

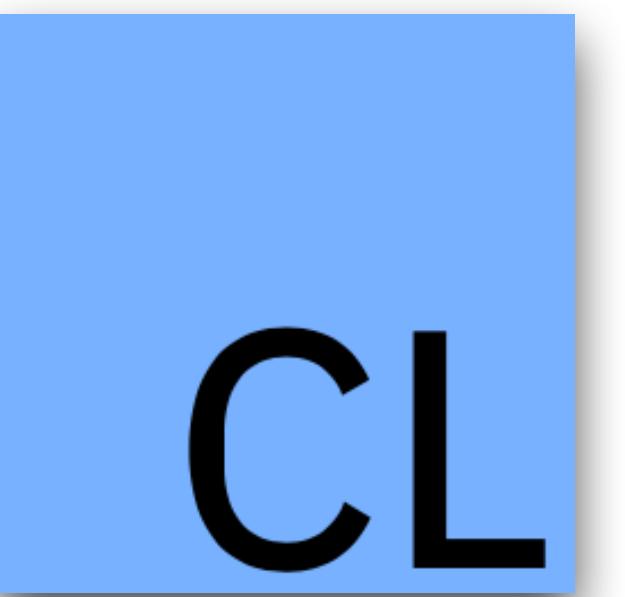
Code for IBM i



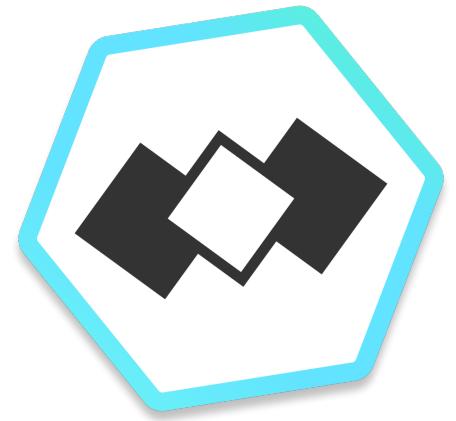
Db2 for i



Project Explorer

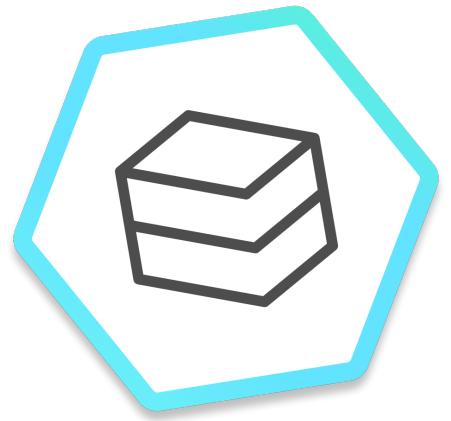


and more!



Code for IBM i

- Improvements for supporting DBCS CCSIDs
- Compile DDS (lf, pf, dspf) from local git repositories
- Support for batch and SEP debugging
- Simplification of debug setup



Db2 for IBM i

- Integrated SQL syntax checking
- Hover support for quick references
- Signature support for procedures and functions
- Integration with AI platforms for natural language questions
- Updatable result sets
- Run All/Selected/From

Db2 for IBM i + AI integration

CHAT + ⏱ ...

worksofliam

@db2i how can i use the department name?

Db2 for i

To use the department name from the `DEPARTMENT` table, you can write a SQL query to select it. Here is an example of how you can retrieve the department name:

```
SELECT DEPTNAME  
FROM SNDBX3.DEPARTMENT;
```

If you need to join it with another table, for example, the `EMPLOYEE` table to get the department name for each employee, you can use a JOIN:

```
SELECT E.EMPNO, E.FIRSTNME, E.LASTNAME, D.DEPTNAME  
FROM SNDBX3.EMPLOYEE E  
JOIN SNDBX3.DEPARTMENT D ON E.WORKDEPT = D.DEPTNO
```

This query retrieves the employee number, first name, last name, and department name for each employee.

What are some objects related to department?

worksofliam

@db2i can you please tell me the highest paid employee in each department? #result

Db2 for i Generating

Run SQL statement

Run this statement in your job?

```
SELECT E.WORKDEPT, E.EMPNO, E.FIRSTNME,  
E.LASTNAME, E.SALARY  
FROM SNDBX3.EMPLOYEE E  
JOIN SNDBX3.DEPARTMENT D ON E.WORKDEPT =  
D.DEPTNO  
WHERE E.SALARY = (  
SELECT MAX(SALARY)  
FROM SNDBX3.EMPLOYEE  
WHERE WORKDEPT = E.WORKDEPT  
)  
ORDER BY E.WORKDEPT;
```

Continue **Cancel**

worksofliam

@db2i can you please tell me the highest paid employee in each department? #result

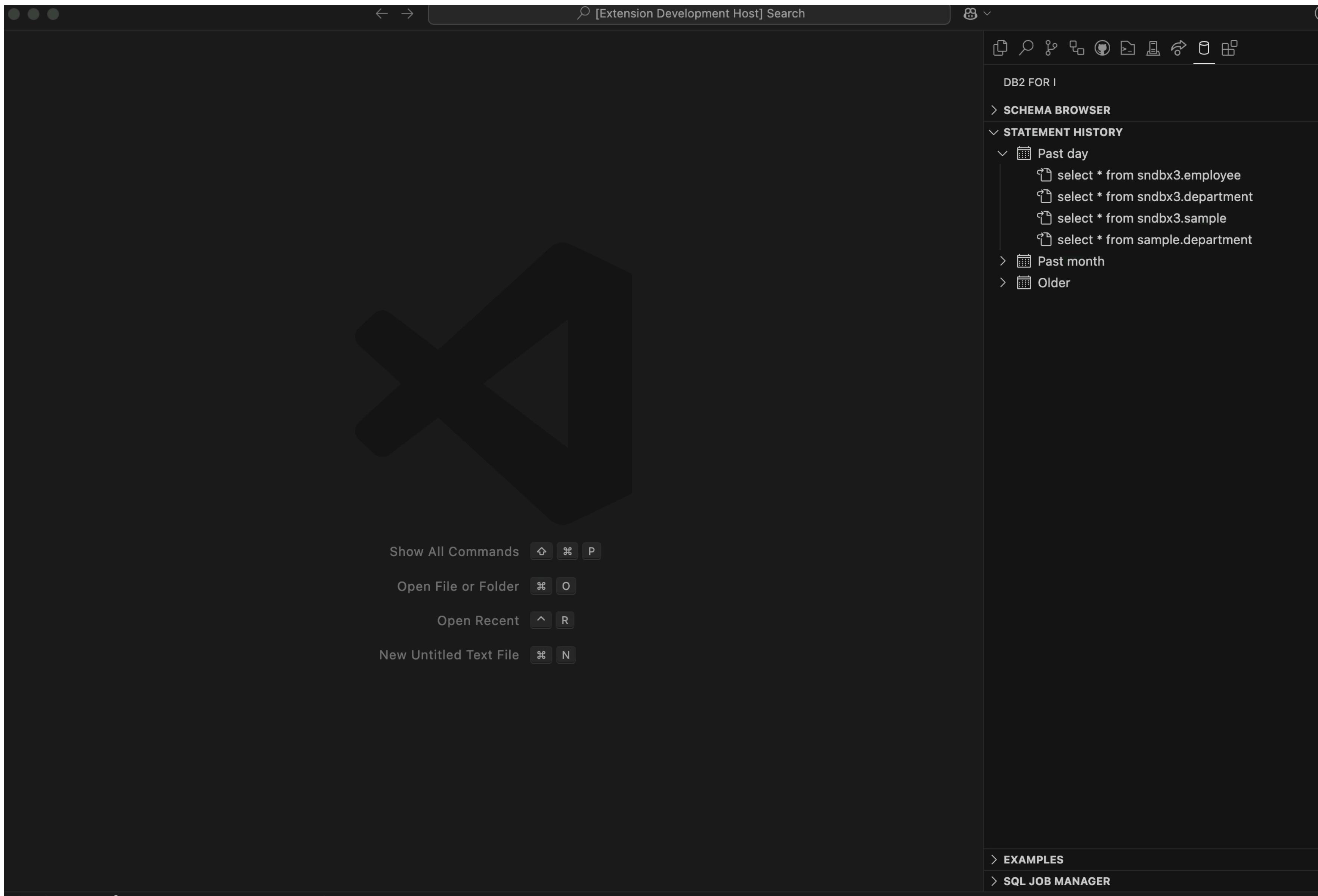
Db2 for i

✓ Running statement...

The result set contains information about employees, including their department, employee number, first name, last name, and salary. Here is a summary:

- A00**: Christine Haas, Employee No. 000010, Salary: 52750
- B01**: Dave Thompson, Employee No. 000020, Salary: 41250
- C01**: Sally Kwan, Employee No. 000030, Salary: 38250
- D11**: Hello Stern, Employee No. 000060, Salary: 32250
- D21**: Eva Pulaski, Employee No. 000070, Salary: 1003234
- E11**: John Geyer, Employee No. 000050, Salary: 40175
- E21**: Theodore Spenser, Employee No. 000100, Salary: 26150

Updatable result sets



Hover support and signature support

The screenshot shows a terminal window with the following content:

```
select * from table(qsys2.object_statist Untitled-1
1  select * from table(qsys2.object_statistics[])
object_statistics(
    object_schema => character varying(258),
    objtypelist => character varying(812),
    object_name => character varying(258)
): 70 columns
@param object_schema name, *ALL, *ALLAVL, *ALLSIMPLE, *ALLUSR, *ALLUSRAVL, *CURLIB, *LIBL, *USRLIBL - Default: none
@param objtypelist *ALL or list of system object types separated by blanks or commas - Default: none
@param object_name name, *ALLSIMPLE - Default: NULL
Search on IBM Documentation
```

The terminal window includes standard OS X window controls (red, yellow, green buttons) and a toolbar with a search bar, a user icon, and other icons. At the bottom, there are status indicators for jobs, language (MS SQL), date search, and a help icon.

Real time SQL syntax checker

The screenshot shows a code editor interface with a dark theme. At the top, there's a toolbar with icons for file operations, search, and settings. Below the toolbar is a tab bar with 'Untitled-1' selected. The main area contains the following SQL code:

```
1
2
3  create or replace procedure coolest_ever()
4  program type sub modifies sql data
5  set option usrprf = *user, dynusrprf = *user, commit = *none
6  begin
7  declare a integer
8  set a = 5;
9 end;
```

In the bottom right corner of the code editor, there's a small red vertical bar indicating a syntax error. Below the code editor is a 'PROBLEMS' panel. The 'PROBLEMS' tab is active, showing a single error: 'Untitled-1 1'. The error message is: 'Keyword SET not expected. Valid tokens: NOT DEFAULT CONSTANT. - 42601 (SQL0199) [Ln 8, Col 3]'. The bottom of the screen features a status bar with various icons and text, including 'SNDBX3-iopen.iinthecloud.com', 'New job (1)', 'Ln 2, Col 1', 'Spaces: 2', 'LF', 'MS SQL', and 'Date Search'.

Run all/from/selected

The screenshot shows a SQL editor window with the following details:

- Title Bar:** Untitled-1
- Toolbar:** Search, User, Settings, Run, Find, Copy, Paste, ...
- Code Area:** Contains numbered SQL statements:
 - 3 select * from employee;
 - 4
 - 5 select * from department;
 - 6
 - 7 stop;
 - 8
 - 9 select * from books;
 - 10
 - 11 select * from project;
- Context Menu (Open with submenu):** Run statement, Run statement in new view, Run and explain statement, Explain without running, Run all statements (highlighted in blue), Run statements from cursor, Open as Notebook.
- Bottom Navigation:** PROBLEMS, OUTPUT, TERMINAL, IBM I (selected), DEBUG CONSOLE, RUN AND DEBUG, PORTS, COMMENTS.
- RESULTS Table:** DEPTNO, DEPTNAME, MGRNO, ADMRDEPT, LOCATION.

DEPTNO	DEPTNAME	MGRNO	ADMRDEPT	LOCATION
A00	SPIFFY COMPUTER SERVICE DIV.	000010	A00	null
B01	PLANNING	000020	A00	Hello world
C01	Info Centre	000030	A00	null
D01	Department of Tim	null	A00	null
D11	MANUFACTURING SYSTEMS	null	D01	null
D21	ADMINISTRATION SYSTEMS	null	D01	null
- Bottom Status Bar:** 0 0 SNDBX3-iopen.iinthecloud.com New job (1) Ln 5, Col 15 Spaces: 2 LF {} MS SQL Date Search



Language support

- Ability to quickly format free-format RPGLE
- Go to implementation for export procedures from references
- Support for fixed-format RPGLE references
- Peek and go to definition for fixed- and mixed-format RPGLE

Go to Implementation & References

The screenshot shows two code editors side-by-side, illustrating the "Implementation & References" feature.

Left Editor (TEST.RPGL):

- File: TEST.RPGL
- Path: PBEHR > QRPGLESRC > TESTSRV_H.rpgleinc > whichLibrary
- Code:

```
1 **free
2
3 dcl-pr whichLibrary char(10) extproc(*dclcase);
4
5 ctl-opt option(*srcStmt : *noDebugIO : *noUnref);
6
7 /include TESTSRV_H
8
9 //=====
10 // Which Library?
11 //=====
12 dcl-proc whichLibrary export;
13   dcl-pi *n char(10);
14   end-pi;
15
16   return 'PATRICK';
17
18 end-proc whichLibrary;
19
20
```

Right Editor (employees.pgm.sqlrpgle):

- File: employees.pgm.sqlrpgle
- Path: qrpglesrc > employees.pgm.sqlrpgle
- Code:

```
8 // -----
9
10 //INCLUDE 'constants.rpgleinc' Path not valid. It must be relative to the project.
11
12 // -----
13
14 Dcl-F emps WORKSTN Sfile(SFLDta:Rrn) IndDS(WkStnInd) InfDS(fileinfo);
15
16 Dcl-S Exit Ind Inz(*Off);
17
18 Dcl-S Rrn      Zoned(4:0) Inz;
```

Bottom Status Bar:

- master*
- Ln 18, Col 9
- Spaces: 2
- UTF-8
- LF
- RPGLE



QuickTime Player File Edit View Window Help

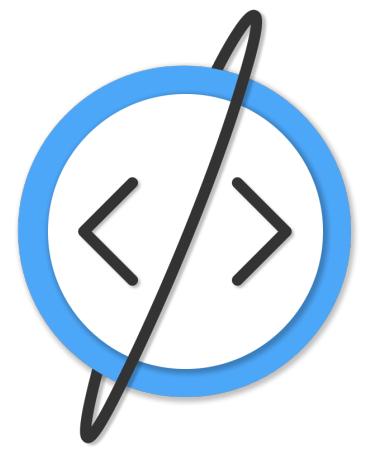
DEPTS.RPGLE dept.pgm.sqlrpgle

qrpglesrc > dept.pgm.sqlrpgle > WkStnInd

```
19
20     Dcl-S Exit Ind Inz(*Off);
21
22     Dcl-S Rrn          Zoned(4:0) Inz;
23
24     Dcl-DS WkStnInd;
25         ProcessSCF    Ind      Pos(21);
26         ReprintScf   Ind      Pos(22);
27         Error        Ind      Pos(25);
28         PageDown     Ind      Pos(30);
29         PageUp       Ind      Pos(31);
30         SflEnd       Ind      Pos(40);
31         SflBegin     Ind      Pos(41);
32         NoRecord     Ind      Pos(60);
33         SfldspCtl   Ind      Pos(85);
34         Sflclr       Ind      Pos(75);
35         Sfldsp       Ind      Pos(95);
36     End-DS;
37
38     DFILEINFO      DS
39     D  FILENM      *FILE
40     D  CPFID
```

46 52

main* 0 ▲ 0 worksofliam (2 years ago) Ln 28, Col 47 Spaces: 2 LF {} RPGLE 1



Source Orbit

- Complete support for fixed-format, mixed-format and free-format RPGLE
- Support for git repositories and the QSYS file system
- Visual Studio Code extension release

Source Orbit

Object Browser

Shows all objects that would exist based on source code in the repository.

Object Dependencies

Nodes below the objects indicate that the parent depends on them.

Affected Objects

Source Orbit hooks right into git can show what objects would be affected (and might need to be rebuilt) based on the working and staged changes.

The screenshot shows the Source Orbit interface running on an IBM i system. The main window has several tabs open:

- EXPLORER**: Shows a tree view of objects under the project "BBS400".
- BBSLGIND.dspf M**: A data structure definition file.
- BBSADGCR.pgm.rpgle 1 X**: An RPGLE program source code editor.
- BBSADGCR.pgm.rpgle (Working)**: A preview or staging area for the RPGLE code.

The **EDITOR** tab displays the following RPGLE code:

```
1  H/TITLE Administration - General Configuration
2  H COPYRIGHT('C) 2020 David Asta under MIT License')
3  * SYSTEM      : V4R5
4  * PROGRAMMER   : David Asta
5  * DATE-WRITTEN: 12/NOV/2020
6  *
7  * This program allows an Administrator user to display/change the
8  * general Configuration values of the BBS stored in PCONFIG
9  ****
10 /copy 'src/CBKOPTIMIZ.rpgleinc'
11 ****
12 * INDICATORS USED:
13 * 80 - *ON turns DSPATR(PR), which protects fields from being changed
14 * 81 - CBKPCFGREA CHAIN Not Found
15 ****
16 You, yesterday | 2 authors (Dave Asta and others)
17 FBBSADGCD  CF  E          WORKSTN
18 You, yesterday | 2 authors (Dave Asta and others)
19 FPCONFIG  UF  E          K DISK
20 ****
21 * Data structures
22 /copy 'src/CBKDTAARA.rpgleinc'
23 * Constants
24 D cKeysDft      C          CONST('F10>Edit   F12=Go back')
25 D cKeysEdit     C          CONST('F10=Confirm Changes  F12=Cancel')
26 D cSavedOK      C          CONST('Configuration was changed successfully.')
27 D cSavedKO      C          CONST('There was an error while writing to PCONFIG.')
28 *
29 * Variables
30 /copy 'src/CBKPCFGDCL.rpgleinc'
31 D wCfgKey       S          6A
32 D wShowWelcome  S          1A  Dave Asta, 3 years ago • Initial com
33 ****
34 C           WRITE  HEADER
35 C  80        EVAL   KEYSLS = cKeysDft
36 C  N80       EVAL   KEYSLS = cKeysEdit
37 C           WRITE  FOOTER
38 C           EXFMT BODY
39 C           CLEAR  MSGLIN
40 C           EXSR   CheckFkeys
41 ****
42 * Subroutine called automatically at startup
43 ****
44 C  -*INZSR    BEGSR
```

The **OUTLINE** tab on the right lists various subroutines and functions defined in the code.

The **AFFECTED OBJECTS** tab shows a list of objects that would be affected by changes in the current editor:

- BBSADGCD
- PCONFIG
- cKeysDft CONST('F10=EDIT F12=GO BACK')
- cKeysEdit CONST('F10=CONFIRM CHANGES F12=CAN-')
- cSavedOK CONST('CONFIGURATION WAS CHANGED SUCC-')
- cSavedKO CONST('THERE WAS AN ERROR WHILE WRIT-')
- wCfgKey CHAR(6)
- wShowWelcome CHAR(1)
- *INZSR Subroutine
- CheckFkeys Subroutine
- SavePCONFIG Subroutine

Project Explorer

Integrated right into the IBM i Project Explorer without any additional setup required.

Diagnostic Messages

Source Orbit can make suggestions about source names, missing references, and more.

Affected Objects view

This view shows what objects would be affected based on the active editor. As you switch between sources, the view updates automatically.

RPG testing integration

File Edit Selection View Go Run Terminal Help ← → 🔍 examples 🌐

TESTING

Filter (e.g. text, !exclude, @tag) ⚙️

3/8 5.6s ⏲

- examples 5.0ms
 - cbl.test.cblle
 - rpgsqlstmf.test.sqlrpgle
 - rpgstmf.test.rpgle 0.0ms
- sub 5.0ms
 - cbl.test.cblle
 - rpgsqlstmf.test.sqlrpgle 5.0ms
 - rpgstmf.test.rpgle 0.0ms
 - testWhatever_1 0.0ms
 - testWhatever_2 0.0ms

Run Test

sub > rpgstmf.test.rpgle > testWhatever_1

```

222 // =====
223 // RPGUnit test case.
224 // =====
225 dcl-proc testWhatever_1 export;
226   dcl-pi *n extproc(*dclcase) end-pi;
227
228   print('Executing: * testWhatever_1()');
229
230 // Run
231 assert(sds.pgmName = 'TEMPLATE': 'Name of the test suite should be ''TEMPLATE'''); ⓘ Name of the test suite should be 'TEMPLATE'
232
233 // Place your assertions here.
234
235 end-proc;
236
237 // =====
238 // RPGUnit test case.
239 // =====
240 dcl-proc testWhatever_2 export;
241   dcl-pi *n extproc(*dclcase) end-pi;
242
243   print('Executing: * testWhatever_2()');
244
  
```

PROBLEMS COMMENTS DB2 FOR I DEBUG CONSOLE OUTPUT TERMINAL PORTS IBM I JOB LOG TEST RESULTS

WORKSPACE examples (4) [Deployment Successful]

- rpgsqlstmf.test.sqlrpgle (2) [Compilation Skipped]
 - ✓ testWhatever_1 0.005s
 - ✓ testWhatever_2 0s
- rpgstmf.test.rpgle (2) [Compilation Skipped]
 - X testWhatever_1 0s

Failure: Name of the test suite should be 'TEMPLATE'

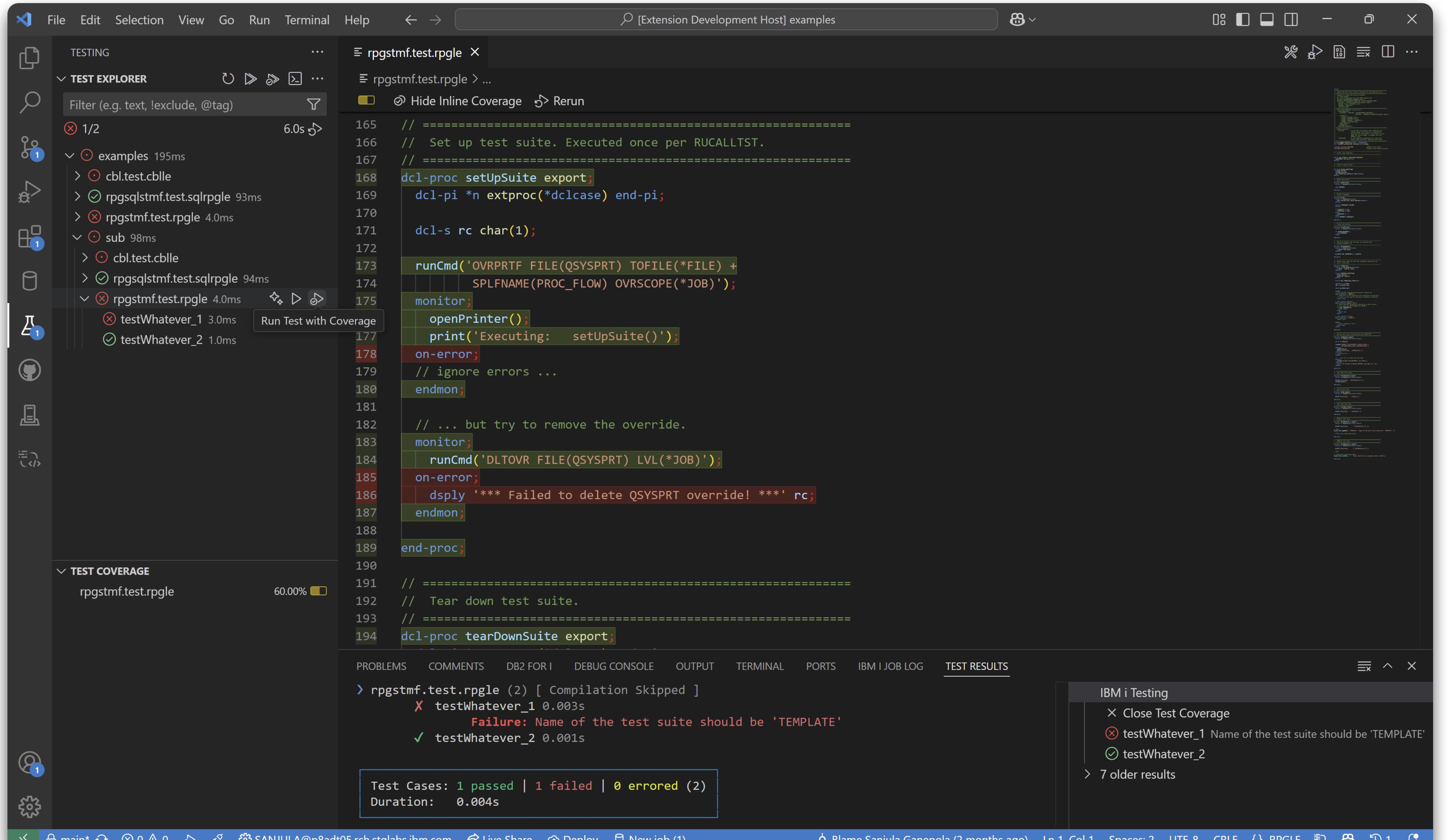
 - ✓ testWhatever_2 0s
- cbl.test.cblle (4) [Compilation Error]
 - CPFA0A9: Object not found. Object is EN_US.UTF-8.
: CRTCBLMOD MODULE(*PGMID) SRCSTMF('/home/SANJULA/builds/examples/sub/cbl.test.cblle') OPTI
ON(*NOMONOPRC) DBGVIEW(*SOURCE) TGTRLS(*CURRENT) DEFINE(DISABLE_ASSERT_EQUAL) TGTCCSID(37)
 - CPFA0A9: Object not found. Object is EN_US.UTF-8.
 - CPFA0A9: Object not found. Object is EN_US.UTF-8.
 - CPFA0A9: Object not found. Object is EN_US.UTF-8.
 - CPD4090: Printer device PRT01 not found. Output queue changed to QPRINT in library QGPL.
 - CPFA0A9: Object not found. Object is EN_US.UTF-8.
 - CPI2126: AUT parameter ignored.
 - CPI2121: Replaced object SETUPSTE type *MODULE was moved to QRPOBJ.

IBM i Testing

- TEST_TRUE
- TEST_FALSE
- TEST_FAIL0
- TEST_FAIL1
- testWhatever_1 Name of the test suite shou...
- testWhatever_1
- testWhatever_2
- testWhatever_2

> 5 older results

main 🔍 0 ▲ 0 🔍 SANJULA@p8adt05.rch.stglabs.ibm.com 🔍 Live Share 🔍 Deploy 🔍 New job (1) 🔍 Sanjula Ganepola (3 weeks ago) Ln 225, Col 1 Spaces: 2 UTF-8 CRLF {} RPGLE 🔍 1 🔍



coolness.rpgle U X

← → 🔎 [Extension Development Host] ibmi-company_system ⚙️

qrpglesrc > coolness.rpgle > doSum

```
1 **free
2
3 dcl-proc doSum export;
4   dcl-pi *n;
5     a int(10) value;
6     b int(10) value;
7   end-pi;
8
9   dcl-s result int(10);
10
11  result = a + b;
12
13  return result;
14
15 e Extract
    Create IBM i test case
```

EXPLORER

IBMI-COMPANY_SYSTEM

- qddssrc
 - employee.table
 - emps.dspf
- qrpgleref
 - constants.rpgleinc
- qrpglesrc
 - biffle.sqlrpgle
 - coolness.rpgle
 - depts.pgm.sqlrpgle
 - employees.pgm.sqlrpgle
 - fixed.rpgle
 - mypgm.pgm.rpgle
- random
- .env
- .gitignore

TIMELINE

Ln 13, Col 17 Spaces: 2 LF {} RPGLE ⏴ 1 📲

codefori.github.io/docs

chat.ibmioss.org