The IBM DB2 Workload Generator (GLW)
Version 1 Release 4
12th February 2007

DB2 Information Management Software

Mike Bracey

Systems Engineer

mike_bracey@uk.ibm.com

e.business on demand software

The IBM DB2 Workload Generator

- The purpose of this tool is to assist the pre-sales technical community for DB2 tools to:
  - ► gain understanding and knowledge of the DB2 tools
  - ► provide the DB2 structures, data, application code and workload driver to enable customer demonstrations

- The tool can be used with all the DB2 tools:
  - ► Change management - create a development and production database, make changes to development and compare the difference
  - ► Performance management - run the workload and observe with PE, capture the SQL for analysis with QM
  - ► Recovery management - examine the logs with LAT, use CA to update image copies
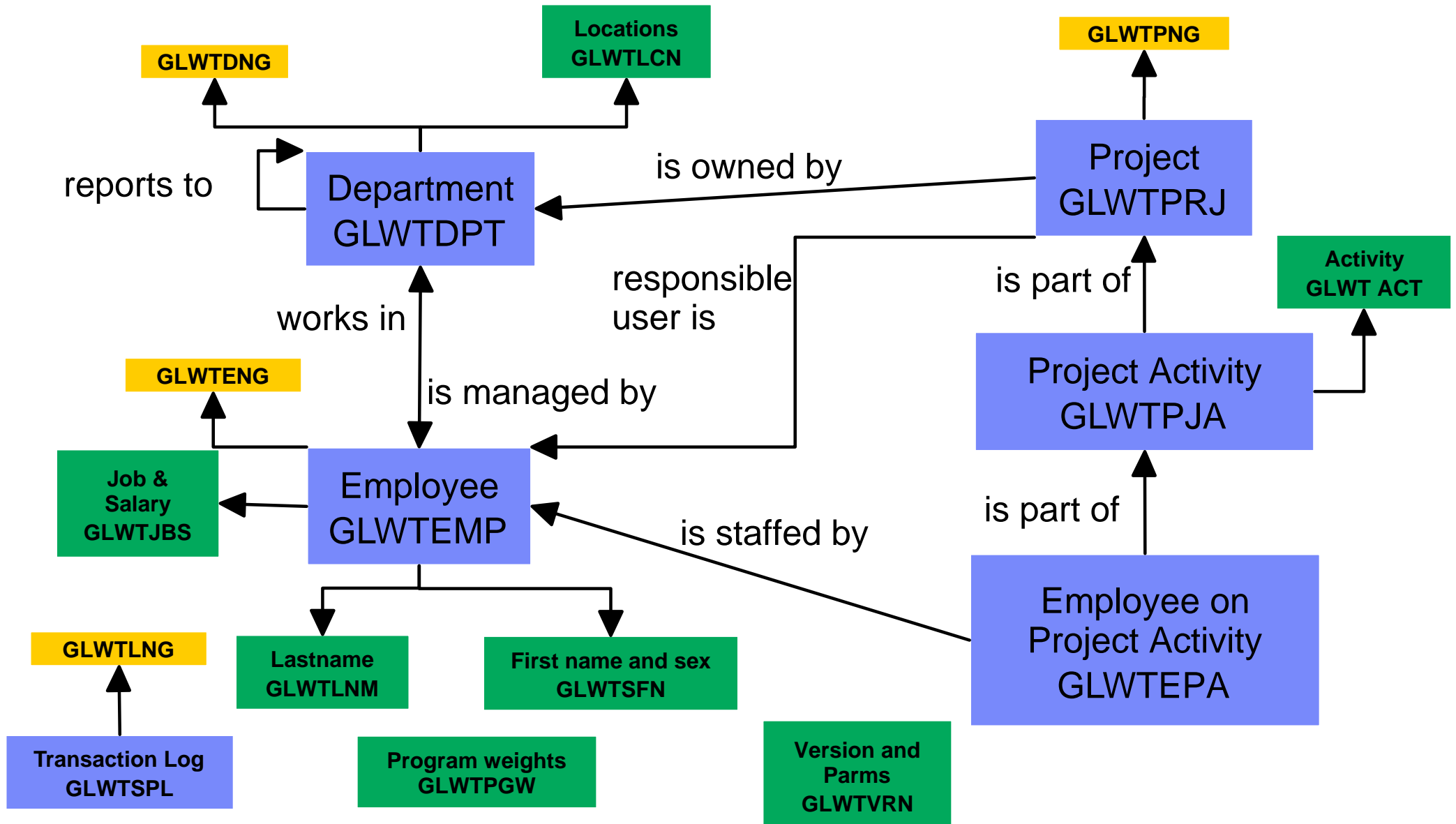
The well known IVP tables with some code on top

- **Tables**
  - ► GLWTDPT, GLWTEMP, GLWTPRJ, GLWTPJA, GLWTEPA
  - ► plus supporting tables
- **Stored Procedures**
  - ► DPTADD, DPTUPD, DPTUPR, DPTMGR,DPTLCK,DPTBAL,DPTDEL
  - ► EMPADD, EMPUPD, EMPDEL, EMPQRY, EMPFND
  - ► PRJADD, PRJUPD
  - ► plus supporting procedures
- **Other features exploited:**
  - ► Views
  - ► Referential Integrity
  - ► Partitioned tables
  - ► Triggers

The Workload Database

GLWTDNG

Locations GLWTLCN

GLWTPNG

reports to

Department GLWTDPT

is owned by

Project GLWTPRJ

responsible user is

is part of

Activity GLWT ACT

works in

GLWTENG

is managed by

Project Activity GLWTPJA

Job & Salary GLWTJBS

Employee GLWTEMP

is staffed by

is part of

GLWTLNG

Lastname GLWTLNM

First name and sex GLWTSFN

Employee on Project Activity GLWTEPA

Transaction Log GLWTSPL

Program weights GLWTPGW

Version and Parms GLWTVRN

Driver program parameters - GLWRUN

Connection:

DB2SSID(DB21) or DB2LOCN(MOPDB21) USERID(DMMJB)
SCHEMA(GLWSAMP)
LOG(SUMMARY)

Running a workload:
ACTION(RUN)
RUNTIME(5)
RUNMODE(RANDOM)
RUNPROF(STANDARD)
WAITTIME(0)
FLUSHBP(BOTH)

Building the database:
ACTION(BUILD) RUNTIME(0)
EXPLAIN(Y) BUILDRI(DB2)
PRELOAD(EMPTY) PERFLEV(BASE)
GDGLIMIT(2)
COMPRESS(ASIS)
TRIGGER(YES)
DATACAP(ASIS)
GRANTEE(PUBLIC)

%GLWRUN DB2SSID(DB21) SCHEMA(MYDB) ACTION(BUILD) RUNTIME(10)

Driver program parameters - Connection

Parameter	Description	Default
DB2SSID	DB2 subsystem id for local access	None
DB2LOCN	DB2 location for remote access	None
USERID	Userid for remote access	None
SCHEMA	The schema name. This name is used for: database name; table owner name; collection name; stored procedure owner; trigger schema name	GLWSAMP
LOG	SUMMARY or DDL or ALL	SUMMARY

Driver program parameters - ACTION

Action	Description
BUILD	CREATE the database - if it exists then DROPs - CREATE the stored procedures - BIND the packages - DEFINE the GDGs for image copies - RUN if runtime > 0
RUN	run the workload - assumes environment exists - ONLY valid option for remote access
DROP	drops the database if created by same user - DROPs the stored procedures - FREEs all the packages - DELETEs all the GDGs and Image Copies
BIND	BINDs the packages - RUN if runtime > 0

Driver program parameters - ACTION(BUILD)

Parameter	Description	Default
RUNTIME	Set to 0 for just a build of the database and application	1
EXPLAIN	Y or N	Depends
BUILDRI	Referential Integrity: DB2 - DB2 defined RI GLW - Application RI	DB2
PRELOAD	EMPTY - application tables start empty DPT5K - 5000 rows in GLWTDPT and other tables appropriately populated	EMPTY
PERFLEV	BASE - missing ix - poor performance TUNED - additional indexes defined	BASE
GDGLIMIT	GDG limit setting for image copies	0
COMPRESS	ASIS, Yes or No	ASIS
TRIGGER	Yes or No	Yes
DATACAP	ASIS, Yes or No	ASIS
BUILDDS	Dataset holding the build definitions	hlq.GLW.SGLWSAMP
BUILDMBR	Member name of build definitions	GLWSAMP
GRANTEE	GRANT access to this userid	PUBLIC

Driver program parameters - ACTION(RUN)

Parameter	Description	Default
RUNMODE	RANDOM or FIXED;	RANDOM
RUNTIME	RANDOM - run time in minutes FIXED - repeats of RUNPROF	1
RUNPROF	Determines proportion of each transaction: STANDARD - medium growth STEADY - low growth GROWTH - high growth QUERY - query only TIMEOUT - forces a timeout USER - modifiable by any user	STANDARD
WAITTIME	Causes a delay between each transaction	0 seconds
FLUSHBP	NONE;BEFORE;AFTER;BOTH Stop and start all tablespaces at beginning and end of each run	BOTH

Table profiles

Table Name	View Name	Content	Number of Columns	Number of rows (no workload)	Number of Rows (10 minutes workload)
GLWTDPT	WLDEPT	Departments	10	0	588
GLWTEMP	WLEMP	Employees	19	0	7,203
GLWTPRJ	WLPROJ	Projects	13	0	1,171
GLWTPJA	WLPROJACT	Activities on each Project	10	0	21,078
GLWTEPA	WLEMPPROJACT	Employees assigned to each Activity on each Project	10	0	68,184
GLWTLCN	WLLOCN	Departmental Locations	2	130	130
GLWTJBS	WLJOBSALARY	Employee Jobs and Salaries	4	15	15
GLWTLNM	WLLASTNAME	Employee surnames	2	351	351
GLWTSFN	WLSEXFIRSTNAME	Employee Sex and forenames	3	84	84
GLWACT	WLACT	Activities	3	18	18
GLWTDNG	WLDEPT_NO_GEN	Number generator for GLWTDPT	2	0	0
GLWTENG	WLEMP_NO_GEN	Number generator for GLWTEMP	2	0	0
GLWTPNG	WLPROJ_NO_GEN	Number generator for GLWTPRJ	2	0	0
GLWLNG	WLTRAN_NO_GEN	Number generator for GLWTSPL	2	0	0
GLWTSPL	WLSPLOG	Log of each Stored Procedure call by the driver	6	0	14,696
GLWTPGW	WLPROGWT	Run time weighting for each Stored Procedure	2	84	84
GLWTVRN	WLVERSN	Database version control table	15	1	1