBMiSample1.class	2/5/2015 9:49 AM	CLASS File	2 KE					
Computer	IBMiSample1.java	2/5/2015 9:19 AM	JAVA File	3 KE					
DVD Drive (D:) VS	ibmisample1zz.java	2/5/2015 5:01 PM	JAVA File	7 KE					
Schoen (\\barrie	IBMiSample2.class	2/5/2015 9:57 AM	CLASS File	3 KE					
rissoft (\\ristwyrr -	IBMiSample2.java	5/19/2015 2:15 AM	JAVA File	5 KE					
nsusers (\\ristwy)	📓 jt400.jar	5/12/2010 5:03 PM	Executable Jar File	4,381 KE					
g pcbackups (\\192	WriteIfsLogFile.class	2/6/2015 2:30 PM	CLASS File	3 KE					
	C] WritelfsLogFile.java	2/6/2015 2:30 PM	JAVA File	3 KE					
📭 Network									
•	l.						-		
Filer	name: hello1.java			•	All types (*.*)				
					Open	Cancel			

Editing from IFS Share with Notepad++



\\10.60.72.40\javacmds\ibmisamples\hello1.java - Notepad++ [Administrator]	a hanna a			101	
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?					Х
1 H/* Program/Java Class: hellol					A
2 Besg: This program is a hello world sample.					
3 - Inis Java program outputs some text.					
back data to the IBM 1 Job so that the calling					
5 - cl program can complete normally of terminate					
· · · · · · · · · · · · · · · · · · ·					
9 Emplie class belloi /					
12 * Graram arrs					
13 - */					
14 public static void main(String[] args) (
15 // TODO Auto-generated method stub					
16					
17					
18 H try (
19					11
20 // Output program start message					
21 System.out.println("START: Program Start");					
22					
23 // Output some data					
24 System.out.println("Test1");					
25 System.out.println("Test2");					
26					
27					
28 // This was a successful completion so exit with any relative messages					
29 System.out.println("OR: This was a successful program run");					
30 System.out.println("END: Program End");					
31 System.exit(0);					
32					
33) catch (Exception ex) (
34					
35 // On an exception, write the message to the <u>sticut</u> log					
36 // and exit the Java program with an error so calling CL					
37 // gets an indication of error.					
38 System.out.println(ex.getMessage().trim());					
39 System.out.println("ERROR: This was not a successful program run");					
40 System.out.println("END: Program End");					
<pre>41 System.exit(-2);</pre>					-
	1. 10 1010 D. 17		D. 1115-1		D.IC.
Java source tile	length : 1618 lines : 47	Ln:1 Col:1 Sel:010	Dos\Windows	011-8 M/0 ROW	1142

Developing Java Programs in RDI



- Graphical editing. Eclipse is FREE if you don't have RDI
- Compile and debug locally on PC, even without IBM i
- Deploy .class files to IFS via copy/paste and RSE or file share

Rational Developer RSE IFS Filter on /javacmds helpsystems

🧔 Remote System Explorer	r - IBM Rational Developer for i			X
<u>F</u> ile <u>E</u> dit <u>N</u> avigate Se <u>a</u>	<u>a</u> rch <u>P</u> roject Da <u>t</u> a <u>R</u> un <u>W</u> indow <u>H</u> elp			
📑 • 🖪 🖪 📤 🦄 •	🝷 🐻 🖄 🔸 😰 Activity: Other Activity 🔹 🛤 🛐 🌃 🗮 🛒 🐭 🕼 🖘 🕲 🐘 💷 🖉 👘 😵 🖓 🔹	🖢 👻 🕶 🕅	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	
		Ouic	k Assess	
		Quic	KACCESS	
📲 Remote Systems 🛛 🤻	😪 Team 🗧 🗖	- 8	🗄 Outline 🔀	
🔹 🏖 😓 🔶 🖗	🗟 🖻 🕘 🌞 🗣 🔻		An outline is not availa	ble.
Image: Image: Image: Provide a constraint of the second				
⊳ 📑 Local				
▷ ■ 192.168.2.26				
▶ ■ 192.168.2.252				
Academy - 10.60.72	2.40			
B B Objects				
D Commands				
BE IBMi Contexts				X
▲ 💱 IFS Files	New Hiter			
⊳ 붥 File system	File Filter File Filter			
⊳ 券 Root file sy	Create a file filter Name the new filter			
▷ ♣ Home				
Spooled Thes	Filters are saved for easy re-use. Specify a unique of	name for this fi	lter. This name will app	ear
iSphere Spool	Folder: /javacmus Polder: /javacmus in the Remote Systems view, and will be expandab	ile.		
a 🔵 TN5250J	Filter name: javacmds			
Session1	Subset by Tile name			
NISDOM	File name filter: *			
	© Subset by file types			
	File types filter: Select Filters are created in filter pools, which are re-usab	ole in multiple c	connections. Select the	
<	pool to create this filter in. The pool names are qu:	alified by their	profile name.	
	Show files only Barent filter pool: hs0445.CN-Academy - 10.60.72	2.40-com.ibm.e	tools.iseries.subsystem	-
Property	Cancel			
Connected	IEC Ellar			
Number of children				
Port	0 Command Normal Command Normal	<u><u> </u></u>	ish Cancel	
(
Subsystem: IFS Files				

Start A New Java Project in RDI



6 J	ava - IBM Rational Developer for i				nie – sie statu statu statu		_ _ ×		
File	<u>Edit Source Refactor Navigate Search Pr</u>	oject Da <u>t</u> a <u>R</u> un	Wi	ndow <u>H</u> elp					
t i	New	Alt+Shift+N ►	12	Java Project	New Java Project		Q + 2		
	Open File		13	Project	Create a Java Project				
	Close	Ctrl+W	₿	Package	Create a Java project	in an external location			
	Close All	Ctrl+Shift+W	ø	Class					
	Save	Ctrl+S	G	Interface			pie,		
星	Save As		G	Enum	Project name: IBMiSamples				
10	Save All	Ctrl+Shift+S		Annotation	Use default location				
	Revert		18	Java Working Set	Location: C:\riswork\rationalsdp\works	space\JBMiSamples Browse			
	Move		ă	Folder					
	Rename	F2	0	File	JRE				
E	Refresh	F5	8	Untitled Text File	Our Use an execution environment JRE:	JavaSE-1.6 平			
	Convert Line Delimiters To	,	88	Pluglet	🖱 Use a project specific JRE:	jdk 👻			
	Print	Ctrl+P		Report	🗇 Use default JRE (currently 'jdk')	Configure JREs			
	Switch Workspace	•		Template					
	Restart		E	Library Illinit Test Case	Project layout				
2	Import			Some rear cuse	Use project folder as root for source	is and class files			
4	Export			Exam		Example	③ Create separate folders for sources a	and class files <u>Configure default</u>	
	Properties	Alt+Enter	3	Other Ctrl+N	Working sets				
	1 hello1.iava [RemoteSystemsTempFiles]				Add project to working sets				
	2 ADDIFSSHRC.CLLE [RemoteSystemsTempF]				Working sets:	* Select			
	Fxit								
-			4		 The wizard will automatically config 	gure the JRE and the project layout based on the			
		Droblems	6	lavador Declaration	existing source.				
		<terminated> He</terminated>	lloWe	orld (1) [Java Application] C:\P					
START: Program Start			art			*			
		Test2							
		OK: This was	a su	ccessful program run	(2) C Back	Next > Finish Cancel			
		and thog di	-114		- COUCK	The Cancer			
•		4			с		*		
						5			

32

Create the Hello World Class



						Quick	Access	1
age E	ixplorer 🛛 🕒 🍫 🏹				New Java Class		X	1
BMiS	amples		. Jo	Inva Desigert				
	Go Into		5	Project	The use of the o	lefault package is discouraged.	C	
SF.	Open in New Window		-	Package	-		-	
an	Open Type Hierarchy	F4	G	Class	Source folder:	IBMiSamples/src	Browse	
av	Show In	Alt+Shift+W ►	0	Interface	Package:	(default)	Browse	
10 10 10	Copy Copy Qualified Name	Ctrl+C	8	Annotation Source Folder	Enclosing type:	[]	Browse	
3	Paste Delete	Shift+Insert Delete		Java Working Set Folder File	Name:	HelloWorld		
	Build Path	,			Modifiers:	default private protected abstract final static		
	Source Refactor	Alt+Shift+S > Alt+Shift+T >	RA RA	Untitled Text File Pluglet	Superclass:	java.lang.Object	Browse	
è.	Import			Report	Interfaces:	1	Add	
2	Export			Template			Remove	
60	 Refresh Close Project Close Unrelated Projects Assign Working Sets 	FS		Uibrary JUnit Test Case Example Other Ctrl+N	Which method stubs would you like to create? Which method stubs would you like to create? Constructors from superclass Inherited abstract methods			
	Run As Debug As Profile As Add SQLJ Support	•	ed> Proj	@ Javadoc Q Declaratii HelloWorld (1) [Java Application] C gram Start	Do you want to ad	Do you want to add comments? (Configure templates and default value <u>here</u>)		C3 ?
	Validate Team	,	s was a successful program run ogram End		? Finish Cancel			-5

Copy/Paste from helloworld.java in IFS





Right click and run as Java application



🧔 Java - RemoteSystemsT	emp	Files/10.60.72.40/javacmds/IBMiSamples/HelloWorl	d.java - IBM Rational Developer for i	
<u>File Edit Source Refa</u>	ctor	<u>N</u> avigate Search <u>P</u> roject Da <u>t</u> a <u>R</u> un <u>W</u> ind	ow Help	
		• 🖶 🛛 • 🖗 🍠 🗉 🖬 🐻 🏠	🝷 🌄 Activity: Develop Java Applications 🔹 🖳 👔 🔛 🔀 🛊 🗘 🔹 🚱 🔹 🍕 🔹 🛛 😵	1 2 A -
1 - 2 - 0	4	• 13		Quick Access
Package Explorer ☆ Package Explorer			- 0	🗄 Outline 🛛 🗖 🗖
			a Class: HelloWorld	
			program is a hello world sample. rogram outputs some text.	G HelloWorld
(default part) HelioW	:kagi ndd.i	e) * back data t	o the IBM i job so that the calling	• * main(String[]) : void
JRE System Lib		New +	an complete normally or terminate pe or other message.	
iSphereSpooledFil		Open F3		
JavaTest2		Open With	lloWorld {	
		Open Type Hierarchy F4	E	
		Show In Alt+Shift+W >	rgs	
	B	Copy Ctrl+C	<pre>ic void main(String[] args) {</pre>	
		Copy Qualified Name	Auto-generated method stub	
	â	Paste Shift+Insert		
	×	Delete Delete		
		Build Path	Dutput program start message	
		Source Alt+Shift+S >	tem.ouc.princin(STAKT: Program Start);	
		Refactor Alt+Shift+T •	Dutput some data tem.out.println("Test1"):	
	è.	Import	tem.out.println("Test2");	
	4	Export		
		References	This was a successful completion so exit with any relative messages	
		Declarations	tem.out.printin(CK: Inis was a successful program Fun); tem.out.orintln("END: Program End"):	
	~			
	50	Acrise Warking Sets	adoc 😡 Declaration 📮 Console 🕄 👘 🖉	× 🗟 🖅 🕙 😁 🔍 👘 🖓 👘
		Assign working Sets	(1) [Java Application] C:\Program Files\JBM\SDP\jdk\bin\javaw.exe (May 19, 2015 12:47:57 AM)	
		Run As	1 Run on Server Alt+Shift+X, R	
		Debug As	w 2 Compiled Application	
		Volidate	J 3 Java Application Alt+Shift+X, J	
		Team	Run Configurations	7
<u> </u>		Compare With		<u>، ا</u>
HelloWorld.java - IBMiSan		Replace With		

Same output as running from green screen









- Why use Java and CL Together
- Review development environments for Java.
- Code, compile and build
- Work through sample commands

IBMISAMP1 – Call Program Return Parms



3 Session A - [24 x 80]	
File Edit View Communication Actions Window Help	
🖻 🗈 🗈 🛲 🖼 🖿 🖬 🖬 💩 💩 🌏 🤗	
Host: 10.60.72.40 Port: 23	Workstation ID: Disconnect
IBMi Sample Java	Cmd Wrapper 1 (IBMISAMP1)
Type choices, press Enter.	
Parameter 1	Test 1
Parameter 2	Test 2
Display standard output result	<u>*YES</u> *NO, *YES
Delete standard output result .	<u>*YES</u> *NO, *YES
Prt java std output on errors .	<u>*NU</u> *NU, *YES
	Bottom
F3=Exit F4=Prompt F5=Refresh	F12=Cancel F13=How to use this display
F24=More keys	
MAL A	12/037
3 1902 - Session successfully started	

IBMISAMP1R – process STDOUT parm data



3 Session A - [24 x 80]		- O X				
File Edit View Communication Actions Window Help						
Host: 10.60.72.40 Port: 23 Workstation ID:	Disconnect					
Display Program Messages						
Display Program Messages DSPLY PARM1 VALUE:TEST DSPLY PARM2 VALUE:TEST2 DSPLY OK: This was a successful program run DSPLY END: Program End DSPLY START: Program Start DSPLY PARM1 VALUE:TEST DSPLY PARM2 VALUE:TEST2 DSPLY OK: This was a successful program run DSPLY END: Program End DSPLY START: Program Start DSPLY PARM1 VALUE:TEST2 DSPLY PARM1 VALUE:TEST2 DSPLY PARM1 VALUE:TEST2 DSPLY PARM2 VALUE:TEST2 DSPLY PARM2 VALUE:TEST2 DSPLY DK: This was a successful program run DSPLY END: Program End DSPLY START: Program Start Press Enter to continue.						
F3=Exit F12=Cancel						
MA A		01/001				
③ ¹ 1902 - Session successfully started		1				

IBMISAMP2 – Run Remote System Command

TH Couries A 104 - 101	
and Session A - [24 x 80]	
<u>File Edit View Communication Actions Window Help</u>	
o toto allo e e e e e e e e e e e e e e e e e e	
Host: 10.60.72.40 Port: 23	Workstation ID: Disconnect
IBM i Run Rem	ote Command (IBMISAMP2)
Type choices, press Enter.	
Command line	'SNDMSG MSG(TEST)'
System host name/IP >	WINDOM
Lines ID	
USEF ID	
Password	
	More
F3=Exit F4=Prompt F5=Refresh	F12=Cancel F13=How to use this display
Alreadu at top of area	
	05/027
1902 - Session successfully started	037037
a love session successionly stated	

helpsystems

IBMISAMP3 – Write to IFS File or Log



B Session A - [24 x 80]					
<u>File Edit View Communication Actions Window H</u> elp					
Host: 10.60.72.40 Port: 23 Workstation ID:	Disconnect				
IBM i Write IFS (IBMISAMP3)					
Type choices, press Enter.					
Text to write	est				
IES file to write /ristemp/log tyt					
Append #VES					
Write iterations	Character value				
Wait time between iterations '1000'	Character value				
Display standard output result > *NO	*NO. *YES				
Delete standard output result . *YES	*NO, *YES				
	More				
F3=Exit F4=Prompt F5=Refresh F12=Cancel	F13=How to use this display				
F24=More keys					
MB A	19/040				
1902 - Session successfully started					

IBMPUTFILE – Send IFS File to Windows Share helpsystems

 This CL command sends a binary file from the IFS to a Windows share using the JCIFS java API

```
    IBMPUTFILE DOMAIN(RJSTESTVM01)
SERVER('rjstestvm01.rjsintranet.com')
SHARENAME('delivernow')
USER('rjs')
PASSWORD('password')
INPUTFILE('/rjstemp/test.txt')
OUTPUTFILE('/rjstemp/test.txt')
REPLACE(*YES)
DSPSTDOUT(*YES)
```

IBMGETFILE – Get IFS File from Windows Share helpsystems

 This CL command reads a binary file from a Windows share using the JCIFS java API

```
    IBMGETFILE DOMAIN(RJSTESTVM01)
SERVER('rjstestvm01.rjsintranet.com')
SHARENAME('delivernow')
USER('rjs')
PASSWORD('password')
INPUTFILE('/rjstemp/test2.txt')
OUTPUTFILE('/rjstemp/test2.txt')
DSPSTDOUT(*YES)
```

IBMSETUSER – Set Netbios User and Password helpsystems

- This CL command sets a global user id and password for netbios commands and stores in data area NBUSER and NBPASS. If *GLOBAL is specified for user and password on IBMGETFILE and IBMPUTFILE, these values are used. This is nice for storing a global netbios login.
- IBMSETUSER OPTION(*SET) NBUSER('user') NBPASS('password')

What commands would you like to see ?



- Send me feedback on additional commands I can add to this library.
- What would you like to see ?





- Why use Java and CL Together
- Review development environments for Java.
- Code, compile and build
- Work through sample commands
- Download examples, pay and provide feedback

Flexible IT Software Solutions



Our solutions help customers save time, money and eliminate errors. And each functional area offers these benefits:

Systems & Network Management	Business Intelligence	Security & Compliance
 Automate manual IT and business processes Remove costly scheduling gaps and delays Meet Service Level Agreements Avoid outages and network slowdowns 	 Access real-time data from anywhere Run lightning-fast large queries View dashboards from any browser Present metrics in a user-friendly format 	 Protect critical data at every access level Centralize user profile administration Eliminate viruses before they spread Stay informed when security events occur Simplify compliance and pass any audit

Solutions Portfolio





8/26/14

QRemote Control

30 Years of Growth And Innovation







Thank you for attending today !



Contact Info

Website:

www.helpsystems.com/rjs

Telephone:

800-328-1000 sales +1 952-933-0609 support

Presenter

Richard Schoen <u>richard.schoen@helpsystems.com</u> Phone: 952-486-6802