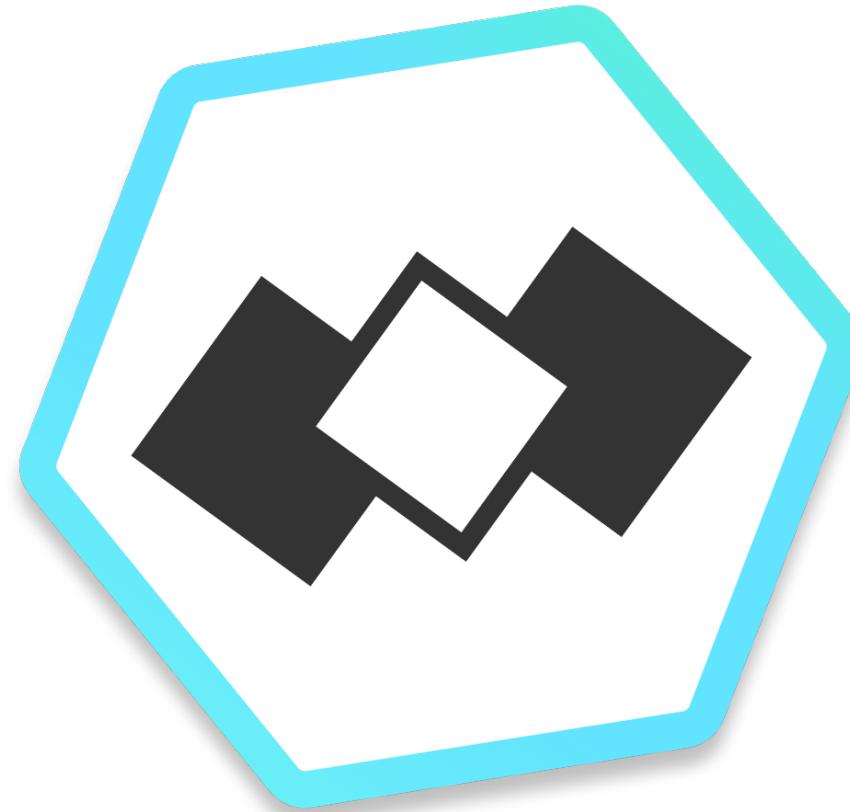


**Code for IBM i  
in 2025**



Code for IBM i



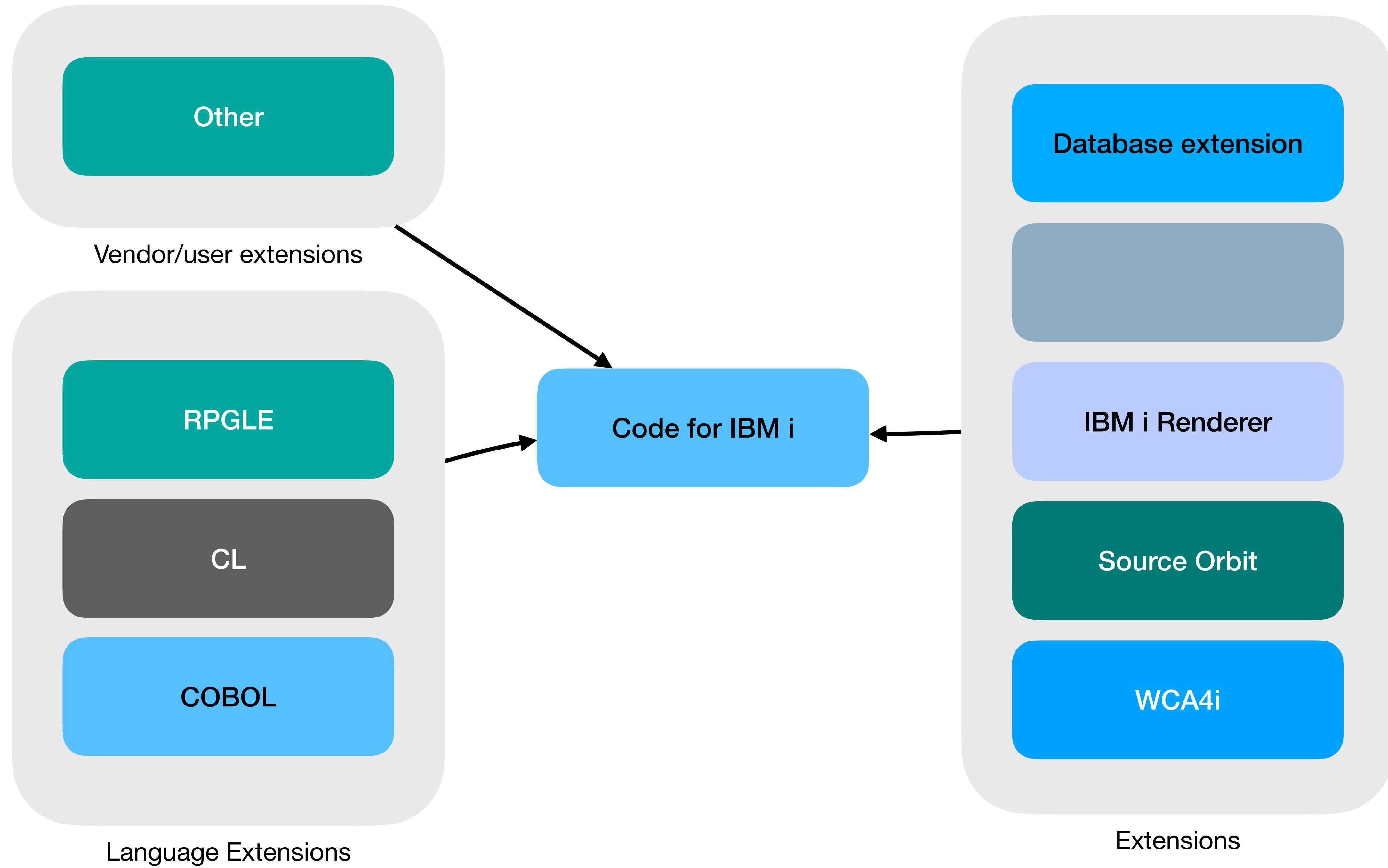
Db2 for i



IBM i Testing



and more!





## Core

### About

Core developers. Used for PRs and discussion

Find a member...

**6 members**  0 child team members



**LJ worksofliam**



**Sébastien Julliand** sebjulliand



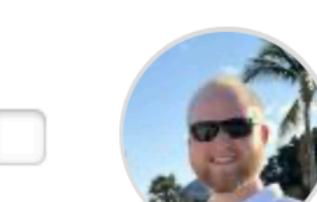
**Christian Jorgensen** chrjorgensen



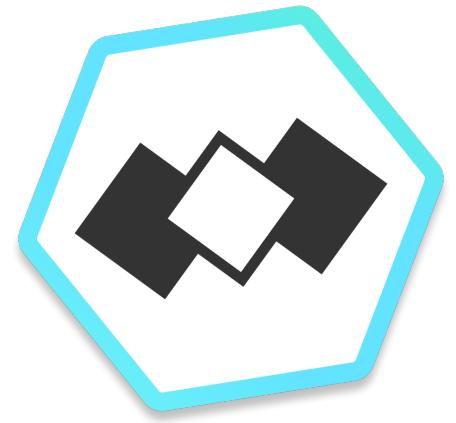
**Julia Yan** julesyan



**Sanjula Ganepola** SanjulaGanepola

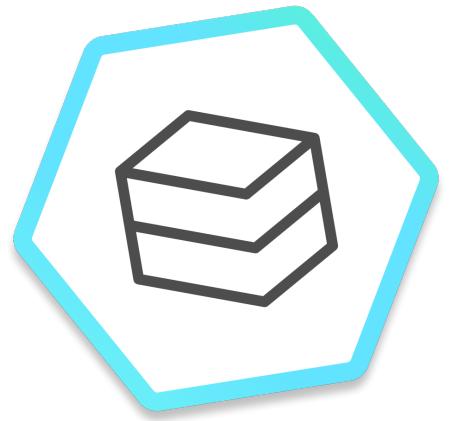


**Joseph Wright** Wright4i



# 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



worksofliam

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

▷ Run SQL statement

Db2 for i Generating

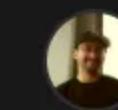
### Run SQL statement

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

▷ Run SQL statement

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**: Evo Pulaski, Employee No. 000070, Salary: 1003234
- **E11**: John Geyer, Employee No. 000050, Salary: 40175
- **E21**: Theodore Spenser, Employee No. 000100, Salary: 26150

⟳ ⌂ ⌄ ⌅

# Db2 for IBM i + AI integration



DB2 FOR I

&gt; SCHEMA BROWSER

∨ STATEMENT HISTORY

∨ Past day

- select \* from sndbx3.employee
- select \* from sndbx3.department
- select \* from sndbx3.sample
- select \* from sample.department

&gt; Past month

&gt; Older

Show All Commands

Open File or Folder

Open Recent

New Untitled Text File

&gt; EXAMPLES

&gt; SQL JOB MANAGER

# 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 standard file operations like New, Open, Save, and a search bar labeled "Search". Below the toolbar is a tab bar with "Untitled-1" selected. The main editor 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 editor area, there's a small red vertical bar indicating a syntax error. The bottom of the screen features a navigation bar with tabs for PROBLEMS, OUTPUT, TERMINAL, IBM I, DEBUG CONSOLE, RUN AND DEBUG, PORTS, and COMMENTS. The PROBLEMS tab is active, showing one error: "Untitled-1 1: Keyword SET not expected. Valid tokens: NOT DEFAULT CONSTANT. - 42601 (SQL0199) [Ln 8, Col 3]". The bottom status bar displays connection information ("SNDBX3-iopen.iinthecloud.com"), job status ("New job (1)"), and various file and search settings.

# Run all/from/selected

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

- Title Bar:** Untitled-1
- Toolbar:** Search, User, Settings, Run/Stop, View, Help.
- 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;
```

The statement `select * from department;` is highlighted.
- Context Menu (Open with ⌘-Shift-R):** A dropdown menu is open at the end of the selected statement, listing options:
  - Run statement (⌘ R)
  - Run statement in new view (^ ⌘ R)
  - Run and explain statement (⇧ ⌘ R)
  - Explain without running (⌥ ⌘ R)
  - 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:** Displays data from the `department` table.

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:** Shows 0 errors, 0 warnings, a connection icon to SNDBX3-iopen.iinthecloud.com, a job count of 1, a search icon, Ln 5, Col 15, Spaces: 2, LF, MS SQL, Date Search, and a bell icon.

# The word on debugging



## 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 displays 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

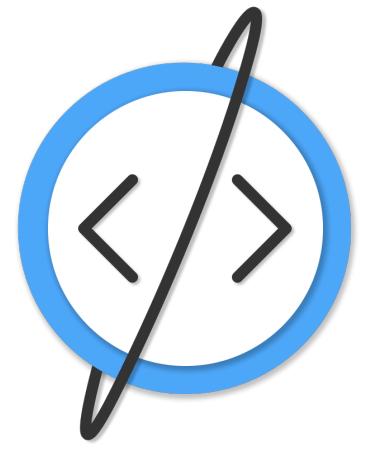
[Extension Development Host] ibmi-company\_system

DEPTS.RPGLE dept.pgm.sqlrpgle X

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
```

worksofliam (2 years ago) Ln 28, Col 47 Spaces: 2 LF {} RPGLE ⏴ 1



# Source Orbit

- Source based dependency management system
- 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 with the following components:

- Project Explorer:** Shows a tree structure of objects under "BBS400". Nodes with a blue outline indicate dependencies.
- Editor:** Displays the source code of `BBSADGCR.pgm.rpgle`. The code includes comments about administration, general configuration, and various subroutines like `*INZSR`, `CheckFkeys`, and `SavePCONFIG`.
- Outline:** A sidebar listing declarations and definitions for the current source file.
- Affected Objects:** A sidebar showing a list of objects that would be affected by changes in the current editor.

## 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'

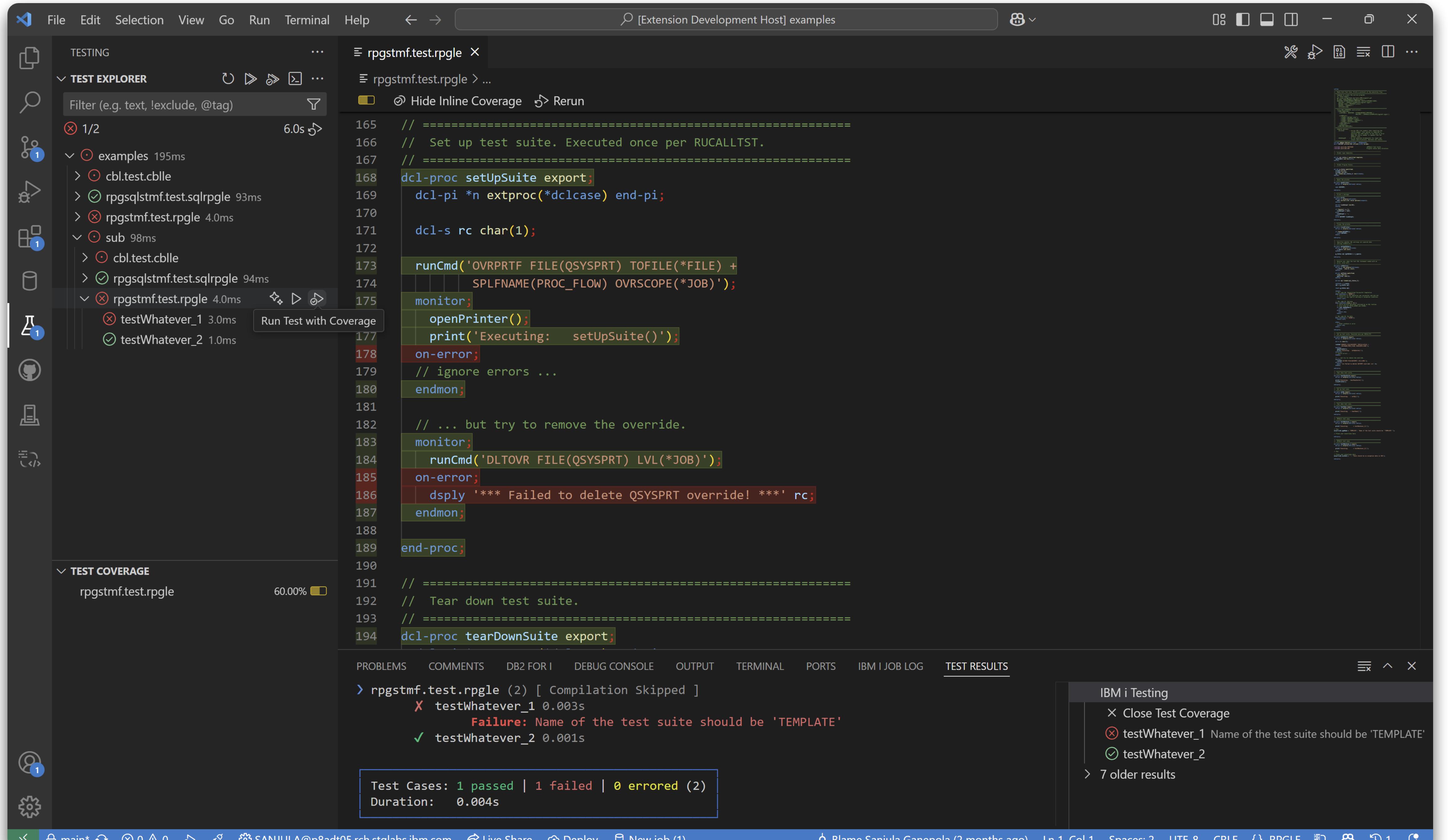
  - ✓ testWhatever\_2 0s
- cbl.test.cblle (4) [ Compilation Error ]
  - CPFA0A9: Object not found. Object is EN\_US.UTF-8.  
: CRTCBLMOD MODULE(\*PGMID) SRCSTMF('/home/SANJULA/builds/examples/sub/cbl.test.cblle') OPTI  
ON(\*NOMONOPRC) DBGVIEW(\*SOURCE) TGTRLS(\*CURRENT) DEFINE(DISABLE\_ASSERT\_EQUAL) 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 🔍



empdet.sqlrpgle x

qrglesrc > empdet.sqlrpgle > getDeptDetail

```
34 Explain | Summarize | Usage
35 dcl-proc getDeptDetail export;
36   dcl-pi *n like(department_detail_t);
37   deptno char(3) const;
38 end-pi;

39
40 dcl-ds department_detail likeds(department_detail_t);

41
42 exec sql
43 ...
44 select
45   rtri
46   coal
47   (sel
48   fro
49   whe
50   into
51   :dep
52   :dep
53   :department_detail.totalsalaries
      from

  Extract
    ↗ Generate test case for 'getDeptDetail'
    ↗ Generate test suite for 'empdet.sqlrpgle'
    More Actions...
    ↗ Explain getDeptDetail with watsonx Code Assistant for i
    ↗ Run statement in Db2 for i
```

main\* 0 ▲ 16 worksofliam (1 week ago) Ln 43, Col 11 Spaces: 2 LF {} RPGLE 1

```
-bash-5.2$ node dist/index.js --project ../ibmi-company_system/ --library-list RPGUNIT QDEVTOOLS --current-library SANJULA --save-command-output --save-test-output --save-test-result
IFS ibmi-company_system (1)
> empdet.test.sqlrpgle → TEMPDET.SRVPGM (4) [ Compilation Successful ]
    ✓ test_getDeptDetail_found 0.01s
    ✓ test_getDeptDetail_notFound 0s
    ✓ test_getEmployeeDetail_found 0.013s
    ✓ test_getEmployeeDetail_notFound 0s
```

#### EXECUTION

```
Deployments: 0 successful | 0 failed (0)
Compilations: 1 successful | 0 failed | 0 skipped (1)
```

#### RESULTS

```
Test Files: 1 passed | 0 failed | 0 errored (1)
Test Cases: 4 passed | 0 failed | 0 errored (4)
Assertions: 9
Duration: 0.023s
```

PASS

```
-bash-5.2$
```

through a CLI!



SanjulaGanepola temporarily deployed to COMMON1 yesterday — with GitHub Actions Inactive



github-actions bot commented yesterday

## Test and Code Coverage Report

test passing coverage 76%

### Test Result

Total Tests	Passed	Failed	Errored	Assertions	Duration
1	1	0	0	4	0.013s

### Code Coverage

File	Coverage	Uncovered Lines	Covered Lines	Executable Lines
empdet.sqlrpgle	53%	9	10	19
empdet.test.sqlrpgle	93%	2	25	27

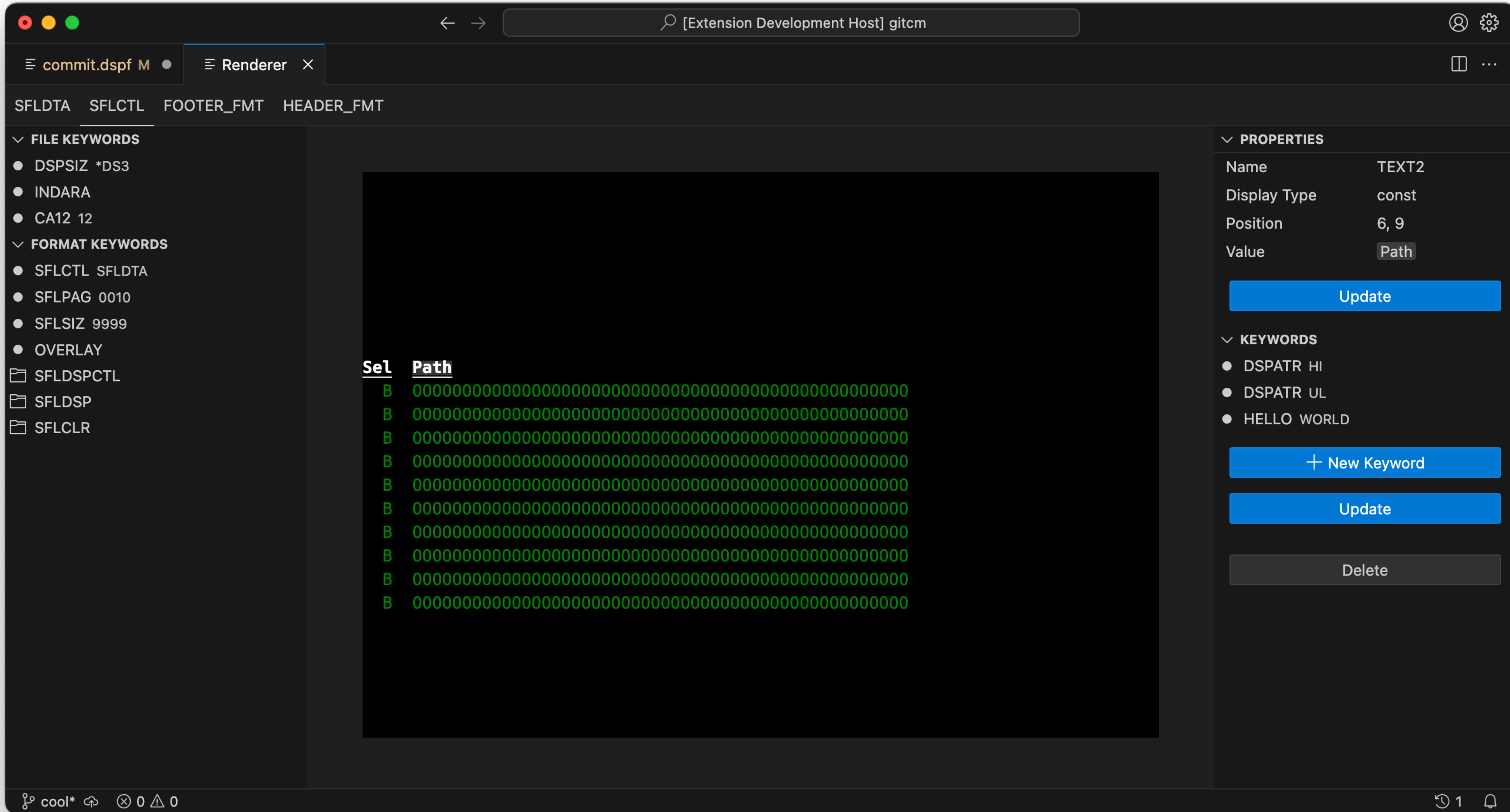


ibmi

succeeded yesterday in 46s

- >  Set up job
- >  Checkout
- >  Setup Node.js 18
- >  Install ibmi-ci
- >  Install Source Orbit
- >  Build and Test
- >  Add Summary Report
- >  Post Comment to PR
- >  Upload Test and Coverage Logs
- >  Post Setup Node.js 18
- >  Post Checkout
- >  Complete job

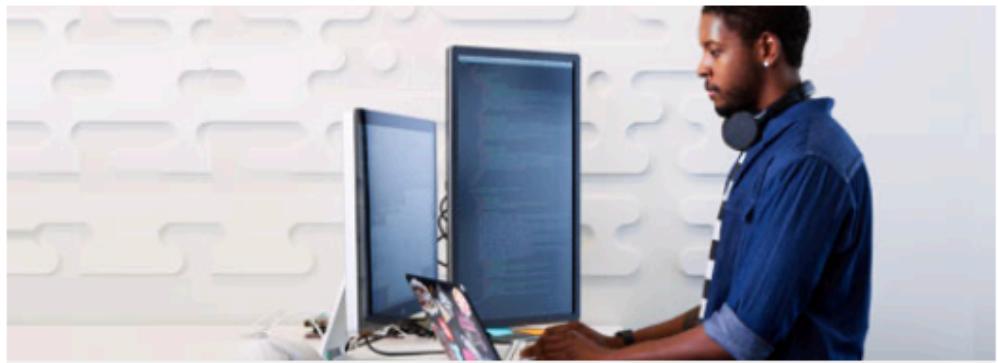
# Coming soon



**codefori.github.io/docs**

**chat.ibmioss.org**

**Going on**



## King III Solutions

Growing Revenue  
by 300% with  
Visual Studio Code  
and IBM i

VS Code is enabling K3S to write code more efficiently and faster with better performance as well.

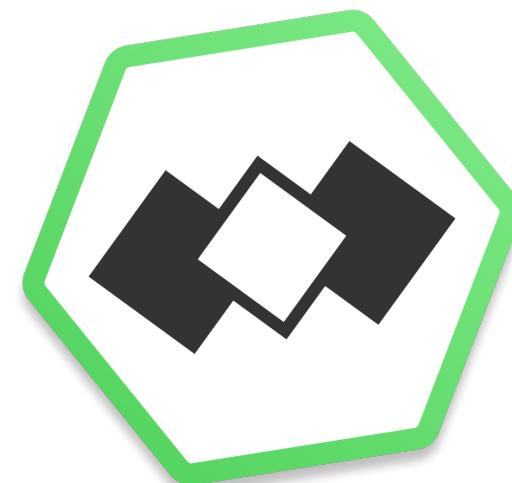
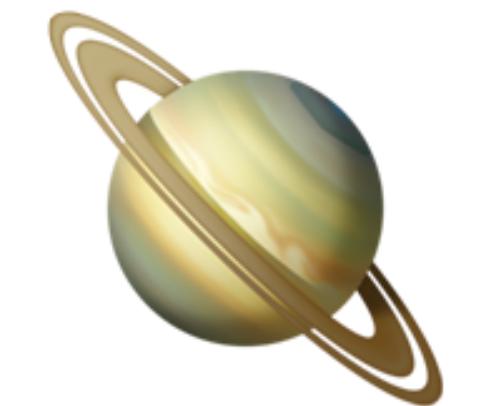
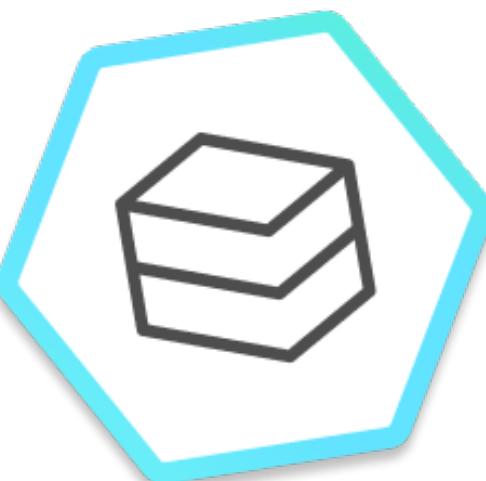
Their team can use an industry-standard application development solution while taking advantage of the mass amount of IBM i extensions that are available.

The development team at K3S comes from a wide variety of skills and backgrounds, but since they started to work with VS Code for IBM i, they've been able to all get on the same page by standardizing on one tool everyone can learn, increasing productivity immediately.

This has allowed the company to not only retain talent, but also attract new developers as well to the platform by implementing an industry-standard solution.

# What's next

- Continued work on vscode-db2i
  - More improvements to Schema Browser
  - Visual Explain UI improvements
  - Loads more
- Build tools
  - To streamline development with git, we need build tools
  - Source Orbit to be expanded and easier to use
- Testing for IBM i
  - New extension in the works
  - User feedback already being collected





**github.com/works of liam/blog**