



# Better Object Builder for IBM i

... for the native OS/400 objects

Project structure and typical usage

v2.4.10

## Using BOB

# BOB CLI commands

- `makei` - the main command to interact with Bob
- `crtfrmstmf` - a utility to compile from stream files when the compiler only supports QSYS members

# Makei functionality

- `makei cvtsrcpf` – convert QSYS members to Unicode IFS stream files
- `makei init` – create `iproj.json`
- `makei build` – build the entire project
  - `makei b -t <object>` - build target object
  - `makei b -d <directory>` - make all objects in the specified directory (based on `Rules.mk`)
- `makei compile -f <stream file>` - build target object of specified stream file
- `makei compile -files file1: file2: ...` - build target objects of all specified stream files

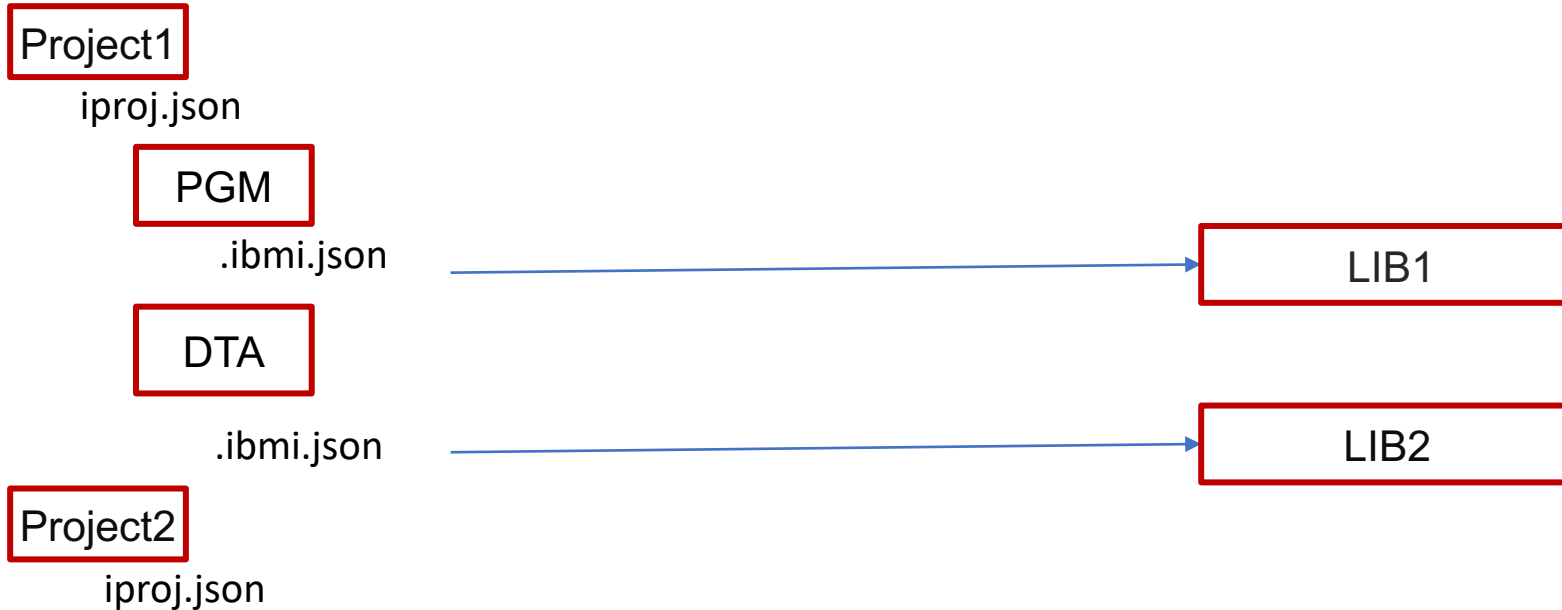
# Typical Bob Project Structure

- iproj.json  
(<https://ibm.github.io/ibmi-bob/#/prepare-the-project/iproj-json>)
- .ibmi.json  
(<https://ibm.github.io/ibmi-bob/#/prepare-the-project/ibmi-json>)
- Rules.mk  
(<https://ibm.github.io/ibmi-bob/#/prepare-the-project/rules.mk>)



# Multi-library project structure

- A directory containing iproj.json is a project
  - Projects cannot be nested
- Target library for creating objects is set by “objlib” attribute
- Can specify multiple target object library
  - Use .ibmi.json to specify target object library for a directory
  - Can also specify the EBCDIC encoding for compiler to use



# Project structure

Payroll-bob <*project directory*>

iproj.json

Rules.mk

```
SUBDIRS := data
```

```
MSTDSP.FILE: MasterDisplay.DSPF PRJMST.FILE RSNMST.FILE
```

```
PAYROLL.PGM: PAYROLL.PGM.RPGLE MSTDSP.FILE PRJMST.FILE
```

**Data** <*subdirectory*>

Rules.mk

```
RSNMST.FILE: RSNMST.TABLE
```

```
PRJMST.FILE: PRJMST.TABLE
```

# Dependency ordering

- “rough” ordering based on file extension

`TARGETS = $(TRGs) $(DTAs) $(SQLs) $(BNDDs) $(PFs) $(LFs) $(DSPFs) $(PRTFs) $(CMDs) $(MODULEs) $(SRVPGMs) $(PGMs) $(MENUs) $(PNLGRPs) $(QMQRYS) $(WSCSTs) $(MSGs)`

- Fine tuned ordering based on dependencies specified in Rules.mk

`Target_object: main_source dependency1 dependency`

- Proposed project to generate Rules.mk based on SQL services

# Demo of BOB

```
$ git clone https://github.com/IBM/ibmi-company_system.git
```

```
Cloning into 'ibmi-company_system'...
```

```
$ cl crtlib bobdemocs
```

```
CPC2102: Library BOBDEMOCS created.
```

```
$ makei build -e verlibcsy=BOBDEMOCS
```

```
Set variable <verlibcsy> to 'BOBDEMOCS'
```

```
> /Q0penSys/pkgs/bin/make -k BUILDVARSMKPATH="/tmp/tmp7sjl59kh" -k  
BOB="/Q0penSys/pkgs/lib/bob" -f "/Q0penSys/pkgs/lib/bob/src/mk/Makefile" all
```

```
=== Creating SQL TABLE from Sql statement [department.table]
```

```
RUNSQLSTM srcstmf('/home/REINHARD/bob-recursive-example/ibmi-  
company_system/qddssrc/department.table') DBGVIEW(*SOURCE) TGTRLS()  
OUTPUT(*PRINT) MARGINS(1024)
```

```
✓ DEPARTMENT.FILE was created successfully!
```