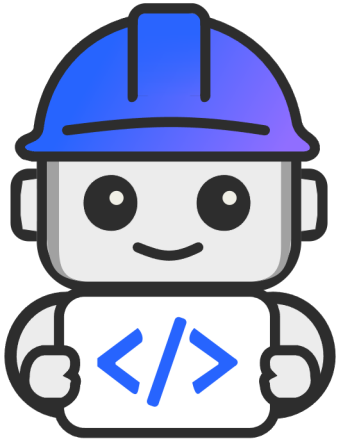
IBM Project Bob



Tim Rowe – timmr@us.ibm.com
STSM - Application Development

1988

AS/400®

RPG

COBOL

- Monolithic
- Waterfall
- Intertwined
- Punch Card based RPG

2000

iSeries

RPG

COBOL

Java

EGL HATS

- Monolithic
- Waterfall
- Intertwined
- Punch Card based RPG
- Re-facing UI
- SQL , ILE, PASE

2008 - Present

IBM i

Modern RPG

COBOL

git

Bitbucket

MySQL

Jira

REST Apis

php

Java

DevOps

SQL

- Modular
- Agile
- Self Documenting
- Microservices
- ‘Normal’
- Open

Current State

- SEU
- Monolithic
- Checkin – Checkout
- Closed
- O-Spec
- Locked up Business Logic
- Maintainability Issues
- Minimal Automation

- IBM i Development is Unique

Where We Should Be

- VsCode
- Modular
- Branching
- Open
- Print Files, Wed
- Connectable Business Logic
- Maintainability Issues
- Automated Build, Deployment

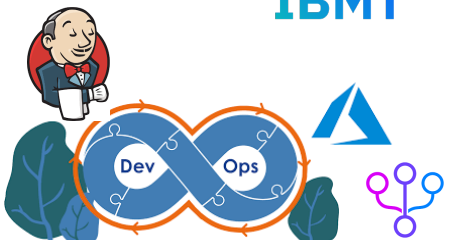
- IBM i Development ‘Normal’

What are the Expectations of Todays Developers

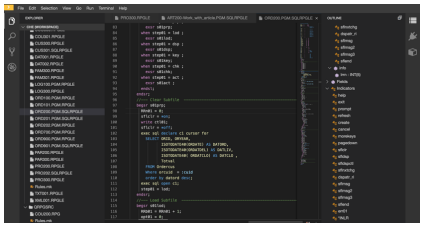
IBM i

Source Control

Pipelines
Automation



Developer IDE



Web and Mobile Interfaces – Secure Connections – Rest APIs

RPG

Modern Business Language

SQL

Fully Relational Db2
- Security at the Data
- Optimized complex data access

AI Coding Assistants

IBM i

RPG a Modern Language

```
0007 F* PROMPTS TO SELECT THE A/P VOUCHER PROCESS
0008 FSCREEN  CP  F     512            WORKSTN
0010 E                    MSG     1   1 40
0013 ISCREEN  NS  01   1 CS   2 C1
0014 I* FORMAT-AP100SRD
0015 I                                        3   8 SELECT
0023 I        NS  09
0028 I           UDS
0039 I*
     I                                      129 134 KYCANC
     I                                      170 175 SELECT
0040 I                                      509 5100Y2KCEN              19
0041 I                                      511 5120Y2KCMP              80
0042 C*****
0047 C                    SETOF                     81  90
0048 C                    MOVEL*BLANKS   MSG40  40
0049 C*
0050 C   KG               MOVEL'CANCEL'  KYCANC 10
0051 C   KG               SETON                     LR
0052 C   KG               SETOF                     0109
0053 C*
0054 C   09               EXSR ONETIM
0055 C*
     C   01               EXSR S1
0057 C*******************************************
0058 C************ * * * * * * * * * * * * * * *
0059 CSR         ONETIM    BEGSR                                       ONETIM
0060 C*
0061 C*
     C                    MOVEL*BLANKS     LECT
0081 C* SET UP DEFAULTS
0086 C                    SETON                    81
0087 CSR                  ENDSR
0088 C************ * * * * * * * * * * * * * * *
0089 CSR         S1        BEGSR                                       S1
0090 C*
0136 C*
0137 C* VALIDATE SELECTION
0138 C           SELECT    COMP 'NORMAL'             1010
0139 C         10SELECT    COMP 'ARGLMS'             1010
0139 C         10SELECT    COMP 'PAPER '             1010
0139 C         10SELECT    COMP 'FLEXI '             1010
0141 C         10          SETON                     819054
0142 C         10          MOVELMSG,1     MSG40
0143 C         10          GOTO ENDS1
```

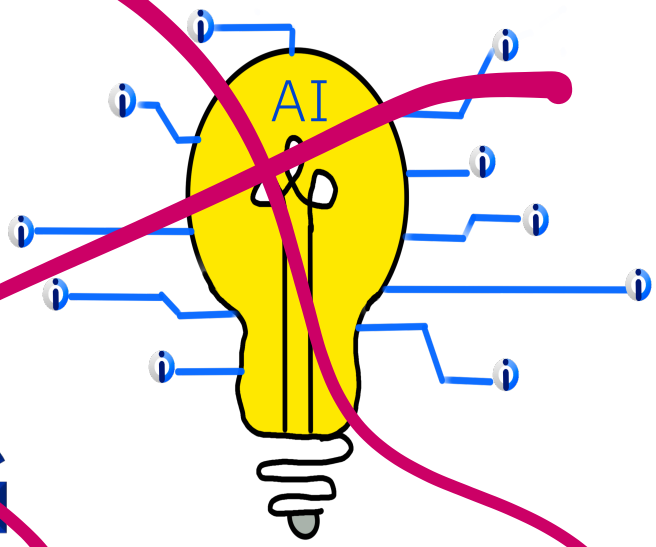
RPG

AS/400®

```
**FREE
//=============================================================================
// Program Name: AP100S
// Description : A/P Voucher Process Selection Screen
// Original    : System/36 RPG program AP100S.RPG36
//=============================================================================

ctl-opt dftactgrp(*no) actgrp('AP100S') bnddir('BNDRDIR');

// File declarations
dcl-f AP100SFM workstn indds(dspIndicators) sfile(subfile:rrn);

// Constants
dcl-c ERROR_MSG 'MUST BE ''NORMAL'' ''ARGLMS'' ''PAPER'' ''FLEXI''';

// Data structures
dcl-ds dspIndicators;
   exitKey ind pos(3);
   cancelKey ind pos(7);
   firstTime ind pos(9);
   mainScreen ind pos(1);
   invalidSelection ind pos(10);
   displayScreen ind pos(81);
   errorMsgDisplay ind pos(54);
   // Other indicators as needed
end-ds;

// Standalone fields with more descriptive names
dcl-s voucherType char(6);
dcl-s errorMessage char(40);
dcl-s rrn packed(4:0);
dcl-s exitProgram ind;

// Main procedure - implements the RPG cycle logic
dcl-proc main;
   // Initialize - equivalent to first cycle
   firstTime = *on;
   exitProgram = *off;

   // Main processing loop - equivalent to RPG cycle
   dow not exitProgram;
      // Clear indicators at the start of each cycle
```

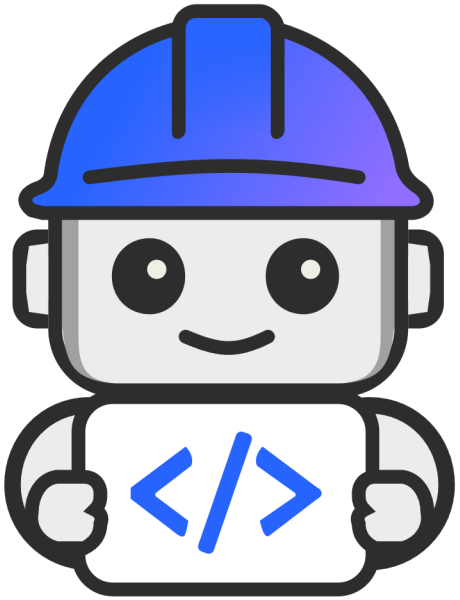
Modern RPG

~~Code Assistant~~ for RPG



These are old news....

Meet Project Bob



AI-powered integrated development environment (IDE) and modernization assistant

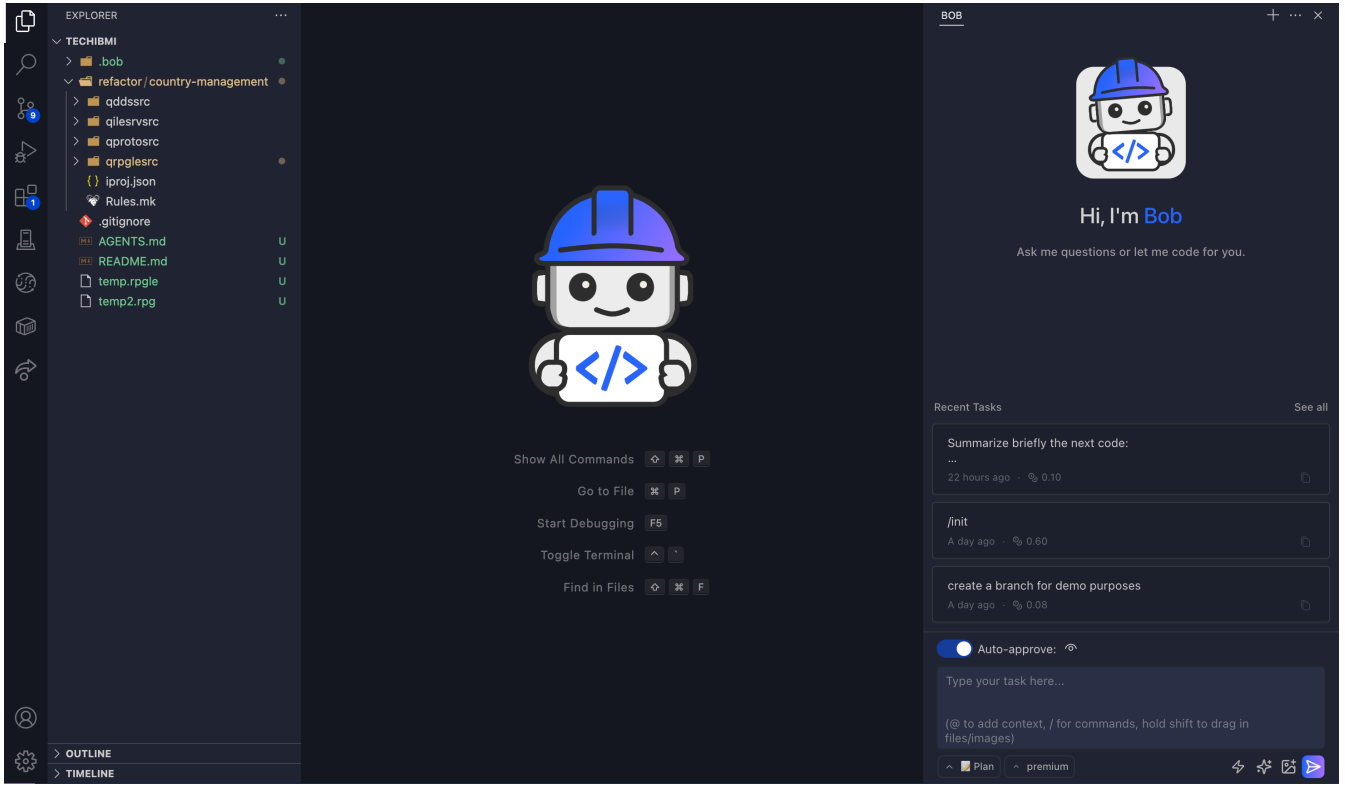
Project Bob Way

From Ideology to IDE

Why Project Bob?

Software Development Partner… integrated into a code editor

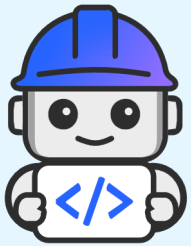
Full visibility at project-level



Project Bob Way

From Ideology to IDE

What are the main Project Bob capabilities for IBM i?



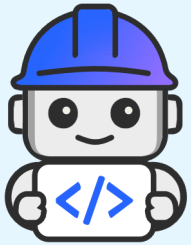
The initial release will redefine what is possible for IBM i development with powerful capabilities including:

- ✓ **Understand:** Comprehend complex IBM i applications (RPG, CL, DDS, SQL)
- ✓ **Explain:** Clear explanations and diagrams of code functionality and data usage
- ✓ **Refactor:** Identify and create reusable procedures, update variable names
- ✓ **Generate**: Write RPG code, create procedures and applications
- ✓ **Transform:** Modernize RPG II and RPG III to ILE-based RPG, convert to embedded SQL
- ✓ **Testing:** Create unit tests for code and data verification leveraging IBM i centric frameworks like RPGUNIT

Project Bob Way

From Ideology to IDE

- Think like a Developer
- Adapts to your Code
- Secure Development



Example: Modernization Approach

Analyze

- Automated inventory & Dependency mapping
- Understand Database components
- Review display files
- Generate a transform plan

Transform

- Move from OPM to ILE, Fixed format to Free format
- Identify Business Logic and Create new Service Programs
- Refactor to improve readability and maintenance

Validate

- Unit Testing
- Build and Deploy Application
- Run Sanity Tests

Project Bob and IBM i

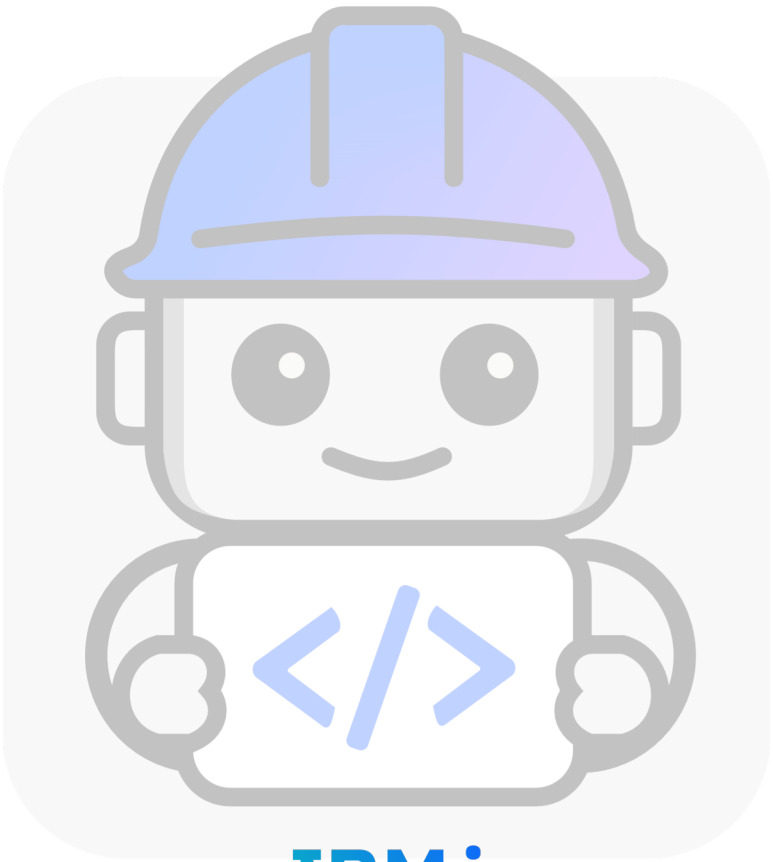
IBM i

Explain

1. Explain a Simple RPG Application
2. Explain a 1980 era ERP Application complete with Diagrams
3. Impact Analysis Report for File Level Access and Change

Refactor

1. Refactor Variable Names to be Self Describing
2. Extract Procedures and Create Service Program
3. Remove Un-Used Variables



Transform

1. RPGII to Modern Free Format ILE RPG with Readable Variable Names
2. RPG Fixed to Free Conversion
3. Database - Replace Record Level Access Database Access with Embedded SQL Access

Generate

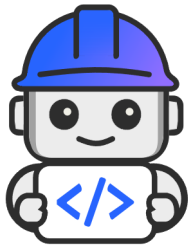
1. Generate Comments in Free Form RPG Program
2. Generate a brand new Vechile Management App – SQL, RPG, Python
3. Literate Mode for Code Completion in Line
4. Create Unit Testcases Leveraging RPGUNIT

https://www.youtube.com/@ask-bob

IBM i

Project Bob and the Possibilities

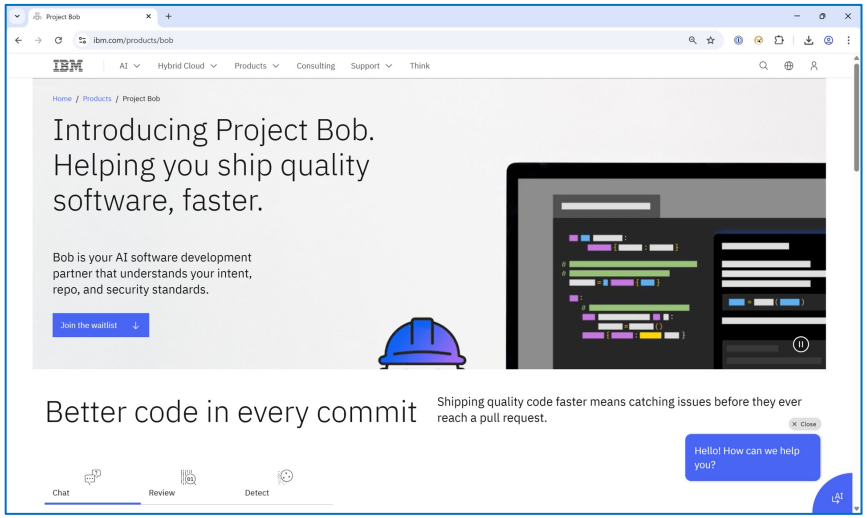
- Clear understanding of programs, application, data
- Convert O-Spec to Printer Files
- Field length expansion
- Convert 2 digit years to real date fields
- Remove the Cycle
- OPM to ILE
- Change Add and Delete to Insert
- Identify copied code and create a procedure
- Create Detailed Documentation
- Create Unit Test Cases
- Convert Source Physical Files to Stream Files
- Convert from Synon
- Remove Green Screen and replace with Web ?

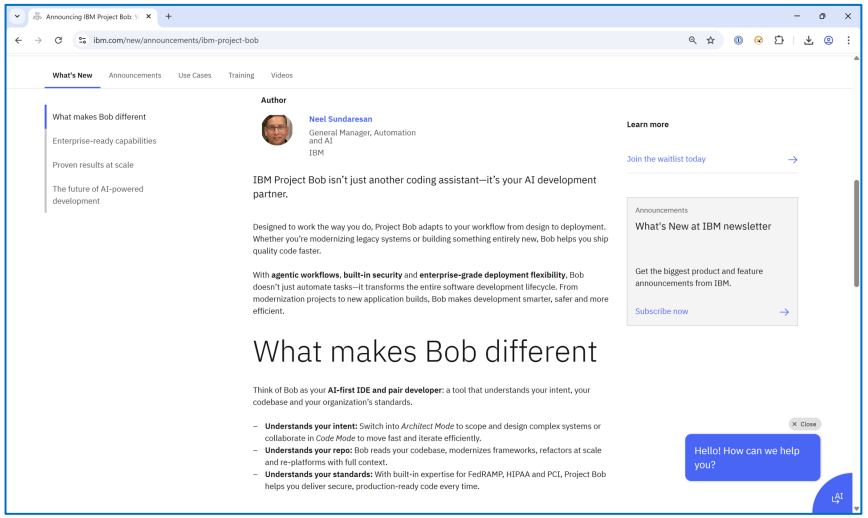


You are now free to imagine the possibilities...

Project Bob

IBM i





https://www.ibm.com/products/bob

https://www.ibm.com/new/announcements/ibm-project-bob

Check out more examples on the YouTube Channel

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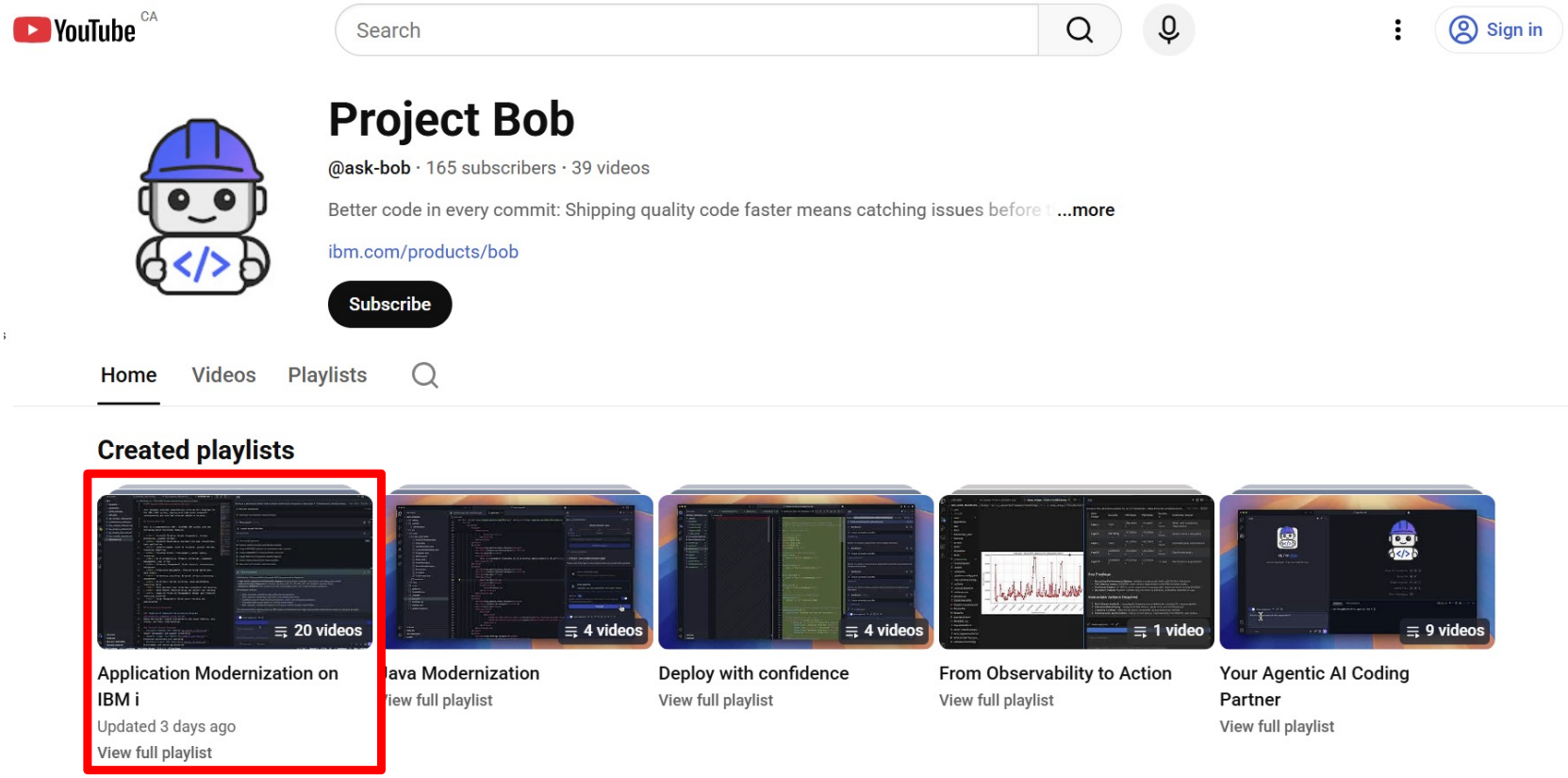
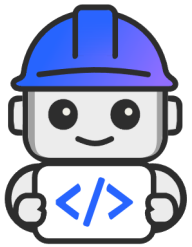


https://www.youtube.com/@ask-bob

Get Involved



Join the waitlist to provide feedback and help us continue to create the best possible experience!

https://www.ibm.com/products/bob

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