

GAMS



GAMS – Data Exchange (GDX) Tools and Utilities

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GDX files

Data file for multiple GAMS symbols

GAMS



GDX files

Data file for multiple GAMS symbols
No Symbolic Equations

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Binary (no loss of precision)



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Platform independent



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Can be compressed



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GDX Tools do not require a license



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Data file for multiple GAMS symbols

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GDX Tools do not require a license

Open API for multi language/platform



Create a GDX file

Files Help



gdx=indus89



C:\InformsSD2009\indus89.gms

indus89.gms

indus89.lst

```
$TITLE Indus Basin Model Revised -  
$context
```



Viewing a GDX file

```
--- Restarting execution
--- indus89.gms(3621) 0 Mb
--- Reading solution for model wsisn
--- indus89.gms(3621) 4 Mb
--- GDX File C:\InformsSD2009\indus89.gdx
*** Status: Normal completion
--- Job indus89.gms Stop 10/08/09 18:08:06 e:
```



Viewing a GDX file (GAMS IDE)

IDE C:\InformsSD2009\indus89.gdx

indus89.gdx indus89.gms indus89.lst

Entry	Symbol	Type	Dim	Nr Elem
31	a	Set	1	3
219	acost	Var	2	15
32	ai	Set	1	6
206	alpha	Par	2	117
222	animal	Var	3	45
243	artfod	Var	3	30
244	artwater	Var	3	180
245	artwaternd	Var	2	444
38	baseyear	Par	0	1
263	bdraft	Equ	3	180
205	beta	Par	2	97

alpha: demand curve intercept

Plane Index (empty)

basmati	nwfp	6
	pmw	6
	pcw	21
	psw	21
		21

Symbol search

Reset Squeeze defaults Ordering: 1 2

Sort Decimals Search

Next Prev

Next Prev



Export GDX file (GAMS IDE)

Write symbol to HTML

Write ALL symbols to HTML

Write symbol to Excel file

Write symbol to Excel file filtered

Write ALL symbols to Excel file



View file in Excel

comdef (Parameter) canal command characteristics

		01-ud	02-cbd	03-ray	04-uc	05-mr	06-sad	07-for	08
1980	cca	0.36	0.649	0.424	1.017	0.158	0.969	0.426	1
1980	ccap	0.131	0.163	0.11	0.506	0.282	0.332	0.204	0
1980	ceff	0.7	0.8	0.8	0.76	0.8	0.72	0.7	
1980	wce-r	0.57	0.57	0.45	0.57	0.57	0.51	0.51	
1980	wce-k	0.57	0.57	0.45	0.57	0.57	0.51	0.51	
1980	flde	0.9	0.9	0.9	0.9	0.9	0.8	0.8	
1980	cca	0.36	0.649	0.424	1.017	0.158	0.969	0.426	1



Export GDX file (GAMS IDE)

Write symbol to HTML

Write ALL symbols to HTML

Write symbol to Excel file

Write symbol to Excel file filtered

Write ALL symbols to Excel file



View file in Excel (TOC)



indus89.xlsx

	A	B	C	D	E	F
1	Name	Type	Dim	Count	Explanatory text	
2	a	set	1	3	animal types	
3	acost	variable	2	15	farm cost in	
4	ai	set	1	6	animals input out	
5	alpha	parameter	2	117	demand curve int	
6	animal	variable	3	45	production of live	
7	artfod	variable	3	30	artificial fodder s	
8	artwater	variable	3	180	water from imagi	
9	artwaterne	variable	2	444	water from imagi	



View file in Excel

indus89.xlsx

	A	B	C	D
1	<u>TOC</u>			
2	comdef	(parameter)	canal command characteristics	
3	is	dc	cnl	Value
4	1980	cca	01-ud	0.36
5	1980	cca	02-cbd	0.649
6	1980	cca	03-ray	0.424
7	1980	cca	04-uc	1.017
8	1980	cca	05-mr	0.158
9	1980	cca	06-sad	0.969
10	1980	cca	07-for	0.426
11	1980	cca	08-pak	1.049



View GDX File GAMS IDE

comdef: canal command characteristics

1980

1988

1993

	01-ud	02-cbd	03-ray	04-uc	05-mr	06-sad
cca	0.36	0.649	0.424	1.017	0.158	0.969
ccap	0.131	0.163	0.11	0.506	0.282	0.332
ceff	0.703	0.811	0.8	0.76	0.8	0.728
wce-r	0.57	0.573	0.45	0.57	0.57	0.522



GDXDiff

GDX file differ

Input file one

C:\InformsSD2009\cplex.gdx

Input file two

C:\InformsSD2009\xpress.gdx

Difference file

Eps

1e-8

RelEps

0.0

☐ Ignore Set text

Field to compare

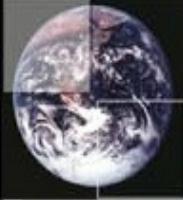
All fields

☐ FldOnly

☐ DiffOnly

✓ OK

✗ Cancel



GDXDiff

canaldiv: Differences

Level

Marginal

Lower

Upper

		dif1	dif2
05-mr	apr	0.044400	0.016300
	jul	0.216000	0.244100
06-sad	may	0.332000	0.331352
	jun	0.332000	0.328327



GDXMerge

* Generate a few gdx files

```
$call rm *.gdx
```

```
$call gamslib transport
```

```
$call gams transport lp=bdmlp gdx=bdmlp
```

```
$call gams transport lp=cplex gdx=cplex
```

```
$call gams transport lp=conopt gdx=conopt
```

```
$call gams transport lp=gurobi gdx=gurobi
```

```
$call gams transport lp=minos gdx=minos
```

```
$call gams transport lp=snopt gdx=snopt
```

```
$call gams transport lp=xa gdx=xa
```

```
$call gams transport lp=xpress gdx=xpress
```

```
$call gdxmerge *.gdx
```

```
$call shellexecute /verb=open merged.gdx
```



GDXMerge

		bdmlp	conopt	cplex	gurobi	minos	snopt	xa	xpress
seattle	new-york	50		50		50	50		
	chicago	300	300	300	300	300	300	300	300
san-diego	new-york	275	325	275	325	275	275	325	325
	topeka	275	275	275	275	275	275	275	275

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GDXXRW

Reading and writing Excel spreadsheets

Requires that MS Excel is installed



GDXXRW

	A	B	C	D	E	
1			one			
2			a	b	c	a
3	case1	red	11	12	13	
4		green	21	22	23	
5		blue	31	32	33	
6	case2	red	41	42	43	
7		green	51	52	53	
8		blue	61	62	63	
9	case3	red	71	72	73	
10		green	81	82	83	
11		blue	91	92	93	

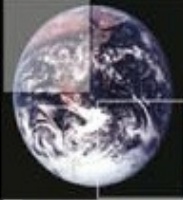
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GDXXRW

```
$call =gdxxrw.exe data1.xls cmerge=1 par=A rng=sheet1!A1  
rdim=2 cdim=2
```

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GDXXRW

case1	red	one	a	11
			b	12
			c	13
		two	a	14
			b	15
			c	16
	green	one	a	21
			b	22



GDXXRW

		one			two		
		a	b	c	a	b	c
case1	red	11	12	13	14	15	16
	green	21	22	23	24	25	26
	blue	31	32	33	34	35	36
case2	red	41	42	43	44	45	46
	green	51	52	53	54	55	56
	blue	61	62	63	64	65	66
case3	red	71	72	73	74	75	76
	green	81	82	83	84	85	86
	blue	91	92	93	94	95	96

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GDXXRW

XLSTalk utility

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GDXXRW

XLSTalk utility

Test if Excel is installed
Open / Close Excel file
Run an Excel Macro

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GDX API

Support for multiple languages

GAMS



GDX API

Support for multiple languages

C

C++

Delphi (Pascal)

Fortran

Java

Visual Basic

Support for multiple platforms

GAMS



GDX API

Support for multiple platforms

All platforms where GAMS is available



GDX API Examples / Documentation

A file explorer window showing the directory structure of GAMS23.3. The 'gdx' folder is selected and highlighted with a blue border.

- GAMS23.3
 - apifiles
 - common
 - examples
 - gamsx
 - gdx**
 - opt
 - coinfml
 - cplex
 - datalib_ml
 - Dictionaries

A file explorer window showing the contents of the 'gdx' folder. The files 'gdxioapi.pdf' and 'gdxioapi.chm' are circled in red.

- gdxinc
- gdxjava.java
- gdxioapi.pdf**
- gdxioapi.chm**
- gdx9glu.c
- gdx9def.f90
- gdxdpdef.pas
- gdxopdef.pas
- gdxocpdef.pas
- gdxdddec.inc
- gdxdcpdef.pas



Contacting GAMS

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