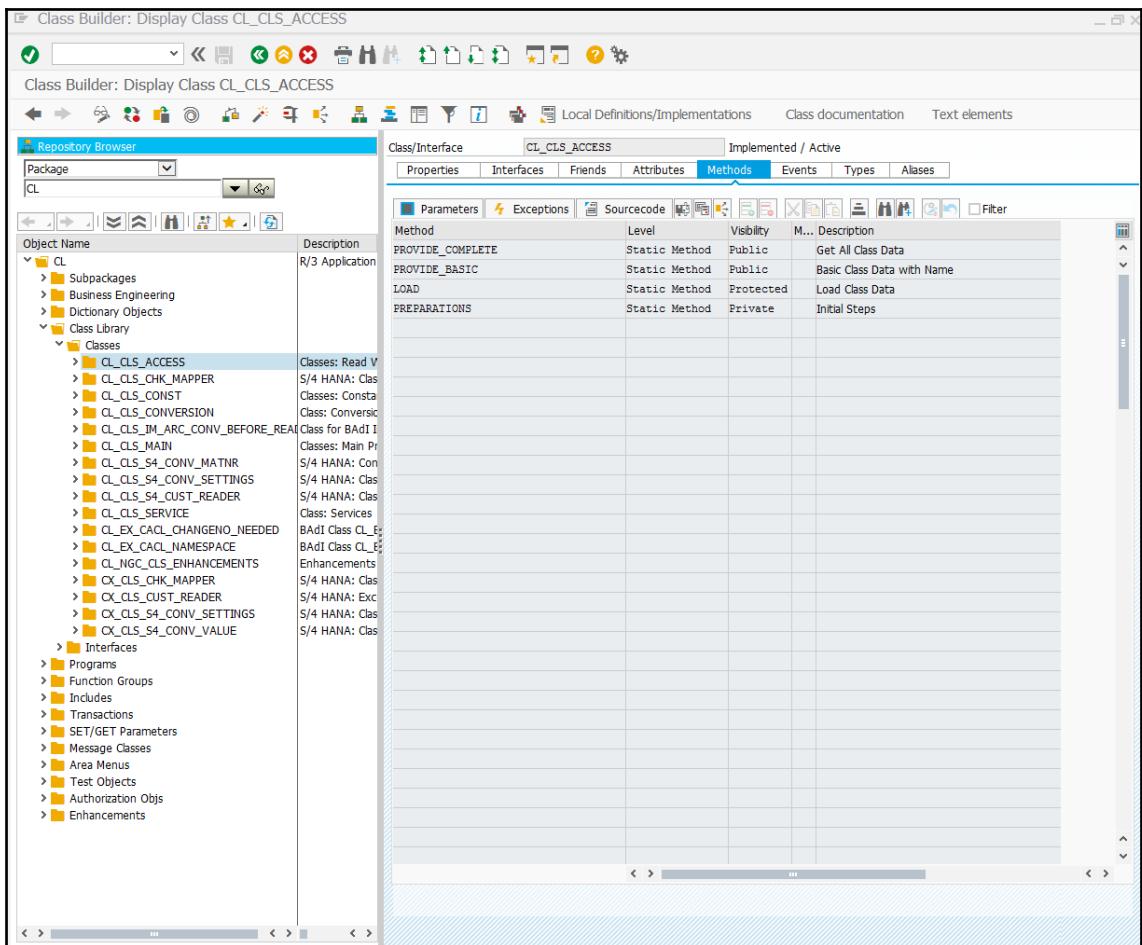
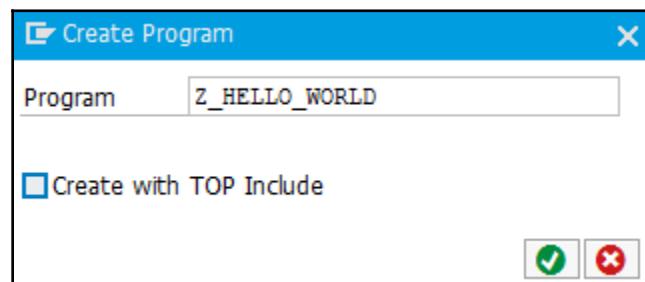
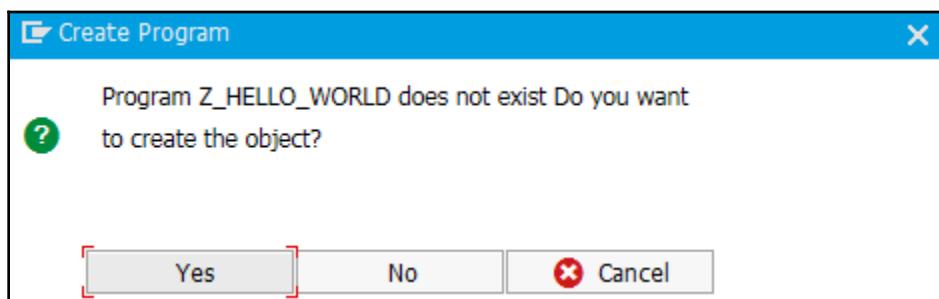
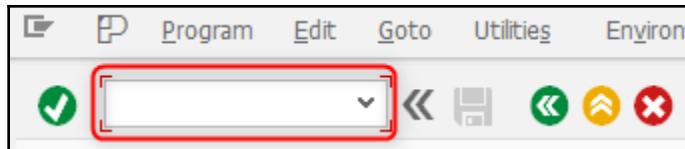


Graphic Bundle

Chapter 1: Creating Custom Code





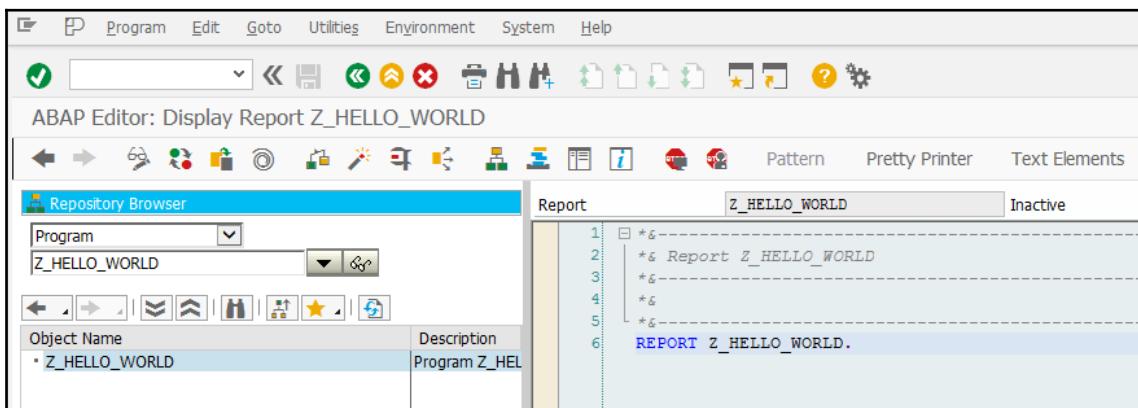
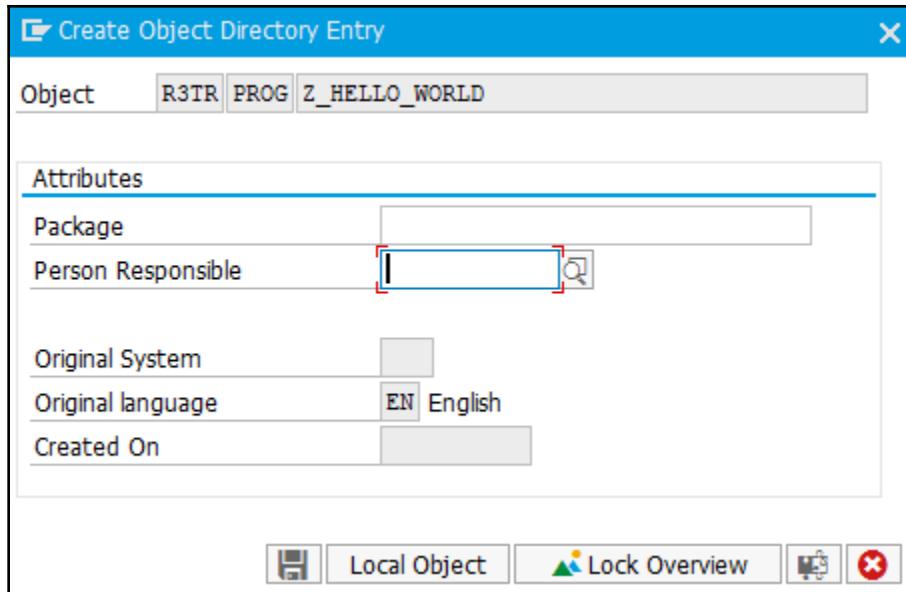
ABAP: Program Attributes Z_HELLO_WORLD Change

Title	Program Z_HELLO_WORLD	
Original language	EN	
Created		
Last Changed		
Status	New (Revised)	
Attributes		
Type	1 Executable program	
Status	Unclassified	
Authorization Group		
Application		
LDB name		
Selection screen		
ABAP Language Version	X Standard ABAP (Unicode)	
<input checked="" type="checkbox"/> Fixed point arithmetic		
<input type="checkbox"/> Editor lock		
<input type="checkbox"/> Start using variant		

Save   

Local Object

Graphic Bundle



Graphic Bundle

Report Z_HELLO_WORLD Inactive

```
1  *-<-->
2  *& Report Z_HELLO_WORLD
3  *-<-->
4  *&
5  *-<-->
6  REPORT Z_HELLO_WORLD.
7  WRITE 'Hello World'.
```



✓ Object activated



List Edit Goto System Help

Program Z_HELLO_WORLD

```
Program Z_HELLO_WORLD
Hello World
```

Graphic Bundle

Dictionary: Display Table

Transparent Table SFLIGHT Active

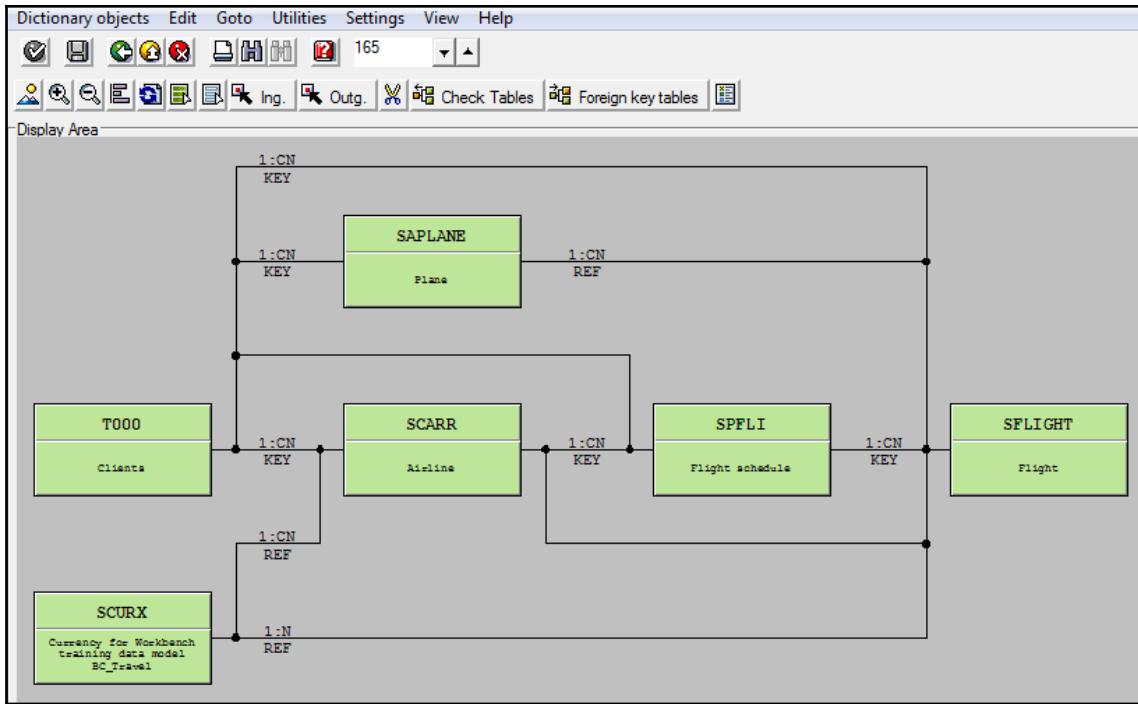
Short Description Flight

Attributes Delivery and Maintenance Fields Entry help/check Currency/Quantity Fields

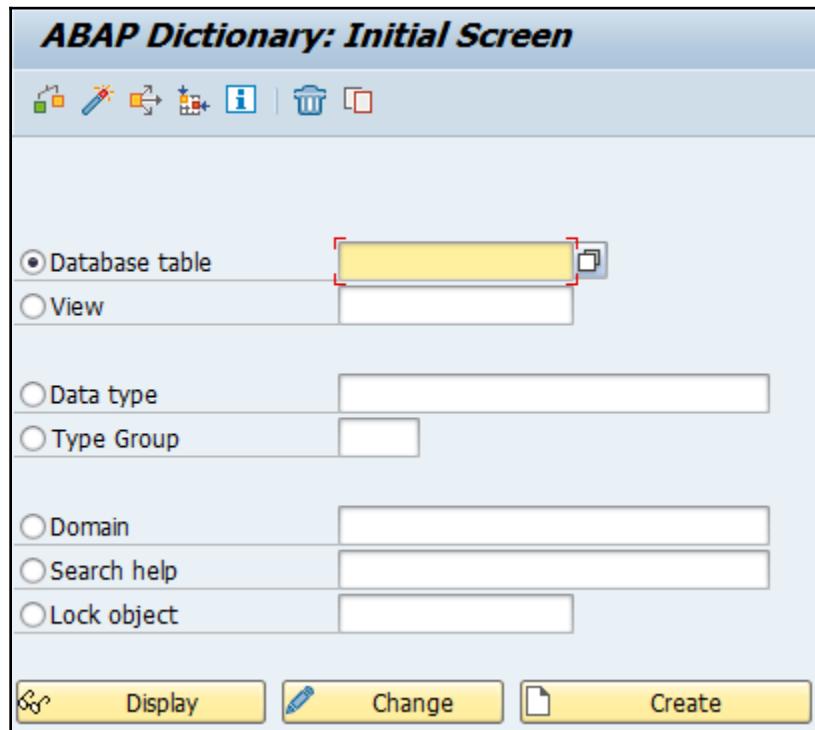
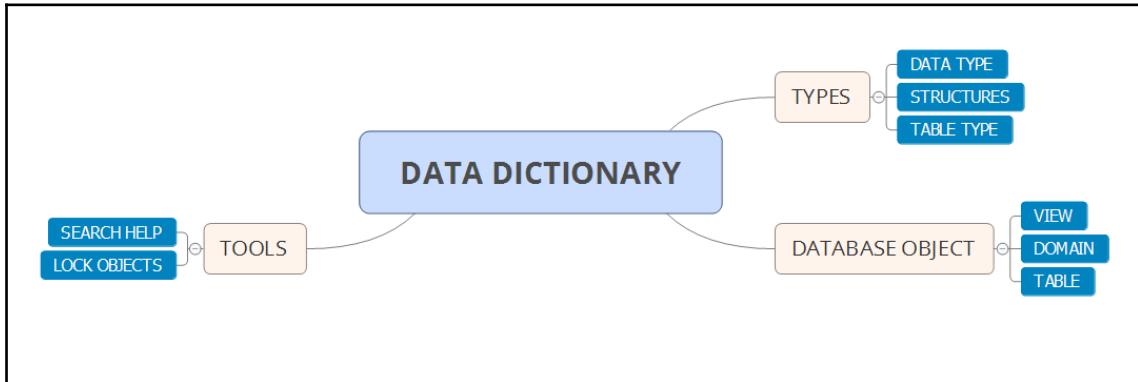
14

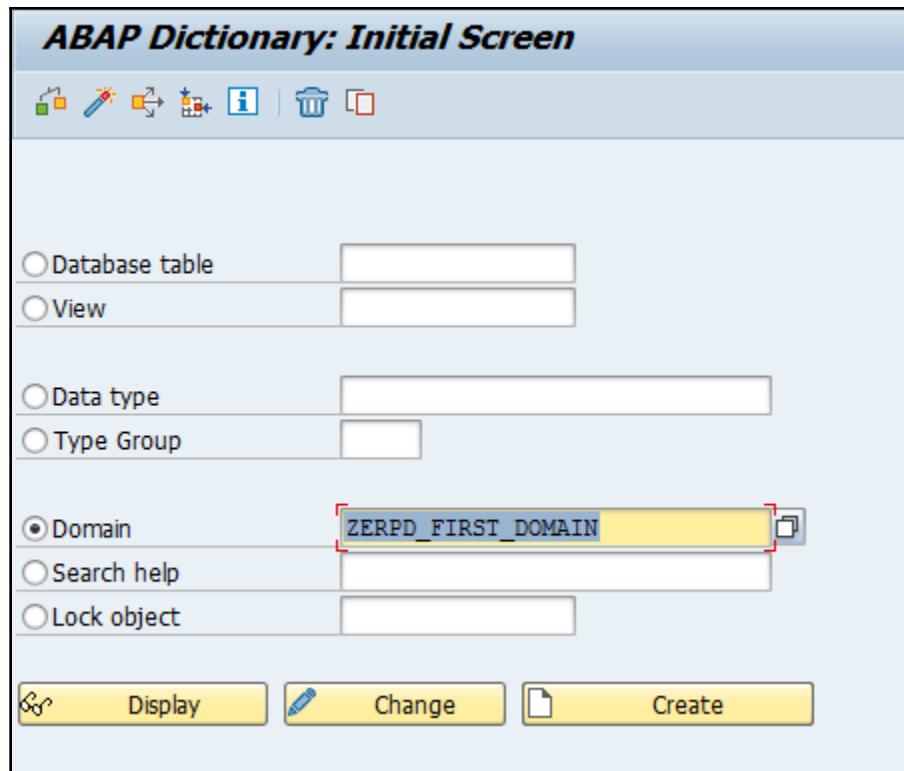
Field	Key In...	Data element	Data Type	Length	Deci...	Short Description
MANDT	<input checked="" type="checkbox"/>	S_MANDT	CLNT	3	0	Client
CARRID	<input checked="" type="checkbox"/>	S_CARR_ID	CHAR	3	0	Airline Code
CONNID	<input checked="" type="checkbox"/>	S_CONN_ID	NUMC	4	0	Flight Connection Number
FDATE	<input checked="" type="checkbox"/>	S_DATE	DATS	8	0	Flight date
PRICE	<input type="checkbox"/>	S_PRICE	CURR	15	2	Airfare
CURRENCY	<input type="checkbox"/>	S_CURRCODE	CUKY	5	0	Local currency of airline
PLANETYPE	<input type="checkbox"/>	S_PLANETYPE	CHAR	10	0	Aircraft Type
SEATSMAX	<input type="checkbox"/>	S_SEATSMAX	INT4	10	0	Maximum capacity in economy class
SEATSOCC	<input type="checkbox"/>	S_SEATSOCC	INT4	10	0	Occupied seats in economy class
PAYMENTSUM	<input type="checkbox"/>	S_SUM	CURR	17	2	Total of current bookings
SEATSMAX_B	<input type="checkbox"/>	S_SMAX_B	INT4	10	0	Maximum capacity in business class
SEATSOCC_B	<input type="checkbox"/>	S_SOCC_B	INT4	10	0	Occupied seats in business class
SEATSMAX_F	<input type="checkbox"/>	S_SMAX_F	INT4	10	0	Maximum capacity in first class
SEATSOCC_F	<input type="checkbox"/>	S_SOCC_F	INT4	10	0	Occupied seats in first class

Graphic Bundle



Chapter 2: The Basic Structure of ABAP





Dictionary: Change Domain

Domain: ZERPD_FIRST_DOMAIN Active
Short Description: First Domain

Properties Definition Value Range

Format

Data Type	CHAR	Character String
No. Characters	10	
Decimal Places	0	

Output Characteristics

Output Length	10
Convers. Routine	

Sign
 Lower Case

Domain: ZERPD_FIRST_DOMAIN Active
Short Description: First Domain

Properties Definition Value Range

Single Vals

I	Fix.Val.	Short Descript.
1	EXAMPLE 1	
2	EXAMPLE 2	

Tables Table Contents

Table LT_VALUE_DOMAIN

Attributes Standard [2x9(272)]

Insert Column Columns ...

Row	DOMNAME [C(30)]	VALPOS [N(4)]	DDLLANGUAGE [C(1)]	DOMVALUE_L [C(10)]
1	ZERPD_FIRST_DOMAIN	0001		1
2	ZERPD_FIRST_DOMAIN	0002		2

ABAP Dictionary: Initial Screen

Database table

View

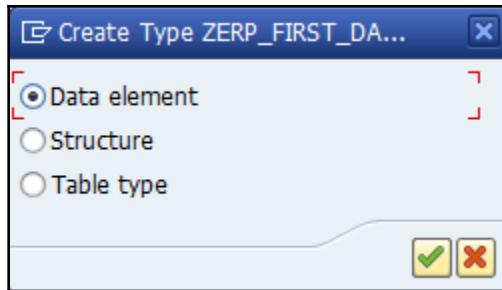
Data type

Type Group

Domain

Search help

Lock object



Dictionary: Change Data Element

Data element **ZERP_FIRST_DATAELEMENT** New(Revised)

Short Description First data element

Attributes Data Type Further Characteristics Field Label

Domain **ZERPD_FIRST_DOMAIN**

Data Type
Length Decimal Places

Predefined Type
Data Type
Length

Reference Type
Name of Ref. Type

Reference to Predefined Type
Data Type
Length

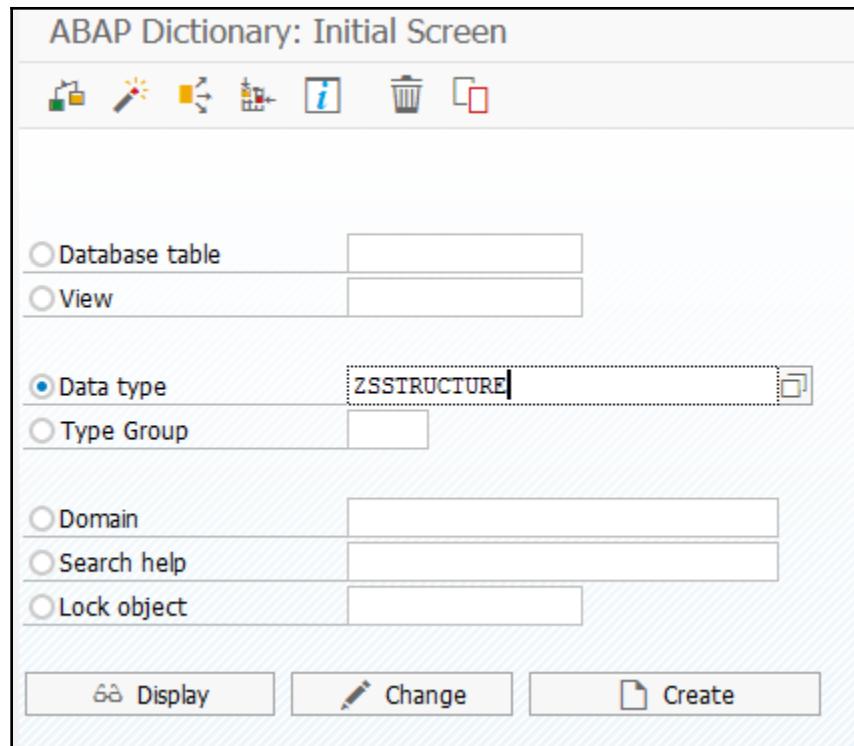
This screenshot shows the 'Dictionary: Change Data Element' interface. It displays a data element named 'ZERP_FIRST_DATAELEMENT' with a short description 'First data element'. The 'Data Type' tab is selected, showing the domain 'ZERPD_FIRST_DOMAIN' is chosen. Other options like 'Predefined Type' and 'Reference Type' are shown but not selected. Fields for data type, length, and decimal places are also visible.

Dictionary: Change Data Element

The screenshot shows the SAP Dictionary interface for changing a data element. The data element is named "ZERP_FIRST_DATAELEMENT" and is marked as "Active". The "Short Description" field contains the value "First data element", which is highlighted with a yellow background and a red border. Below the description, there are tabs for "Attributes", "Data Type", "Further Characteristics", and "Field Label". Under the "Data Type" tab, there is a table with four rows: "Short" (Length 10, Field Label "First DE"), "Medium" (Length 20, Field Label "First Data Element"), "Long" (Length 40, Field Label "First Data Element"), and "Heading" (Length 18, Field Label "First Data Element").

Class Builder: Change Class ZCL_FIRST_CLASS

The screenshot shows the SAP Class Builder interface for changing a class. The class name is "ZCL_FIRST_CLASS" and it is marked as "Implemented / Inactive". The "Properties" tab is selected. Below the tabs, there is a toolbar with icons for creating various class components. A table below shows the properties of the class: "Type" is "tt_type", "Visibility" is "public", "Typing" is "obe", and "Associated..." and "Description" are empty fields with a yellow background and a red border.



Structure **ZSSTRUCTURE** New(Revised)

Short Description Structure to test.

Attributes Components Entry help/check Currency/quantity fields

Component Type 5

Component	Typing Method	Component Type	Data Type	Length	Deci...	Short Description
CARRID	1 Types	S_CARR_ID	CHAR	3	0	Airline Code
CONNID	1 Types	S_CONN_ID	NUMC	4	0	Flight Connection Number
FDATE	1 Types	S_DATE	DATS	8	0	Flight date
PRICE	1 Types	S_PRICE	CURR	15	2	Airfare
VALUECHAR	1 Types		CHAR	3	0	

Graphic Bundle

Dictionary: Change Search Help

Elementary srch hlp: ZSEARCHEXAMPLE New(Revised)

Short description:

Attributes **Definition**

Data Collection

Selection method:

Text table:

Dialog Behavior

Dialog type: D Display values immediately

Hot key:

Enhanced Options

Proposal Search for Input Fields

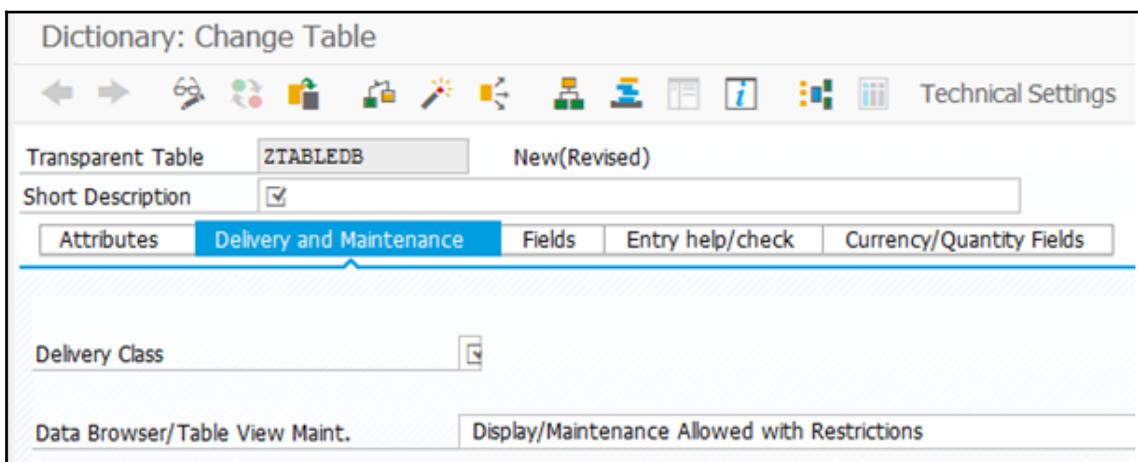
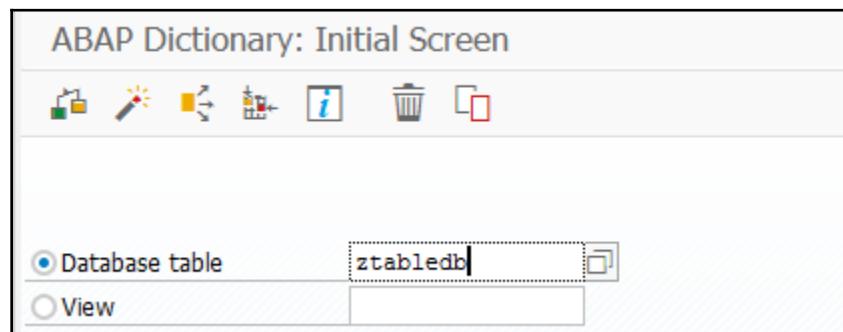
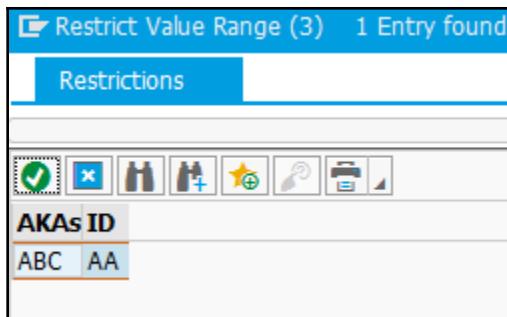
Full Text Fuzzy Search (Database-Specific)

Accuracy Value for Error-Tolerant Full Text Search: 0,8

Search help exit:

Parameter

Search help parameter	IMP	EXP	LPos	SPos	SDis	Data element	M...	Default value
	<input type="checkbox"/>							
	<input type="checkbox"/>							
	<input type="checkbox"/>							
	<input type="checkbox"/>							
	<input type="checkbox"/>							
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	<input type="checkbox"/>							
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input			



Graphic Bundle

Dictionary: Change Table

Transparent Table ZTABLEDB New(Revised)

Short Description Example

Attributes Delivery and Maintenance Fields Entry help/check Currency/Quantity Fields

Field	Key	Initial Values	Data element	Data Type	Length	Deci...	Short Description
MANDT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S_MANDT	CLNT	3	0	Client
CARRID	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S_CARR_ID	CHAR	3	0	Airline Code
CONNID	<input type="checkbox"/>	<input checked="" type="checkbox"/>	S_CONN_ID	NUMC	4	0	Flight Connection Number
FLDATE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	S_DATE	DATS	8	0	Flight date
VALUECHAR	<input type="checkbox"/>	<input type="checkbox"/>		CHAR	3	0	
	<input type="checkbox"/>	<input type="checkbox"/>					

Dictionary: Maintain Technical Settings

Revised<->Active

Name	ZTABLEDB	Transparent Table
Short Descript.	Example	
Last Changed	WCIESIELSKI	2019-05-10
Status	New	Not saved

General Properties **DB-Specific Properties**

Logical Storage Parameters

Data Class

Size Category

Buffering

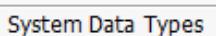
Buffering Not Allowed
 Buffering allowed but switched off
 Buffering Activated

Buffering Type

Single Records Buffered
 Generic Area Buffered Number of Key Fields
 Fully Buffered

Log Data Changes
 Write access only with JAVA

Possible Entries: Data Class	
Data Cl.	Description
APPLO	Master data, transparent tables
APPL1	Transaction data, transparent tables
APPL2	Organization and customizing
DDIM	Dimension Tables in BW
DFACT	Facts Table in BW
DODS	ODS Tables in BW

[] [] []

Possible Entries: Size Category		
	0 to	14 000
1	14 000 to	58 000
2	58 000 to	230 000
3	230 000 to	930 000
4	930 000 to	3 700 000
5	3 700 000 to	7 400 000
6	7 400 000 to	14 000 000
7	14 000 000 to	29 000 000
8	29 000 000 to	59 000 000
9	59 000 000 to	2,300000E+09

[] []

Chapter 3: Database Access in ABAP

Client	Airline	Flight No.	Flight Date	Airfare	Currency	Plane Type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
400	AA	17	20.05.2015	422,94	USD	747-400	385	375	193.508,04	31	31	21	19
400	AA	17	17.06.2015	422,94	USD	747-400	385	372	191.490,54	31	30	21	20
400	AA	17	15.07.2015	422,94	USD	747-400	385	374	193.596,86	31	29	21	21
400	AA	17	12.08.2015	422,94	USD	747-400	385	366	190.259,80	31	30	21	20
400	AA	17	09.09.2015	422,94	USD	747-400	385	373	195.246,25	31	31	21	21
400	AA	17	07.10.2015	422,94	USD	747-400	385	373	190.475,54	31	30	21	19
400	AA	17	04.11.2015	422,94	USD	747-400	385	363	186.889,01	31	30	21	19
400	AA	17	02.12.2015	422,94	USD	747-400	385	374	193.190,71	31	29	21	20
400	AA	17	30.12.2015	422,94	USD	747-400	385	371	193.537,46	31	30	21	21
400	AA	17	27.01.2016	422,94	USD	747-400	385	124	64.045,87	31	9	21	7
400	AA	17	24.02.2016	422,94	USD	747-400	385	77	39.904,41	31	6	21	4
400	AA	17	23.03.2016	422,94	USD	747-400	385	143	73.781,98	31	11	21	8
400	AA	17	20.04.2016	422,94	USD	747-400	385	84	44.002,81	31	7	21	5
400	AA	17	18.05.2016	422,94	USD	747-400	385	41	20.423,81	31	3	21	2
400	AA	17	15.06.2016	422,94	USD	747-400	385	0	0,00	31	0	21	0

Graphic Bundle

Client	Airline	Flight No.	Date	Price	Currency	Pl.type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
400	AA	17					0	0	0	0	0	0	0
400	AA	64					0	0	0	0	0	0	0
400	AZ	555					0	0	0	0	0	0	0
400	AZ	788					0	0	0	0	0	0	0
400	AZ	789					0	0	0	0	0	0	0
400	AZ	790					0	0	0	0	0	0	0
400	DL	106					0	0	0	0	0	0	0
400	DL	1699					0	0	0	0	0	0	0
400	DL	1984					0	0	0	0	0	0	0
400	JL	407					0	0	0	0	0	0	0
400	JL	408					0	0	0	0	0	0	0
400	LH	400					0	0	0	0	0	0	0
400	LH	401					0	0	0	0	0	0	0
400	LH	402					0	0	0	0	0	0	0
400	LH	2402					0	0	0	0	0	0	0
400	LH	2407					0	0	0	0	0	0	0

Client	Airline	Flight No.	Date	Price	Currency	Pl.type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
001	AA						0	0	0	0	0	0	0
006	AA						0	0	0	0	0	0	0
006	AA						0	0	0	0	0	0	0
006	AA						0	0	0	0	0	0	0

Graphic Bundle

Client	Airline	Flight No.	Date	Price	Currency	Pl.type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	17					0	0		0	0	0	0
	AA	64					0	0		0	0	0	0
	AA	64					0	0		0	0	0	0
	AA	64					0	0		0	0	0	0

Client	Airline	Flight No.	Flight Date	Airfare	Currency	Pl.type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0
	AA	17	20.05.2015	422,94			0	0		0	0	0	0
	AA	17	17.06.2015	422,94			0	0		0	0	0	0
	AA	17	15.07.2015	422,94			0	0		0	0	0	0
	AA	17	12.08.2015	422,94			0	0		0	0	0	0
	AA	17	09.09.2015	422,94			0	0		0	0	0	0
	AA	17	07.10.2015	422,94			0	0		0	0	0	0
	AA	17	04.11.2015	422,94			0	0		0	0	0	0
	AA	17	02.12.2015	422,94			0	0		0	0	0	0

Graphic Bundle

Client	Airline	Flight No.	Date	Price	Currency	Pl.type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	401					0	0		0	0	0	0
	LH	401					0	0		0	0	0	0
	LH	401					0	0		0	0	0	0
	LH	401					0	0		0	0	0	0
	LH	401					0	0		0	0	0	0

Client	Airline	Flight No.	Date	Price	Currency	Pl.type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0

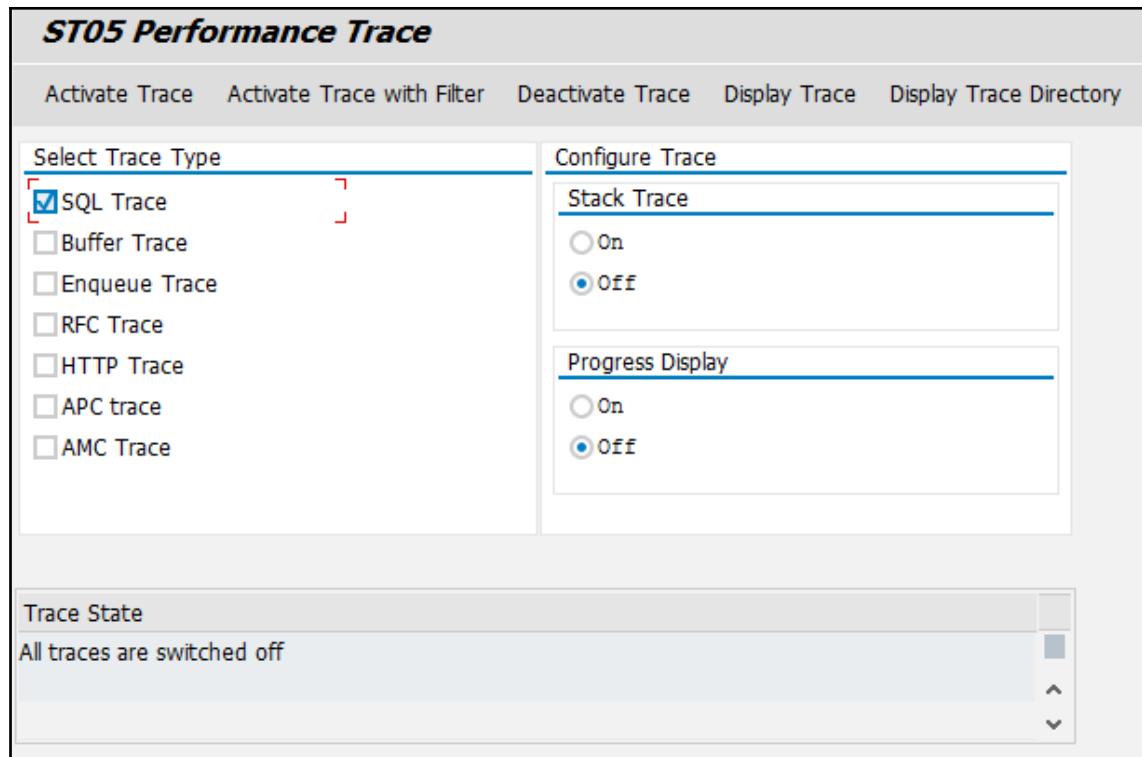
Client	Airline	Flight No.	Date	Price	Currency	Pl.type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
	AA	17					0	0		0	0	0	0
	AA	64					0	0		0	0	0	0
	AZ	555					0	0		0	0	0	0
	AZ	788					0	0		0	0	0	0
	AZ	789					0	0		0	0	0	0
	AZ	790					0	0		0	0	0	0
	DL	106					0	0		0	0	0	0
	DL	1699					0	0		0	0	0	0
	DL	1984					0	0		0	0	0	0
	JL	407					0	0		0	0	0	0
	JL	408					0	0		0	0	0	0
	LH	400					0	0		0	0	0	0
	LH	401					0	0		0	0	0	0
	LH	402					0	0		0	0	0	0
	LH	2402					0	0		0	0	0	0
	LH	2407					0	0		0	0	0	0
	QF	5					0	0		0	0	0	0
	QF	6					0	0		0	0	0	0
	SQ	2					0	0		0	0	0	0
	SQ	15					0	0		0	0	0	0
	SQ	158					0	0		0	0	0	0
	SQ	988					0	0		0	0	0	0
	UA	941					0	0		0	0	0	0
	UA	3504					0	0		0	0	0	0
	UA	3516					0	0		0	0	0	0
	UA	3517					0	0		0	0	0	0

Client	Airline	Flight No.	Date	Price	Currency	Plane Type	Capacity	Occupied	Total	Capacity	Occupied	Capacity	Occupied
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0
	AA	17				747-400	0	0		0	0	0	0

Client	Airline	Flight No.	Flight Date	Country	Depart.cit	Depart	Country	Dest.	Target
400	AA	17	20.05.2015						
400	AA	17	17.06.2015						
400	AA	17	15.07.2015						
400	AA	17	12.08.2015						
400	AA	17	09.09.2015						
400	AA	17	07.10.2015						
400	AA	17	04.11.2015						
400	AA	17	02.12.2015						
400	AA	17	30.12.2015						
400	AA	17	27.01.2016						
400	AA	17	24.02.2016						
400	AA	17	23.03.2016						
400	AA	17	20.04.2016						
400	AA	17	18.05.2016						
400	AA	17	15.06.2016						
400	AA	64	22.05.2015						
400	AA	64	19.06.2015						
400	AA	64	17.07.2015						
400	AA	64	14.08.2015						

Client	Airline	Flight No.	Date	Country	Depart. city	Depart	Country	Arrival city	Target
400	AA	17	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	
400	AA	64	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	
400	AZ	555	IT	ROME	FCO	DE	FRANKFURT	FRA	
400	AZ	788	IT	ROME	FCO	JP	TOKYO	TYO	
400	AZ	789	JP	TOKYO	TYO	IT	ROME	FCO	
400	AZ	790	IT	ROME	FCO	JP	OSAKA	KIX	
400	DL	106	US	NEW YORK	JFK	DE	FRANKFURT	FRA	
400	DL	1699	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	
400	DL	1984	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	
400	JL	407	JP	TOKYO	NRT	DE	FRANKFURT	FRA	
400	JL	408	DE	FRANKFURT	FRA	JP	TOKYO	NRT	
400	LH	400	DE	FRANKFURT	FRA	US	NEW YORK	JFK	
400	LH	401	US	NEW YORK	JFK	DE	FRANKFURT	FRA	
400	LH	402	DE	FRANKFURT	FRA	US	NEW YORK	JFK	
400	LH	2402	DE	FRANKFURT	FRA	DE	BERLIN	SXF	
400	LH	2407	DE	BERLIN	TXL	DE	FRANKFURT	FRA	
400	QF	5	SG	SINGAPORE	SIN	DE	FRANKFURT	FRA	
400	QF	6	DE	FRANKFURT	FRA	SG	SINGAPORE	SIN	
400	SQ	2	SG	SINGAPORE	SIN	US	SAN FRANCISCO	SFO	
400	SQ	15	US	SAN FRANCISCO	SFO	SG	SINGAPORE	SIN	
400	SQ	158	SG	SINGAPORE	SIN	ID	JAKARTA	JKT	
400	SQ	988	SG	SINGAPORE	SIN	JP	TOKYO	TYO	
400	UA	941	DE	FRANKFURT	FRA	US	SAN FRANCISCO	SFO	
400	UA	3504	US	SAN FRANCISCO	SFO	DE	FRANKFURT	FRA	
400	UA	3516	US	NEW YORK	JFK	DE	FRANKFURT	FRA	
400	UA	3517	DE	FRANKFURT	FRA	US	NEW YORK	JFK	

Client	Airline	Flight No.	Flight Date	Country	Depart. city	Depart	Country	Arrival city	Target
400	AA	17	20.05.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	17.06.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	15.07.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	12.08.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	09.09.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	07.10.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	04.11.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	02.12.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	30.12.2015	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	27.01.2016	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	24.02.2016	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	23.03.2016	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	20.04.2016	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	18.05.2016	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	17	15.06.2016	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO
400	AA	64	22.05.2015	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK
400	AA	64	19.06.2015	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK
400	AA	64	17.07.2015	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK
400	AA	64	14.08.2015	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK



ST05 Filter Conditions for Trace Records

Trace Types

<input checked="" type="checkbox"/> SQL Trace	<input type="checkbox"/> BUF Trace	<input type="checkbox"/> Enqueue Trace
<input type="checkbox"/> RFC Trace	<input type="checkbox"/> HTTP Trace	
<input type="checkbox"/> APC Trace	<input type="checkbox"/> AMC Trace	

Trace Period

Date	<input type="text"/>	To	<input style="border: 1px solid red; outline: 2px solid red; width: 20px; height: 20px; vertical-align: middle;" type="text"/>
Time	<input type="text"/>	To	<input type="text"/>

Trace Filter

Client	<input type="text"/>	
User Name	<input type="text"/>	
Object Name	<input type="text"/>	
Duration [Microsecs]	<input type="text"/>	
Executed Operation	<input type="text"/>	
Database Connection	<input type="text"/>	
Database Connection ID	<input type="text"/>	
Work Process ID	<input type="text"/>	
Transaction ID	<input type="text"/>	
EPP Root Context ID	<input type="text"/>	
EPP Connection ID	<input type="text"/>	
EPP Connection Counter	<input type="text"/>	

No. of Records

Performance Analysis: Trace Display (Main Records)

Start Time	ΣDuration	ΣRecords	Program Name	Object Name	Statement
	= 2.050	= 356			
19:56:37.010	2.046	356	Z_MASTERING	SFLIGHT, SPFLI	SELECT <JOIN> WHERE "SF"."MANDT" = '800' /* R3:Z_MASTERING:22 T:SFLIGHT M:800 */ /*unc. rd.*/

Runtime Analysis

Tips & Tricks

Measr. **Evaluate**

Measurement

The measurement times are reliable

Short Description **DEFAULT**

Settings

Variant **DEFAULT** From User

In Dialog

Transaction
 Program
 Function Module
 Eval. Immediately Execute

In Parallel Session

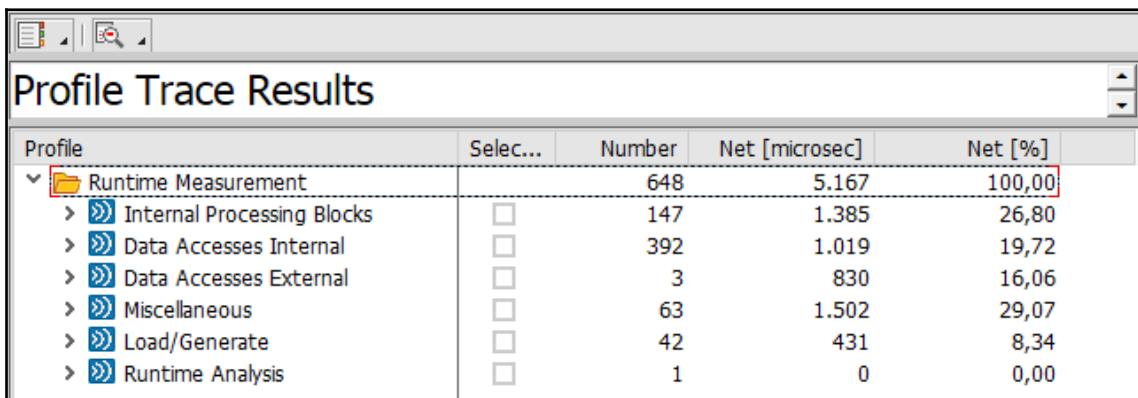
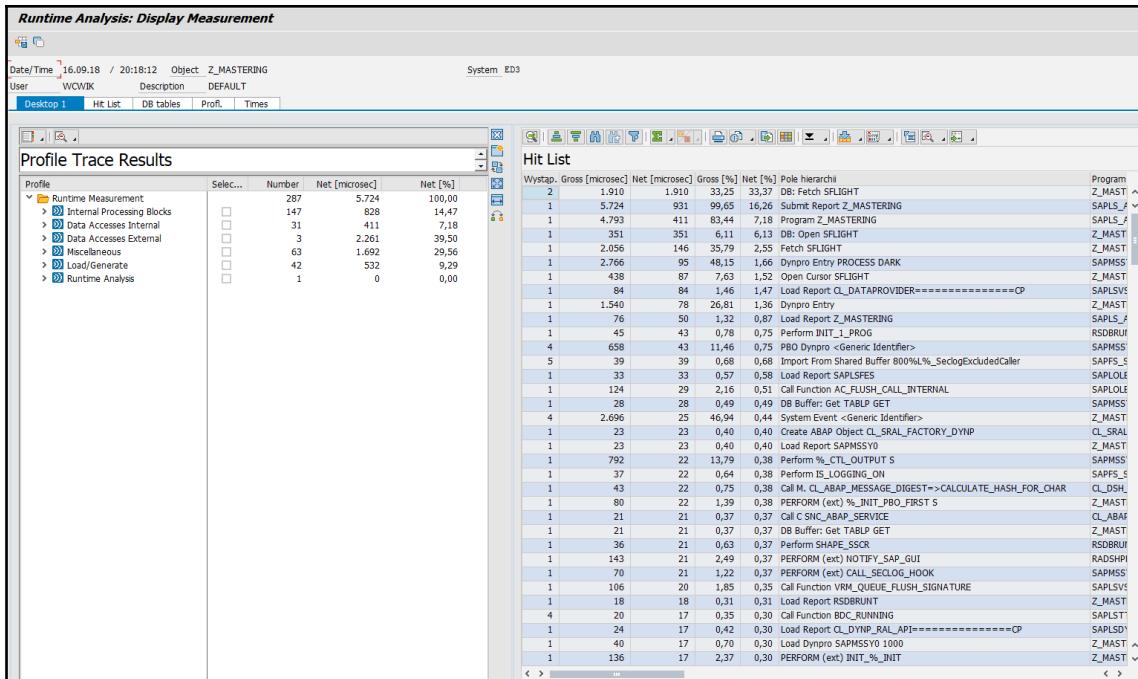
Switch On/Off
 Evaluate Immediately

For User/Service

Schedule

Data Formatting

Determine Names of Internal Tables

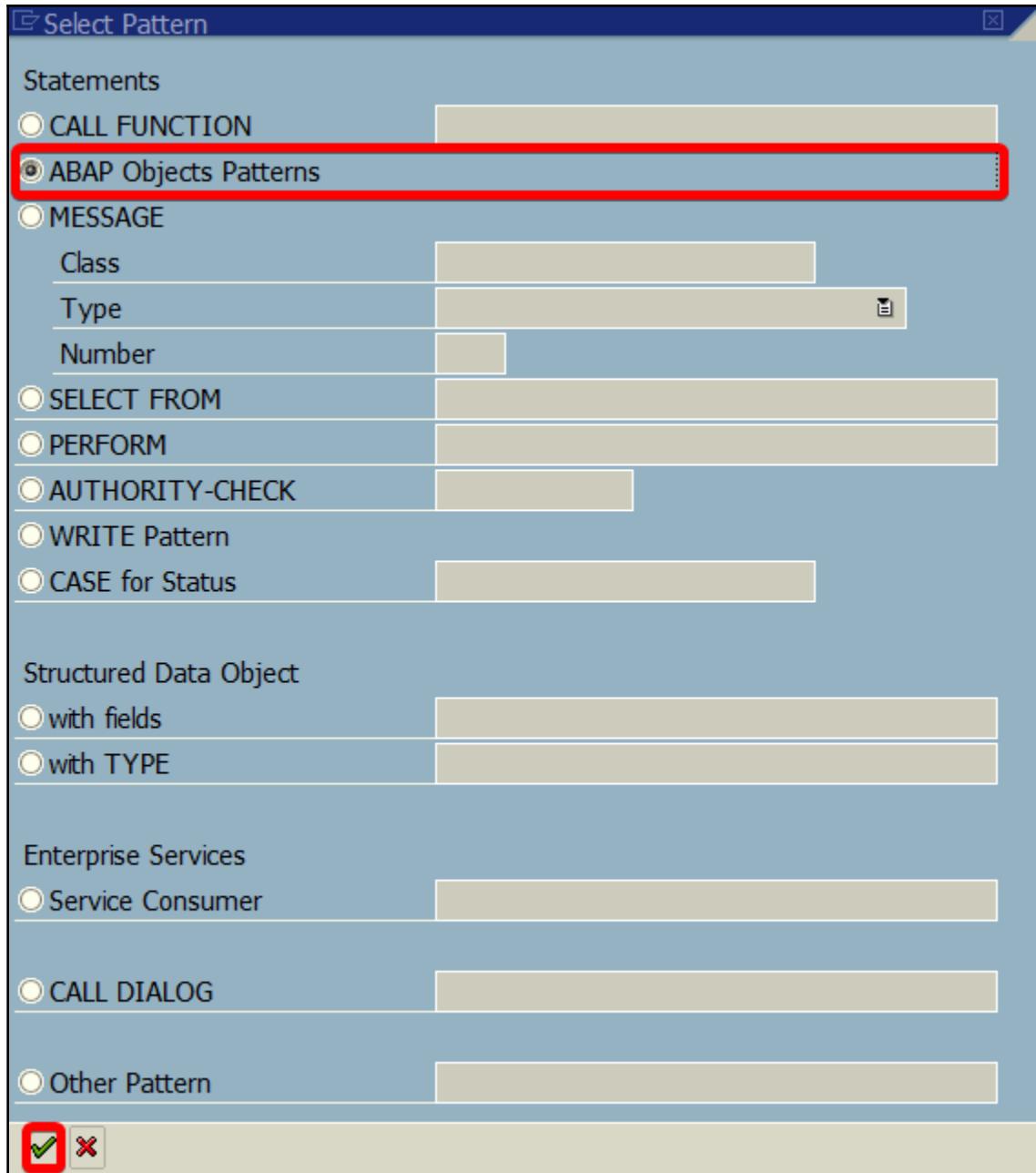


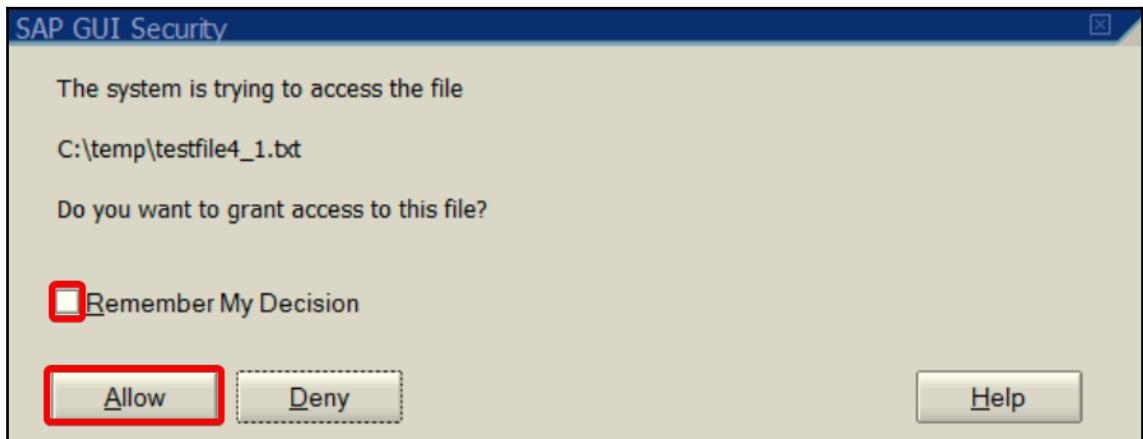
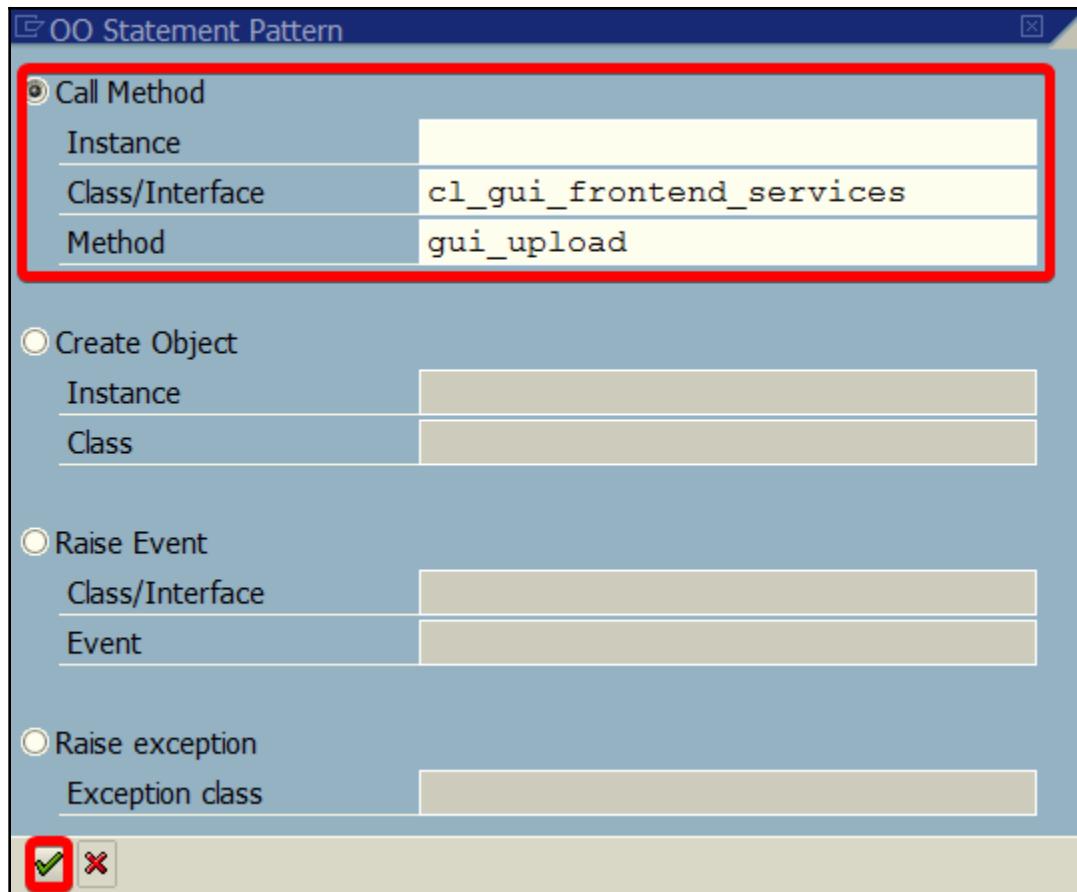
Profile	Selec...	Number	Net [microsec]	Net [%]
Runtime Measurement		1.354	5.983	100,00
> Internal Processing Blocks	<input type="checkbox"/>	147	764	12,77
> Data Accesses Internal	<input type="checkbox"/>	1.098	2.427	40,56
> Data Accesses External	<input type="checkbox"/>	3	937	15,66
> Miscellaneous	<input type="checkbox"/>	63	1.435	23,98
> Load/Generate	<input type="checkbox"/>	42	420	7,02
> Runtime Analysis	<input type="checkbox"/>	1	0	0,00

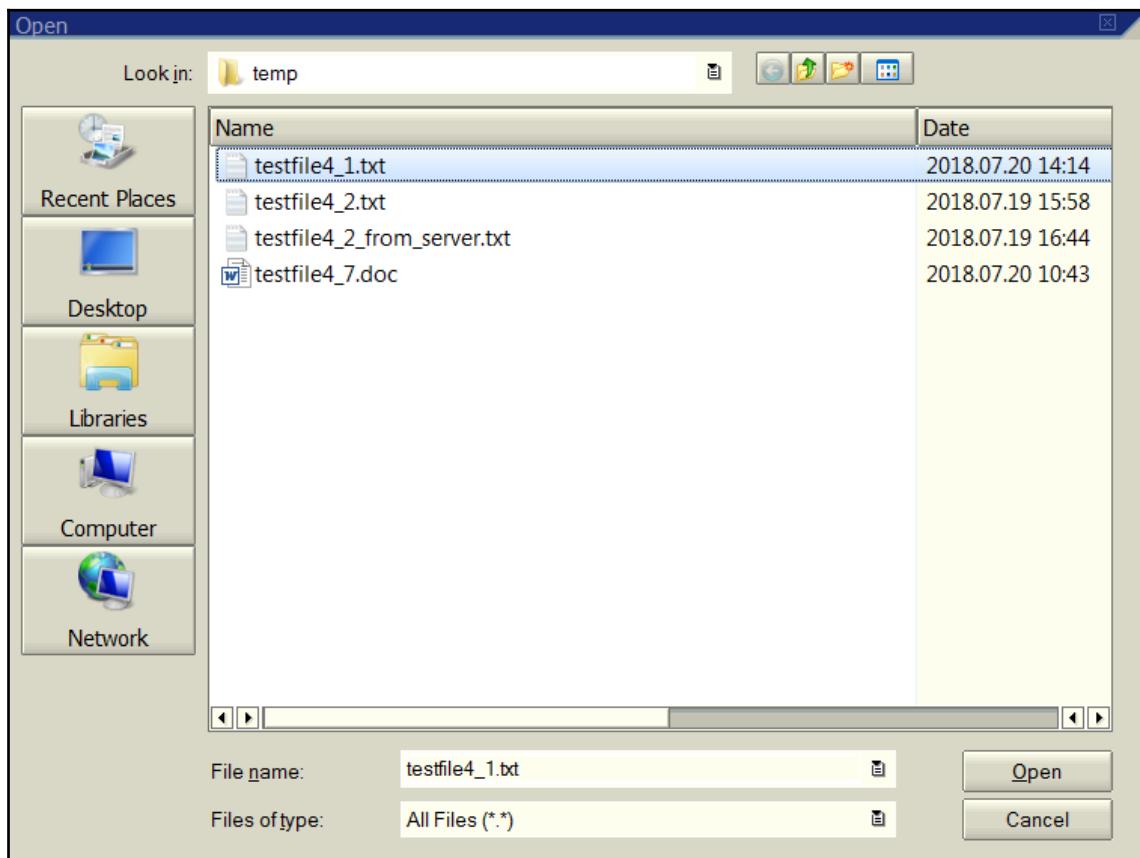
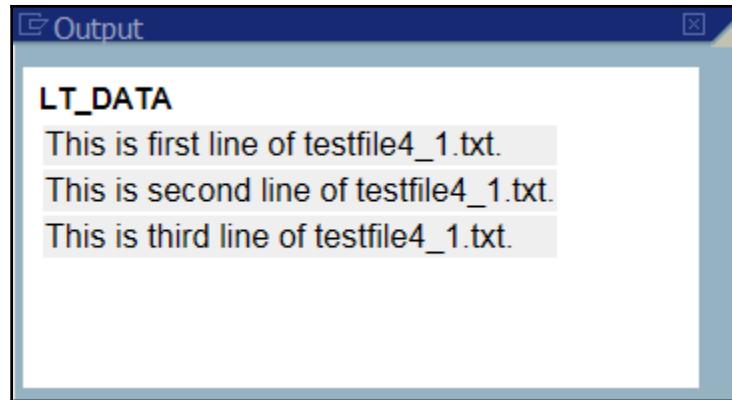
Profile	Selec...	Number	Net [microsec]	Net [%]
Runtime Measurement		286	5.011	100,00
> Internal Processing Blocks	<input type="checkbox"/>	147	747	14,91
> Data Accesses Internal	<input type="checkbox"/>	30	358	7,14
> Data Accesses External	<input type="checkbox"/>	3	2.034	40,59
> Miscellaneous	<input type="checkbox"/>	63	1.463	29,20
> Load/Generate	<input type="checkbox"/>	42	409	8,16
> Runtime Analysis	<input type="checkbox"/>	1	0	0,00

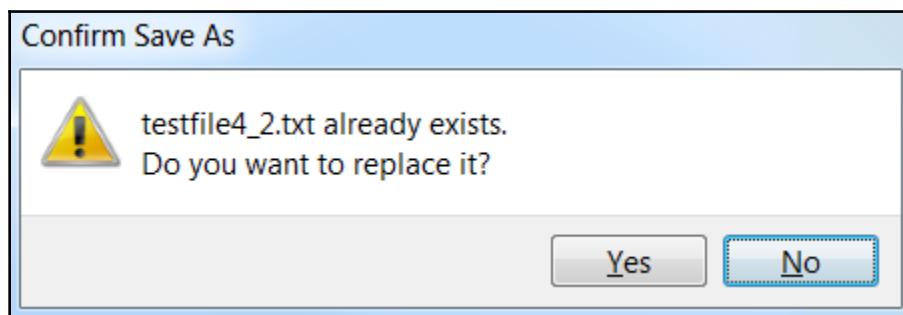
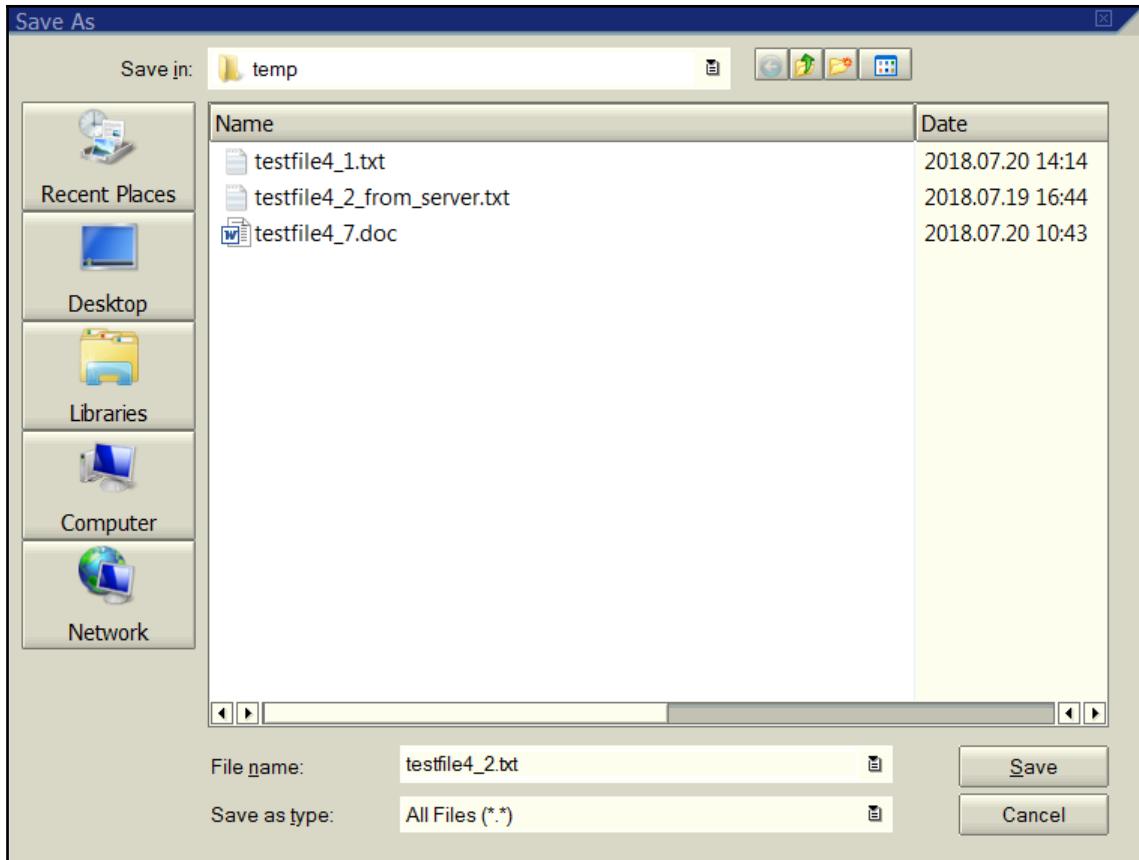
Chapter 4: Import and Export to Document Formats

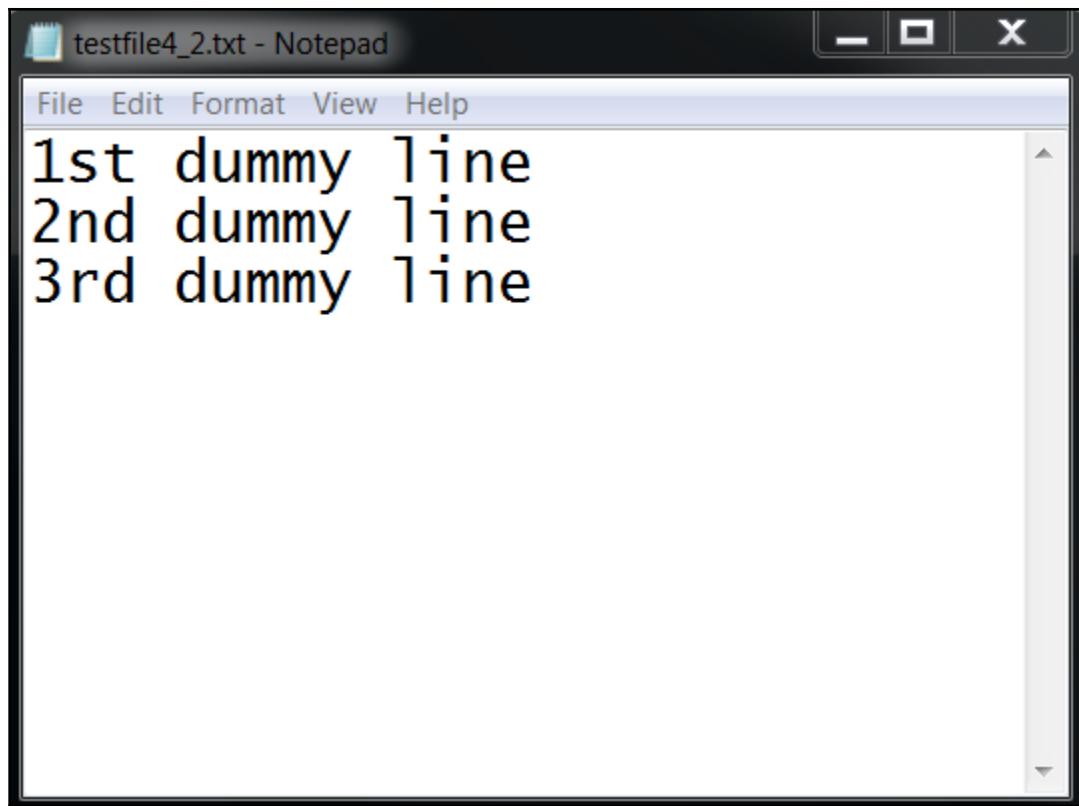


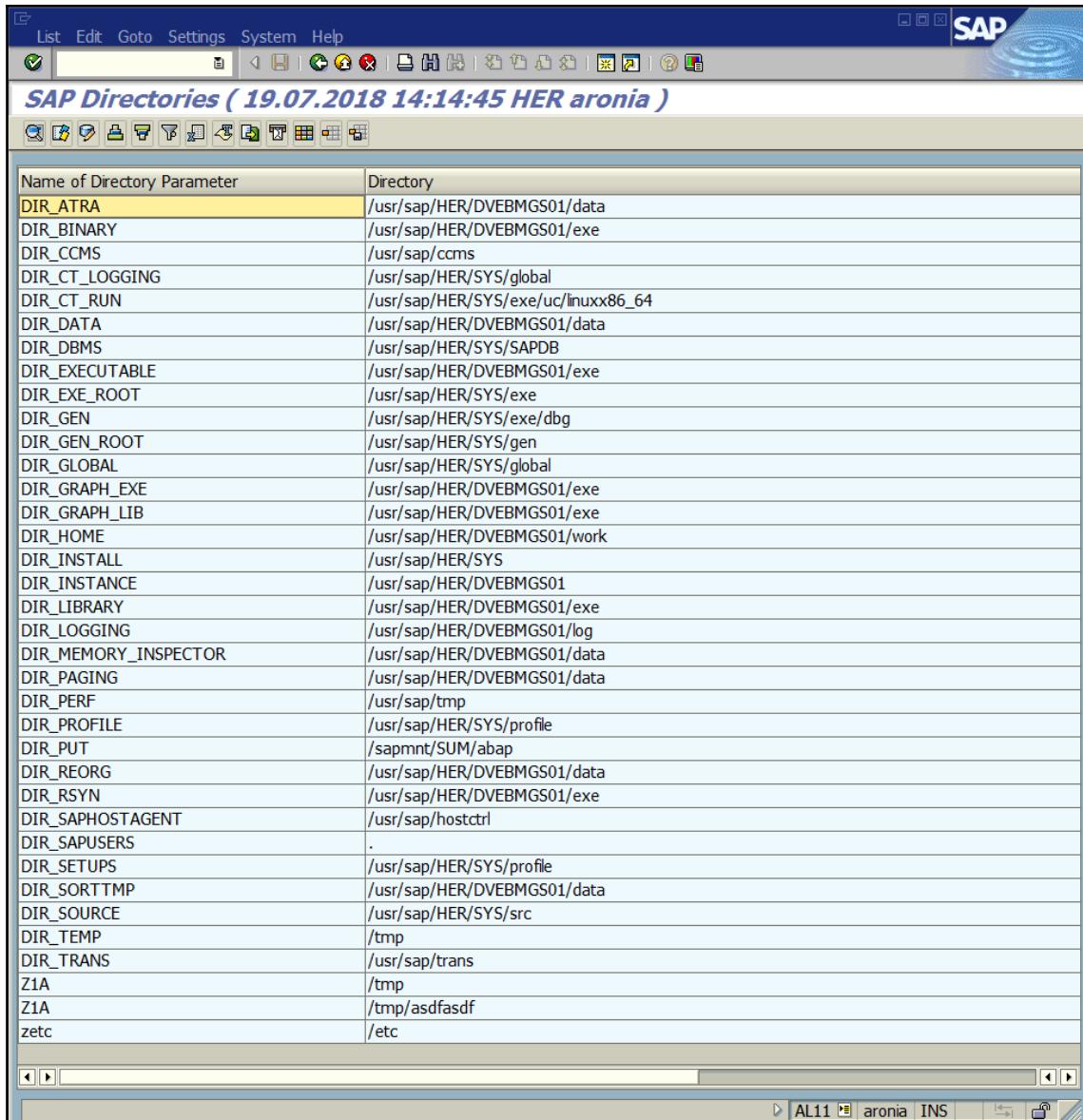








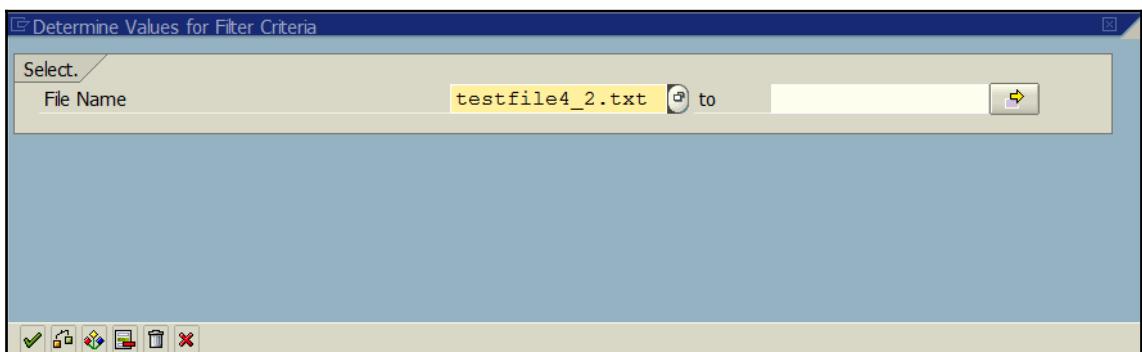
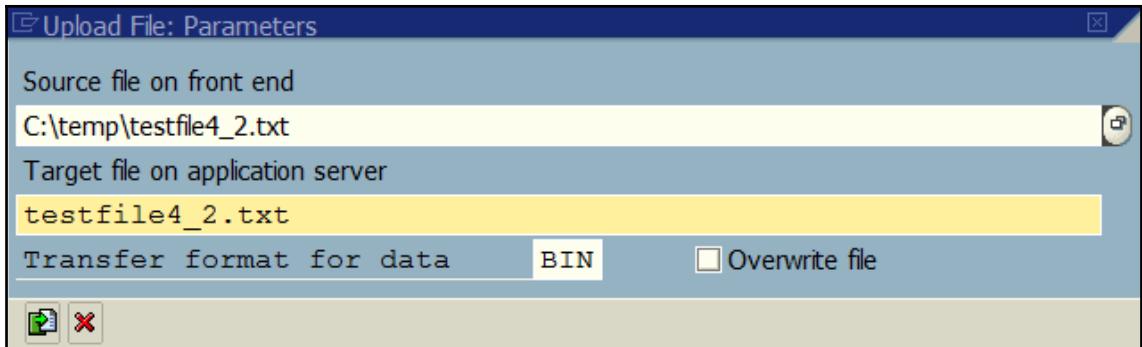




The screenshot shows the SAP GUI interface with the title bar "SAP Directories (19.07.2018 14:14:45 HER aronia)". The main area displays a table of SAP directory parameters and their corresponding paths. The table has two columns: "Name of Directory Parameter" and "Directory". The "Name of Directory Parameter" column lists various system paths, many of which are highlighted in yellow. The "Directory" column lists the full absolute path for each parameter. The SAP logo is visible in the top right corner of the title bar.

Name of Directory Parameter	Directory
DIR_ATRA	/usr/sap/HER/DVEBMGS01/data
DIR_BINARY	/usr/sap/HER/DVEBMGS01/exe
DIR_CCMS	/usr/sap/ccms
DIR_CT_LOGGING	/usr/sap/HER/SYS/global
DIR_CT_RUN	/usr/sap/HER/SYS/exe\uc/linuxx86_64
DIR_DATA	/usr/sap/HER/DVEBMGS01/data
DIR_DBMS	/usr/sap/HER/SYS/SAPDB
DIR_EXECUTABLE	/usr/sap/HER/DVEBMGS01/exe
DIR_EXE_ROOT	/usr/sap/HER/SYS/exe
DIR_GEN	/usr/sap/HER/SYS/exe/dbg
DIR_GEN_ROOT	/usr/sap/HER/SYS/gen
DIR_GLOBAL	/usr/sap/HER/SYS/global
DIR_GRAPH_EXE	/usr/sap/HER/DVEBMGS01/exe
DIR_GRAPH_LIB	/usr/sap/HER/DVEBMGS01/exe
DIR_HOME	/usr/sap/HER/DVEBMGS01/work
DIR_INSTALL	/usr/sap/HER/SYS
DIR_INSTANCE	/usr/sap/HER/DVEBMGS01
DIR_LIBRARY	/usr/sap/HER/DVEBMGS01/exe
DIR_LOGGING	/usr/sap/HER/DVEBMGS01/log
DIR_MEMORY_INSPECTOR	/usr/sap/HER/DVEBMGS01/data
DIR_PAGING	/usr/sap/HER/DVEBMGS01/data
DIR_PERF	/usr/sap/tmp
DIR_PROFILE	/usr/sap/HER/SYS/profile
DIR_PUT	/sapmnt/SUM/abap
DIR_REORG	/usr/sap/HER/DVEBMGS01/data
DIR_R5YN	/usr/sap/HER/DVEBMGS01/exe
DIR_SAPHOSTAGENT	/usr/sap/hostctrl
DIR_SAPUSERS	.
DIR_SETUPS	/usr/sap/HER/SYS/profile
DIR_SORTTMP	/usr/sap/HER/DVEBMGS01/data
DIR_SOURCE	/usr/sap/HER/SYS/src
DIR_TEMP	/tmp
DIR_TRANS	/usr/sap/trans
Z1A	/tmp
Z1A	/tmp/asdfasdf
zetc	/etc

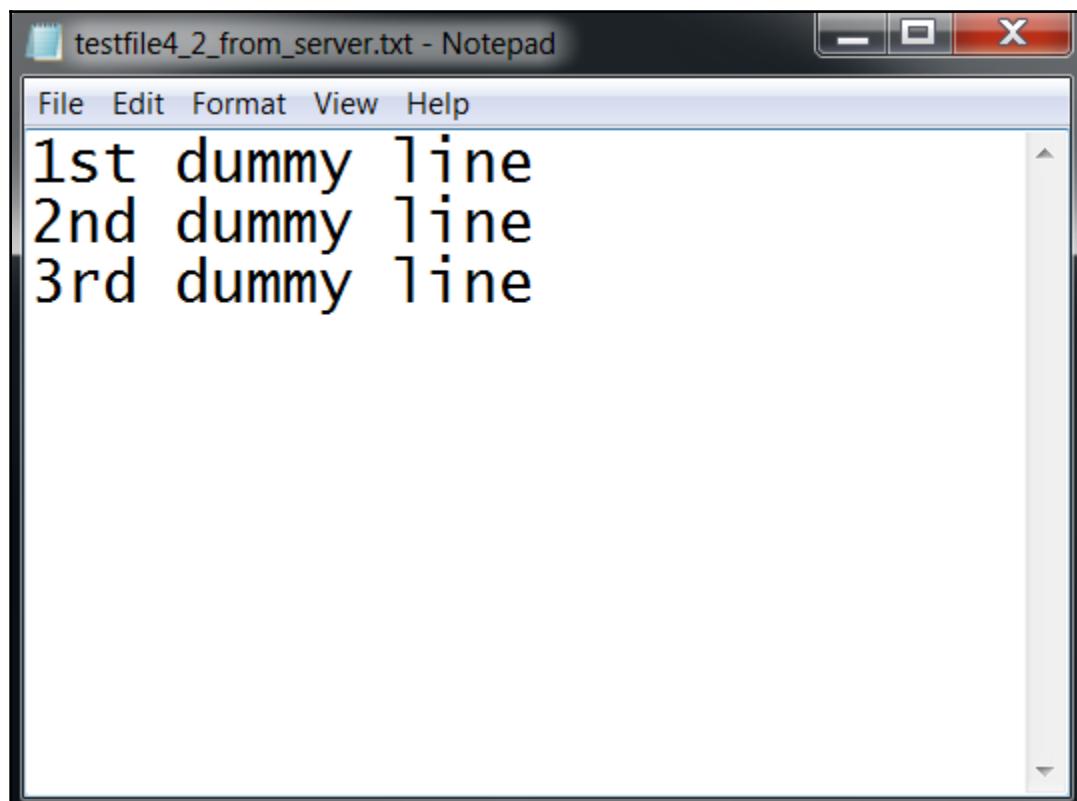
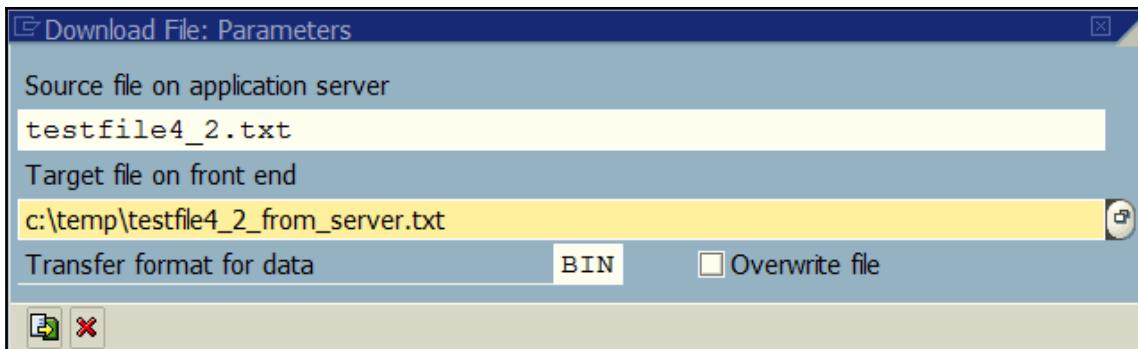
Graphic Bundle

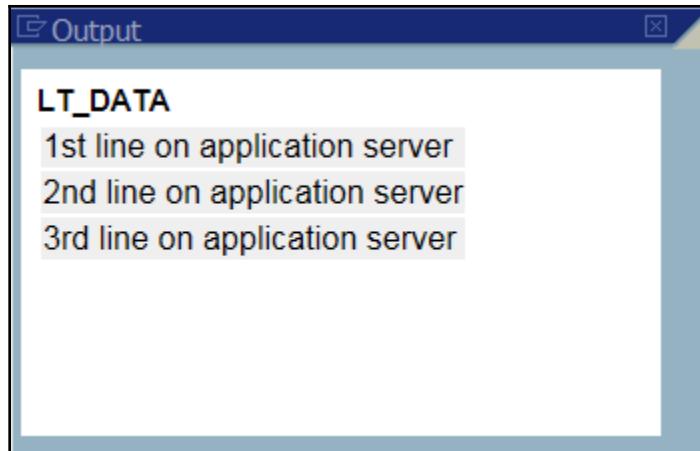


Usable	Viewed	Changed	Length	Owner	Lastchange	Lastchange	File Name
X			48	heradm	20.07.2018	15:16:48	testfile4_2.txt

```
Directory: .
Name:      testfile4_2.txt

1st dummy line
2nd dummy line
3rd dummy line
```

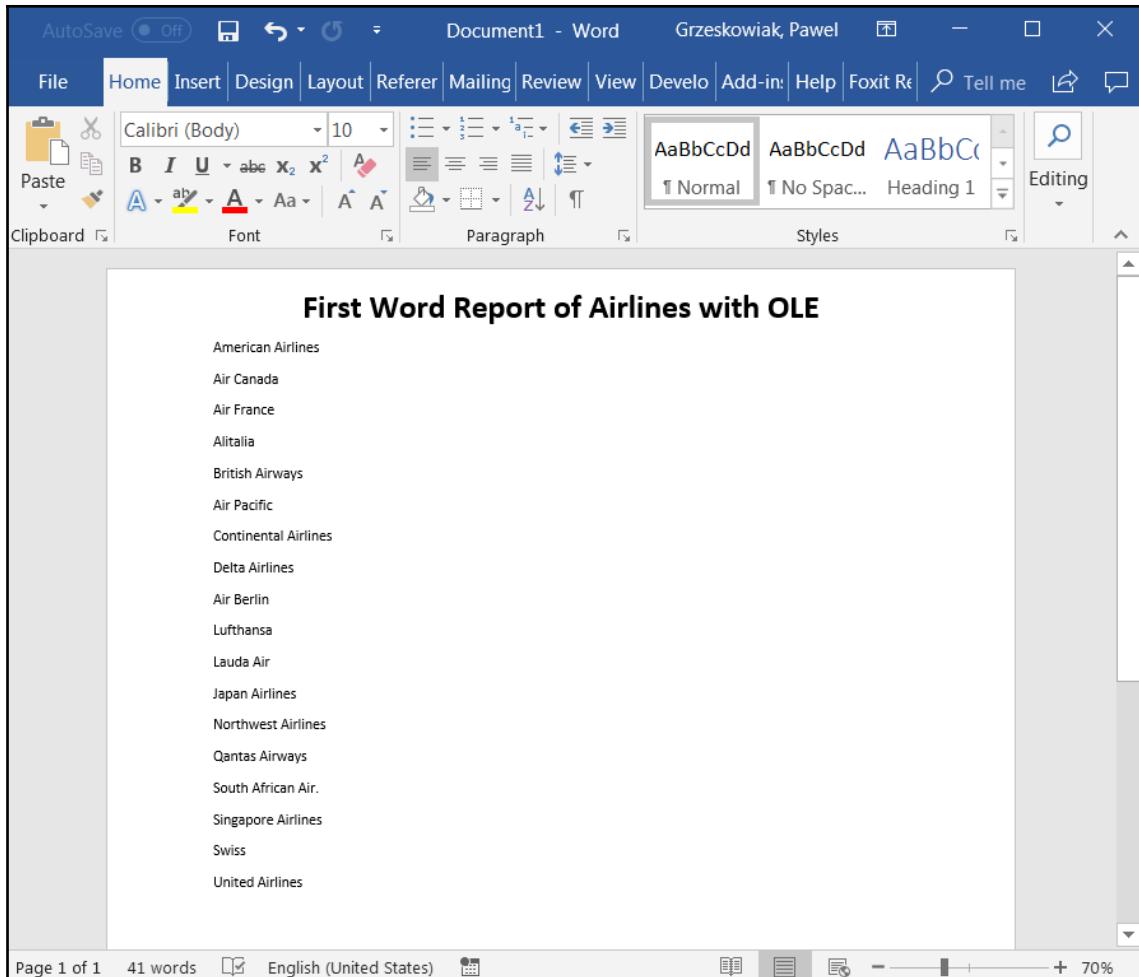


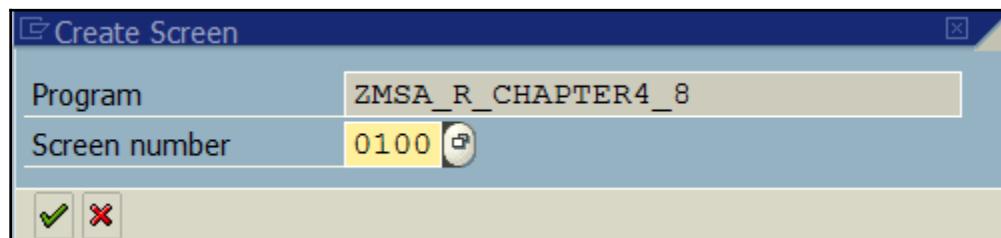
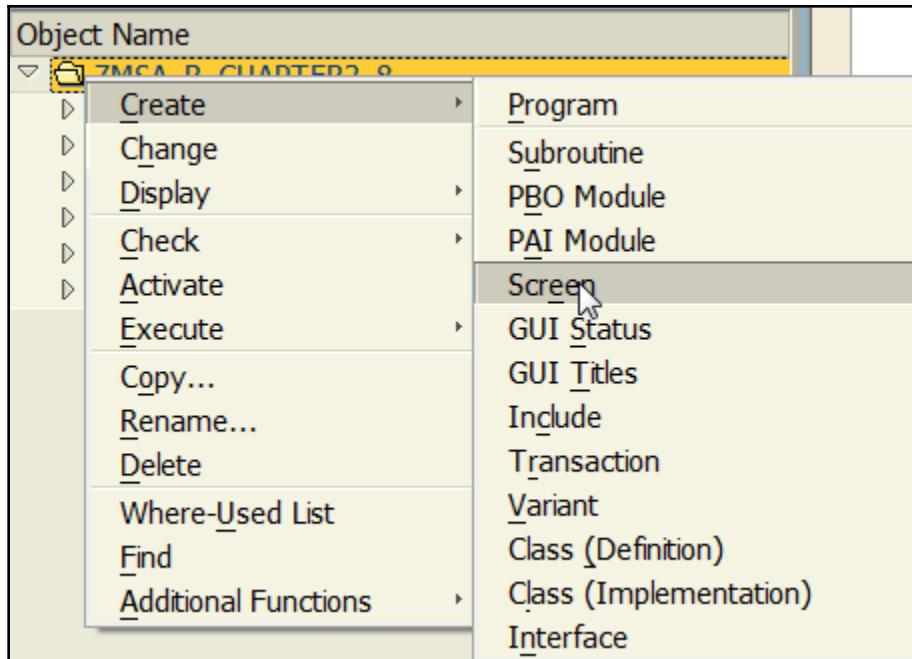


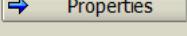
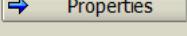
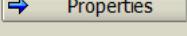
The screenshot shows a Microsoft Excel spreadsheet with the following data:

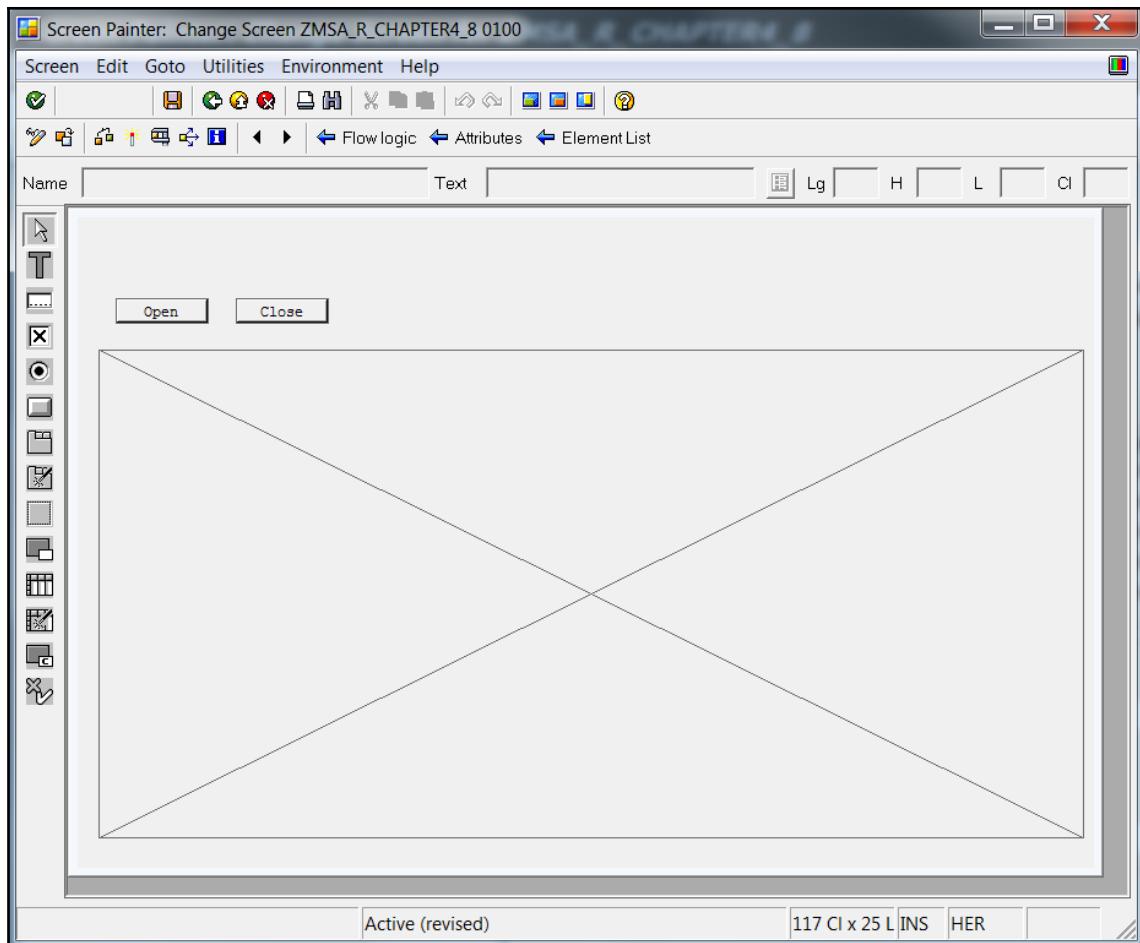
	A	B	C	D	E	F	G	H	I
1	1								
2	2								
3	3								
4	4								
5	5								
6	6								
7	7								
8	8								
9	9								
10	10								
11	11								

The sheet is named "TestSheet".





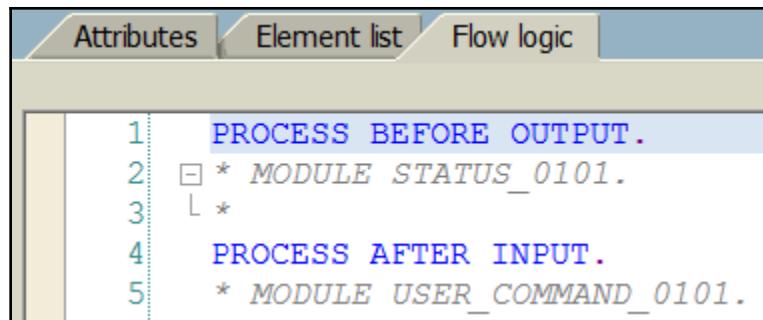
Screen number	100	Active																					
Attributes Element list Flow logic																							
Short Description	Simple Screen for DOI Example ZMSA_R_CHAPTER4_8																						
Original Language	EN English	Package \$MSA																					
Last Changed	20.07.2018	11:43:19																					
Last Generation	20.07.2018	11:44:59																					
<table border="1"><tr><td>Screen Type</td><td>Settings</td></tr><tr><td><input checked="" type="radio"/> Normal</td><td><input type="checkbox"/> Hold Data</td></tr><tr><td><input type="radio"/> Subscreen</td><td><input type="checkbox"/> Switch Off Runtime Compress</td></tr><tr><td><input type="radio"/> Modal dialog box</td><td><input type="checkbox"/> Template (Not Executable)</td></tr><tr><td><input type="radio"/> Selection Dynpro</td><td><input type="checkbox"/> Hold Scroll Position</td></tr><tr><td></td><td><input type="checkbox"/> Without Application Toolbar</td></tr></table>			Screen Type	Settings	<input checked="" type="radio"/> Normal	<input type="checkbox"/> Hold Data	<input type="radio"/> Subscreen	<input type="checkbox"/> Switch Off Runtime Compress	<input type="radio"/> Modal dialog box	<input type="checkbox"/> Template (Not Executable)	<input type="radio"/> Selection Dynpro	<input type="checkbox"/> Hold Scroll Position		<input type="checkbox"/> Without Application Toolbar									
Screen Type	Settings																						
<input checked="" type="radio"/> Normal	<input type="checkbox"/> Hold Data																						
<input type="radio"/> Subscreen	<input type="checkbox"/> Switch Off Runtime Compress																						
<input type="radio"/> Modal dialog box	<input type="checkbox"/> Template (Not Executable)																						
<input type="radio"/> Selection Dynpro	<input type="checkbox"/> Hold Scroll Position																						
	<input type="checkbox"/> Without Application Toolbar																						
<table border="1"><tr><td>Other Attributes</td><td colspan="2"></td></tr><tr><td>Next Dynpro</td><td colspan="2">100</td></tr><tr><td>Cursor Position</td><td colspan="2"></td></tr><tr><td>Screen Group</td><td colspan="2"></td></tr><tr><td>Rows/Columns</td><td>Occupied</td><td>24 116</td></tr><tr><td></td><td>Editing</td><td>25 117</td></tr><tr><td colspan="2">Context Menu FORM ON CTMENU</td><td></td></tr></table>			Other Attributes			Next Dynpro	100		Cursor Position			Screen Group			Rows/Columns	Occupied	24 116		Editing	25 117	Context Menu FORM ON CTMENU		
Other Attributes																							
Next Dynpro	100																						
Cursor Position																							
Screen Group																							
Rows/Columns	Occupied	24 116																					
	Editing	25 117																					
Context Menu FORM ON CTMENU																							



Elem. Type Pushbutton			
Name	BTN_OPEN		
Text	Open_____		
Icon Name			
Tooltip			
Line	4	Def.Length	10
Column	5	Vis.Length	10
		Height	1
Groups			
Switch	<input type="checkbox"/>	Reaction	D ▾
FctCode	OPEN	FctType	▼
Context Menu Form			
ON_CTMENU_			

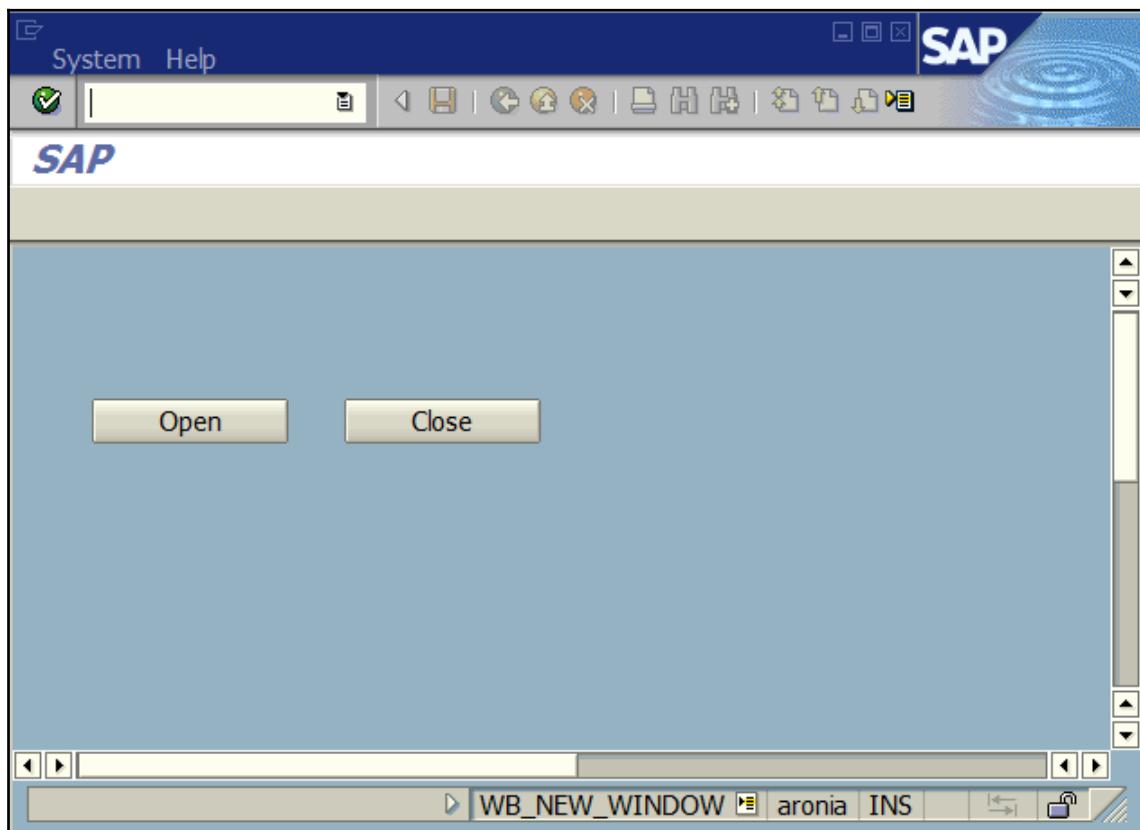
Elem. Type Pushbutton			
Name	BTN_CLOSE		
Text	Close_____		
Icon Name			
Tooltip			
Line	4	Def.Length	10
Column	19	Vis.Length	10
		Height	1
Groups			
Switch	<input type="checkbox"/>	Reaction	D ▾
FctCode	CLOSE	FctType	▼
Context Menu Form			
ON_CTMENU_			

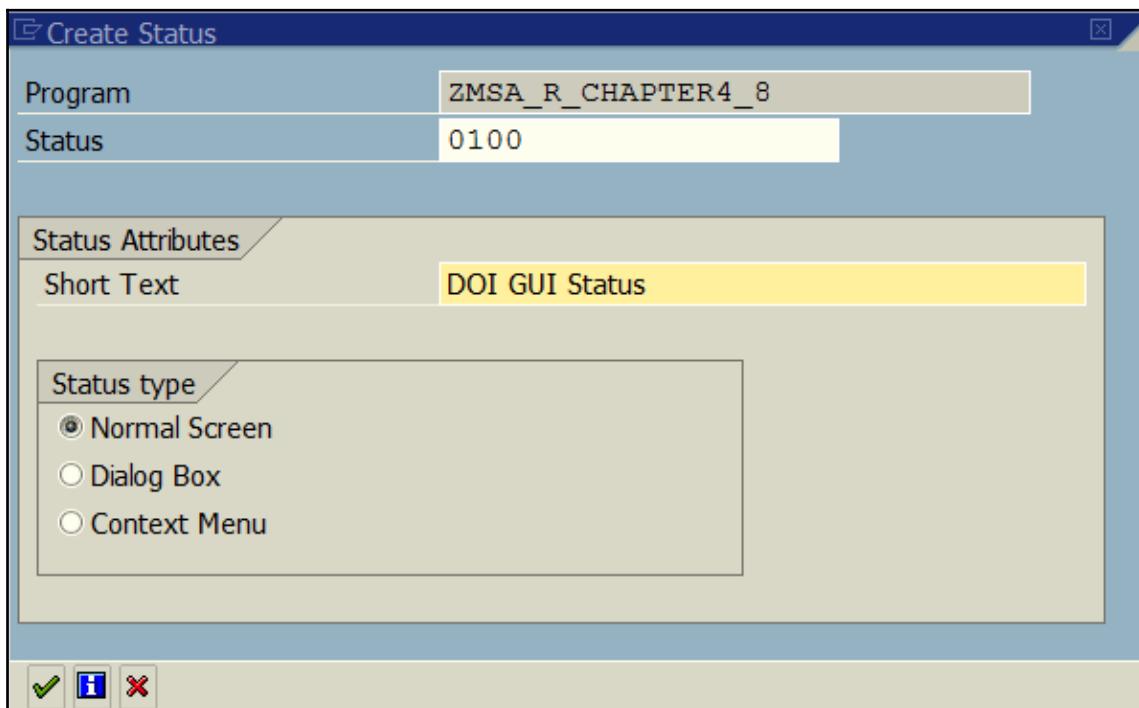
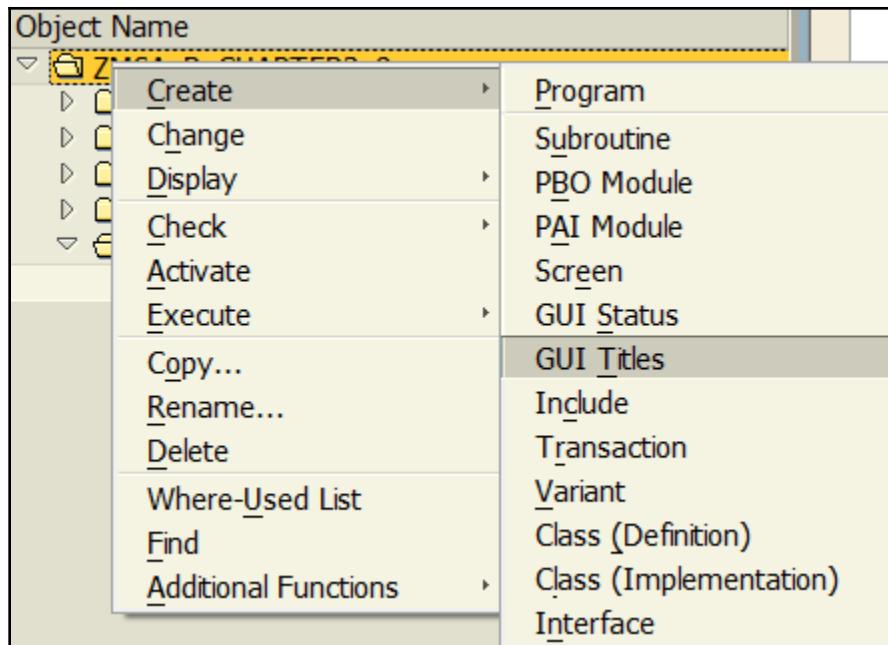
Screen number		100	Active								
		Attributes	Element list	Flow logic							
		General	Texts/I/O Templates	Special	Display	Mod. Groups/Functions					
Hi...	M	Name	Type ...	Line	Col...	Def...	VisLg	Hei...	Scr...	Format	
		<u>BTN_OPEN</u>	Push	4	5	10	10	1			
		<u>BTN_CLOSE</u>	Push	4	19	10	10	1			
+		<u>CUSTOMCONTAINER</u>	CCtrl	6	3	114	114	19			
		<u>LV_ORCODE</u>	OK	0	0	20	20	1	<input type="checkbox"/>	OK	

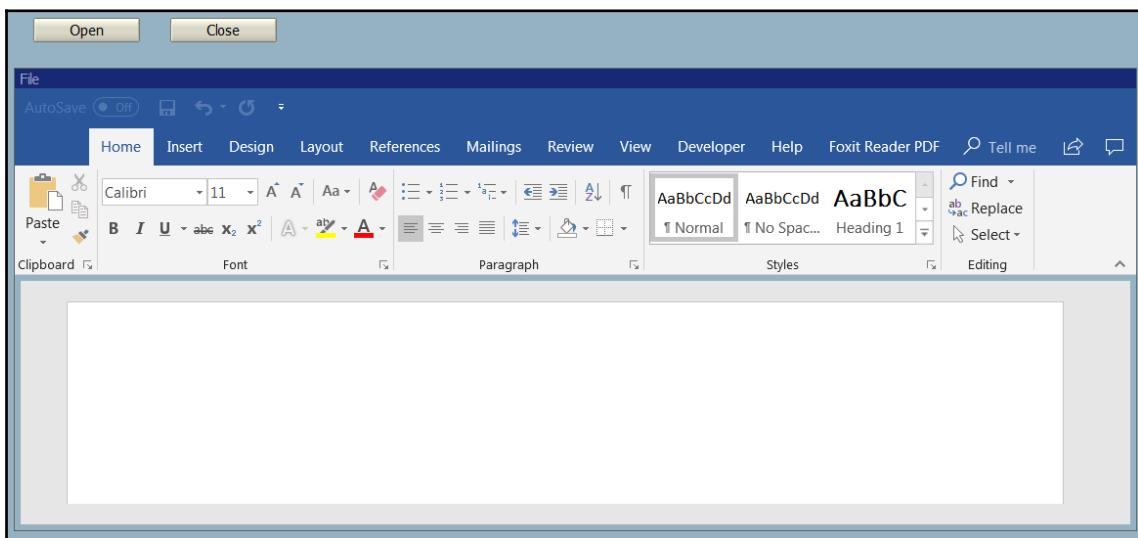
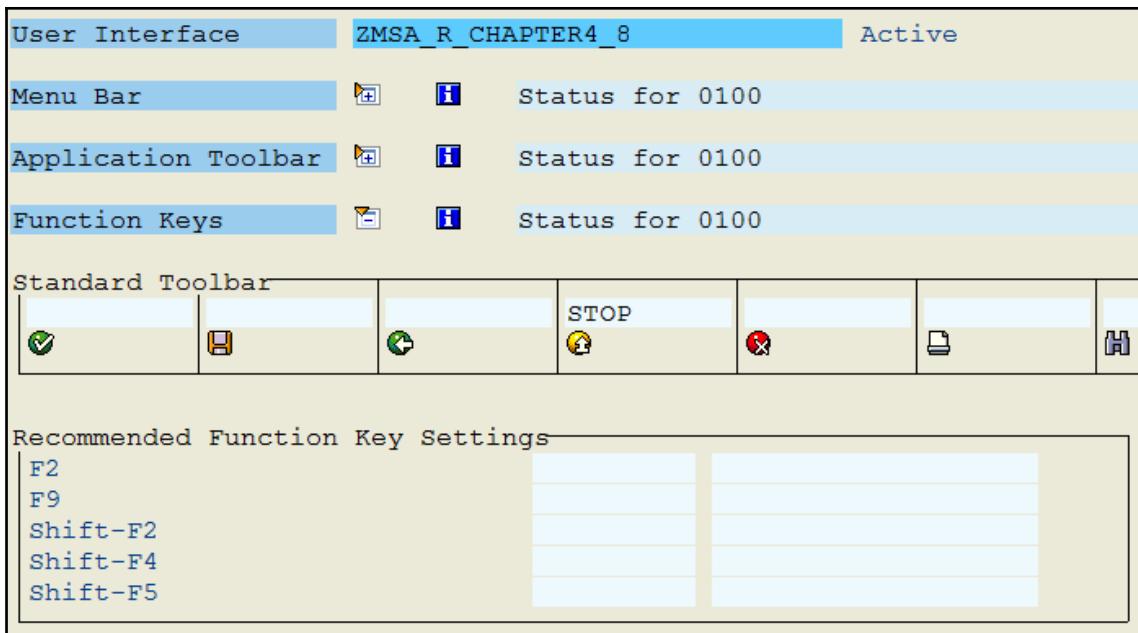


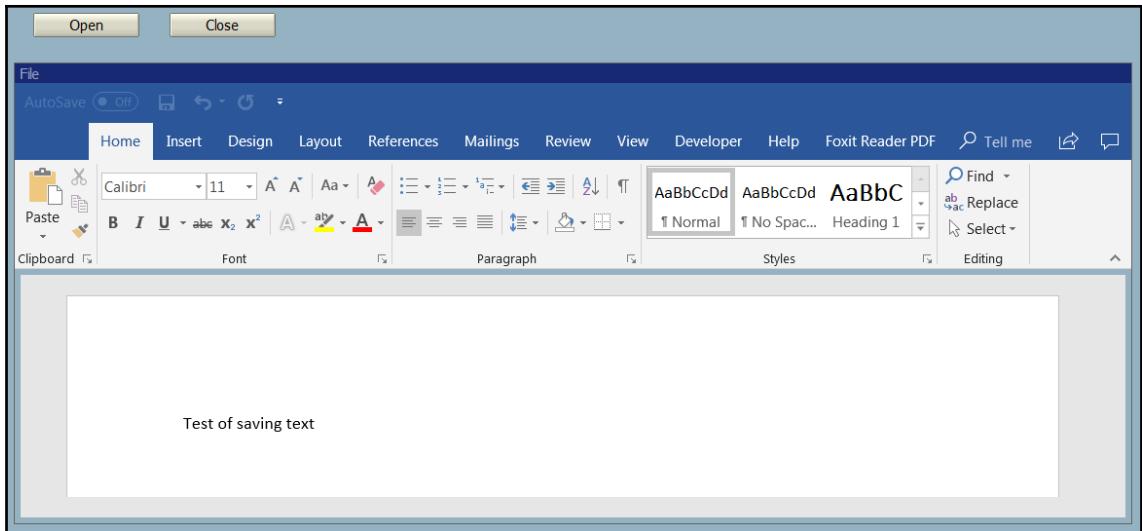
The screenshot shows a SAP ABAP code editor window. The title bar has tabs for "Attributes", "Element list", and "Flow logic". The "Flow logic" tab is selected. The code area contains the following ABAP code:

```
PROCESS BEFORE OUTPUT.  
* MODULE STATUS_0101.  
L *  
PROCESS AFTER INPUT.  
* MODULE USER_COMMAND_0101.
```









Chapter 5: Exposing Data to Print Forms

Form: Display Header: RVINVOICETH

Pages Windows Page Windows Paragraph Formats Character Formats

Administrative Data Basic Settings

Administration Information

Form	RVINVOICETH
Description	Invoice/Tax Invoice (Thailand)
Status	Active - Saved

Classification

Package	J1HL	THR Localization Thailand: Development Class for Logistics
Client ID	000	

Created on 19.11.1999 07:33:11 By SAP Release: 46C
Changed on 25.08.2005 23:50:22 By SAP Release 700

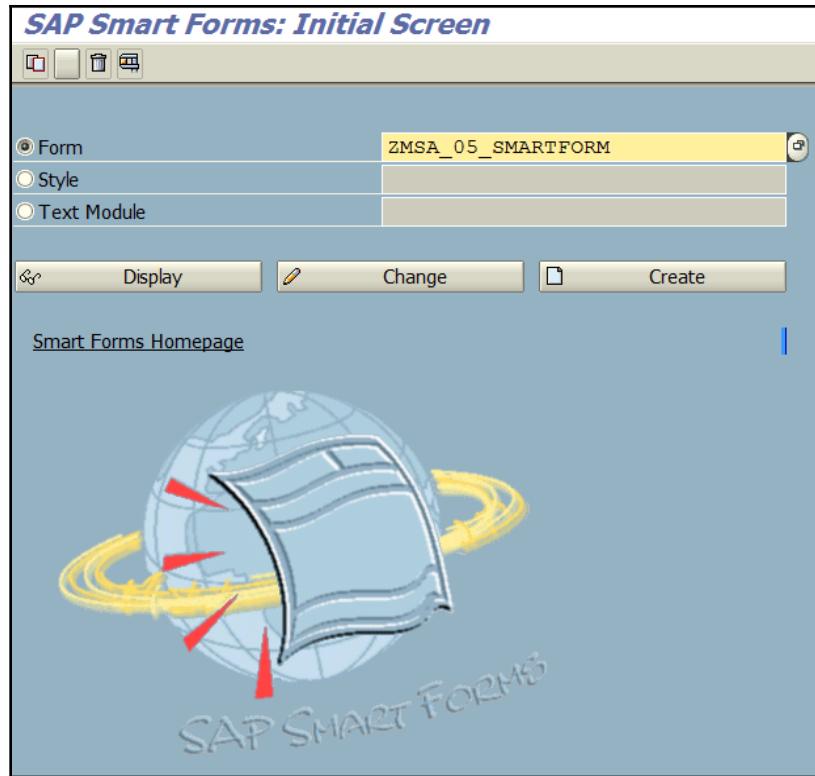
Language Attributes

Language Key	EN
Original language	EN

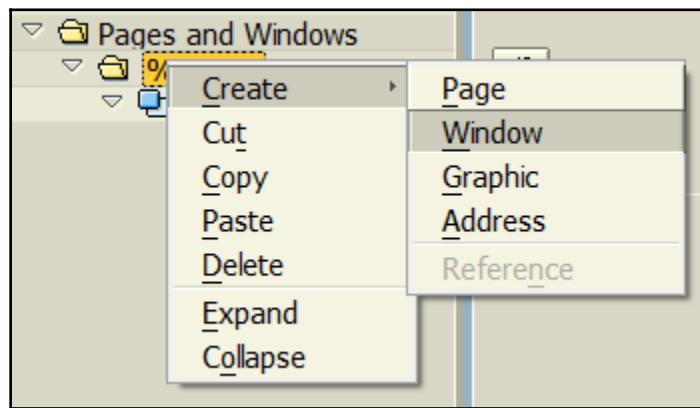
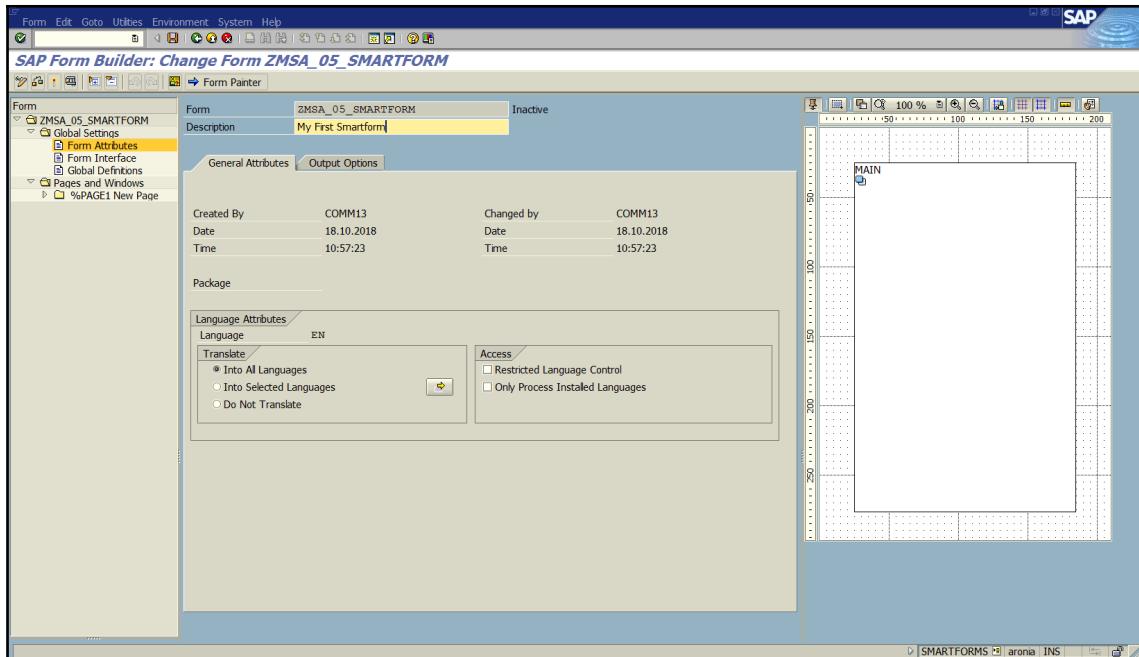
Translate

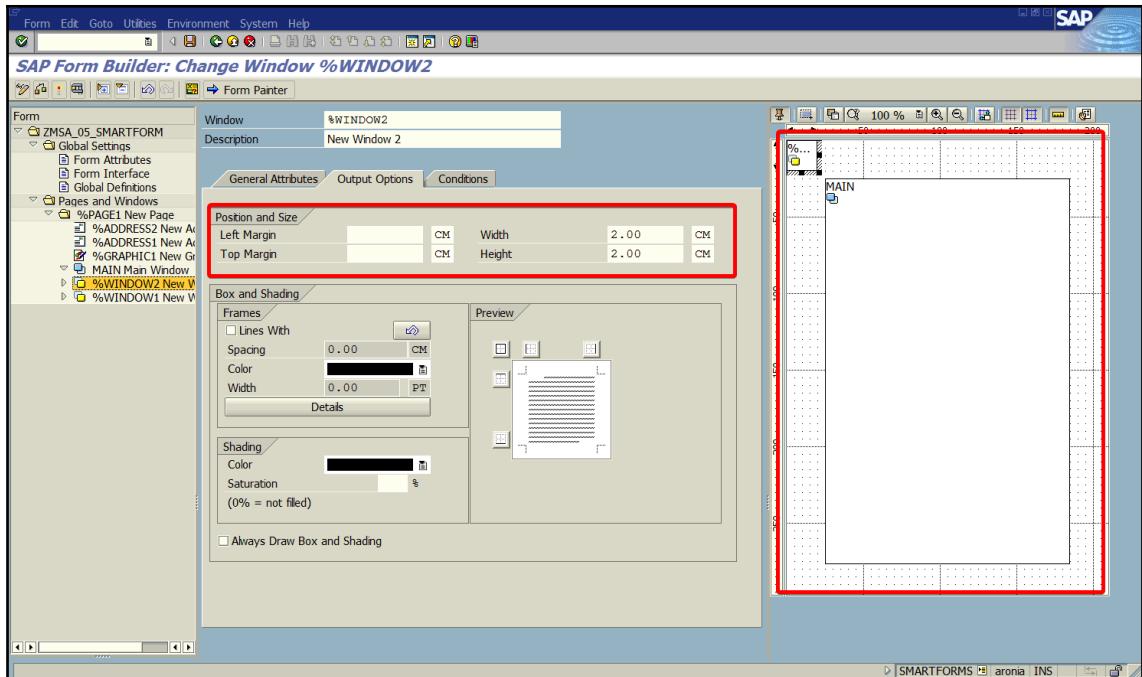
Into All Languages
 Into selected languages

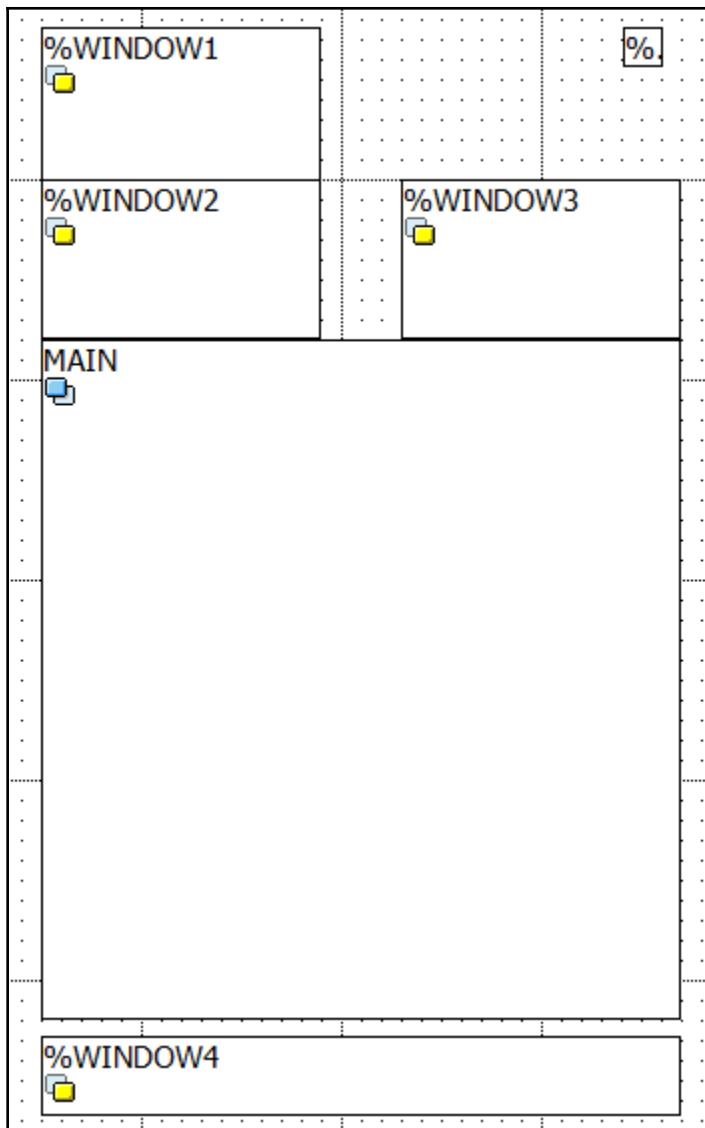
Do Not Translate



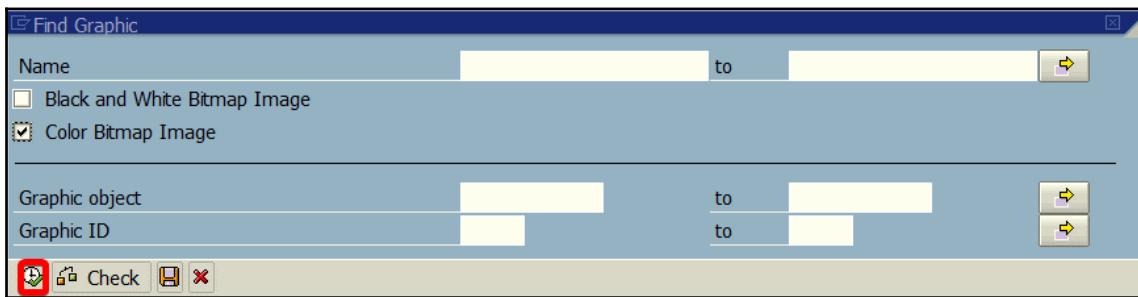
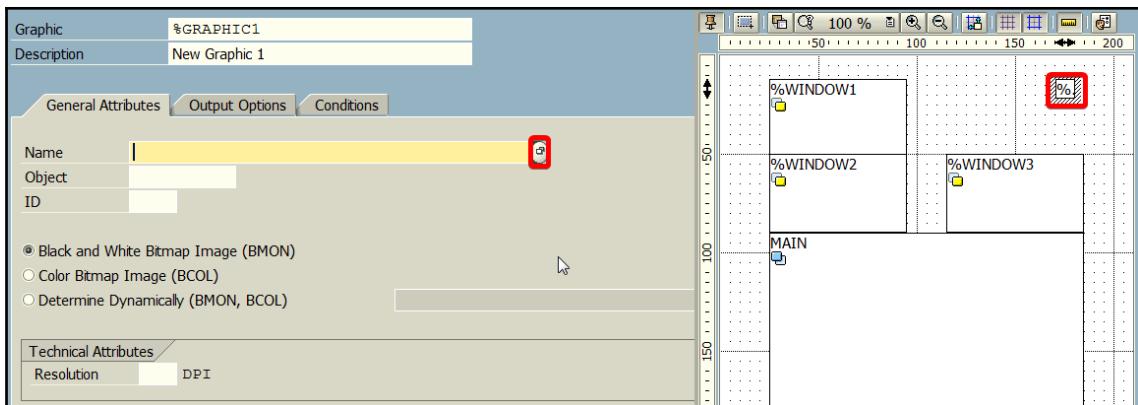
Graphic Bundle







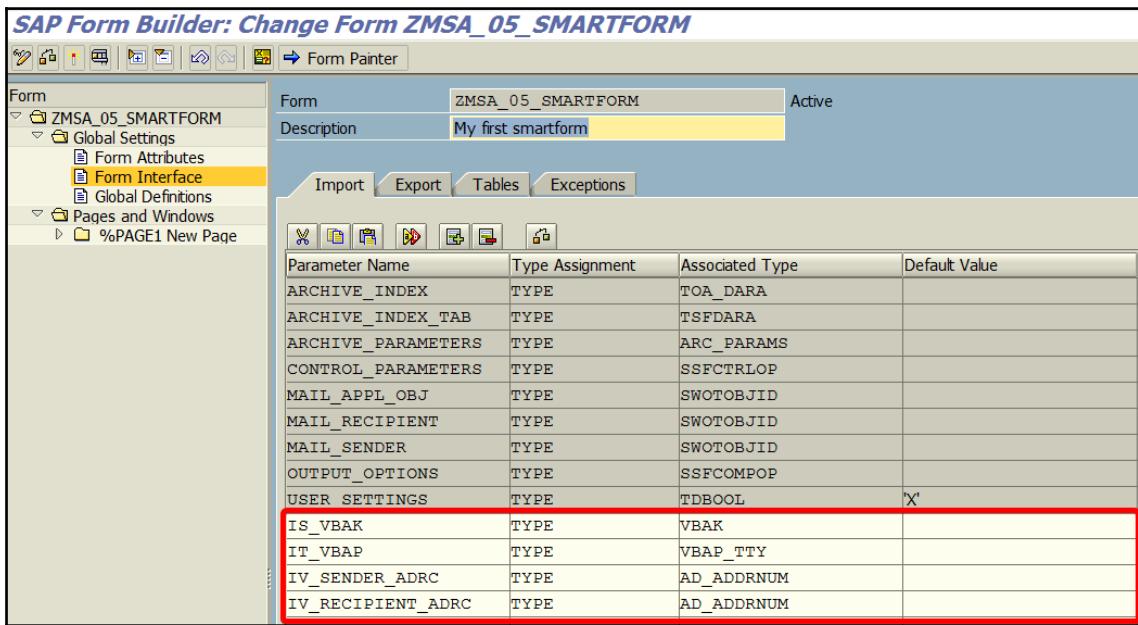
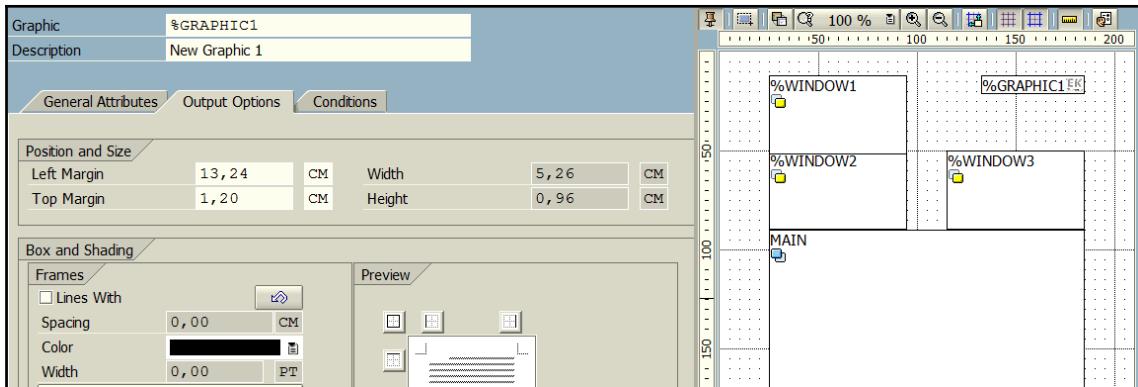
Graphic Bundle

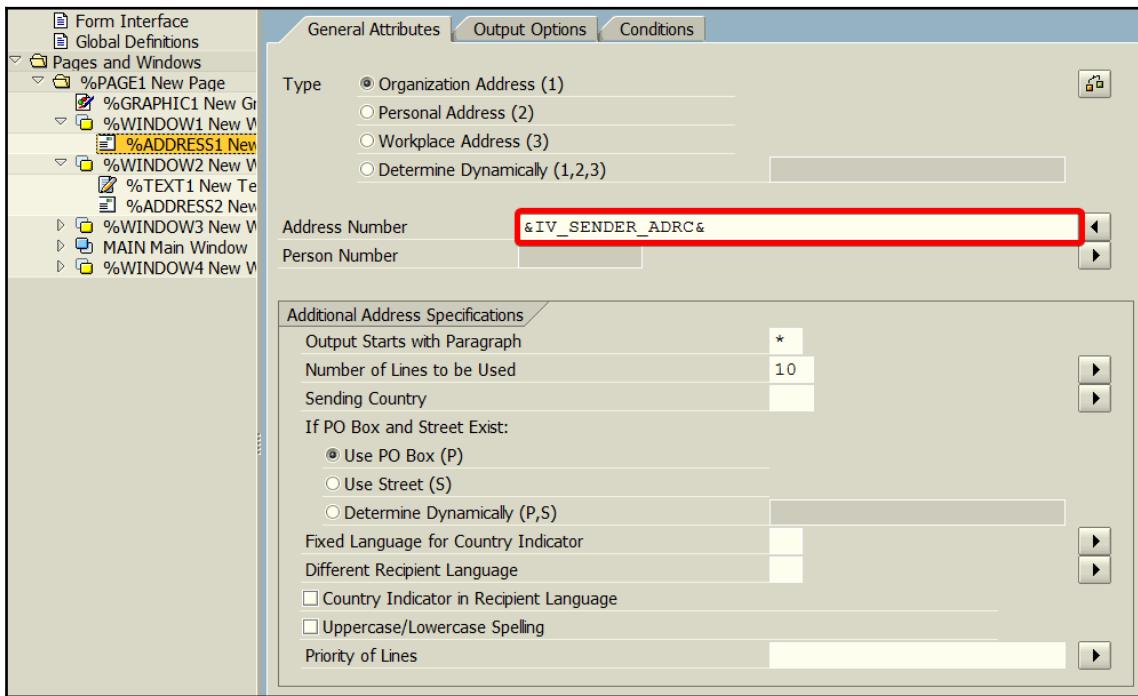
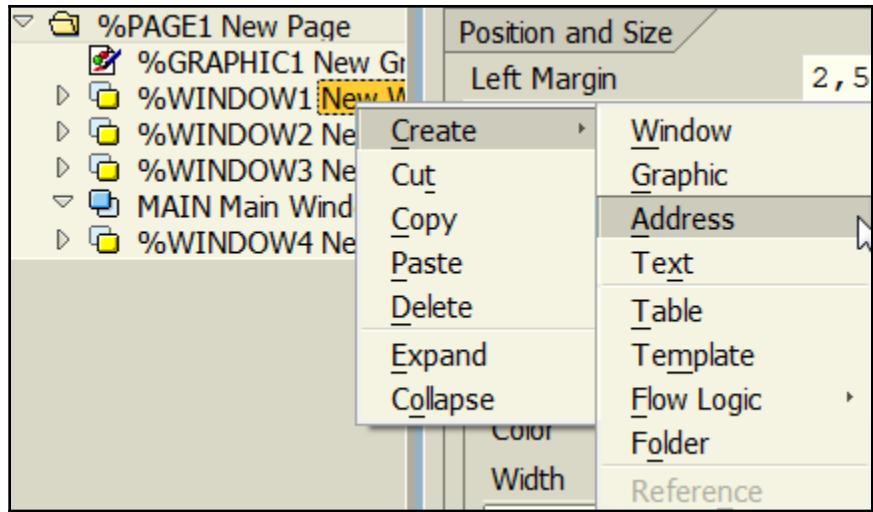


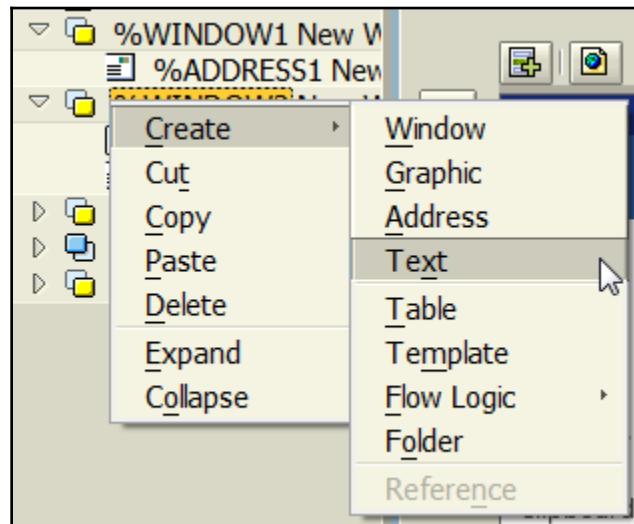
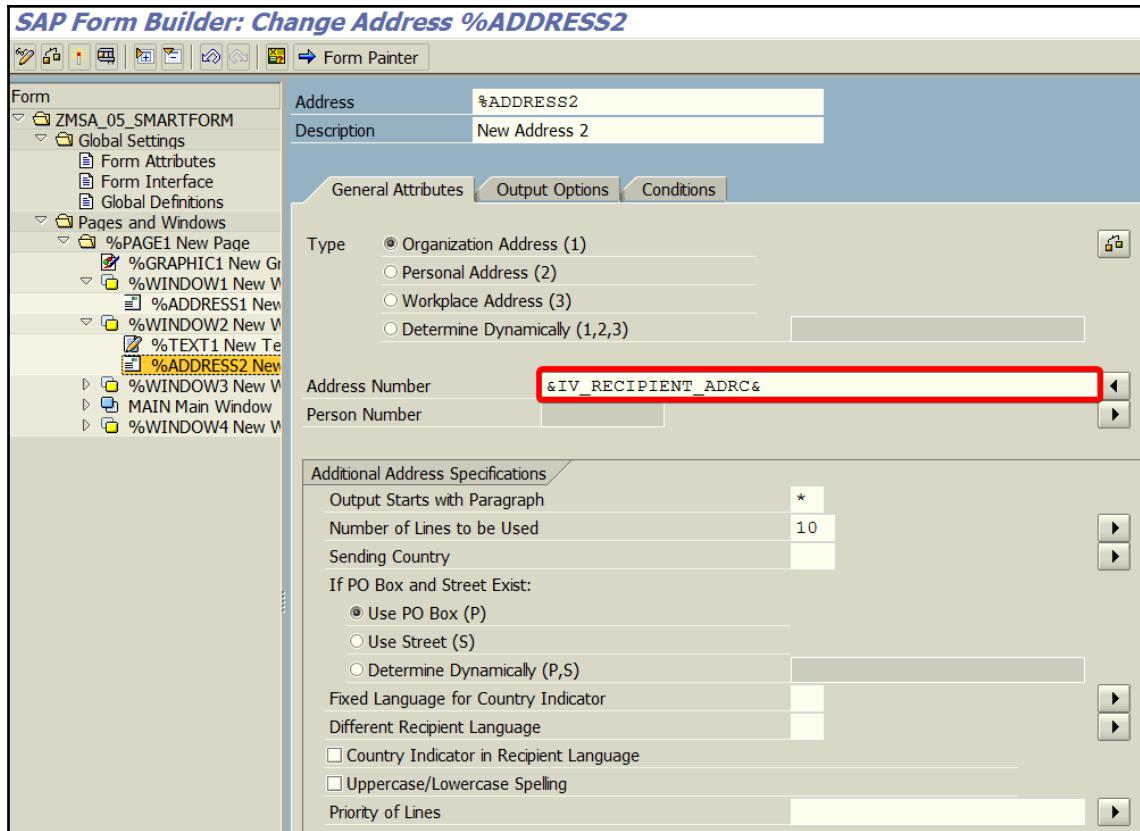
Graphic Bundle

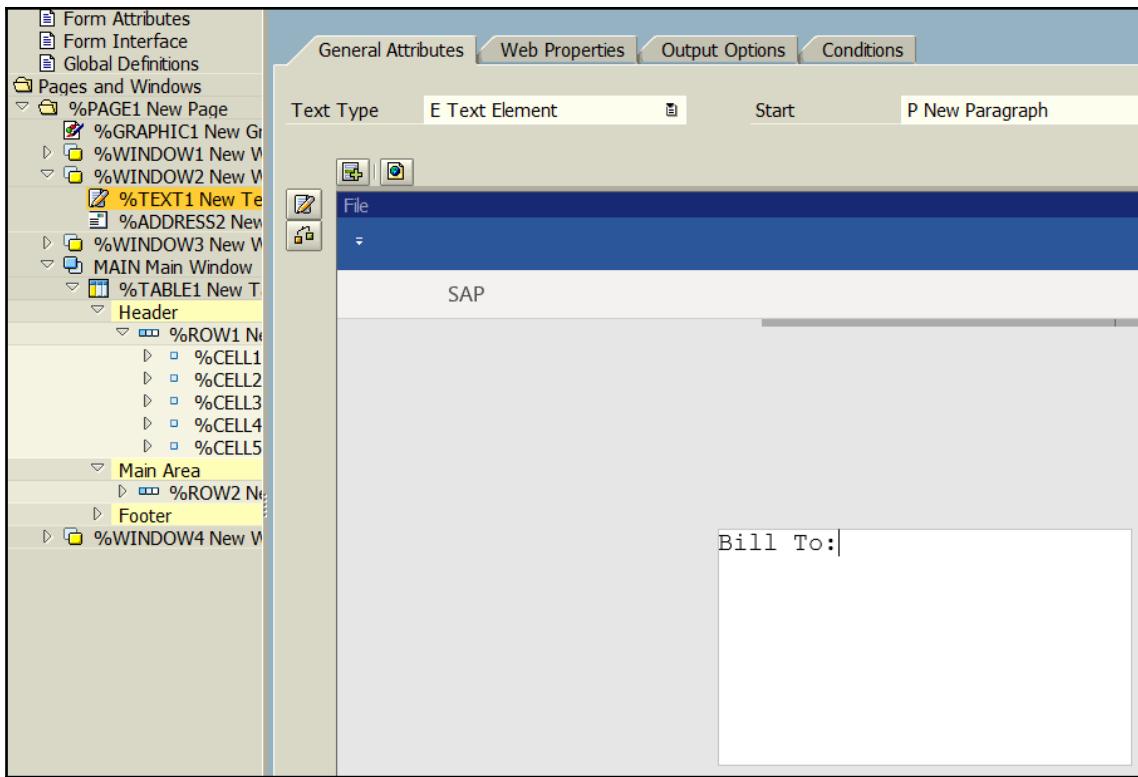
Find Graphic (1) 151 Entries found					
Restrictions					
	Name	Object	ID	GraphicT.	Descript.
	/BEV2/ED_SFRET_DEBI_P1_BCOL	GRAPHICS	BMAP	Color Bitmap Image	DEUTSCHE BIERST
	/BEV2/ED_SFRET_DEBI_P1_BCOL_2002	GRAPHICS	BMAP	Color Bitmap Image	DT.BIERSTERKL.,2002
	/BEV2/ED_SFRET_DEBI_P2_BCOL	GRAPHICS	BMAP	Color Bitmap Image	DEUTSCHE BIERST
	/BEV2/ED_SFRET_DEBI_P2_BCOL_2002	GRAPHICS	BMAP	Color Bitmap Image	DT.BIERSTERKL.,2002
	/CCEE/YUFI_PPPDV_VAT200DPI.TIF	GRAPHICS	BMAP	Color Bitmap Image	PPPDV VAT FORM :1
	/CEECV/BELO_INTA_01	GRAPHICS	BMAP	Color Bitmap Image	ARRIVALS PAGE 01
	/CEECV/BELO_INTA_02	GRAPHICS	BMAP	Color Bitmap Image	ARRIVALS PAGE 02
	/CEECV/BELO_INTA_03	GRAPHICS	BMAP	Color Bitmap Image	ARRIVALS PAGE 3
	/CEECV/BELO_INTR_01	GRAPHICS	BMAP	Color Bitmap Image	DISPATCHES PAGE
	/CEECV/BELO_INTR_02	GRAPHICS	BMAP	Color Bitmap Image	DISPATCHES PAGE
	/CEECV/BELO_INTR_03	GRAPHICS	BMAP	Color Bitmap Image	DISPATCHES PAGE
	/CEECV/BTLO_UPS-01_1	GRAPHICS	BMAP	Color Bitmap Image	INTRASTAT LT: UP
	/CEECV/BTLO_UPS-01_2	GRAPHICS	BMAP	Color Bitmap Image	INTRASTAT LT: UP
	/CEECV/BTLO_UPS-02_1	GRAPHICS	BMAP	Color Bitmap Image	INTRASTAT LT: UP
	/CEECV/BTLO_UPS-02_2	GRAPHICS	BMAP	Color Bitmap Image	INTRASTAT LT: UP
	/CEECV/BVLO_1B_01	GRAPHICS	BMAP	Color Bitmap Image	1B PAGE 03
	/CEECV/BVLO_1B_02	GRAPHICS	BMAP	Color Bitmap Image	1B PAGE 02
	/CEECV/BVLO_1B_03	GRAPHICS	BMAP	Color Bitmap Image	1B PAGE 03
	/CEECV/BVLO_2B_01	GRAPHICS	BMAP	Color Bitmap Image	DISPATCHES PAGE
	/CEECV/BVLO_2B_02	GRAPHICS	BMAP	Color Bitmap Image	DISPATCHES PAGE
	/CEECV/BVLO_2B_03	GRAPHICS	BMAP	Color Bitmap Image	DISPATCHES PAGE
	/ISHFR/BILL_GRAFIC	GRAPHICS	BMAP	Color Bitmap Image	IS-H FR: RECHNUN
	/ISHFR/BILL_GRAFIC_COL_TIF	GRAPHICS	BMAP	Color Bitmap Image	IS-H FR: RECHNUN
	/ISHFR/NINSVERF_REQUEST_P1	GRAPHICS	BMAP	Color Bitmap Image	IS-H FR: KOSTENÜ
	/ISHFR/NINSVERF_REQUEST_P2	GRAPHICS	BMAP	Color Bitmap Image	IS-H FR: KOSTENÜ
	3U	GRAPHICS	BMAP	Color Bitmap Image	STATUS STOP
	8R	GRAPHICS	BMAP	Color Bitmap Image	STATUS WARNING
	9O	GRAPHICS	BMAP	Color Bitmap Image	REQUEST FEHLERH
	BANK	GRAPHICS	BMAP	Color Bitmap Image	BANKING
	BNONE	GRAPHICS	BMAP	Color Bitmap Image	
	BORANG	GRAPHICS	BMAP	Color Bitmap Image	BORANG LOGO IRE
	BORANG_E	GRAPHICS	BMAP	Color Bitmap Image	
	CP22A	GRAPHICS	BMAP	Color Bitmap Image	LOGO FOR CP22A
	CPF LOGO	GRAPHICS	BMAP	Color Bitmap Image	
	DAT2012_PAGE01_V2	GRAPHICS	BMAP	Color Bitmap Image	
	DAT2012_PAGE02_V2	GRAPHICS	BMAP	Color Bitmap Image	
	DAT2016_PAGE01	GRAPHICS	BMAP	Color Bitmap Image	
	DATA	GRAPHICS	BMAP	Color Bitmap Image	BANKING
	DPR_CHECKLIST.BMP	GRAPHICS	BMAP	Color Bitmap Image	
	DPR_HEADER.BMP	GRAPHICS	BMAP	Color Bitmap Image	

Graphic Bundle

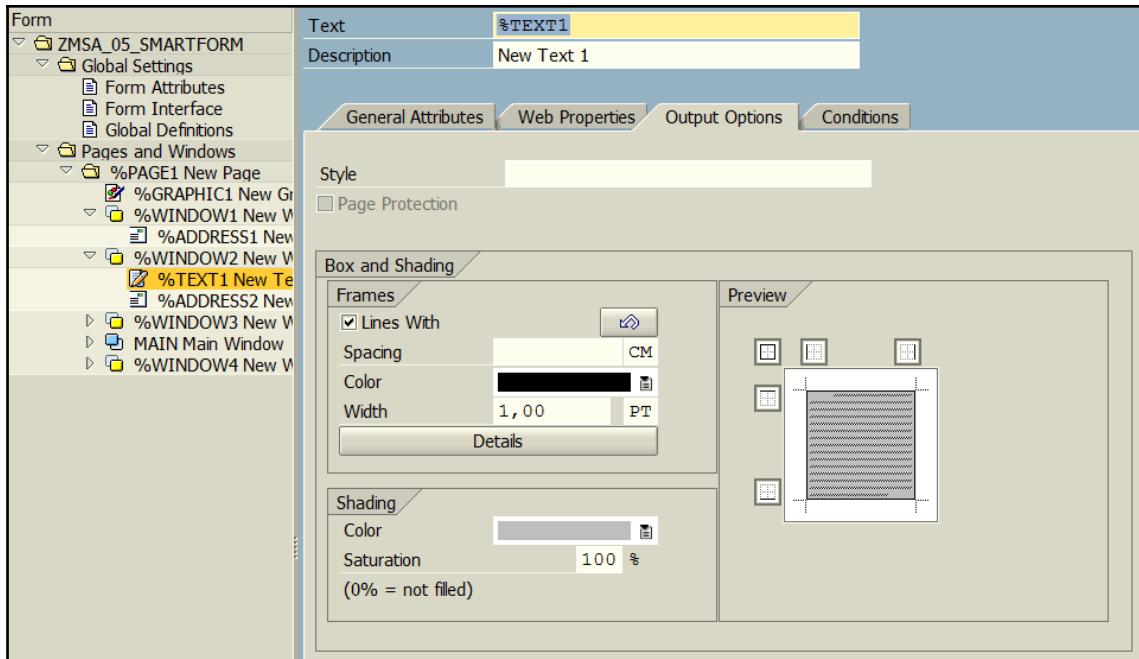








Graphic Bundle



Text: %TEXT1
Description: New Text 1

General Attributes Web Properties Output Options Conditions

Style: Page Protection

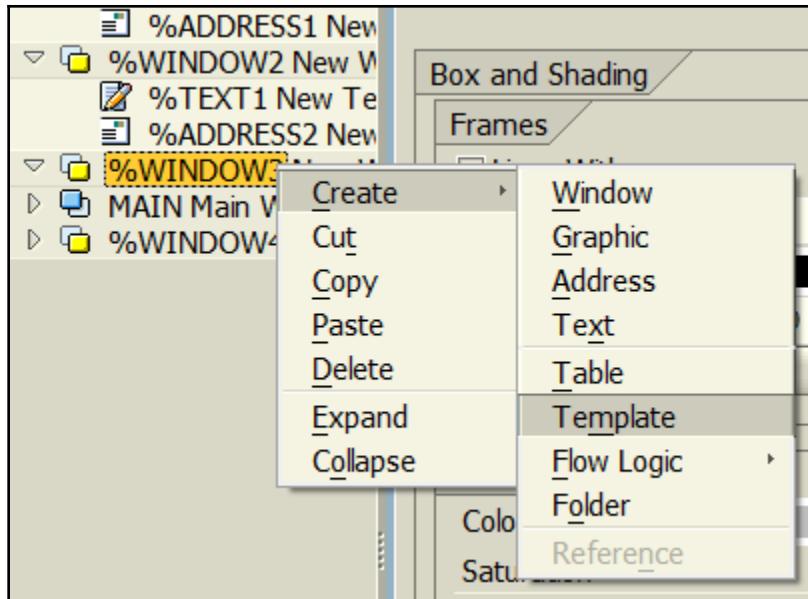
Box and Shading

Frames:
 Lines With:
Spacing:
Color:
Width: PT

Shading:
Color:
Saturation:
(0% = not filled)

Preview: A preview window showing a rectangular box with a diagonal striped pattern.

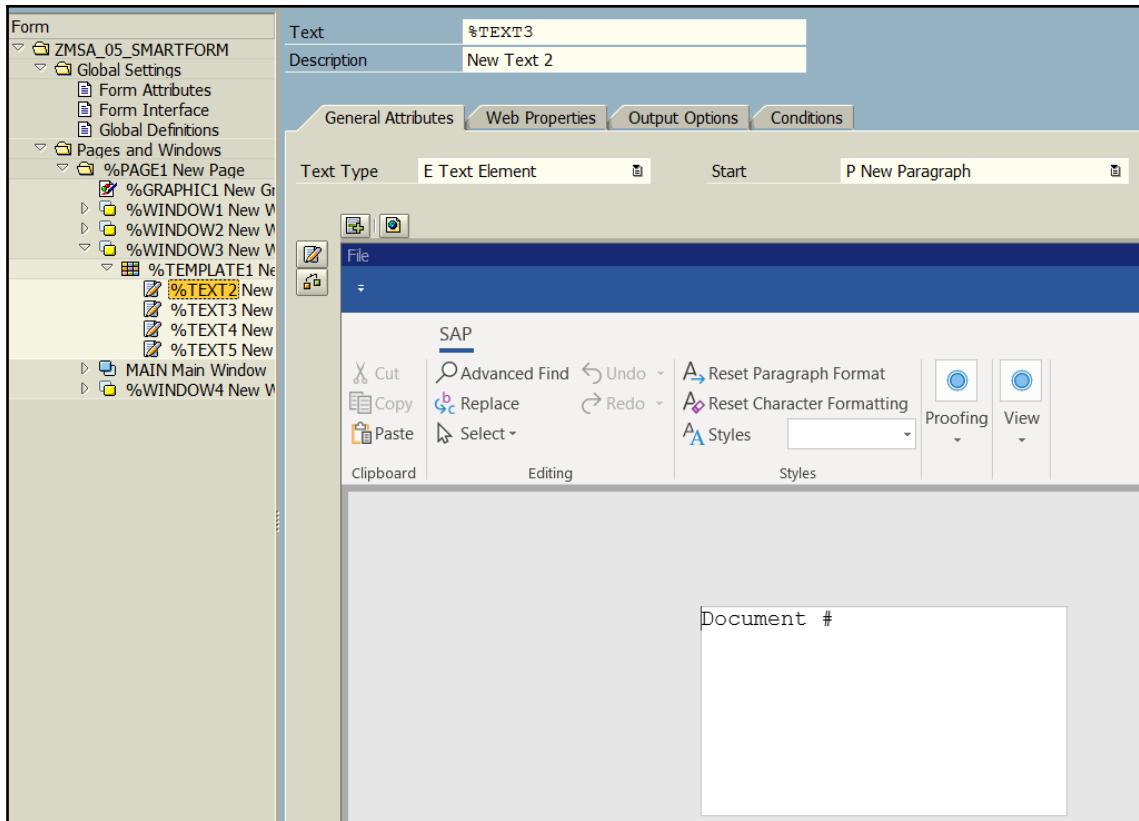
Bill To:
Company
CG
PL-

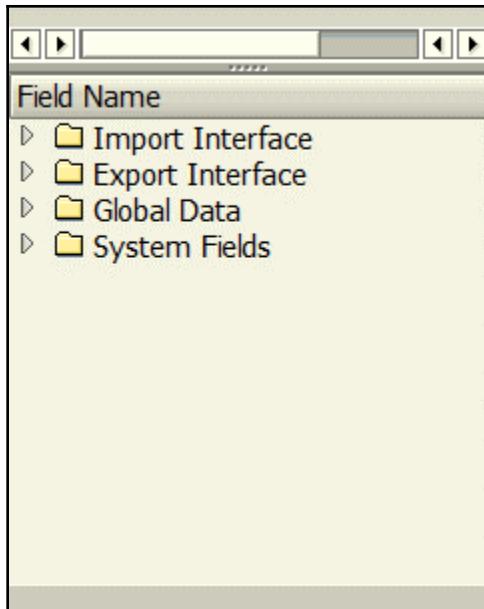


A screenshot of the 'Template' tab in the software interface. The left sidebar shows a tree structure of pages and windows, including 'GLOBAL DEFINITIONS', 'PAGES AND WINDOWS', and specific items like '%PAGE1 New Page', '%WINDOW1 New Window 1', '%TEXT1 New Text 1', '%WINDOW3 New Window 3', and '%TEMPLATE1 New Template'. The main area displays a 'Template' dialog with tabs for 'Template', 'Output Options', and 'Conditions'. The 'Template' tab shows settings for a 'Box' (Color: black, Width: 1,00 PT) and 'Shading' (Color: white, Saturation: 100%). Below these settings is a preview area showing a table with two columns and two rows, labeled '%C1' and '%C2'. A red box highlights the 'Details' button in the top right corner of the dialog.

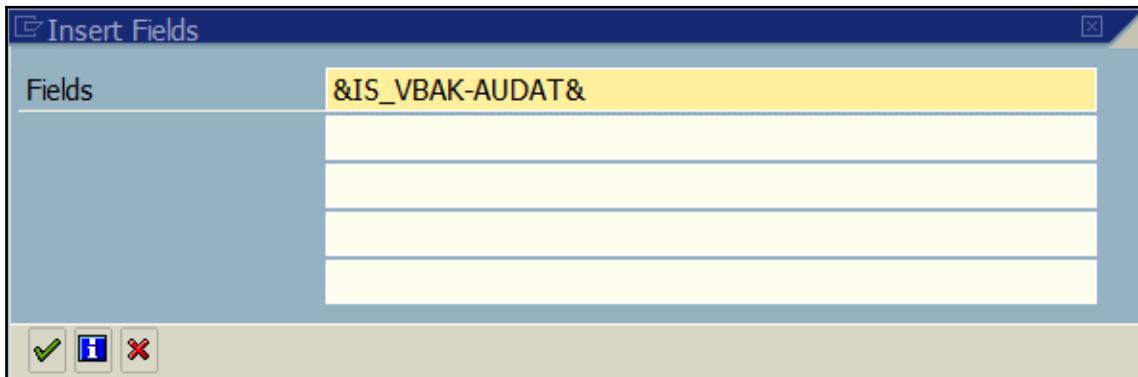
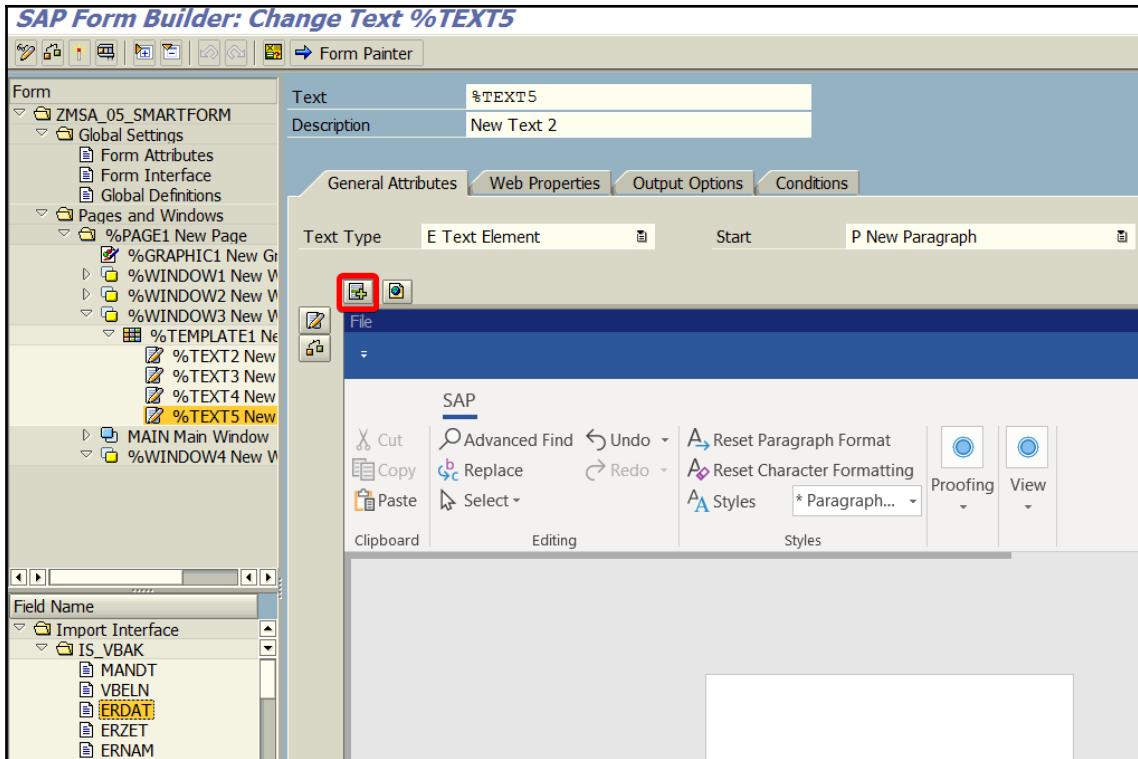
Graphic Bundle

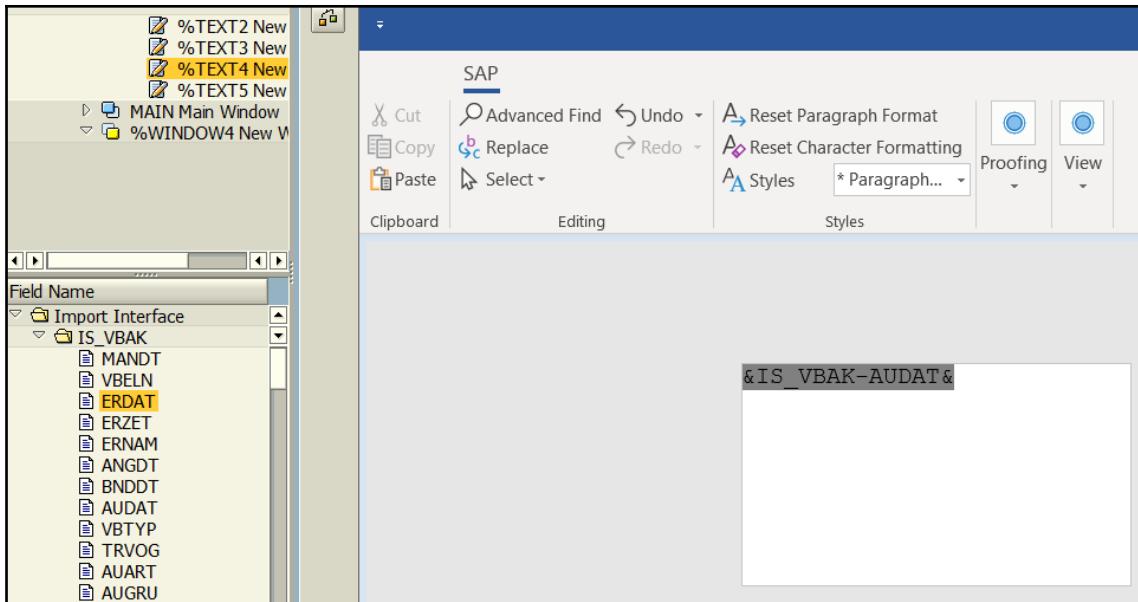
The screenshot shows the SAP Form Builder interface with the title bar "SAP Form Builder: Change Text %TEXT2". The left sidebar displays a tree structure of form objects under "ZMSA_05_SMARTFORM". The selected node is "%PAGE1 New Page", which contains "%GRAPHIC1 New Graphic 1", "%WINDOW1 New Window 1", "%WINDOW2 New Window 2", "%WINDOW3 New Window 3", and "%TEMPLATE1 New Template". "%TEMPLATE1" is expanded to show "%TEXT2 New Text 2", "%TEXT3 New Text 2", "%TEXT4 New Text 2", and "%TEXT5 New Text 2". The main panel shows the properties for "%TEXT2". The "Text" field is set to "\$TEXT2" and the "Description" field is set to "New Text 2". Below these fields are tabs: "General Attributes", "Web Properties", "Output Options", and "Conditions". Under "General Attributes", there is a "Style" section with a "Page Protection" checkbox. The "Box and Shading" section includes "Frames" settings for lines, color, and width, and a "Shading" section for color and saturation. A "Preview" window on the right shows a grid with a patterned border. At the bottom, the "Output structure" section shows "Line" and "Column" both set to "1", with the "Column" field highlighted by a red box.



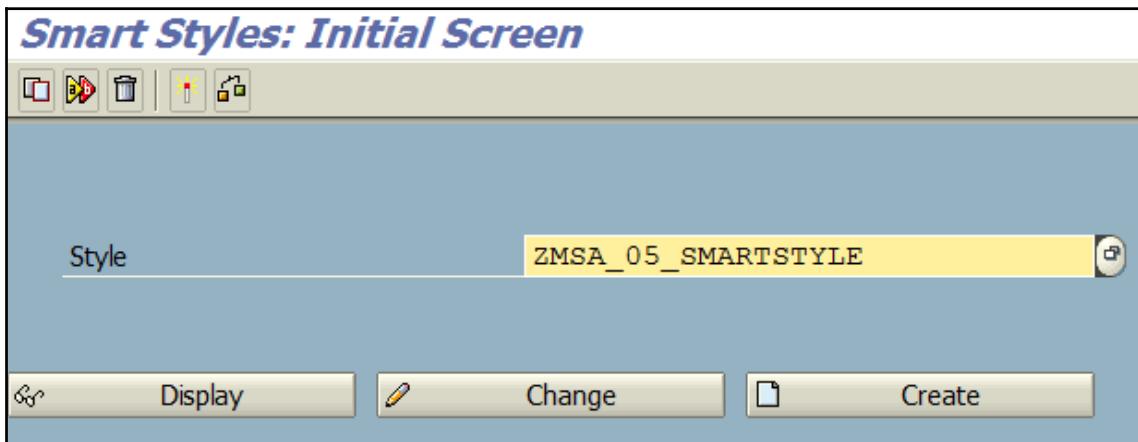


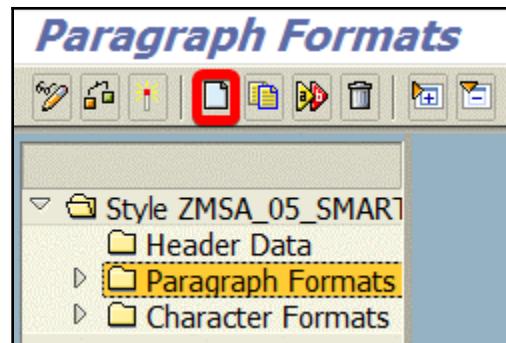
Graphic Bundle





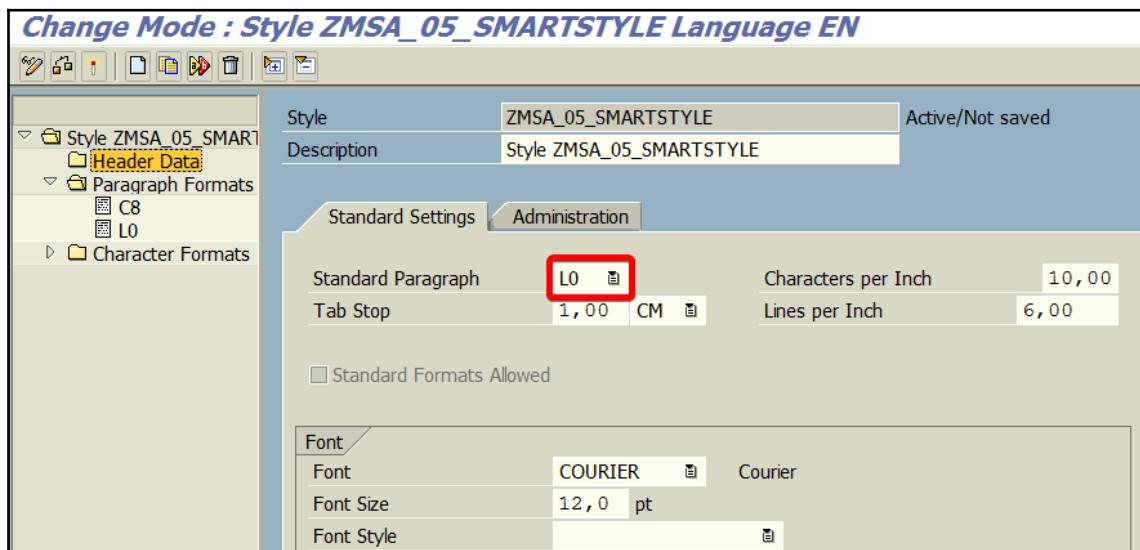
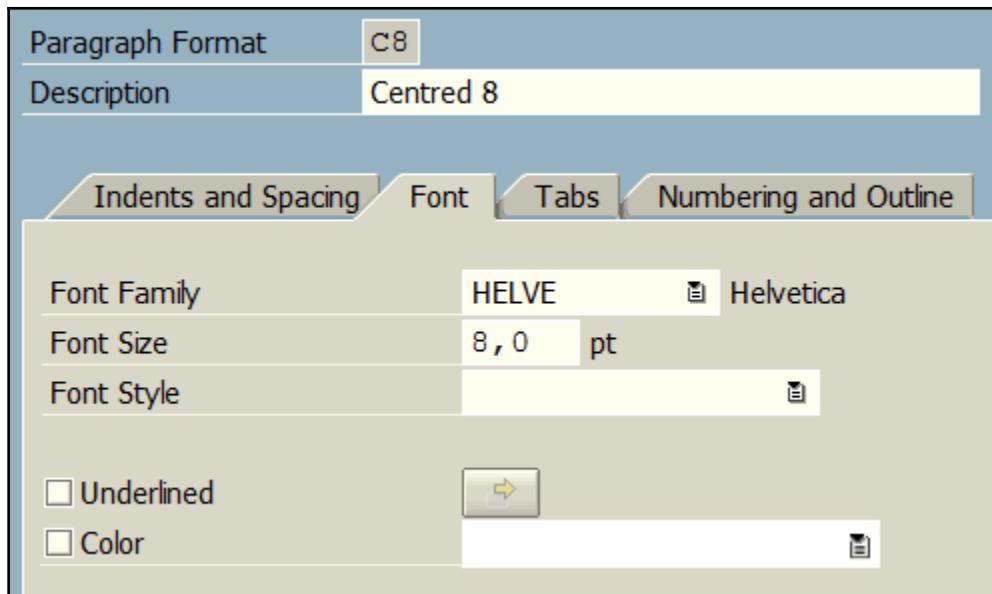
If you have any questions about this purchase order, please contact
Service Desk at (257) 563-7401 or service@lemonfoods.com



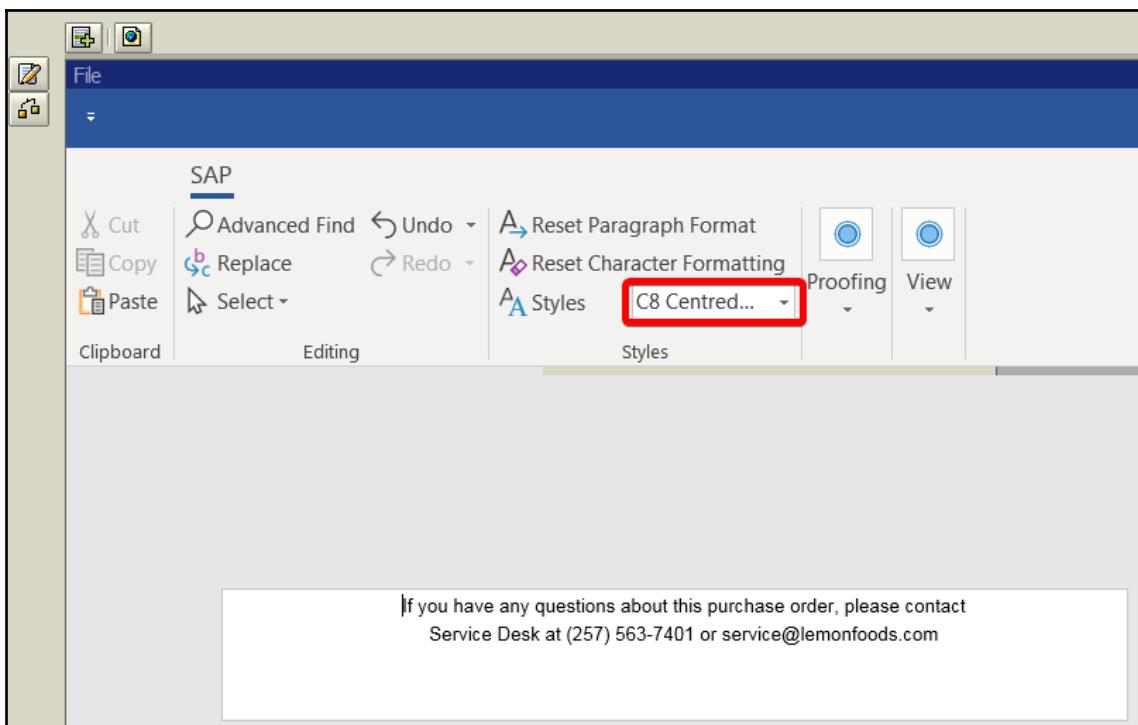
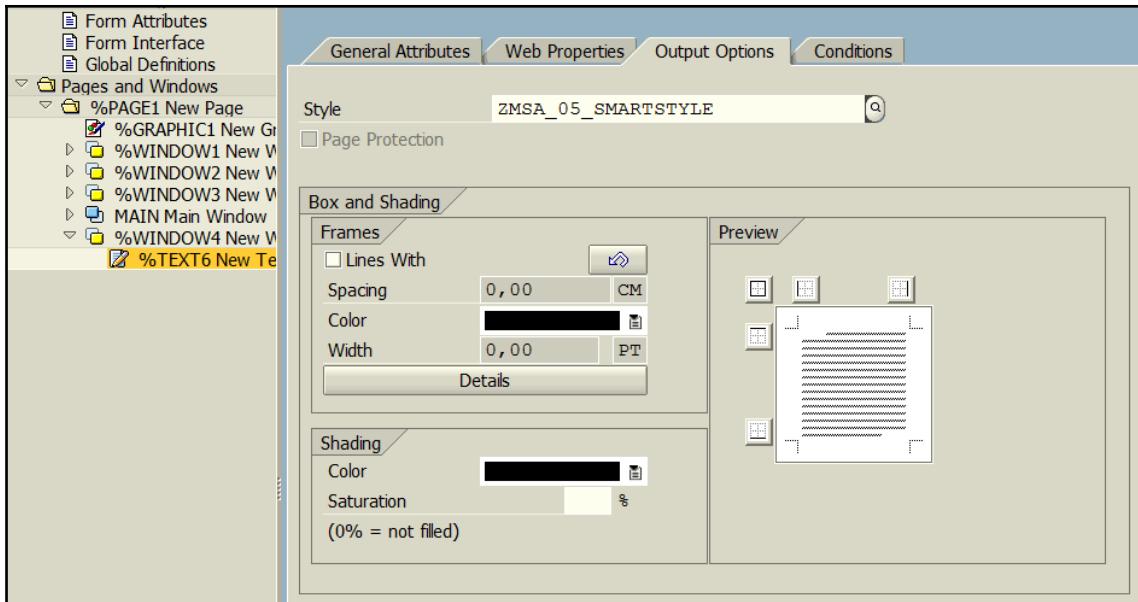


The screenshot shows the 'Paragraph Format' properties dialog box for 'C8'. The 'Description' field is set to 'Centred 8'. The 'Font' tab is selected in the top navigation bar. The 'Alignment' section shows 'CENTER Centered'. In the 'Indent' section, 'Left Margin' and 'Right Margin' are both set to 'CM 0'. In the 'Spacing' section, 'Space Before' and 'Space After' are both set to 'CM 0'. Under 'Text Flow', there are two unchecked checkboxes: 'Page Protection' and 'Next Paragraph Same Page'. The entire dialog box has a light blue background.

Paragraph Format	C8
Description	Centred 8
Indents and Spacing	
Font	
Alignment	CENTER Centered
Indent	
Left Margin	CM 0
Right Margin	CM 0
Indent First Line	CM 0
Spacing	
Space Before	CM 0
Space After	CM 0
Line Spacing	
1,00 LN 0	
Text Flow	
<input type="checkbox"/> Page Protection	
<input type="checkbox"/> Next Paragraph Same Page	



Graphic Bundle

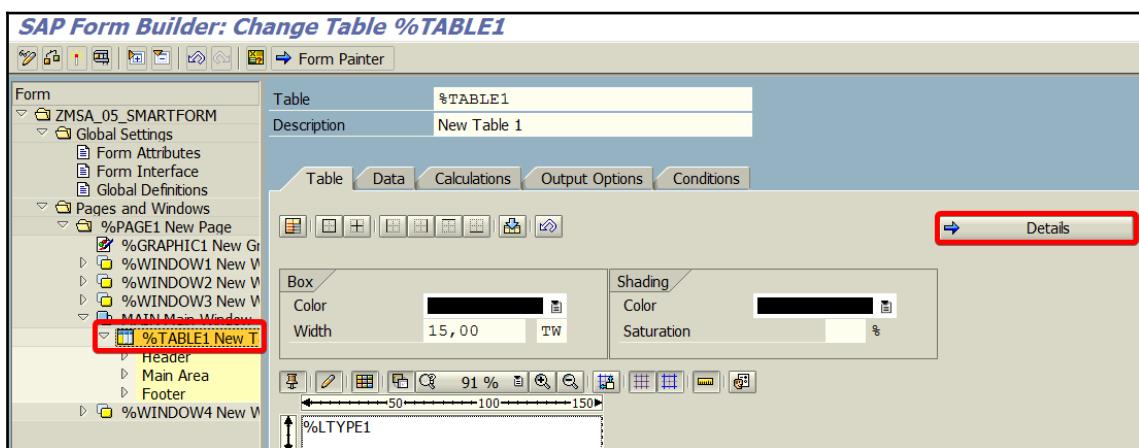
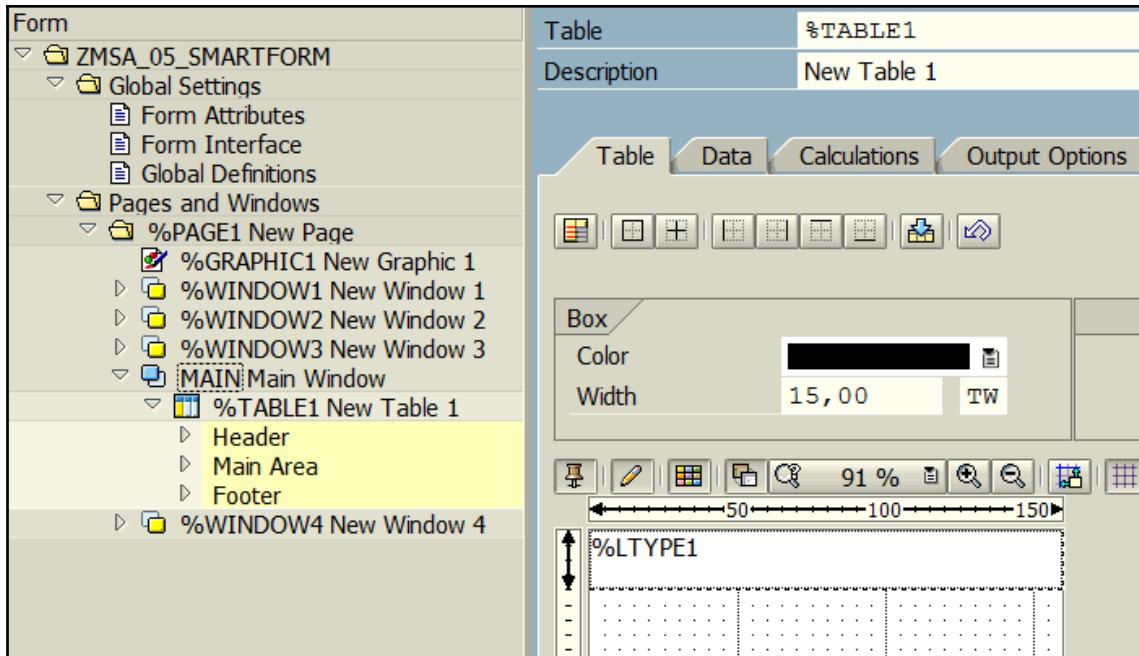


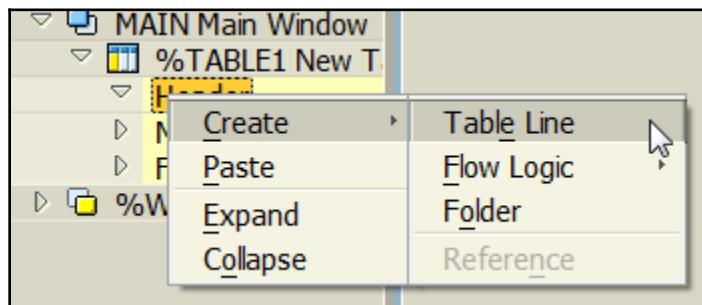
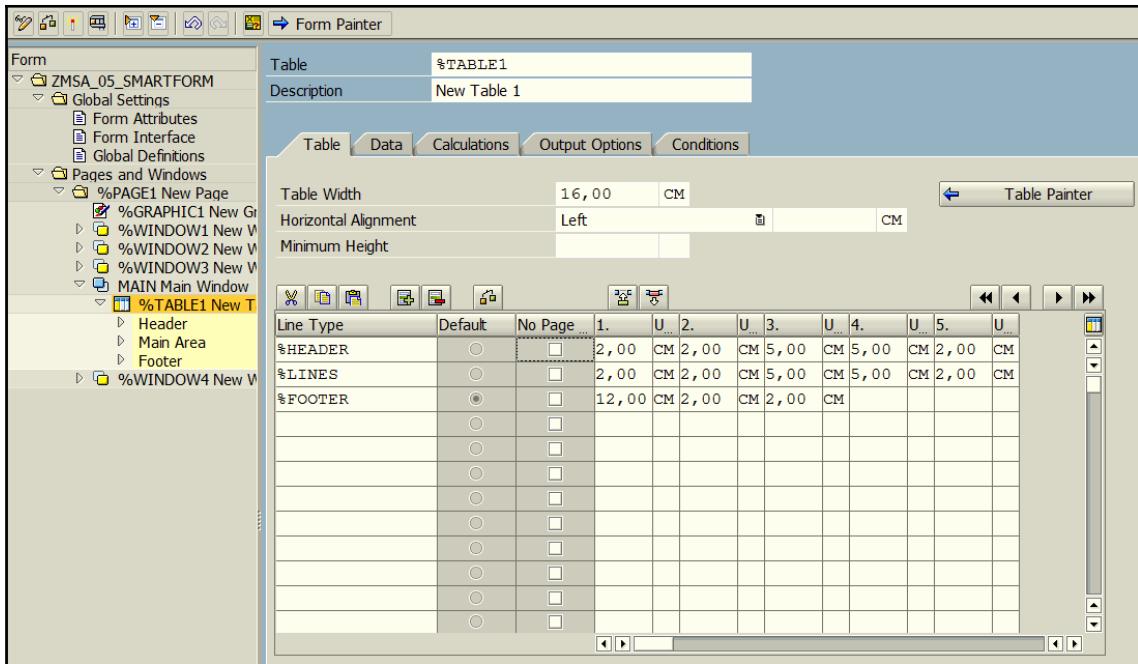
Graphic Bundle

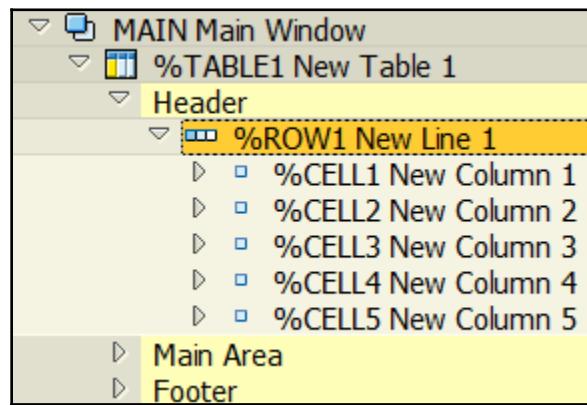
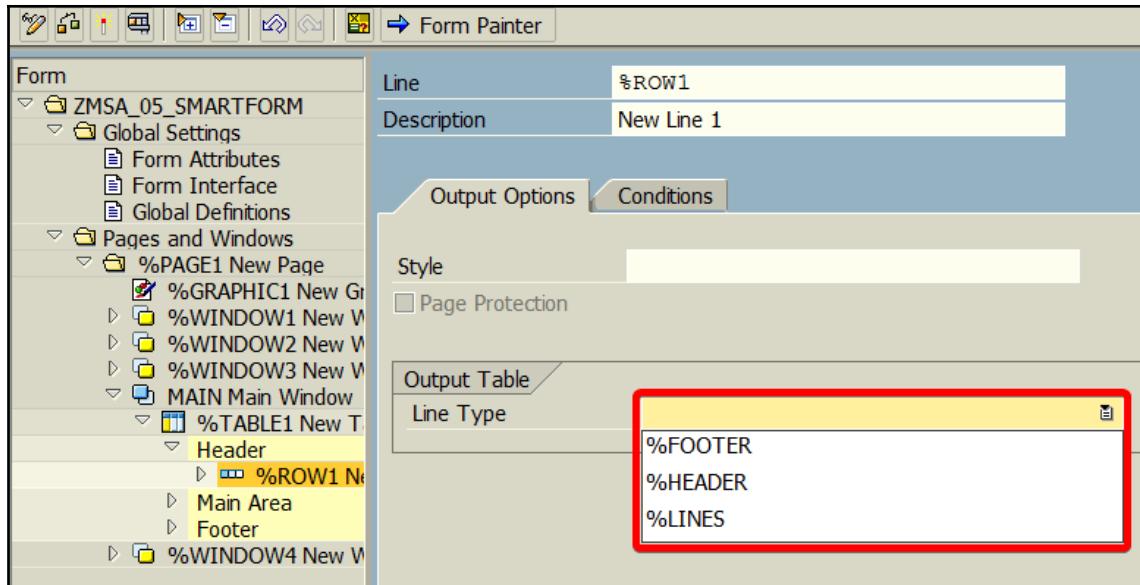
The screenshot shows two overlapping windows. The top window is titled 'Form' and has a sub-title 'ZMSA_05_SMARTFORM Active'. It contains tabs for 'Global Data', 'Types', 'Field Symbols', 'Initialization', and 'Form Routines'. The 'Global Data' tab is selected, showing a table with three rows:

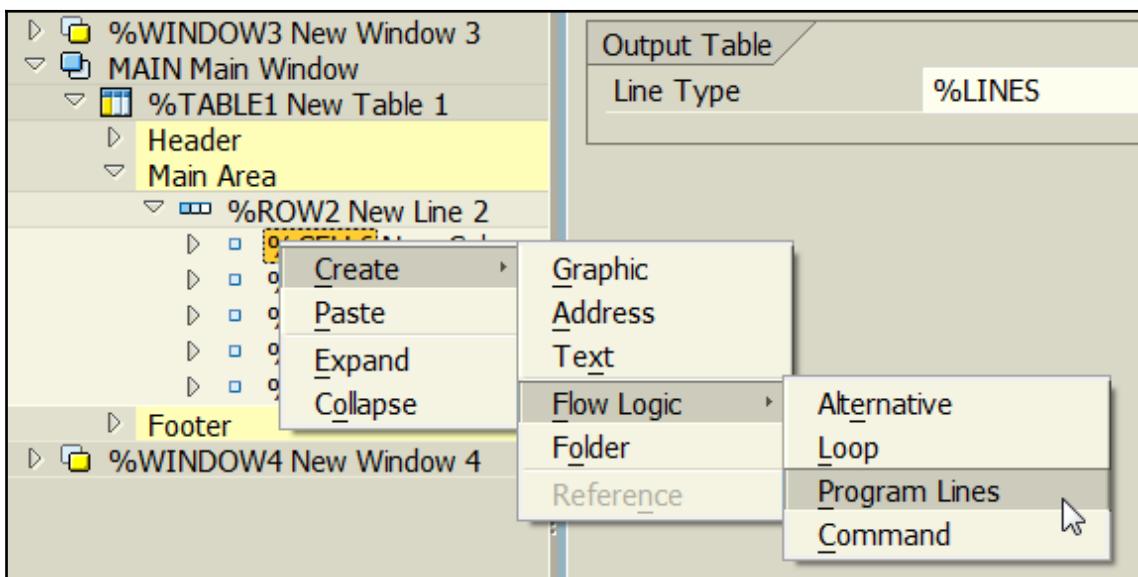
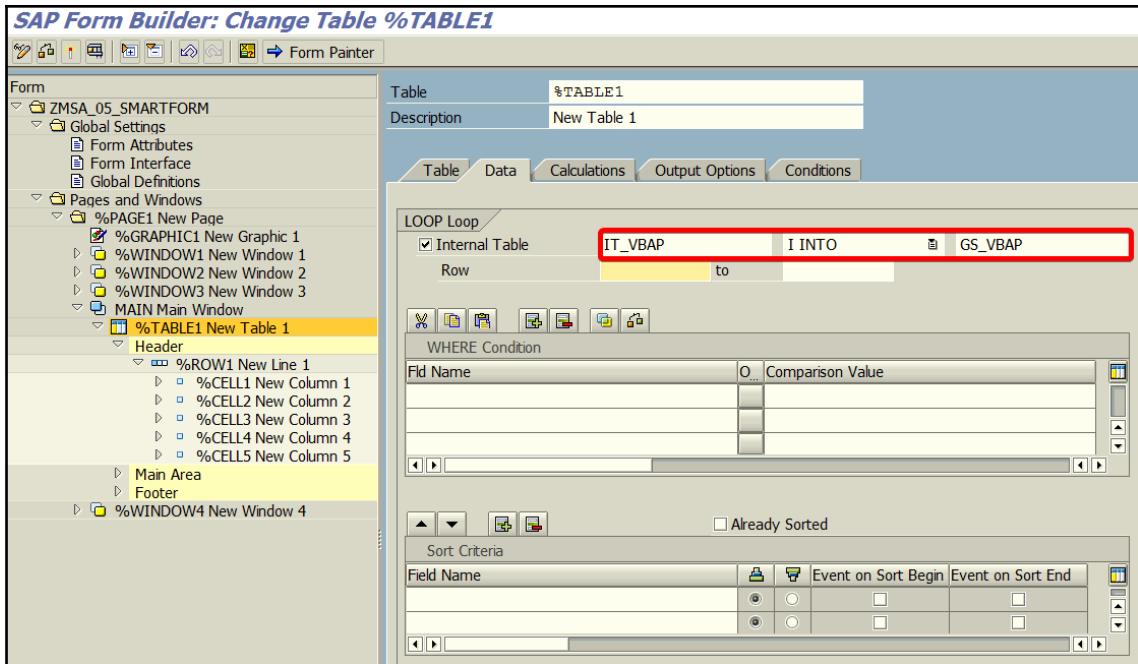
Variable Name	Typing	Associated Type
GS_VBAP	TYPE	VBAP
GV_SUM	TYPE	NETWR_AP
GV_TOTAL	TYPE	NETWR_AP

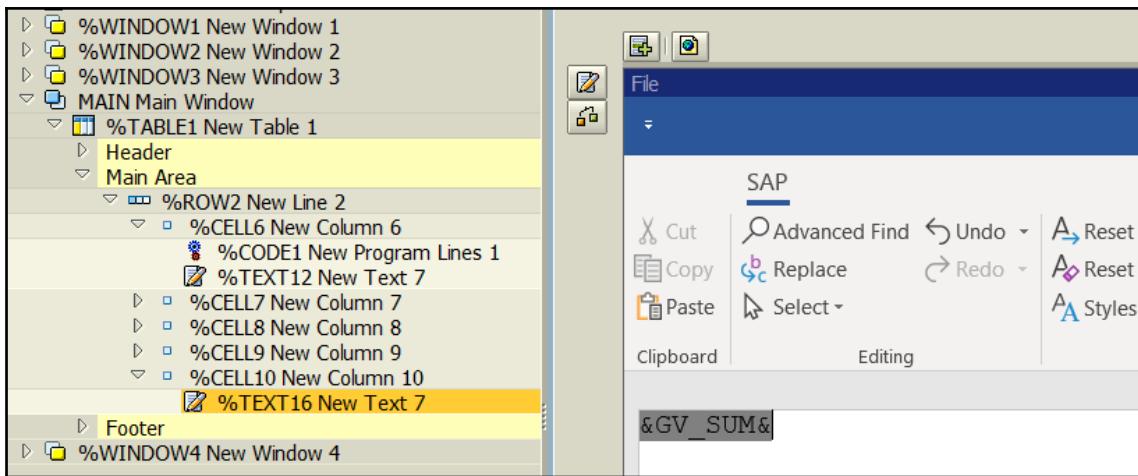
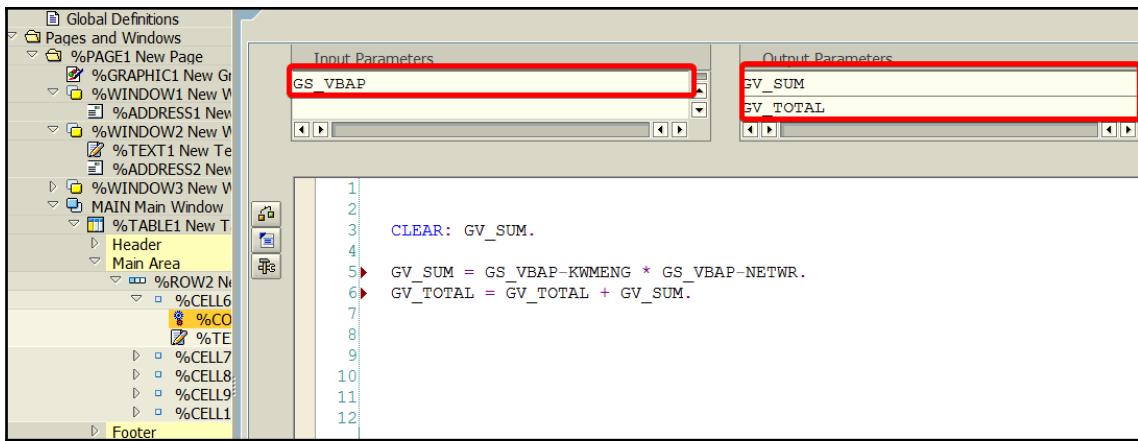
The bottom window is a context menu with the title 'Create' highlighted. The menu items are: Create, Cut, Copy, Paste, Delete, Expand, Collapse, Window, Graphic, Address, Text, Table, Template, Flow Logic, Folder, and Reference.











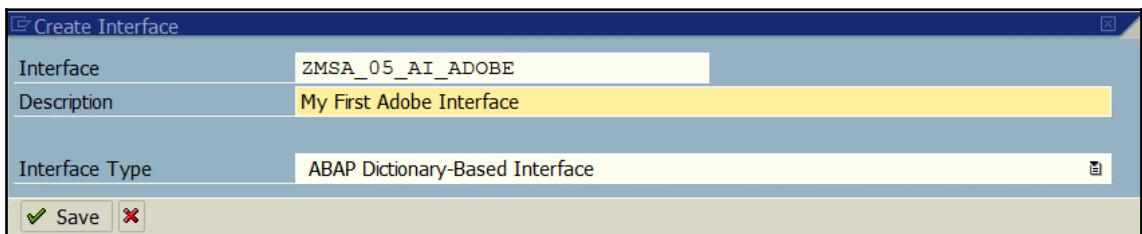
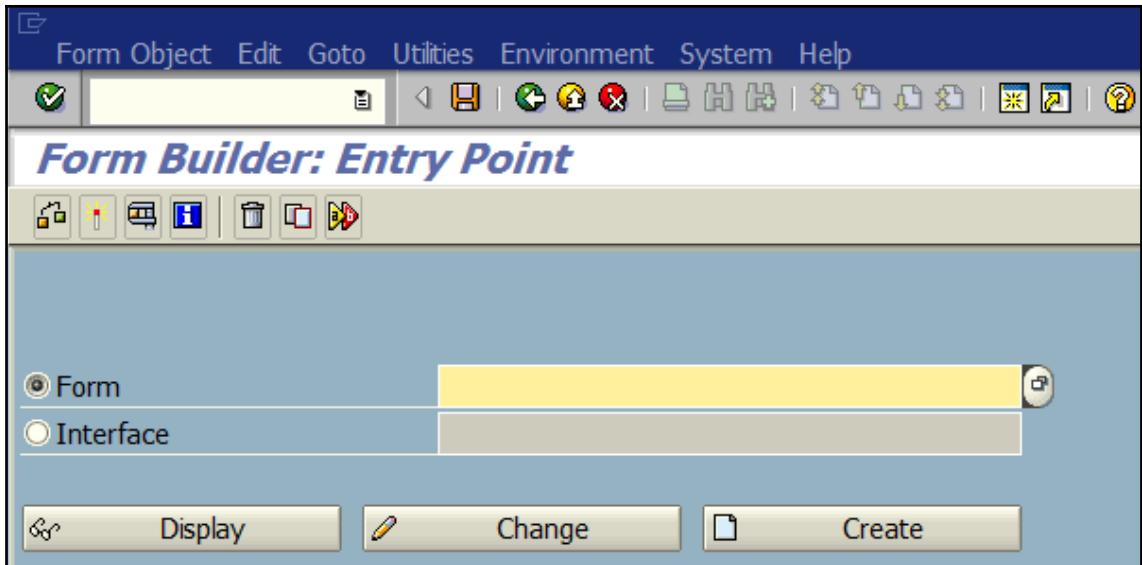
Company
CG
PL-

LOGO

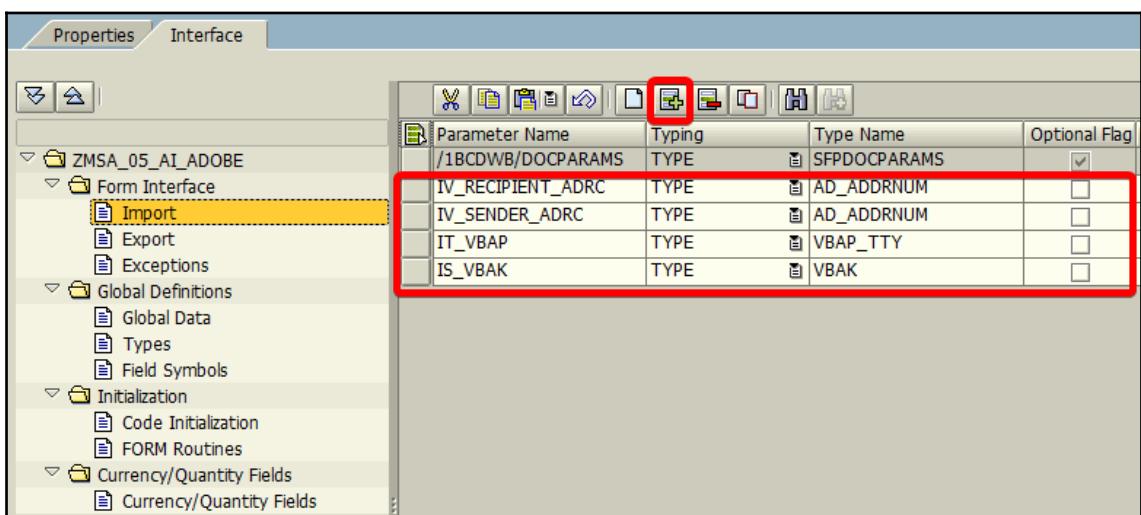
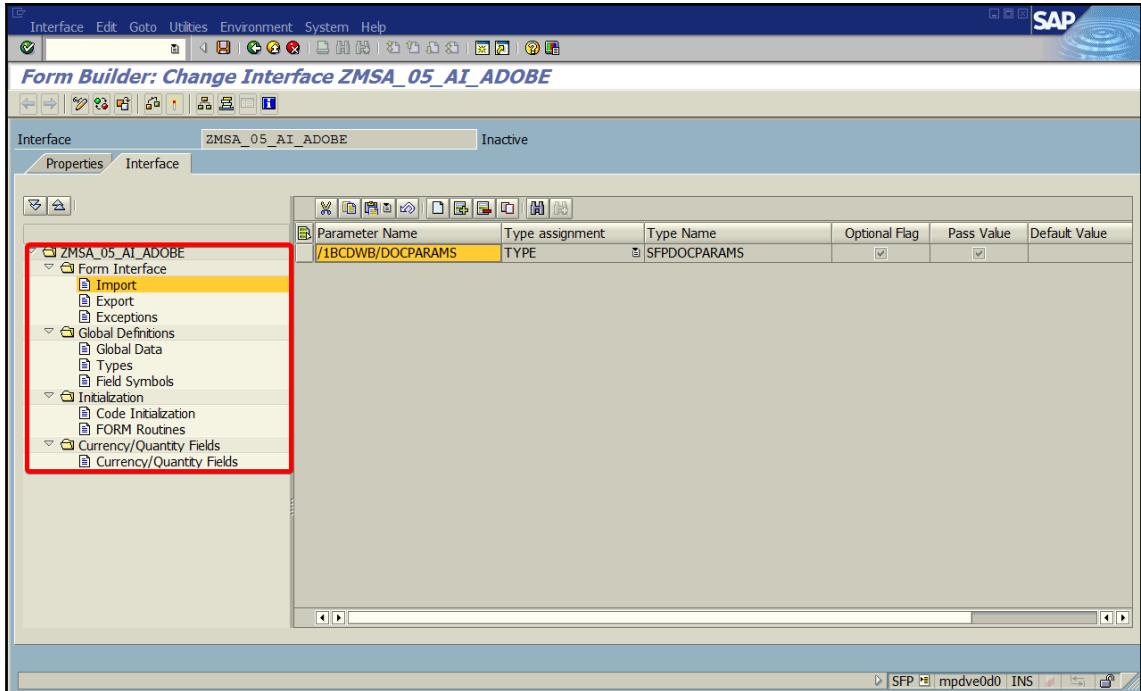
Bill To:
Company
CG
PL-

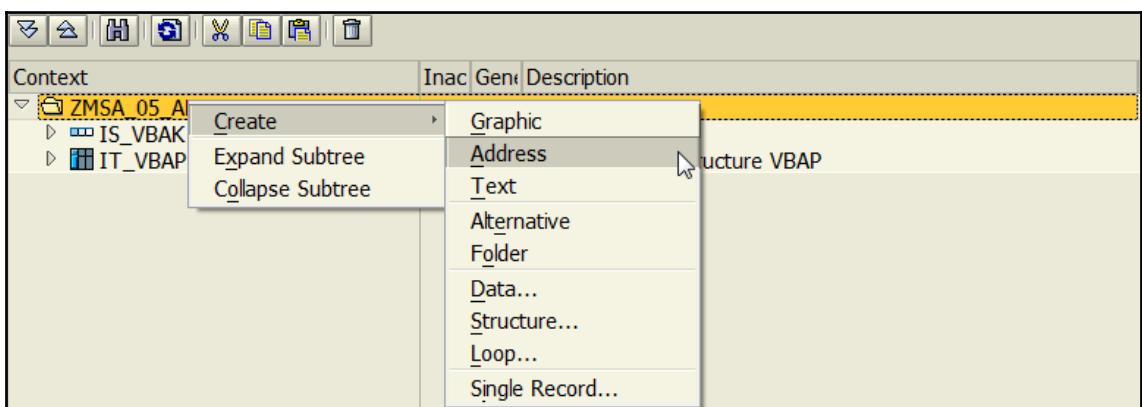
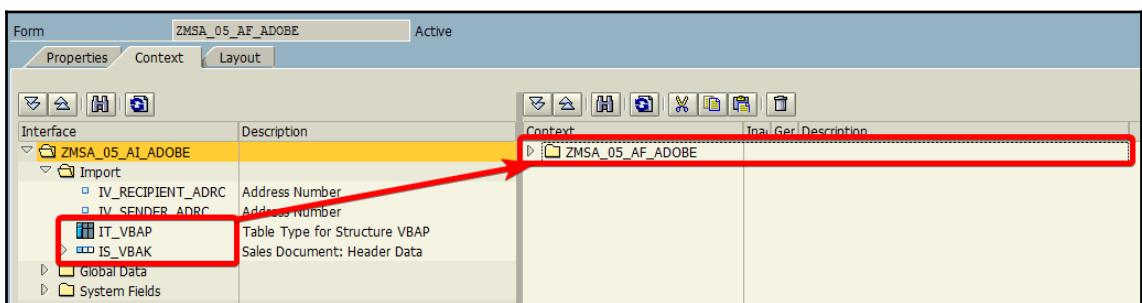
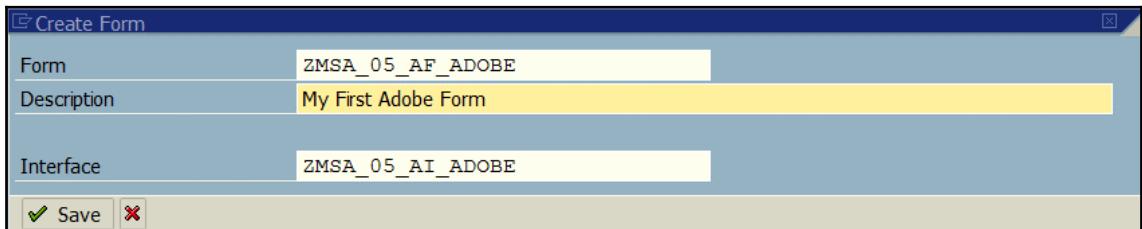
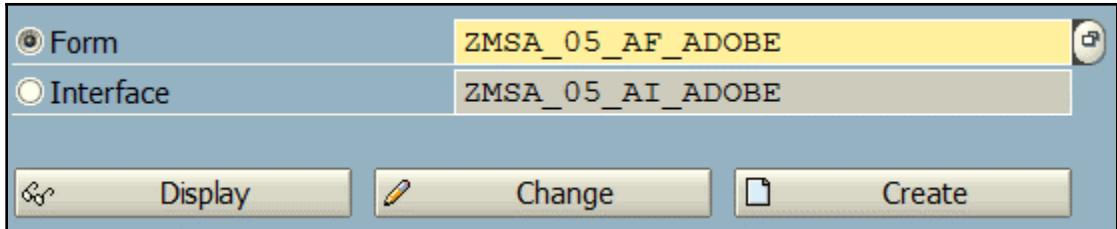
Doc.	Date	Document #
01.01.2018		100001

Mat. #	Description	Qty.	Unit Price	Total
101	Test1	10,000	13,50	135,00
102	Test2	5,000	25,00	125,00
103	Test3	2,000	100,00	200,00
Total				460,00



Graphic Bundle





Graphic Bundle

The screenshot shows two main windows from the SAP interface configuration:

Interface ZMSA_05_AF_ADOBE (Properties tab):

- Import:**
 - IV_RECIPIENT_ADRC**: Address Number
 - IV_SENDER_ADRC**: Address Number (highlighted with a red box)
 - IT_VBAP**: Table Type for Structure VBAP
 - IS_VBAK**: Sales Document: Header Data
- Global Data**
- System Fields**

Context (Properties tab):

- ADDRESS**: Address Node ADDRESS (highlighted with a red box)
- IT_VBAP**: Table Type for Structure VBAP
- IS_VBAK**: Sales Document: Header Data
- GRAPHIC**: Graphic Node GRAPHIC

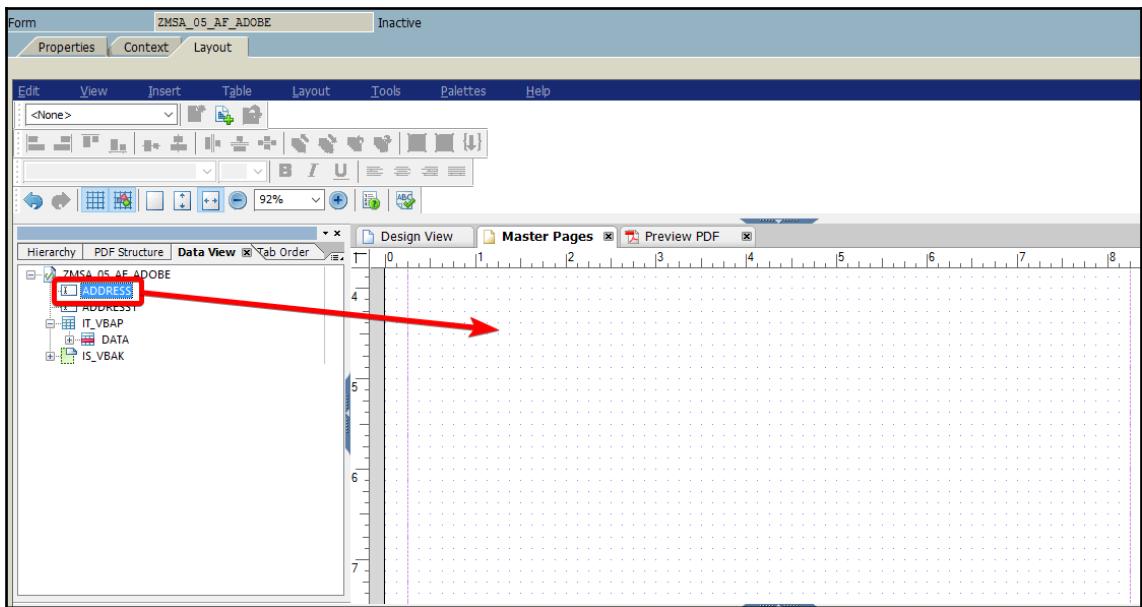
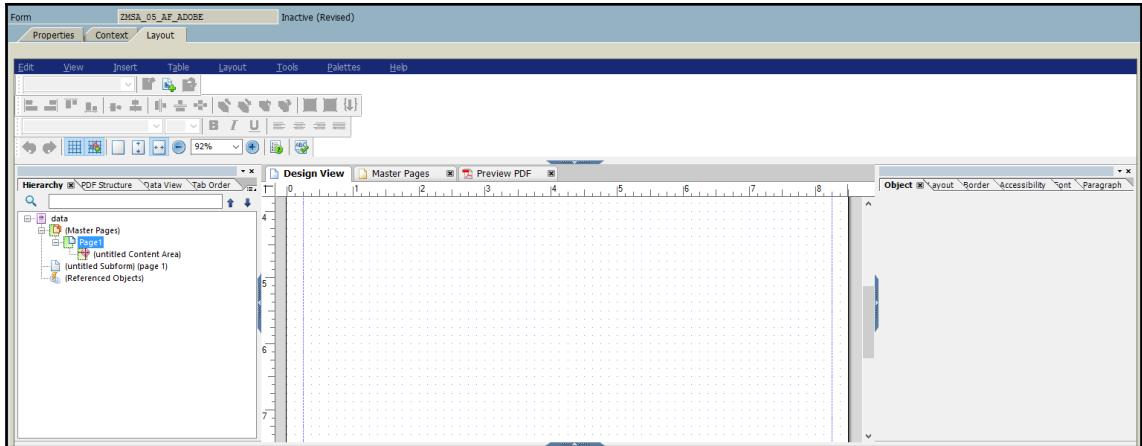
Properties (Properties tab):

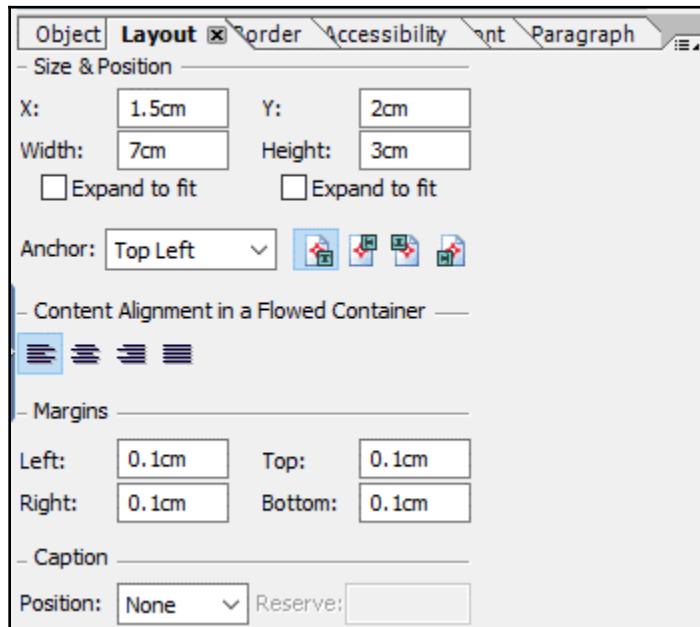
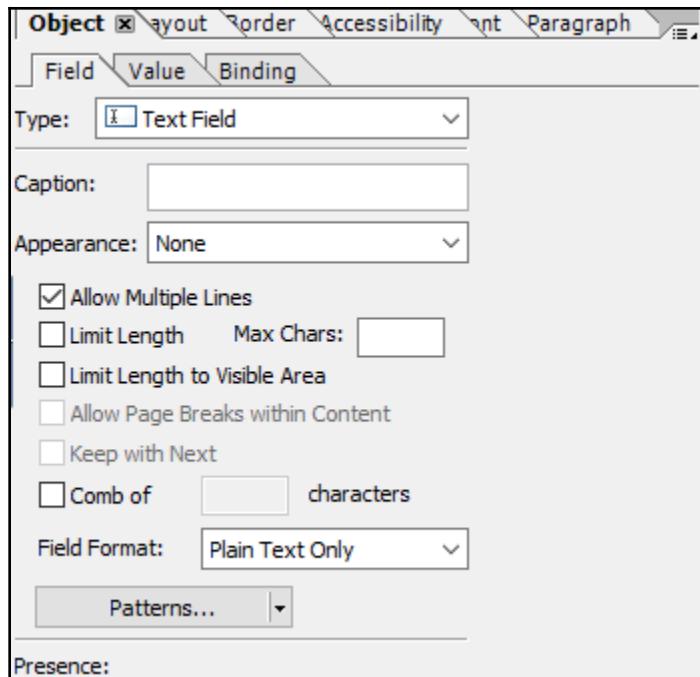
Property	Value
Status	Active
Address	Organization, Company
Address Type	Dynamic Address Type
Address Number	IV_SENDER_ADRC (highlighted with a red box)
Person Number	
Handle for Address Number	

Table Type for Structure VBAP (IT_VBAP):

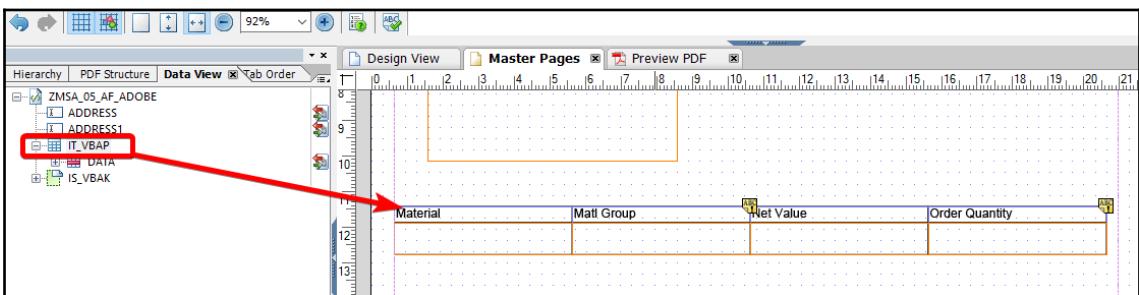
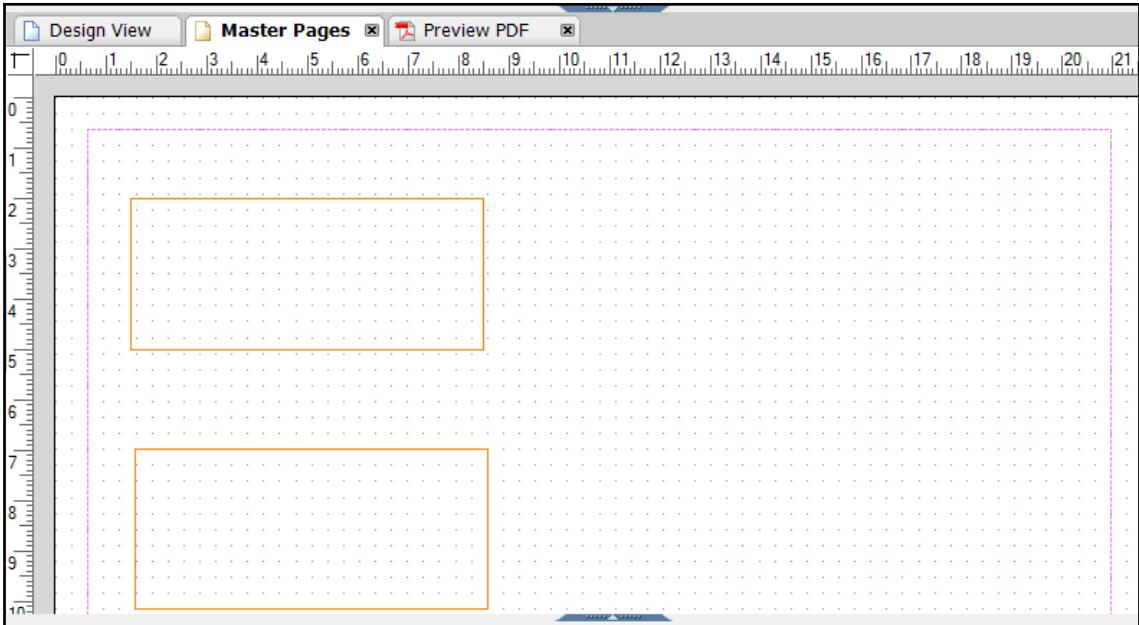
- DATA:**
 - MANDT**
 - VBELN**
 - POSNR**
 - MATNR** (highlighted with a red box):
 - Set to Active**
 - Deactivate**
 - MATW**
 - PMATI**
 - CHARG**

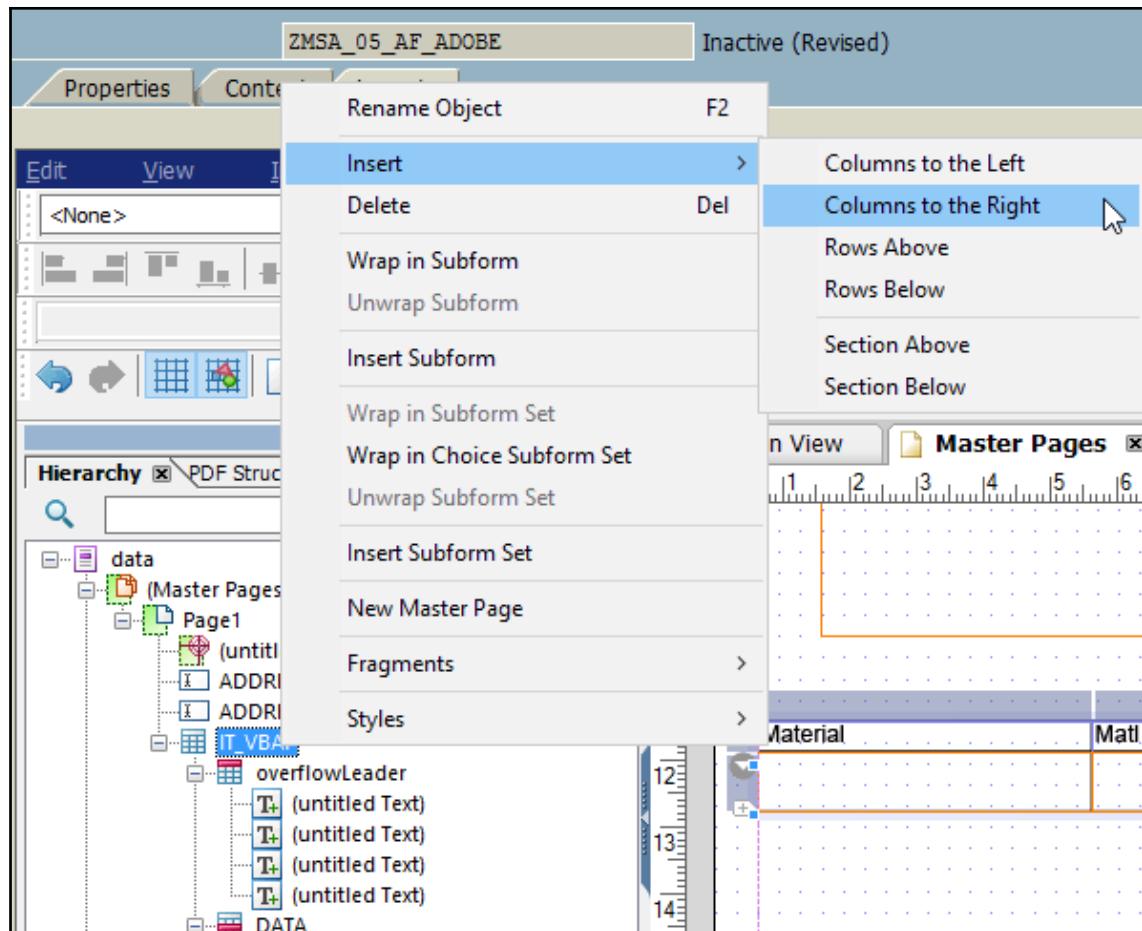
Graphic Bundle

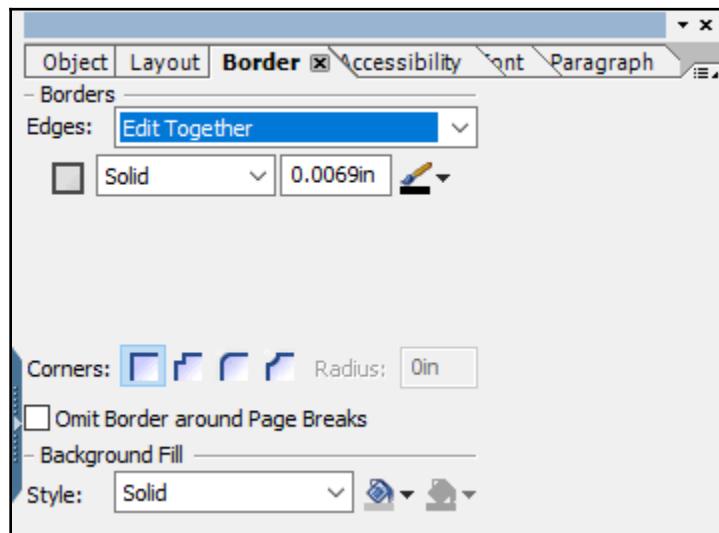
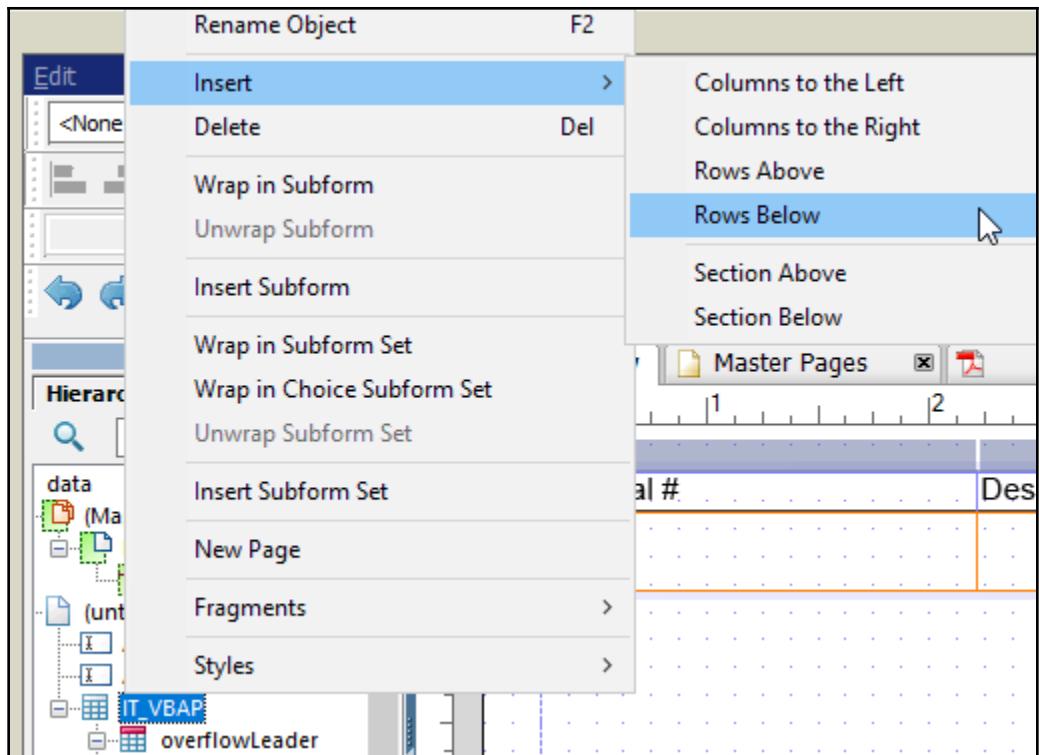


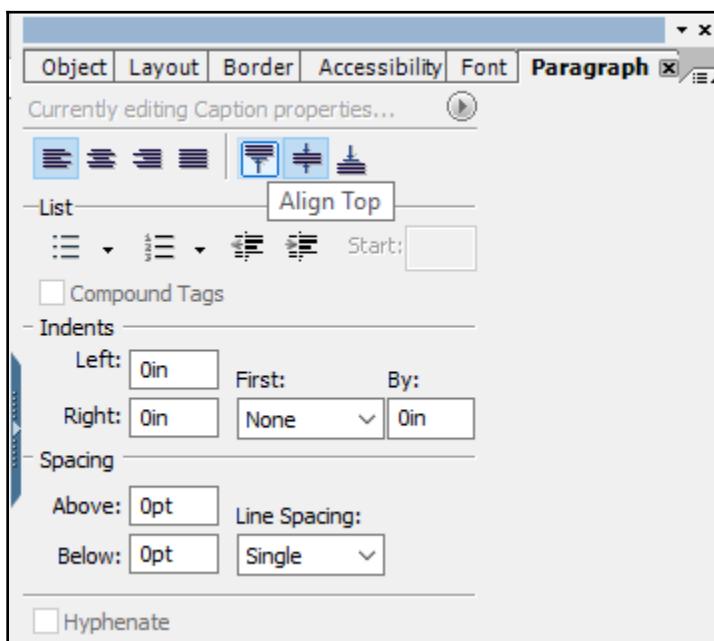
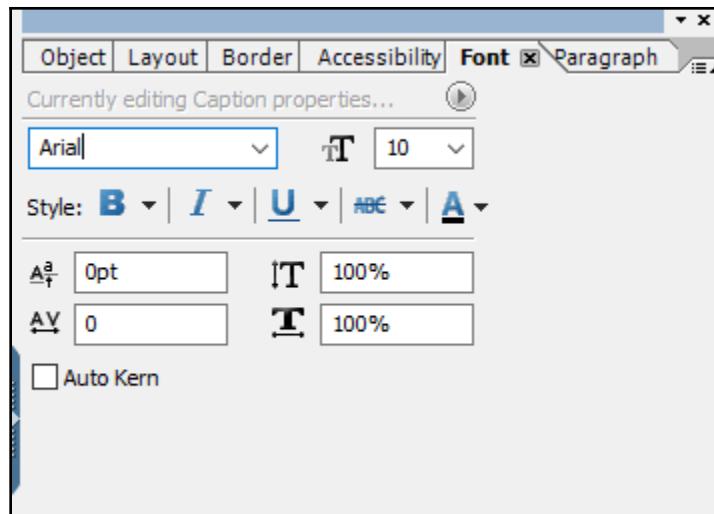


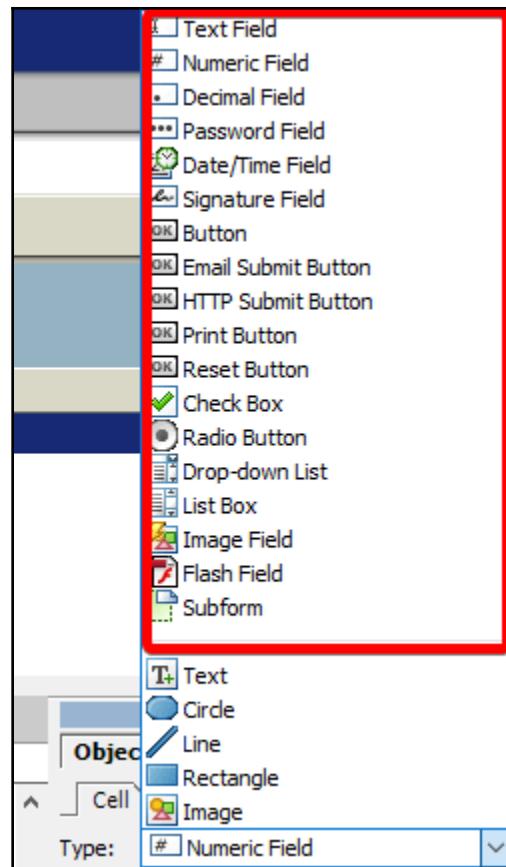
Graphic Bundle

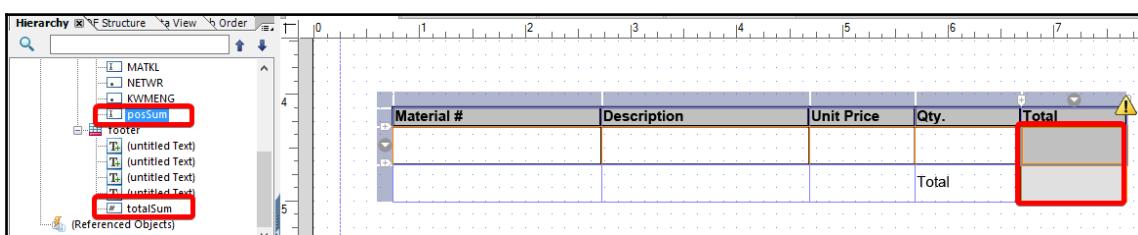
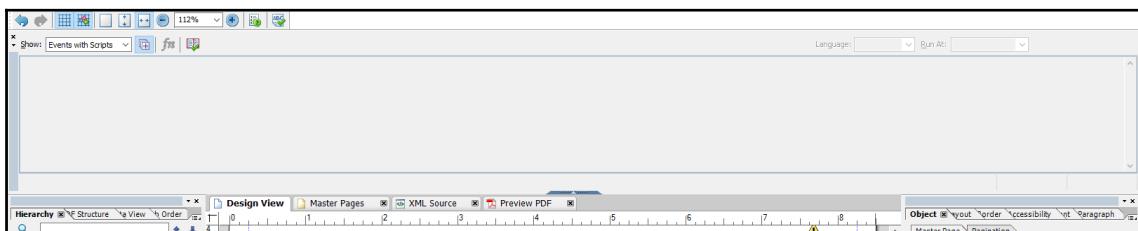
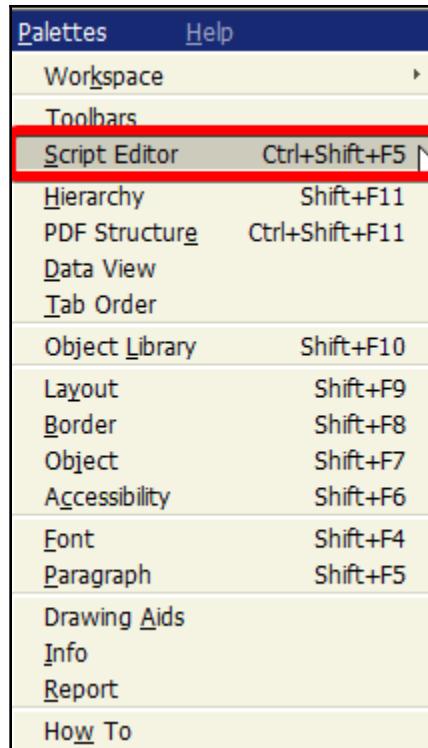


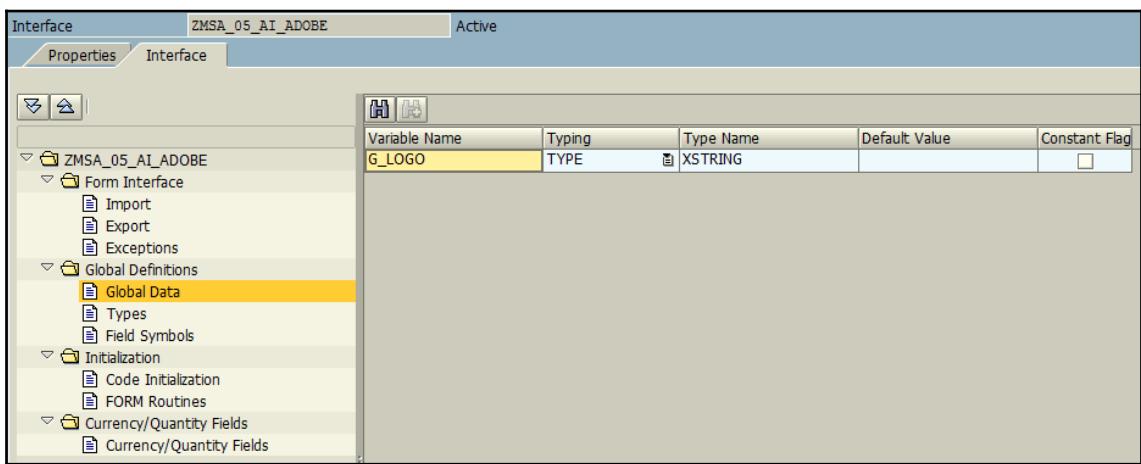
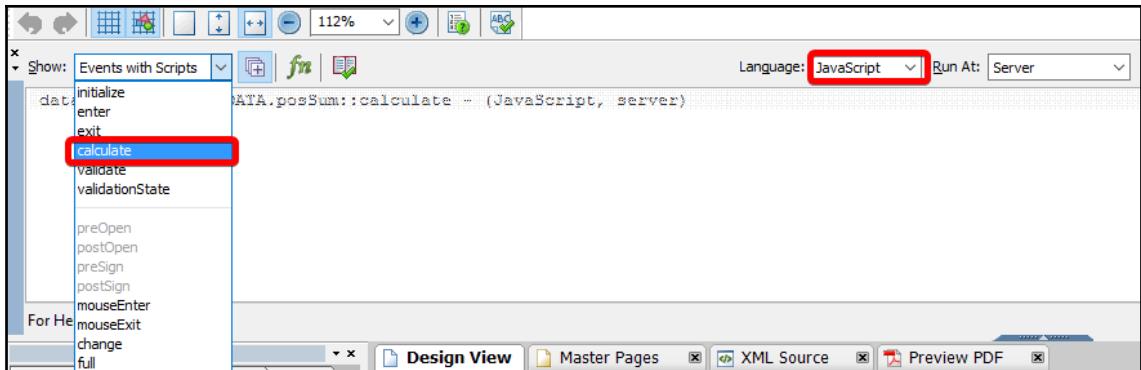


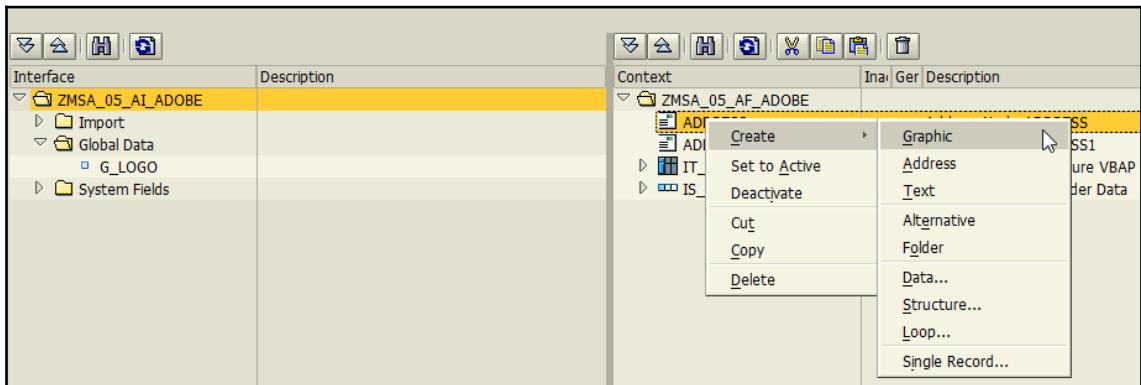
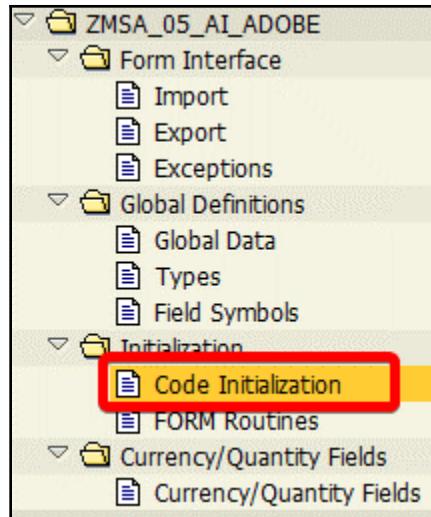










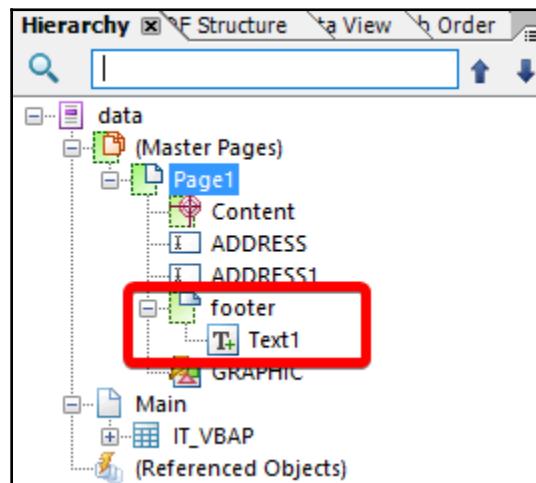
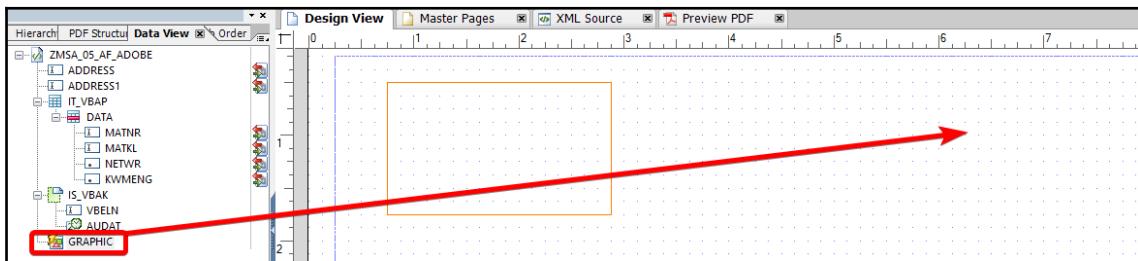


Graphic Bundle

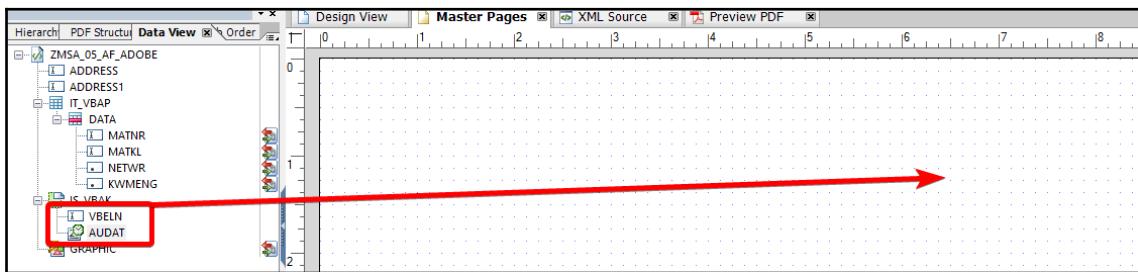
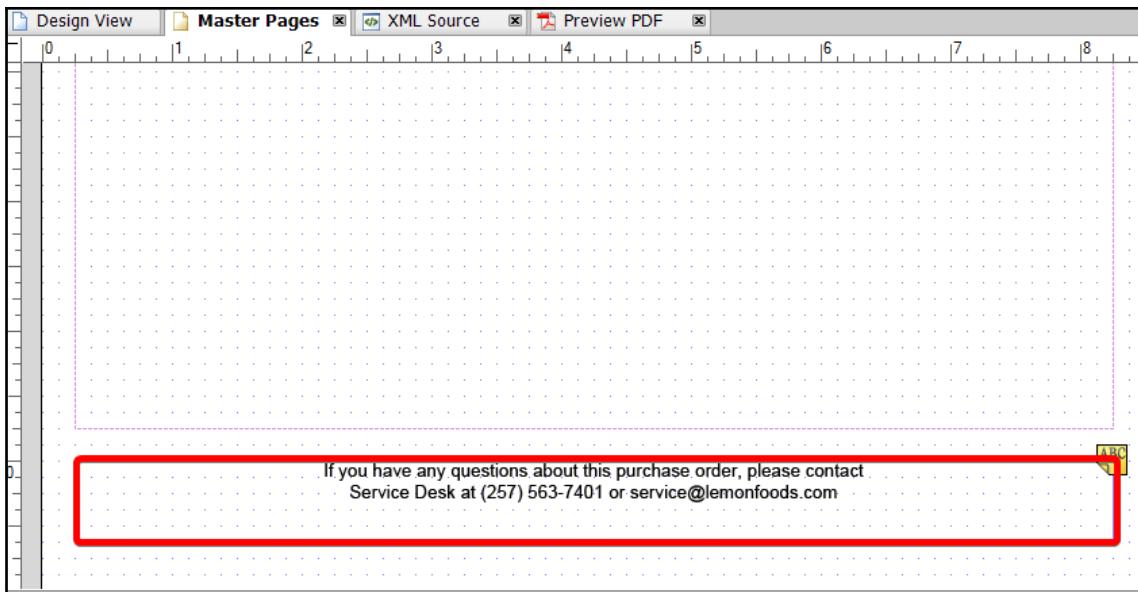
Context	Inai	Ger	Description
└ ZMSA_05_AF_ADOBE			
└ ADDRESS			Address Node ADDRESS
└ ADDRESS1			Address Node ADDRESS1
└ IT_VBAP			Table Type for Structure VBAP
└ IS_VBAK			Sales Document: Header Data
└ GRAPHIC			Graphic Node GRAPHIC

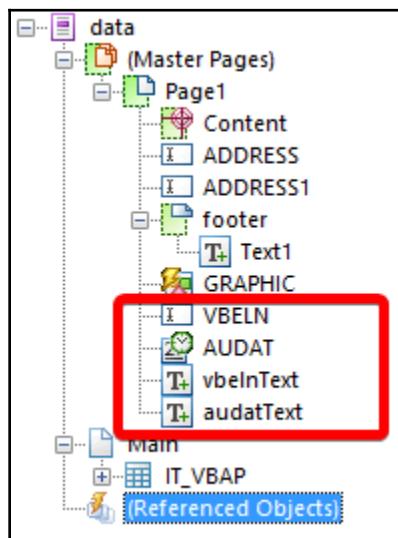
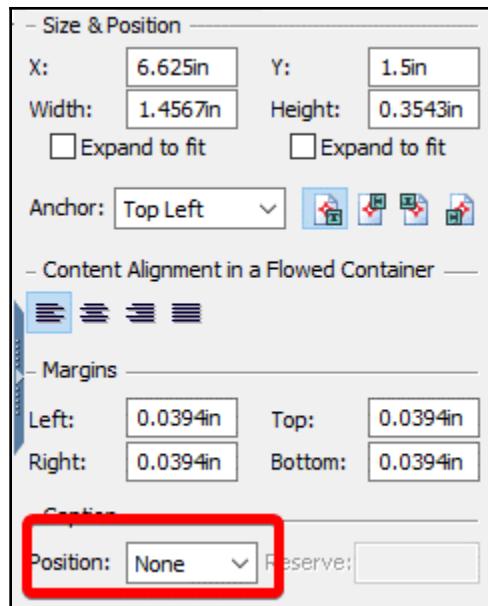
Properties Conditions

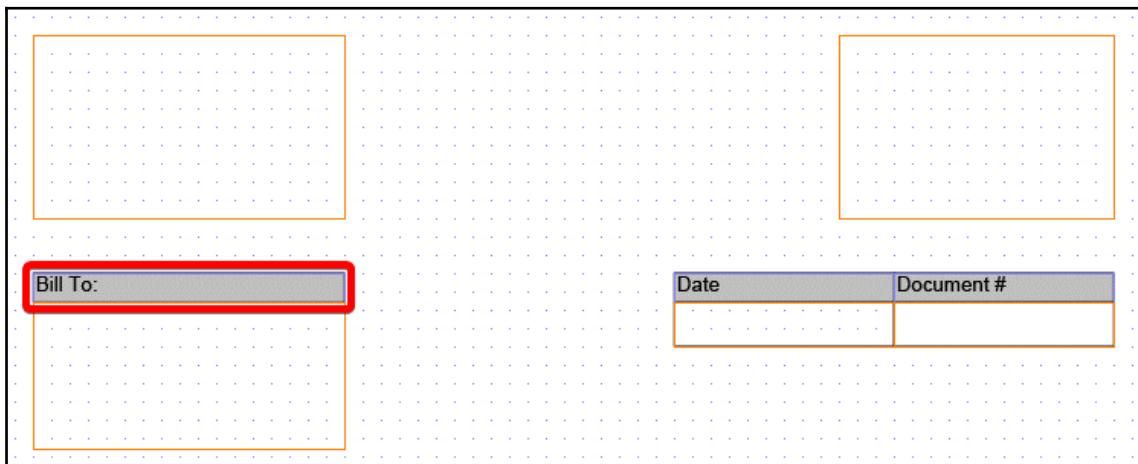
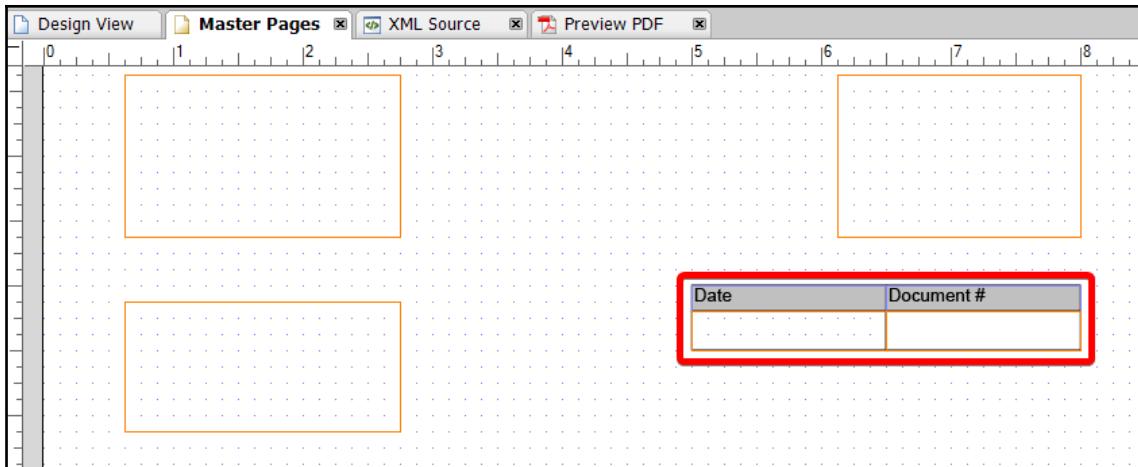
Property	Value
General	
Name	GRAPHIC
Description	Graphic Node GRAPHIC
Status	Active
Graphic	
Graphic Type	Graphic Content
Graphic Content	
Field	G_LOGO
MIME Type	'IMAGE/BMP'



Graphic Bundle







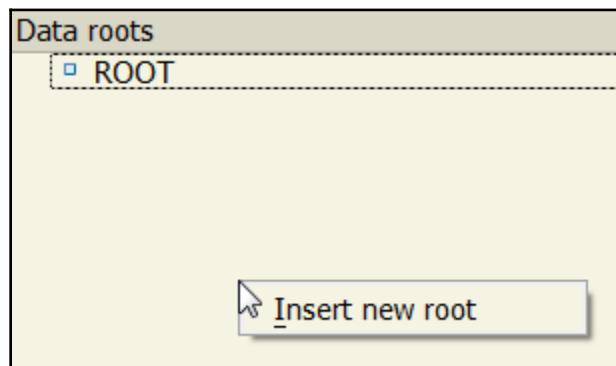
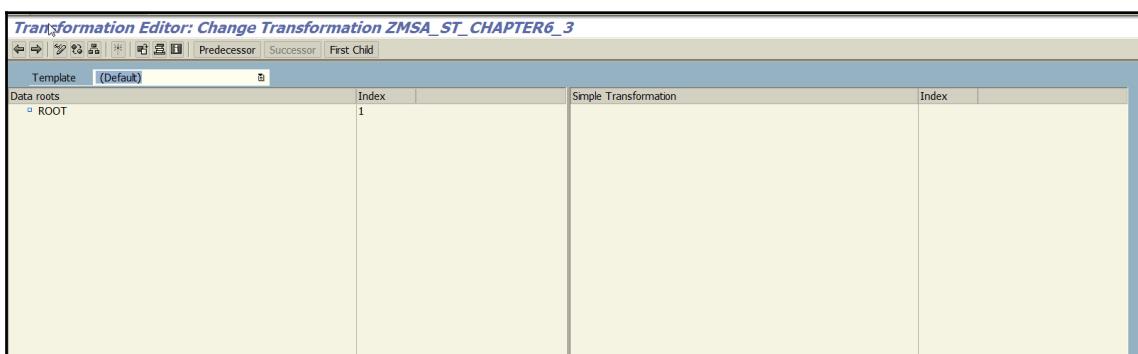
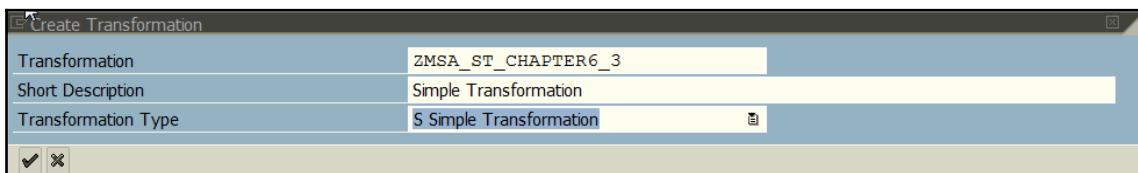
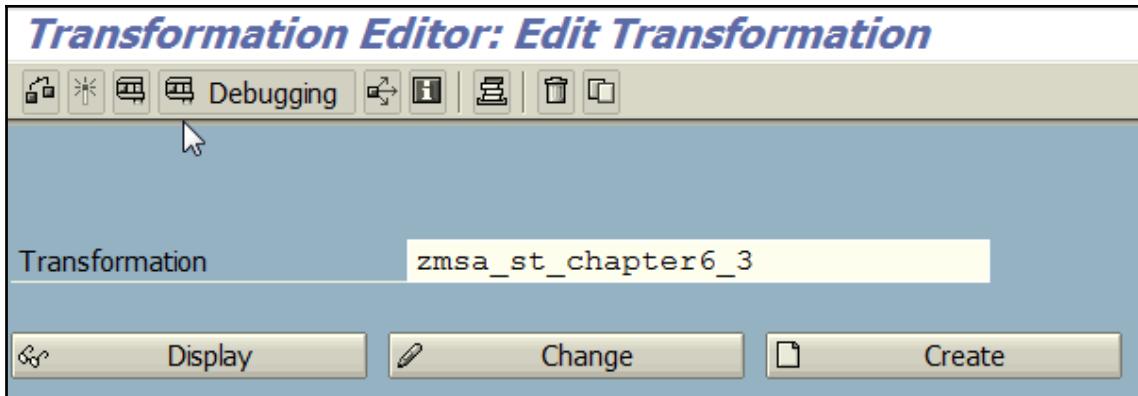
Chapter 6: ABAP and XML

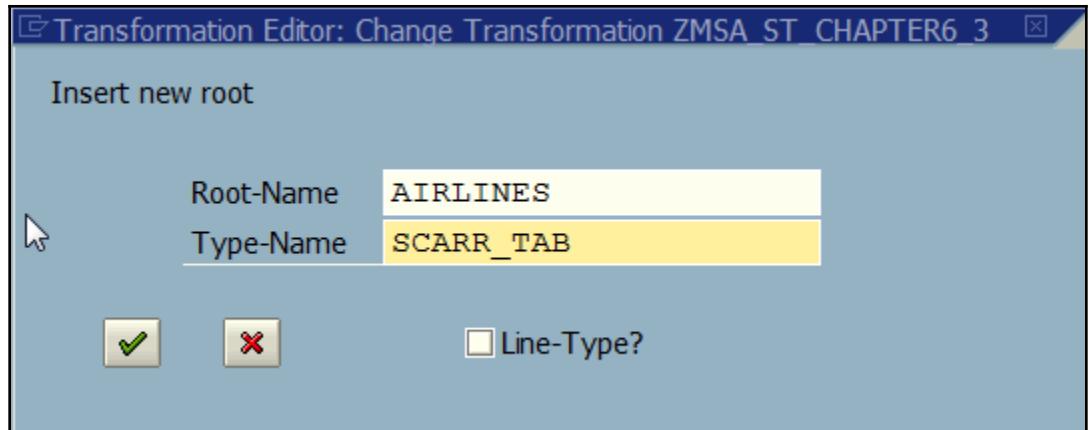
Display XML document

```
<?xml version="1.0" encoding="UTF-8"?>
- <AIRLINES>
  - <SCARR>
    <CARRID>A2</CARRID>
    <CARRNAME>Antarctica Airlines</CARRNAME>
    <CURRCODE>AQD</CURRCODE>
    <URL>http://antarcticaairlines.aq</URL>
  </SCARR>
</AIRLINES>
```

Display XML document

```
<?xml version="1.0" encoding="UTF-8"?>
- <AIRLINES>
  - <SCARR>
    <CARRID>A2</CARRID>
    <CARRNAME>Antarctica Airlines</CARRNAME>
    <CURRCODE>AQD</CURRCODE>
    <URL>http://antarcticaairlines.aq</URL>
  </SCARR>
</AIRLINES>
```





The screenshot shows the "Output" pane of the Transformation Editor displaying the generated XML code. The code defines four airline entries under the root node <AIRLINES>:

```
<AIRLINES>
<SCARR>
<MANDT>100</MANDT>
<CARRID>AA</CARRID>
<CARRNAME>American Airlines</CARRNAME>
<CURRCODE>USD</CURRCODE>
<URL>http://www.aa.com</URL>
</SCARR>
<SCARR>
<MANDT>100</MANDT>
<CARRID>AC</CARRID>
<CARRNAME>Air Canada</CARRNAME>
<CURRCODE>CAD</CURRCODE>
<URL>http://www.aircanada.ca</URL>
</SCARR>
<SCARR>
<MANDT>100</MANDT>
<CARRID>AF</CARRID>
<CARRNAME>Air France</CARRNAME>
<CURRCODE>EUR</CURRCODE>
<URL>http://www.airfrance.fr</URL>
</SCARR>
<SCARR>
<MANDT>100</MANDT>
<CARRID>AZ</CARRID>
<CARRNAME>Alitalia</CARRNAME>
<CURRCODE>EUR</CURRCODE>
<URL>http://www.alitalia.it</URL>
</SCARR>
```

Graphic Bundle

```
Output
LT_CARR
MANDT CARRID CARRNAME          CURRCODE URL
A2    Antarctica Airlines A2D   http://antarcticaairlines.ag
```

```
Output
{
  "VALUES": [
    {
      "CARRID": "AA",
      "CARRNAME": "American Airlines",
      "CURRCODE": "USD",
      "URL": "http://www.aa.com"
    },
    {
      "CARRID": "AC",
      "CARRNAME": "Air Canada",
      "CURRCODE": "CAD",
      "URL": "http://www.aircanada.ca"
    },
    {
      "CARRID": "AF",
      "CARRNAME": "Air France",
      "CURRCODE": "EUR",
      "URL": "http://www.airfrance.fr"
    },
    {
      "CARRID": "AZ",
      "CARRNAME": "Alitalia",
      "CURRCODE": "EUR",
      "URL": "http://www.alitalia.it"
    },
    {
      "CARRID": "BA",
```

Chapter 7: Building User Interfaces

Screen number New(Revised)

Attributes Element list Flow logic

Short Description	<input type="text" value="I"/>
Original Language	<input type="text" value="EN"/> English
Last Changed	<input type="text" value="00:00:00"/>
Last Generation	<input type="text" value="00:00:00"/>

Screen Type

Normal
 Subscreen
 Modal dialog box
 Selection Dynpro

Settings

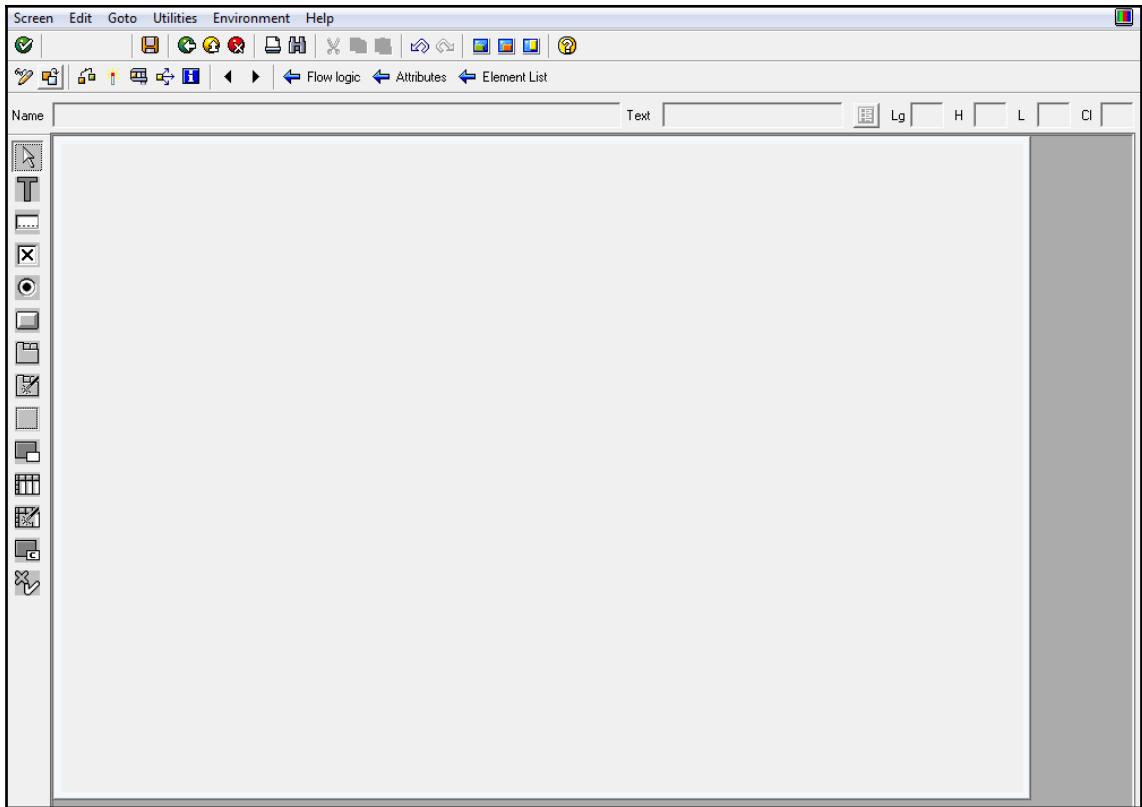
Hold Data
 Switch Off Runtime Compress
 Template (Not Executable)
 Hold Scroll Position
 Without Application Toolbar

Other Attributes

Next Dynpro	<input type="text" value="100"/>
Cursor Position	<input type="text"/>
Screen Group	<input type="text"/>
Rows/Columns	Occupied <input type="text" value="0"/> <input type="text" value="0"/> Editing <input type="text" value="27"/> <input type="text" value="120"/>
Context Menu FORM ON CTMENU	<input type="text"/>

 Properties

Graphic Bundle



A screenshot of the SAP ABAP screen editor showing a graphical user interface. The title bar says 'Mastering ABAP'. The interface includes fields for 'Airline' and 'Connection Number' with dropdown arrows, a 'to' field with a location pin icon, and a 'Type of flight' section with radio buttons for 'Domestic flights' (selected) and 'International flights'.

Airline	<input type="text"/>
Connection Number	<input type="text"/> <input type="button" value="to"/> <input type="text"/>
Type of flight	
<input checked="" type="radio"/> Domestic flights	
<input type="radio"/> International flights	

Text Symbols Selection Texts List Headings

1 / 4

Name	Text	DDIC Refe...
P_CAR	Airline	<input checked="" type="checkbox"/>
P_DOM	Domestic flights	<input type="checkbox"/>
P_INT	International flights	<input type="checkbox"/>
S_CON	Connection Number	<input checked="" type="checkbox"/>

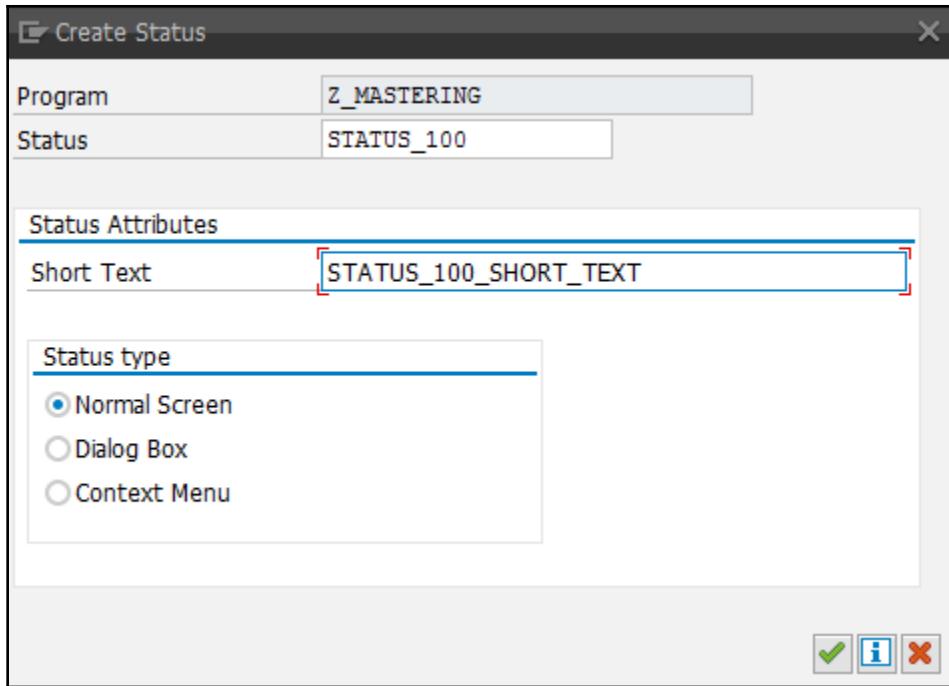
Screen number 100 Inactive

Attributes Element list Flow logic

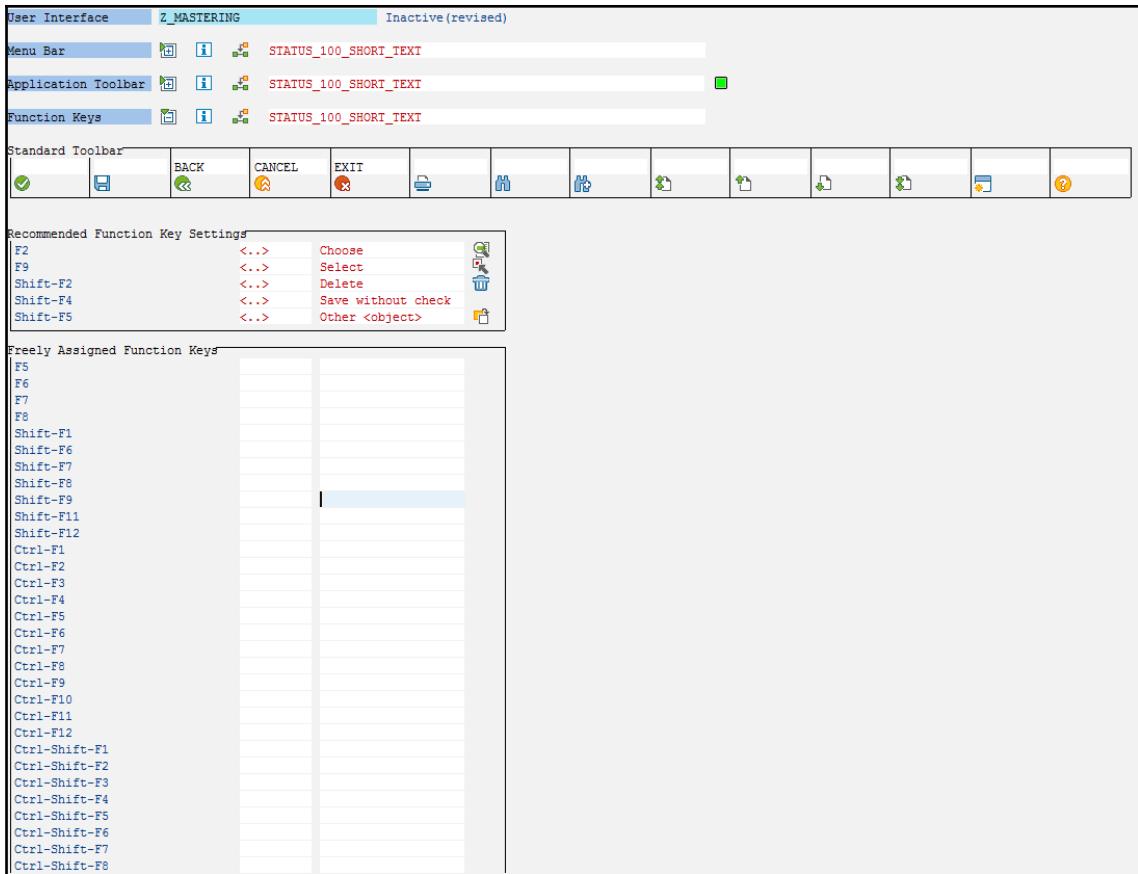
```
1| PROCESS BEFORE OUTPUT.  
2| MODULE PBO_100.  
3|  
4| PROCESS AFTER INPUT.  
5| MODULE PAI_100.
```

Create Title

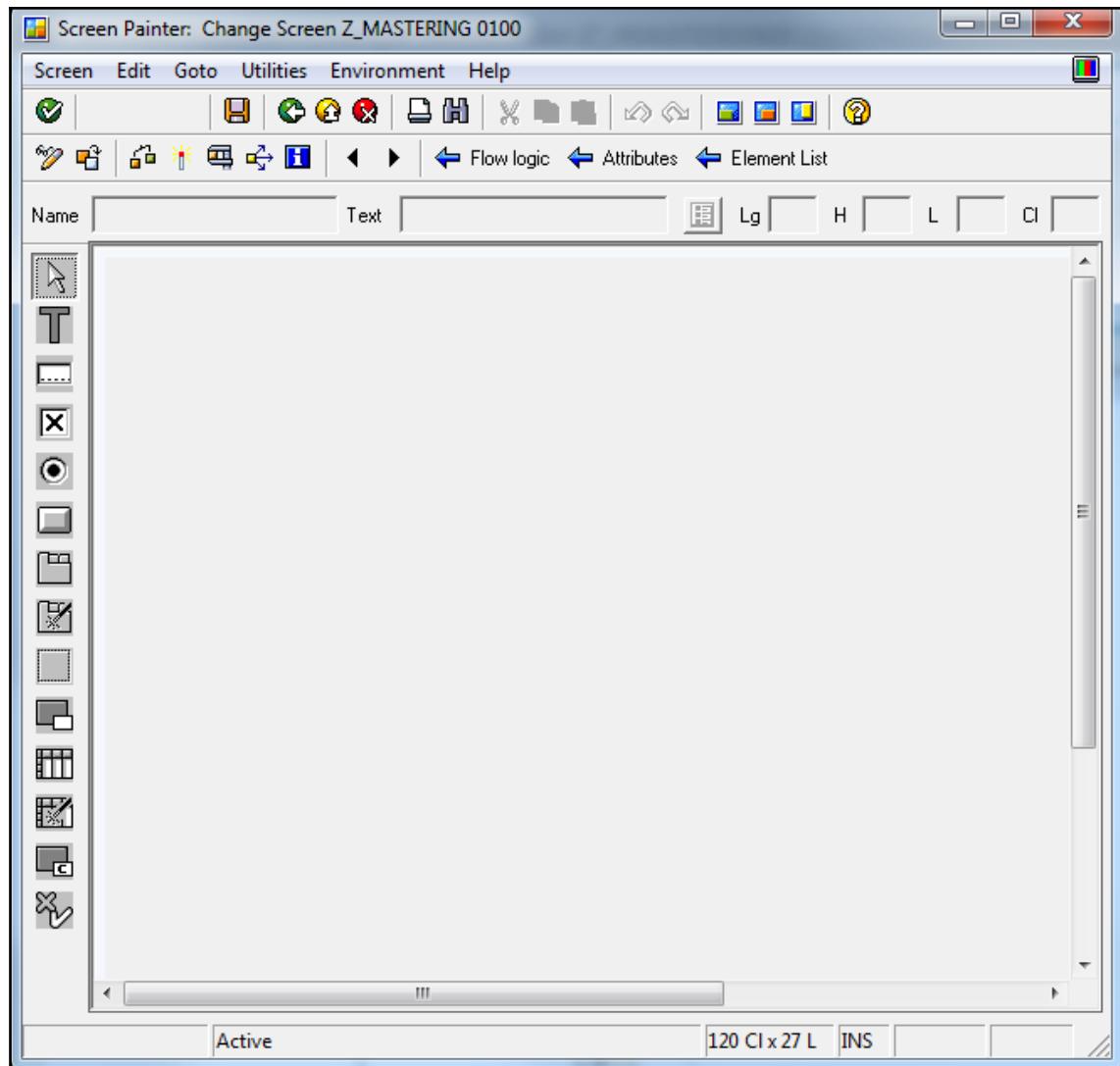
Program	Z_MASTERING
Title Code	TITLEBAR_100
Title	Mastering ABAP
<input checked="" type="checkbox"/> All title <input type="checkbox"/>	

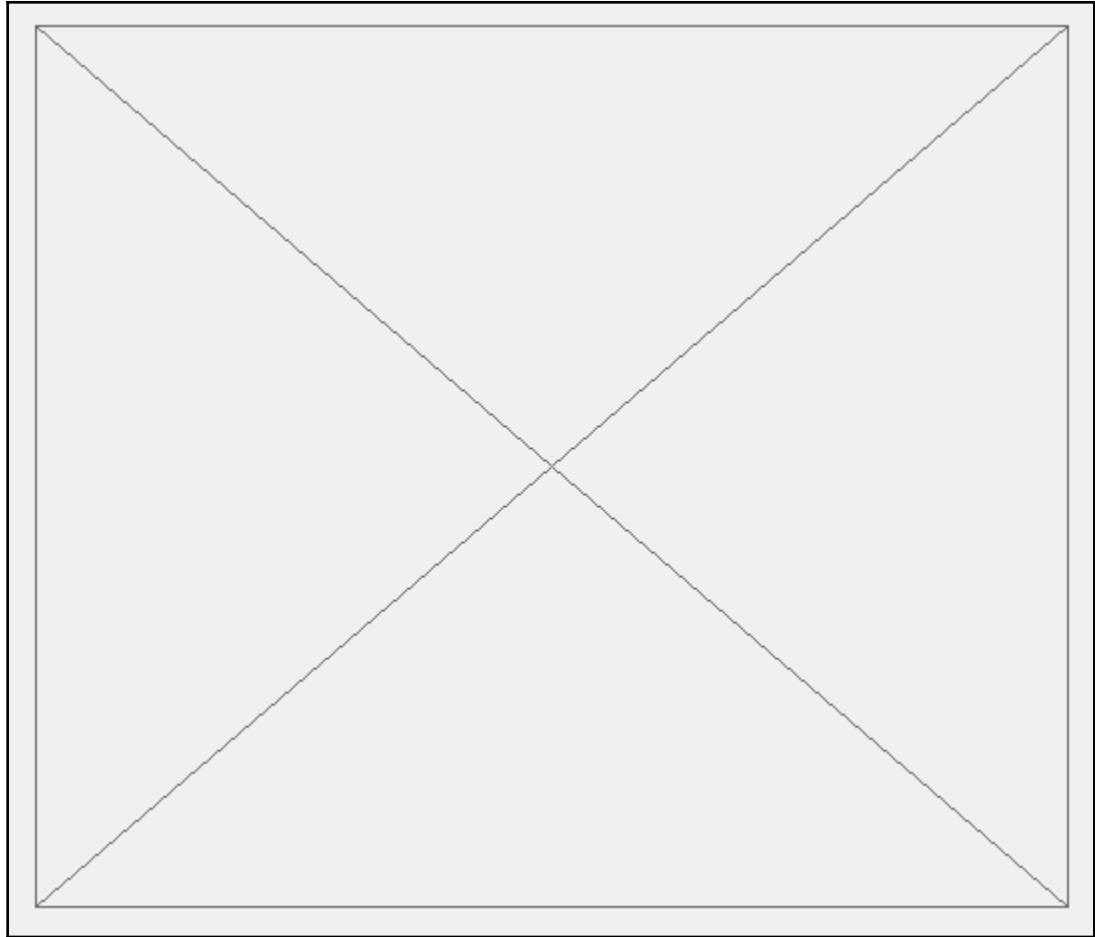


Graphic Bundle



Screen number		100	Active(Revised)													
		Attributes	Element list	Flow logic												
		General	Texts/I/O Templates	Special	Display	Mod. Groups/Functions	References									
H..	M	Name	Typ...	Li...	C...	D...	V...	H...	S...	Format	I...	O...	Ou...	D...	Dic...	Property list
		OK_CODE	OK	0	0	20	20	1	<input type="checkbox"/>	OK				<input type="checkbox"/>		Properties





ID	No.	Ctr	Depart. city	De...	Ctr	Arrival city	Apt	FlightT...	Departure	Arrival	Distance	Dis.	C	Da...
A	17	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:01	11:00:00	14:01:00	2.572	MI	0	
AA	64	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:21	09:00:00	17:21:00	2.572	MI	0	
AZ	555	IT	ROME	FCO	DE	FRANKFURT	FRA	2:05	19:00:00	21:05:00	845	MI	0	
AZ	788	IT	ROME	FCO	JP	TOKYO	TY...	12:55	12:00:00	08:55:00	6.130	MI	1	
AZ	789	JP	TOKYO	TY...	IT	ROME	FCO	15:40	11:45:00	19:25:00	6.130	MI	0	
AZ	790	IT	ROME	FCO	JP	OSAKA	KIX	13:35	10:35:00	08:10:00	6.030	MI	X	1
DL	106	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:55	19:35:00	09:30:00	3.851	MI	1	
DL	1699	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:22	17:15:00	20:37:00	2.572	MI	0	
DL	1984	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:25	10:00:00	18:25:00	2.572	MI	0	
JL	407	JP	TOKYO	NRT	DE	FRANKFURT	FRA	12:05	13:30:00	17:35:00	9.100	KM	0	
JL	408	DE	FRANKFURT	FRA	JP	TOKYO	NRT	11:15	20:25:00	15:40:00	9.100	KM	X	1
LH	400	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:24	10:10:00	11:34:00	6.162	KM	0	
LH	401	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:15	18:30:00	07:45:00	6.162	KM	1	
LH	402	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:35	13:30:00	15:05:00	6.162	KM	X	0
LH	2402	DE	FRANKFURT	FRA	DE	BERLIN	SXF	1:05	10:30:00	11:35:00	555	KM	0	
LH	2407	DE	BERLIN	TXL	DE	FRANKFURT	FRA	1:05	07:10:00	08:15:00	555	KM	0	
QF	5	SG	SINGAPORE	SIN	DE	FRANKFURT	FRA	13:45	22:50:00	05:35:00	10.000	KM	1	
QF	6	DE	FRANKFURT	FRA	SG	SINGAPORE	SIN	11:10	20:55:00	15:05:00	10.000	KM	1	
SQ	2	SG	SINGAPORE	SIN	US	SAN FRANCISCO	SFO	18:25	17:00:00	19:25:00	8.452	MI	0	
SQ	15	US	SAN FRANCISCO	SFO	SG	SINGAPORE	SIN	18:45	16:00:00	02:45:00	8.452	MI	2	
SQ	158	SG	SINGAPORE	SIN	ID	JAKARTA	JKT	1:35	15:25:00	16:00:00	560	MI	0	
SQ	988	SG	SINGAPORE	SIN	JP	TOKYO	TY...	6:40	16:35:00	00:15:00	3.125	MI	1	
UA	941	DE	FRANKFURT	FRA	US	SAN FRANCISCO	SFO	11:36	14:30:00	17:06:00	5.685	MI	0	
UA	3504	US	SAN FRANCISCO	SFO	DE	FRANKFURT	FRA	10:30	15:00:00	10:30:00	5.685	MI	1	
UA	3516	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:25	16:20:00	05:45:00	6.162	KM	1	
UA	3517	DE	FRANKFURT	FRA	US	NEW YORK	JFK	8:15	10:40:00	12:55:00	6.162	KM	0	

Graphic Bundle

ID	No.	Ctr	Depart. city	De...	Ctr	Arrival city	Apt	FlightT...	Departure	Arrival	Distance	Dis.	C	Da...
A	17	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:01	11:00:00	14:01:00	2.572	MI	0	
AA	64	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:21	09:00:00	17:21:00	2.572	MI	0	
AZ	555	IT	ROME	FCO	DE	FRANKFURT	FRA	2:05	19:00:00	21:05:00	845	MI	0	
AZ	788	IT	ROME	FCO	JP	TOKYO	TY...	12:55	12:00:00	08:55:00	6.130	MI	1	
AZ	789	JP	TOKYO	TY...	IT	ROME	FCO	15:40	11:45:00	19:25:00	6.130	MI	0	
AZ	790	IT	ROME	FCO	JP	OSAKA	KIX	13:35	10:35:00	08:10:00	6.030	MI	X	1
DL	106	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:55	19:35:00	09:30:00	3.851	MI	1	
DL	1699	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:22	17:15:00	20:37:00	2.572	MI	0	
DL	1984	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:25	10:00:00	18:25:00	2.572	MI	0	
JL	407	JP	TOKYO	NRT	DE	FRANKFURT	FRA	12:05	13:30:00	17:35:00	9.100	KM	0	
JL	408	DE	FRANKFURT	FRA	JP	TOKYO	NRT	11:15	20:25:00	15:40:00	9.100	KM	X	1
LH	400	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:24	10:10:00	11:34:00	6.162	KM	0	
LH	401	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:15	18:30:00	07:45:00	6.162	KM	1	
LH	402	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:35	13:30:00	15:05:00	6.162	KM	X	0
LH	2402	DE	FRANKFURT	FRA	DE	BERLIN	SXF	1:05	10:30:00	11:35:00	555	KM	0	
LH	2407	DE	BERLIN	TXL	DE	FRANKFURT	FRA	1:05	07:10:00	08:15:00	555	KM	0	
QF	5	SG	SINGAPORE	SIN	DE	FRANKFURT	FRA	13:45	22:50:00	05:35:00	10.000	KM	1	
QF	6	DE	FRANKFURT	FRA	SG	SINGAPORE	SIN	11:10	20:55:00	15:05:00	10.000	KM	1	
SQ	2	SG	SINGAPORE	SIN	US	SAN FRANCISCO	SFO	18:25	17:00:00	19:25:00	8.452	MI	0	
SQ	15	US	SAN FRANCISCO	SFO	SG	SINGAPORE	SIN	18:45	16:00:00	02:45:00	8.452	MI	2	
SQ	158	SG	SINGAPORE	SIN	ID	JAKARTA	JKT	1:35	15:25:00	16:00:00	560	MI	0	
SQ	988	SG	SINGAPORE	SIN	JP	TOKYO	TY...	6:40	16:35:00	00:15:00	3.125	MI	1	
UA	941	DE	FRANKFURT	FRA	US	SAN FRANCISCO	SFO	11:36	14:30:00	17:06:00	5.685	MI	0	
UA	3504	US	SAN FRANCISCO	SFO	DE	FRANKFURT	FRA	10:30	15:00:00	10:30:00	5.685	MI	1	
UA	3516	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:25	16:20:00	05:45:00	6.162	KM	1	
UA	3517	DE	FRANKFURT	FRA	US	NEW YORK	JFK	8:15	10:40:00	12:55:00	6.162	KM	0	

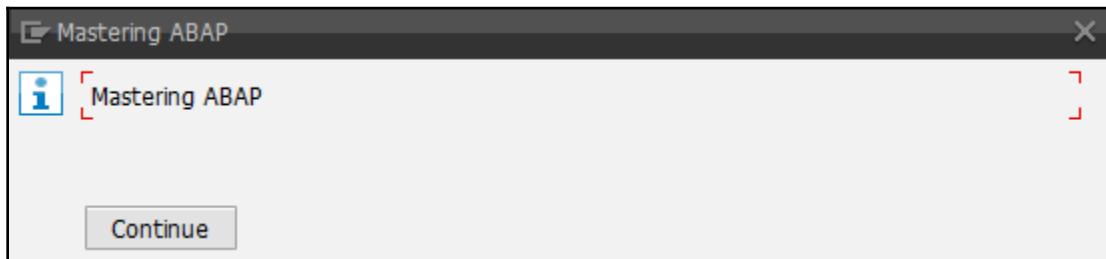
Graphic Bundle

Airline	Flight	Cou...	Departure	De...	Co...	Arrival ci	Destinatio	Flight tim	Depart...	Arrival ti	Distance	UN...	F	Ar...
AA	17	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:01	11:00...	14:01...	2.572,00...	MI	0	
AA	64	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:21	09:00...	17:21...	2.572,00...	MI	0	
AZ	555	IT	ROME	FCO	DE	FRANKFURT	FRA	2:05	19:00...	21:05...	845,0000	MI	0	
AZ	788	IT	ROME	FCO	JP	TOKYO	TYO	12:55	12:00...	08:55...	6.130,00...	MI	1	
AZ	789	JP	TOKYO	TY...	IT	ROME	FCO	15:40	11:45...	19:25...	6.130,00...	MI	0	
AZ	790	IT	ROME	FCO	JP	OSAKA	KDX	13:35	10:35...	08:10...	6.030,00...	MI	X	1
DL	106	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:55	19:35...	09:30...	3.851,00...	MI	1	
DL	1699	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:22	17:15...	20:37...	2.572,00...	MI	0	
DL	1984	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:25	10:00...	18:25...	2.572,00...	MI	0	
JL	407	JP	TOKYO	NRT	DE	FRANKFURT	FRA	12:05	13:30...	17:35...	9.100,00...	KM	0	
JL	408	DE	FRANKFURT	FRA	JP	TOKYO	NRT	11:15	20:25...	15:40...	9.100,00...	KM	X	1
LH	400	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:24	10:10...	11:34...	6.162,00...	KM	0	
LH	401	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:15	18:30...	07:45...	6.162,00...	KM	1	
LH	402	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:35	13:30...	15:05...	6.162,00...	KM	X	0
LH	2402	DE	FRANKFURT	FRA	DE	BERLIN	SXF	1:05	10:30...	11:35...	555,0000	KM	0	
LH	2407	DE	BERLIN	TXL	DE	FRANKFURT	FRA	1:05	07:10...	08:15...	555,0000	KM	0	
QF	5	SG	SINGAPORE	SIN	DE	FRANKFURT	FRA	13:45	22:50...	05:35...	10.000,0...	KM	1	
QF	6	DE	FRANKFURT	FRA	SG	SINGAPORE	SIN	11:10	20:55...	15:05...	10.000,0...	KM	1	
SQ	2	SG	SINGAPORE	SIN	US	SAN FRANCISCO	SFO	18:25	17:00...	19:25...	8.452,00...	MI	0	
SQ	15	US	SAN FRANCISCO	SFO	SG	SINGAPORE	SIN	18:45	16:00...	02:45...	8.452,00...	MI	2	
SQ	158	SG	SINGAPORE	SIN	ID	JAKARTA	JKT	1:35	15:25...	16:00...	560,0000	MI	0	
SQ	988	SG	SINGAPORE	SIN	JP	TOKYO	TYO	6:40	16:35...	00:15...	3.125,00...	MI	1	
UA	941	DE	FRANKFURT	FRA	US	SAN FRANCISCO	SFO	11:36	14:30...	17:06...	5.685,00...	MI	0	
UA	3504	US	SAN FRANCISCO	SFO	DE	FRANKFURT	FRA	10:30	15:00...	10:30...	5.685,00...	MI	1	
UA	3516	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:25	16:20...	05:45...	6.162,00...	KM	1	
UA	3517	DE	FRANKFURT	FRA	US	NEW YORK	JFK	8:15	10:40...	12:55...	6.162,00...	KM	0	

Airline	Flight	Cou...	Departure	De...	Co...	Arrival ci	Destinatio	Flight tim	Depart...	Arrival ti	Distance	UN...	F	Ar...
AA	17	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:01	11:00...	14:01...	2.572,00...	MI	0	
AA	64	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:21	09:00...	17:21...	2.572,00...	MI	0	
AZ	555	IT	ROME	FCO	DE	FRANKFURT	FRA	2:05	19:00...	21:05...	845,0000	MI	0	
AZ	788	IT	ROME	FCO	JP	TOKYO	TYO	12:55	12:00...	08:55...	6.130,00...	MI	1	
AZ	789	JP	TOKYO	TY...	IT	ROME	FCO	15:40	11:45...	19:25...	6.130,00...	MI	0	
AZ	790	IT	ROME	FCO	JP	OSAKA	KDX	13:35	10:35...	08:10...	6.030,00...	MI	X	1
DL	106	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:55	19:35...	09:30...	3.851,00...	MI	1	
DL	1699	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:22	17:15...	20:37...	2.572,00...	MI	0	
DL	1984	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:25	10:00...	18:25...	2.572,00...	MI	0	
JL	407	JP	TOKYO	NRT	DE	FRANKFURT	FRA	12:05	13:30...	17:35...	9.100,00...	KM	0	
JL	408	DE	FRANKFURT	FRA	JP	TOKYO	NRT	11:15	20:25...	15:40...	9.100,00...	KM	X	1
LH	400	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:24	10:10...	11:34...	6.162,00...	KM	0	
LH	401	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:15	18:30...	07:45...	6.162,00...	KM	1	
LH	402	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:35	13:30...	15:05...	6.162,00...	KM	X	0
LH	2402	DE	FRANKFURT	FRA	DE	BERLIN	SXF	1:05	10:30...	11:35...	555,0000	KM	0	
LH	2407	DE	BERLIN	TXL	DE	FRANKFURT	FRA	1:05	07:10...	08:15...	555,0000	KM	0	
QF	5	SG	SINGAPORE	SIN	DE	FRANKFURT	FRA	13:45	22:50...	05:35...	10.000,0...	KM	1	
QF	6	DE	FRANKFURT	FRA	SG	SINGAPORE	SIN	11:10	20:55...	15:05...	10.000,0...	KM	1	
SQ	2	SG	SINGAPORE	SIN	US	SAN FRANCISCO	SFO	18:25	17:00...	19:25...	8.452,00...	MI	0	
SQ	15	US	SAN FRANCISCO	SFO	SG	SINGAPORE	SIN	18:45	16:00...	02:45...	8.452,00...	MI	2	
SQ	158	SG	SINGAPORE	SIN	ID	JAKARTA	JKT	1:35	15:25...	16:00...	560,0000	MI	0	
SQ	988	SG	SINGAPORE	SIN	JP	TOKYO	TYO	6:40	16:35...	00:15...	3.125,00...	MI	1	
UA	941	DE	FRANKFURT	FRA	US	SAN FRANCISCO	SFO	11:36	14:30...	17:06...	5.685,00...	MI	0	
UA	3504	US	SAN FRANCISCO	SFO	DE	FRANKFURT	FRA	10:30	15:00...	10:30...	5.685,00...	MI	1	
UA	3516	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:25	16:20...	05:45...	6.162,00...	KM	1	
UA	3517	DE	FRANKFURT	FRA	US	NEW YORK	JFK	8:15	10:40...	12:55...	6.162,00...	KM	0	

Graphic Bundle

Airl...	Button	Flg...	Cou...	Departure	De...	Co...	Arrival ci	Destinatio	Flight tim	Depart...	Arrival ti	Distance	UN...	F	Ar...
AA	Click	17	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:01	11:00:..	14:01:..	2.572,00...	MI	0	
AA	Click	64	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:21	09:00:..	17:21:..	2.572,00...	MI	0	
AZ	Click	555	IT	ROME	FCO	DE	FRANKFURT	FRA	2:05	19:00:..	21:05:..	845,0000	MI	0	
AZ	Click	788	IT	ROME	FCO	JP	TOKYO	TYO	12:55	12:00:..	08:55:..	6.130,00...	MI	1	
AZ	Click	789	JP	TOKYO	TY...	IT	ROME	FCO	15:40	11:45:..	19:25:..	6.130,00...	MI	0	
AZ	Click	790	IT	ROME	FCO	JP	OSAKA	KIX	13:35	10:35:..	08:10:..	6.030,00...	MI	X	1
DL	Click	106	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:55	19:35:..	09:30:..	3.851,00...	MI	1	
DL	Click	1699	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:22	17:15:..	20:37:..	2.572,00...	MI	0	
DL	Click	1984	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:25	10:00:..	18:25:..	2.572,00...	MI	0	
JL	Click	407	JP	TOKYO	NRT	DE	FRANKFURT	FRA	12:05	13:30:..	17:35:..	9.100,00...	KM	0	
JL	Click	408	DE	FRANKFURT	FRA	JP	TOKYO	NRT	11:15	20:25:..	15:40:..	9.100,00...	KM	X	1
LH	Click	400	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:24	10:10:..	11:34:..	6.162,00...	KM	0	
LH	Click	401	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:15	18:30:..	07:45:..	6.162,00...	KM	1	
LH	Click	402	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:35	13:30:..	15:05:..	6.162,00...	KM	X	0
LH	Click	2402	DE	FRANKFURT	FRA	DE	BERLIN	SXF	1:05	10:30:..	11:35:..	555,0000	KM	0	
LH	Click	2407	DE	BERLIN	TXL	DE	FRANKFURT	FRA	1:05	07:10:..	08:15:..	555,0000	KM	0	
QF	Click	5	SG	SINGAPORE	SIN	DE	FRANKFURT	FRA	13:45	22:50:..	05:35:..	10.000,0...	KM	1	
QF	Click	6	DE	FRANKFURT	FRA	SG	SINGAPORE	SIN	11:10	20:55:..	15:05:..	10.000,0...	KM	1	
SQ	Click	2	SG	SINGAPORE	SIN	US	SAN FRANCISCO	SFO	18:25	17:00:..	19:25:..	8.452,00...	MI	0	
SQ	Click	15	US	SAN FRANCISCO	SFO	SG	SINGAPORE	SIN	18:45	16:00:..	02:45:..	8.452,00...	MI	2	
SQ	Click	158	SG	SINGAPORE	SIN	ID	JAKARTA	JKT	1:35	15:25:..	16:00:..	560,0000	MI	0	
SQ	Click	988	SG	SINGAPORE	SIN	JP	TOKYO	TYO	6:40	16:35:..	00:15:..	3.125,00...	MI	1	
UA	Click	941	DE	FRANKFURT	FRA	US	SAN FRANCISCO	SFO	11:36	14:30:..	17:06:..	5.685,00...	MI	0	
UA	Click	3504	US	SAN FRANCISCO	SFO	DE	FRANKFURT	FRA	10:30	15:00:..	10:30:..	5.685,00...	MI	1	
UA	Click	3516	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:25	16:20:..	05:45:..	6.162,00...	KM	1	
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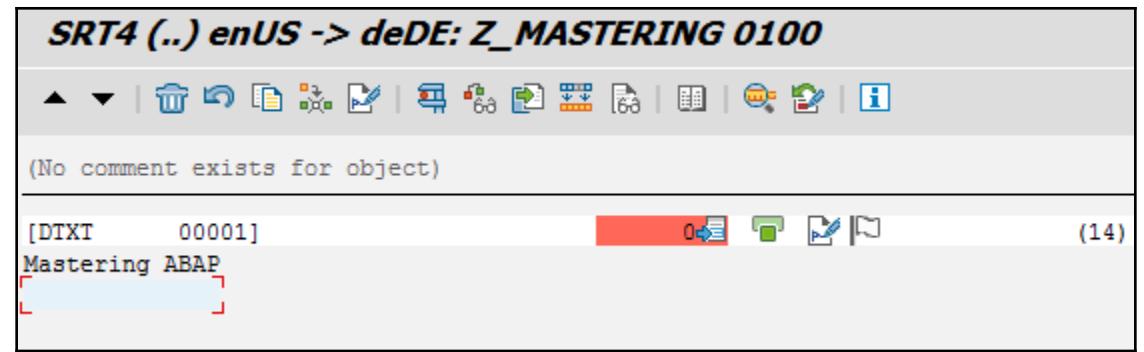
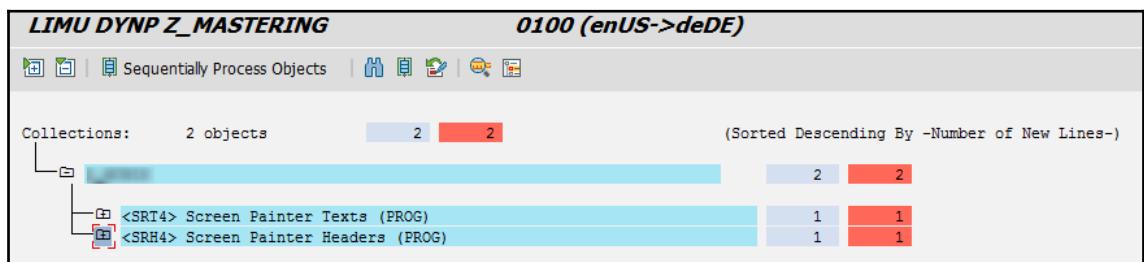
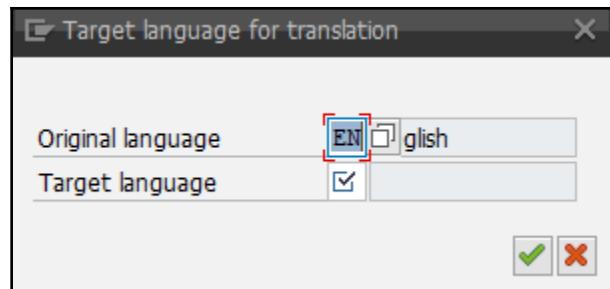


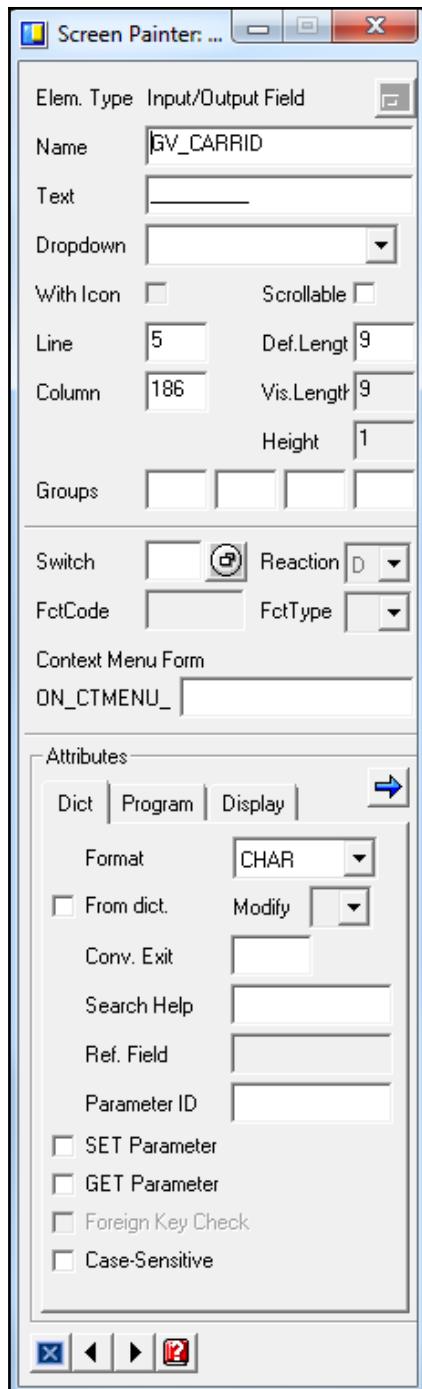
Graphic Bundle

Airline	Flight	Cou...	Departure	De...	Co...	Arrival ci	Destinatio	Flight tim	Depart...	Arrival ti	Distance	UN...	Charter?	Ar...
AA	17	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:01	11:00...	14:01...	2,572,00...	MI	✗	0
AA	64	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:21	09:00...	17:21...	2,572,00...	MI	✗	0
AZ	555	IT	ROME	FCO	DE	FRANKFURT	FRA	2:05	19:00...	21:05...	845,0000	MI	✗	0
AZ	788	IT	ROME	FCO	JP	TOKYO	TYO	12:55	12:00...	08:55...	6,130,00...	MI	✗	1
AZ	789	JP	TOKYO	TY...	IT	ROME	FCO	15:40	11:45...	19:25...	6,130,00...	MI	✗	0
AZ	790	IT	ROME	FCO	JP	OSAKA	KIX	13:35	10:35...	08:10...	6,030,00...	MI	✓	1
DL	106	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:55	19:35...	09:30...	3,851,00...	MI	✗	1
DL	1699	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:22	17:15...	20:37...	2,572,00...	MI	✗	0
DL	1984	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:25	10:00...	18:25...	2,572,00...	MI	✗	0
JL	407	JP	TOKYO	NRT	DE	FRANKFURT	FRA	12:05	13:30...	17:35...	9,100,00...	KM	✗	0
JL	408	DE	FRANKFURT	FRA	JP	TOKYO	NRT	11:15	20:25...	15:40...	9,100,00...	KM	✓	1
LH	400	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:24	10:10...	11:34...	6,162,00...	KM	✗	0
LH	401	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:15	18:30...	07:45...	6,162,00...	KM	✗	1
LH	402	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:35	13:30...	15:05...	6,162,00...	KM	✓	0
LH	2402	DE	FRANKFURT	FRA	DE	BERLIN	SXF	1:05	10:30...	11:35...	555,0000	KM	✗	0
LH	2407	DE	BERLIN	TXL	DE	FRANKFURT	FRA	1:05	07:10...	08:15...	555,0000	KM	✗	0
QF	5	SG	SINGAPORE	SIN	DE	FRANKFURT	FRA	13:45	22:50...	05:35...	10,000,0...	KM	✗	1
QF	6	DE	FRANKFURT	FRA	SG	SINGAPORE	SIN	11:10	20:55...	15:05...	10,000,0...	KM	✗	1
SQ	2	SG	SINGAPORE	SIN	US	SAN FRANCISCO	SFO	18:25	17:00...	19:25...	8,452,00...	MI	✗	0
SQ	15	US	SAN FRANCISCO	SFO	SG	SINGAPORE	SIN	18:45	16:00...	02:45...	8,452,00...	MI	✓	2
SQ	158	SG	SINGAPORE	SIN	ID	JAKARTA	JKT	1:35	15:25...	16:00...	560,0000	MI	✗	0
SQ	988	SG	SINGAPORE	SIN	JP	TOKYO	TYO	6:40	16:35...	00:15...	3,125,00...	MI	✗	1
UA	941	DE	FRANKFURT	FRA	US	SAN FRANCISCO	SFO	11:36	14:30...	17:06...	5,685,00...	MI	✗	0
UA	3504	US	SAN FRANCISCO	SFO	DE	FRANKFURT	FRA	10:30	15:00...	10:30...	5,685,00...	MI	✗	1
UA	3516	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:25	16:20...	05:45...	6,162,00...	KM	✗	1
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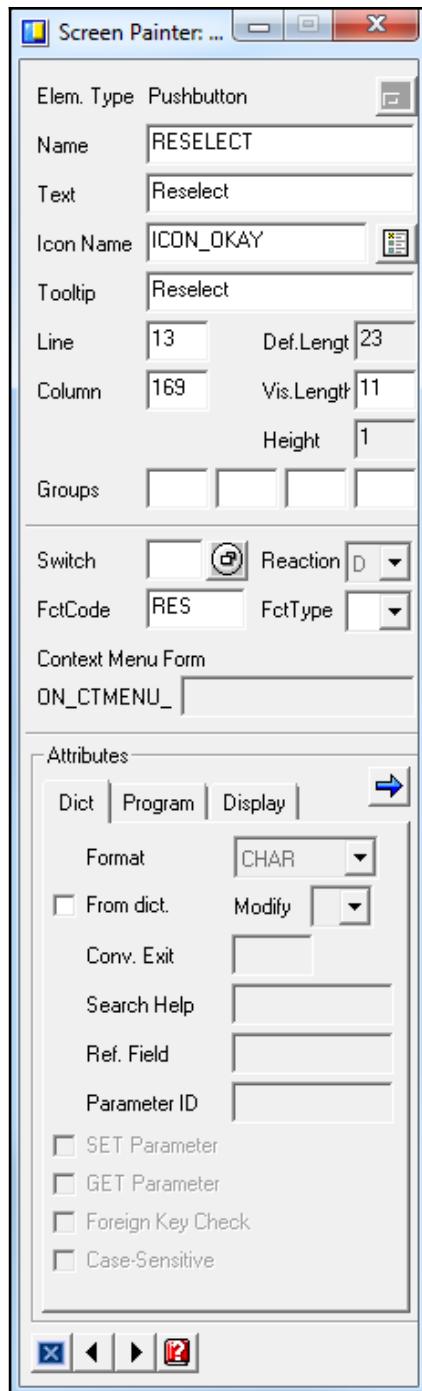
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AA	Click	17	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:01	11:00...	14:01...	2,572,00...	MI	✗	0
AA	Click	64	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:21	09:00...	17:21...	2,572,00...	MI	✗	0
AZ	Click	555	IT	ROME	FCO	DE	FRANKFURT	FRA	2:05	19:00...	21:05...	845,0000	MI	✗	0
AZ	Click	788	IT	ROME	FCO	JP	TOKYO	TYO	12:55	12:00...	08:55...	6,130,00...	MI	✗	1
AZ	Click	789	JP	TOKYO	TY...	IT	ROME	FCO	15:40	11:45...	19:25...	6,130,00...	MI	✗	0
AZ	Click	790	IT	ROME	FCO	JP	OSAKA	KIX	13:35	10:35...	08:10...	6,030,00...	MI	✓	1
DL	Click	106	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:55	19:35...	09:30...	3,851,00...	MI	✗	1
DL	Click	1699	US	NEW YORK	JFK	US	SAN FRANCISCO	SFO	6:22	17:15...	20:37...	2,572,00...	MI	✗	0
DL	Click	1984	US	SAN FRANCISCO	SFO	US	NEW YORK	JFK	5:25	10:00...	18:25...	2,572,00...	MI	✗	0
JL	Click	407	JP	TOKYO	NRT	DE	FRANKFURT	FRA	12:05	13:30...	17:35...	9,100,00...	KM	✗	0
JL	Click	408	DE	FRANKFURT	FRA	JP	TOKYO	NRT	11:15	20:25...	15:40...	9,100,00...	KM	✓	1
LH	Click	400	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:24	10:10...	11:34...	6,162,00...	KM	✗	0
LH	Click	401	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:15	18:30...	07:45...	6,162,00...	KM	✗	1
LH	Click	402	DE	FRANKFURT	FRA	US	NEW YORK	JFK	7:35	13:30...	15:05...	6,162,00...	KM	✓	0
LH	Click	2402	DE	FRANKFURT	FRA	DE	BERLIN	SXF	1:05	10:30...	11:35...	555,0000	KM	✗	0
LH	Click	2407	DE	BERLIN	TXL	DE	FRANKFURT	FRA	1:05	07:10...	08:15...	555,0000	KM	✗	0
QF	Click	5	SG	SINGAPORE	SIN	DE	FRANKFURT	FRA	13:45	22:50...	05:35...	10,000,0...	KM	✗	1
QF	Click	6	DE	FRANKFURT	FRA	SG	SINGAPORE	SIN	11:10	20:55...	15:05...	10,000,0...	KM	✗	1
SQ	Click	2	SG	SINGAPORE	SIN	US	SAN FRANCISCO	SFO	18:25	17:00...	19:25...	8,452,00...	MI	✗	0
SQ	Click	15	US	SAN FRANCISCO	SFO	SG	SINGAPORE	SIN	18:45	16:00...	02:45...	8,452,00...	MI	✗	2
SQ	Click	158	SG	SINGAPORE	SIN	ID	JAKARTA	JKT	1:35	15:25...	16:00...	560,0000	MI	✗	0
SQ	Click	988	SG	SINGAPORE	SIN	JP	TOKYO	TYO	6:40	16:35...	00:15...	3,125,00...	MI	✗	1
UA	Click	941	DE	FRANKFURT	FRA	US	SAN FRANCISCO	SFO	11:36	14:30...	17:06...	5,685,00...	MI	✗	0
UA	Click	3504	US	SAN FRANCISCO	SFO	DE	FRANKFURT	FRA	10:30	15:00...	10:30...	5,685,00...	MI	✗	1
UA	Click	3516	US	NEW YORK	JFK	DE	FRANKFURT	FRA	7:25	16:20...	05:45...	6,162,00...	KM	✗	1
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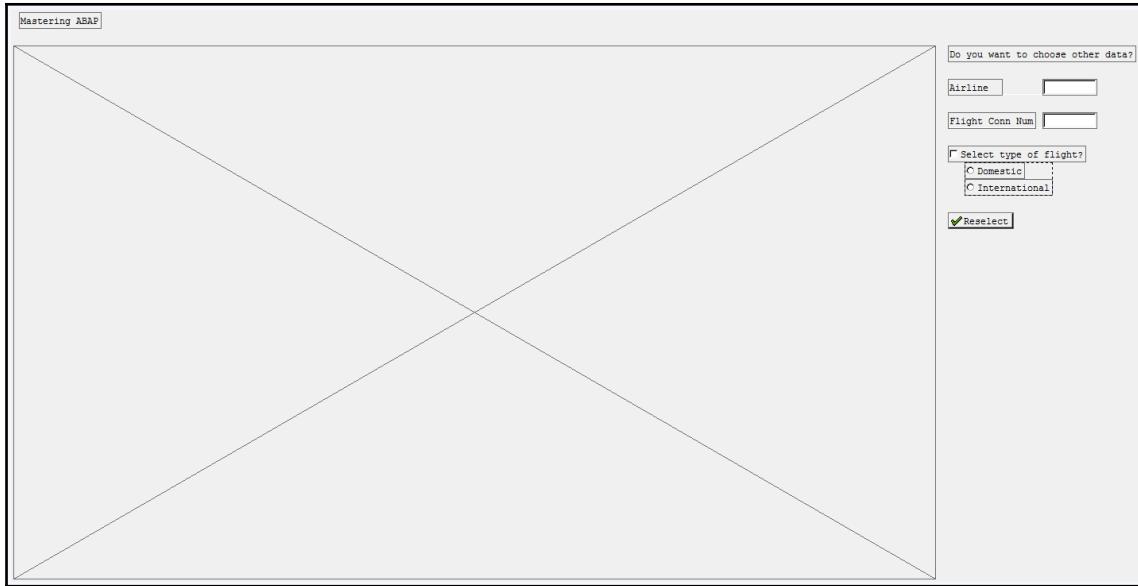




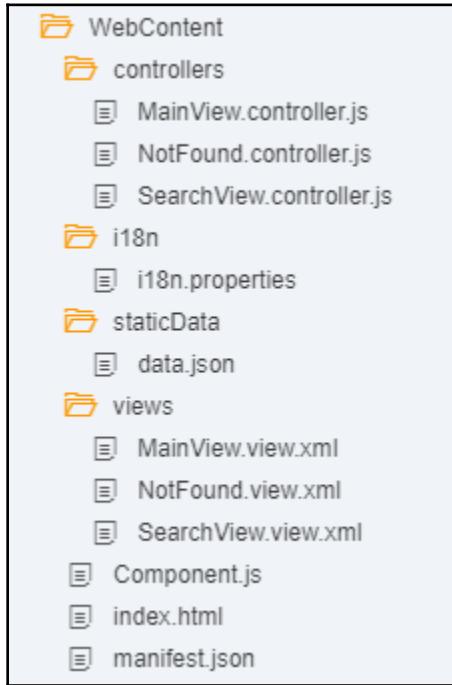


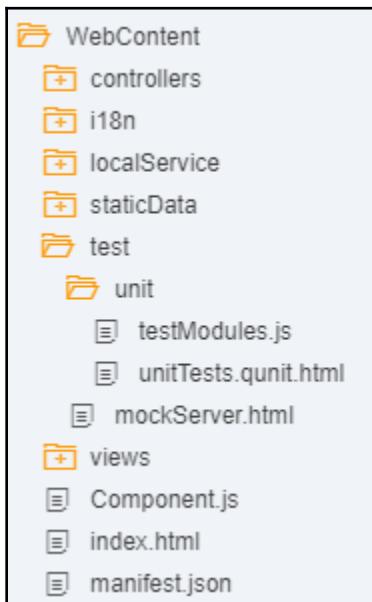
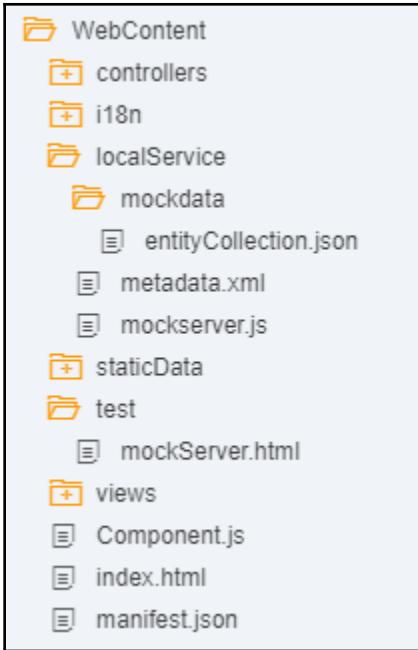


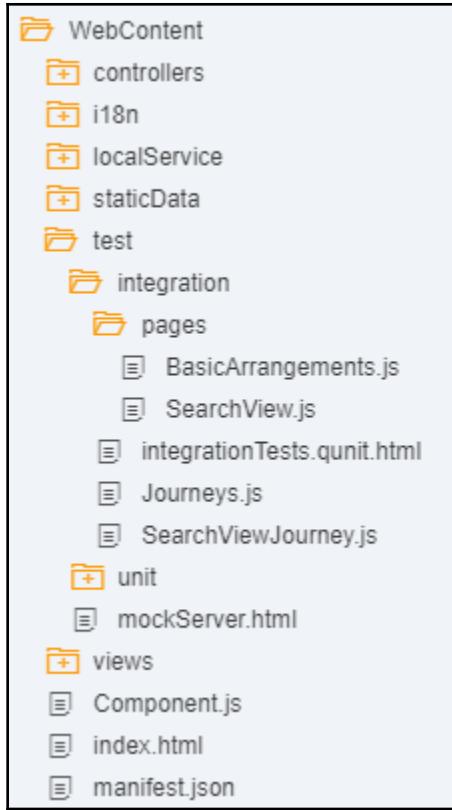




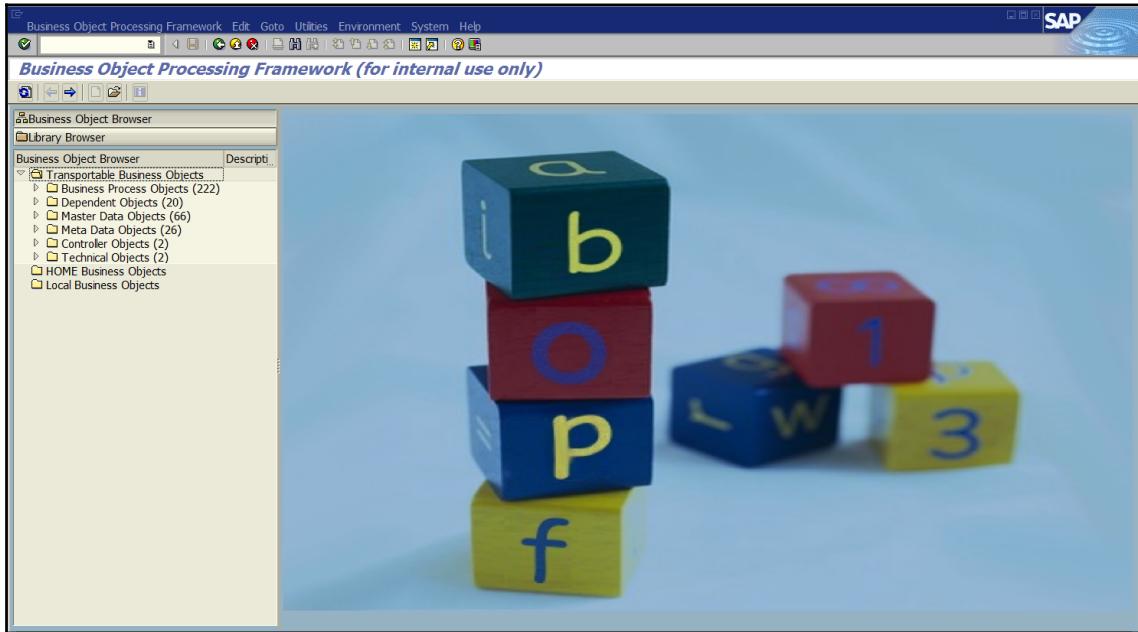
Chapter 8: Creating Stunning UI5 Interfaces



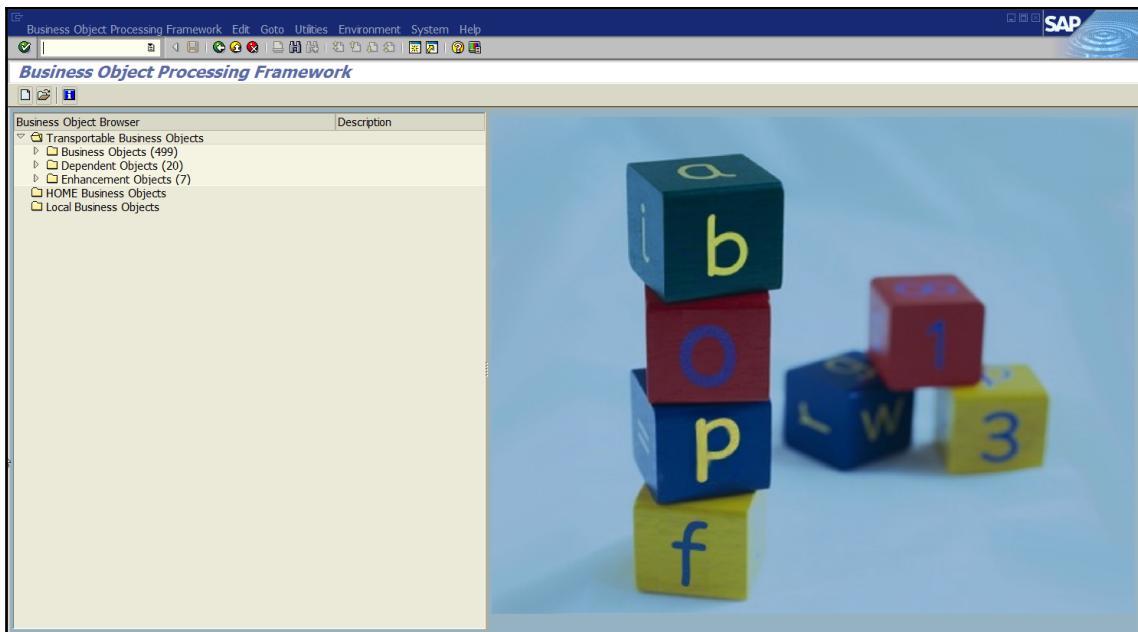
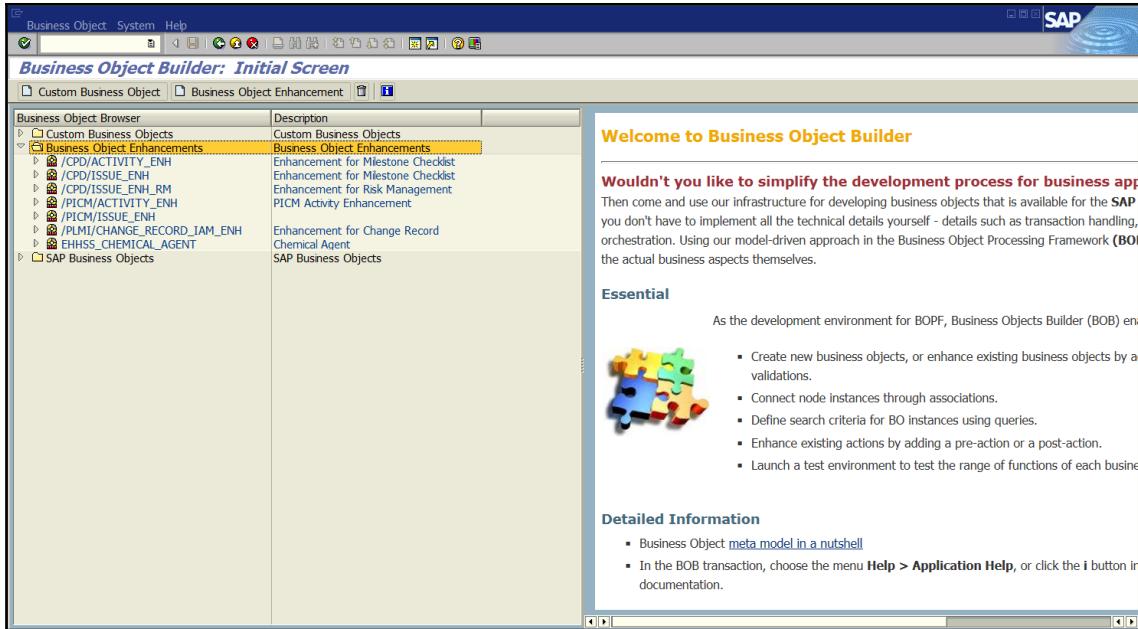


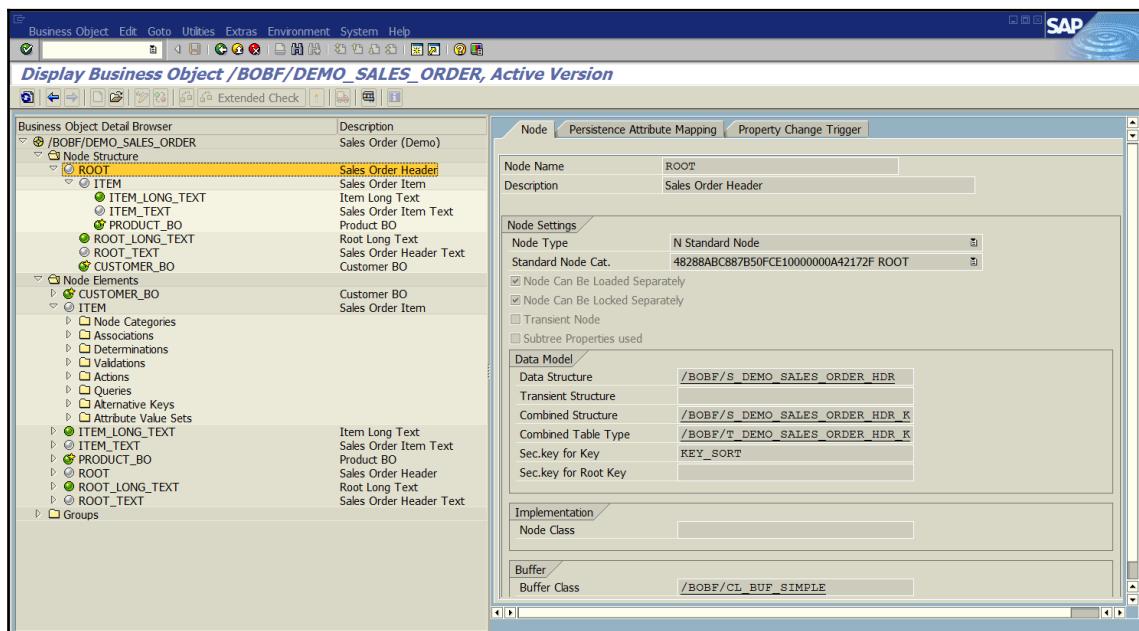
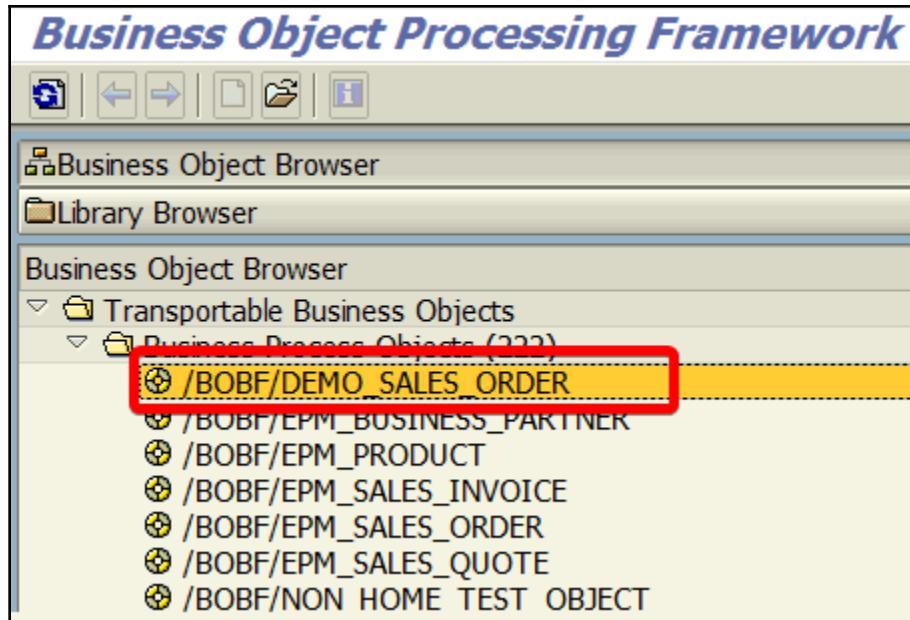


Chapter 9: Business Object Processing Framework



Graphic Bundle





Graphic Bundle

General Table Display

Table		/BOBF/DM_PRD_HDR	Product Header (Demo)	
Text table			<input type="checkbox"/> No texts	
Layout			<input type="checkbox"/> Maintain entries	
Maximum no. of hits	500			
Selection Criteria				
Fld name	O...	Fr.Value	To value	More
Client				<input checked="" type="checkbox"/> MANDT
NodeID				<input checked="" type="checkbox"/> DB_KEY
NodeID				<input checked="" type="checkbox"/> NODE_CAT_KEY
Product ID				<input checked="" type="checkbox"/> PRODUCT_ID
Product Type				<input checked="" type="checkbox"/> PRODUCT_TYPE
Base UOM				<input checked="" type="checkbox"/> BASE_UOM
Selling Price				<input checked="" type="checkbox"/> SELL_PRICE
Curr (Sell Price)				<input checked="" type="checkbox"/> SELL_PRICE_CURR
Purchase Price				<input checked="" type="checkbox"/> BUY_PRICE

/BOBF/DM_PRD_HDR: Display of Entries Found

/BOBF/DM_PRD_HDR: Display of Entries Found																																			
Search in Table		/BOBF/DM_PRD_HDR		Product Header (Demo)																															
Number of hits	1	Runtime	0	Maximum no. of hits	500																														
<table border="1"> <thead> <tr> <th>NodeID</th> <th>NodeID</th> <th>Product ID</th> <th>ProductTyp</th> <th>BaseUOM</th> <th>Selling Price</th> <th>Curr(Sell)</th> <th>Pur. Price</th> <th>Curr(Buy)</th> <th>Created By</th> <th>Created on</th> <th>Changed By</th> <th>Changed on</th> </tr> </thead> <tbody> <tr> <td>000C29BD36411ED983F2D67189348D6F</td> <td>00000000000000000000000000000000</td> <td>101</td> <td>FOOD</td> <td>KG</td> <td>20.000,00</td> <td>USD</td> <td>10.000,00</td> <td>USD</td> <td>PGRZESKO</td> <td>03.01.2019 21:32:34</td> <td>PGRZESKO</td> <td>03.01.2019 21:32:34</td> </tr> </tbody> </table>										NodeID	NodeID	Product ID	ProductTyp	BaseUOM	Selling Price	Curr(Sell)	Pur. Price	Curr(Buy)	Created By	Created on	Changed By	Changed on	000C29BD36411ED983F2D67189348D6F	00000000000000000000000000000000	101	FOOD	KG	20.000,00	USD	10.000,00	USD	PGRZESKO	03.01.2019 21:32:34	PGRZESKO	03.01.2019 21:32:34
NodeID	NodeID	Product ID	ProductTyp	BaseUOM	Selling Price	Curr(Sell)	Pur. Price	Curr(Buy)	Created By	Created on	Changed By	Changed on																							
000C29BD36411ED983F2D67189348D6F	00000000000000000000000000000000	101	FOOD	KG	20.000,00	USD	10.000,00	USD	PGRZESKO	03.01.2019 21:32:34	PGRZESKO	03.01.2019 21:32:34																							

/BOBF/DM_PRD_HDT: Display of Entries Found

/BOBF/DM_PRD_HDT: Display of Entries Found																			
Search in Table		/BOBF/DM_PRD_HDT		Header Text															
Number of hits	1	Runtime	0	Maximum no. of hits	500														
<table border="1"> <thead> <tr> <th>NodeID</th> <th>NodeID</th> <th>NodeID</th> <th>Language</th> <th>Descr.</th> </tr> </thead> <tbody> <tr> <td>000C29BD36411ED983F2D6718934AD6F</td> <td>000C29BD36411ED983F2D67189348D6F</td> <td>00000000000000000000000000000000</td> <td>EN</td> <td>Banana</td> </tr> </tbody> </table>										NodeID	NodeID	NodeID	Language	Descr.	000C29BD36411ED983F2D6718934AD6F	000C29BD36411ED983F2D67189348D6F	00000000000000000000000000000000	EN	Banana
NodeID	NodeID	NodeID	Language	Descr.															
000C29BD36411ED983F2D6718934AD6F	000C29BD36411ED983F2D67189348D6F	00000000000000000000000000000000	EN	Banana															

Program ZMSA_R CHAPTER9_1

Program ZMSA_R CHAPTER9_1

Instance with the same key already exists

Program ZMSA_R CHAPTER9_1

Program ZMSA_R CHAPTER9_1

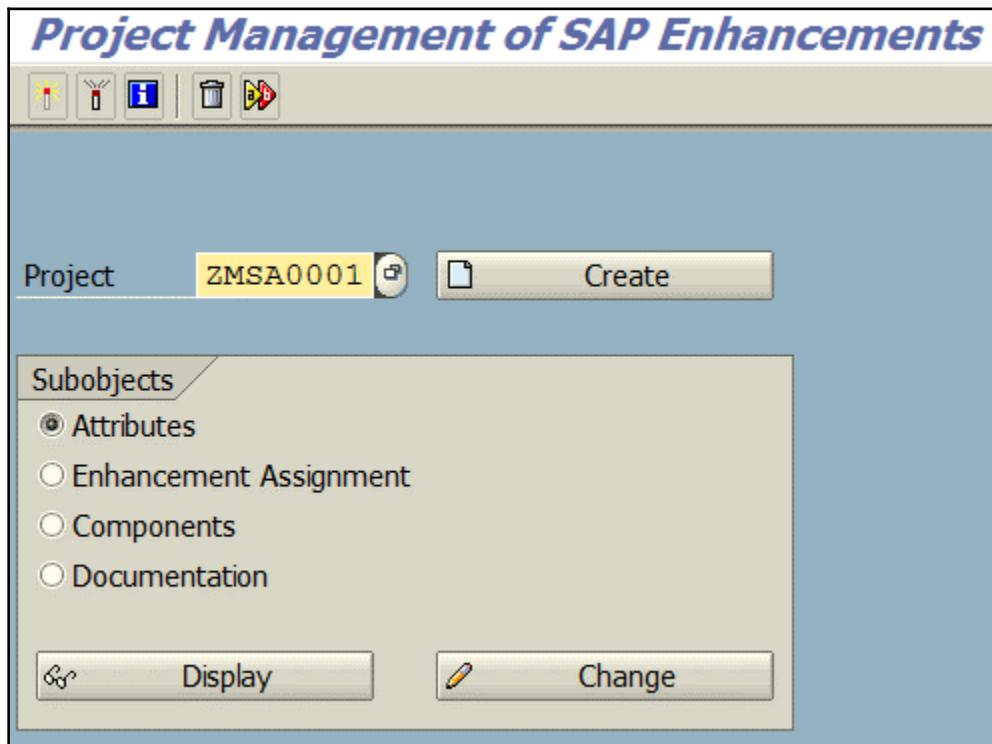
Product # 101

Product Banana

Buy Price 1,000000

Sell Price 2,000000

Chapter 10: Modification and Customization Techniques



Attributes of Enhancement Project ZMSA0001

Enhancement assignments Components

Project	ZMSA0001
Short text	First Enhancement Project

Administrative Data

Package		
Original language	EN	
Created by	COMM13	25.07.2018
Last Changed On		

Activation

Project Status		
Changed		

Attributes of Enhancement Project ZMSA0001

Enhancement assignments Components

Project ZMSA0001
Short text First Enhancement Project

Administrative Data

Package		
Original language	EN	
Created by	COMM13	25.07.2018
Last Changed On		

Activation

Project Status		
Changed		



Change ZMSA0001

The screenshot shows the SAP Change interface for project ZMSA0001. The top navigation bar includes icons for enhancement, component, component assignment, and component assignment assignment, with 'Enhancement' highlighted. A table displays enhancement assignments:

Project	Impl	●	Exp	ZMSA0001 First Enhancement Project
Enhancement	Impl	●	Exp	SAPMF02D User exits: Customer master data
Function exit				EXIT_SAPMF02D_001

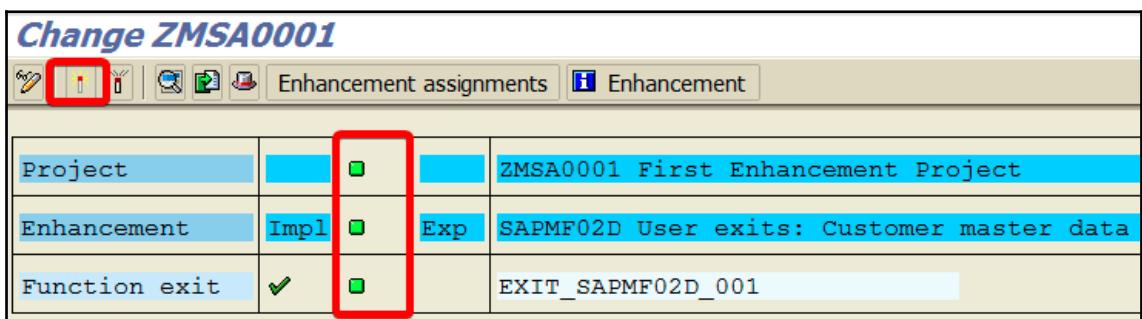
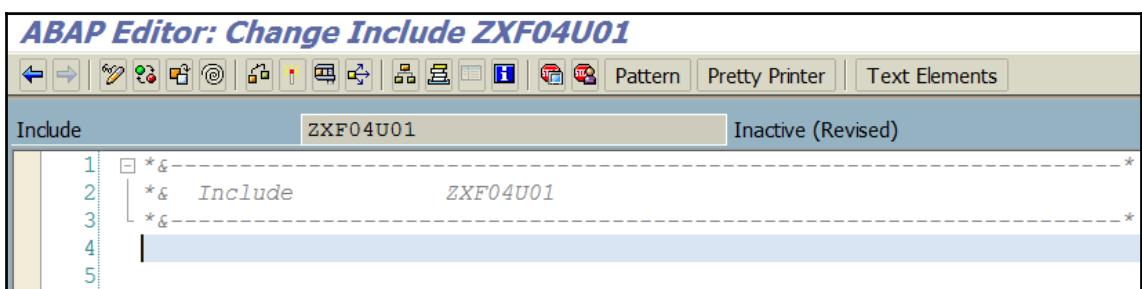
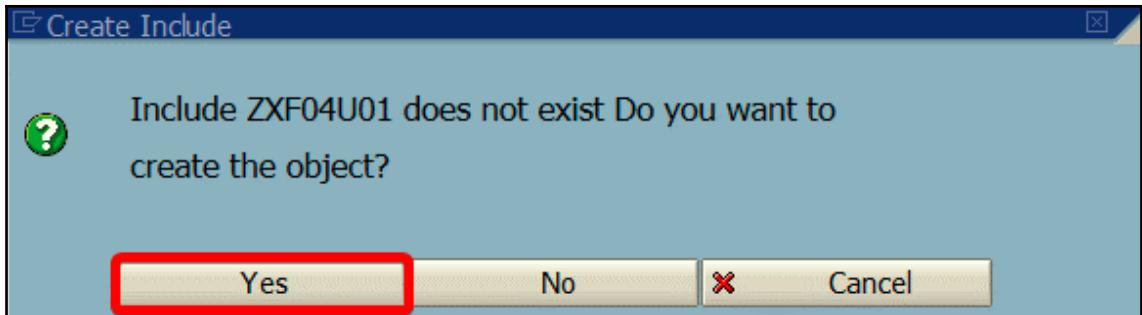
Function Builder: Display EXIT_SAPMF02D_001

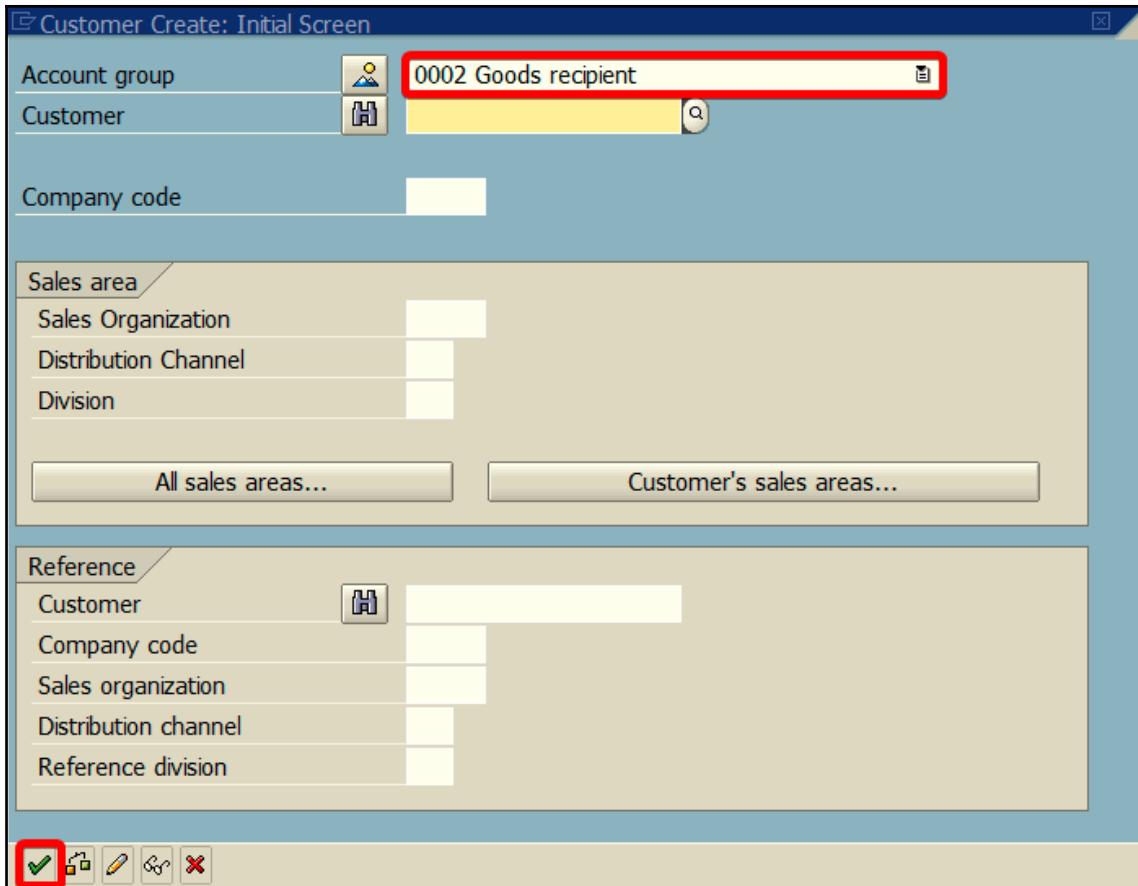
Function module EXIT_SAPMF02D_001 Active

Attributes Import Export Changing Tables Exceptions Source code

```
1  FUNCTION EXIT_SAPMF02D_001.
2  *"-*
3  ***"Lokale Schnittstelle:
4  **"    IMPORTING
5  **"        VALUE(I_KNA1) LIKE KNA1 STRUCTURE KNA1
6  **"        VALUE(I_KNB1) LIKE KNB1 STRUCTURE KNB1 OPTIONAL
7  **"        VALUE(I_KNVV) LIKE KNVV STRUCTURE KNVV OPTIONAL
8  **"        VALUE(I_ADDRHANDLE) LIKE ADDR1_SEL-ADDRHANDLE
9  **"                OPTIONAL
10 **"    TABLES
11 **"        T_KNAS STRUCTURE KNAS OPTIONAL
12 **"        T_KNAT STRUCTURE KNAT OPTIONAL
13 **"        T_KNB5 STRUCTURE KNB5 OPTIONAL
14 **"        T_KNEK STRUCTURE KNEK OPTIONAL
15 **"        T_KNEW STRUCTURE KNEW OPTIONAL
16 **"        T_KNEX STRUCTURE KNEK OPTIONAL
17 **"        T_KNVA STRUCTURE KNVA OPTIONAL
18 **"        T_KNVD STRUCTURE KNVD OPTIONAL
19 **"        T_KNVI STRUCTURE KNVI OPTIONAL
20 **"        T_KNVK STRUCTURE KNVK OPTIONAL
21 **"        T_KNVL STRUCTURE KNVL OPTIONAL
22 **"        T_KNVP STRUCTURE KNVP OPTIONAL
23 **"        T_KNZA STRUCTURE KNZA OPTIONAL
24 **"-*
25
26
27 INCLUDE ZXF04U01.
28
29
30 ENDFUNCTION.
```

 Program names ZX... are reserved for includes of exit function groups





Create Customer: General Data

Other Customer

Customer INTERNAL

Address Control Data Payment Transactions Marketing Unloading Points Export Data Contact Person

Preview

Name
Title Mr.
Name John Doe

Search Terms
Search term 1/2 001 Polish

Street Address
Street/House number
Postal Code/City 50-015 Wroclaw
Country PL Region
Transportation Zone 0000000001

PO Box Address
PO Box
Postal code
Company Postal Code

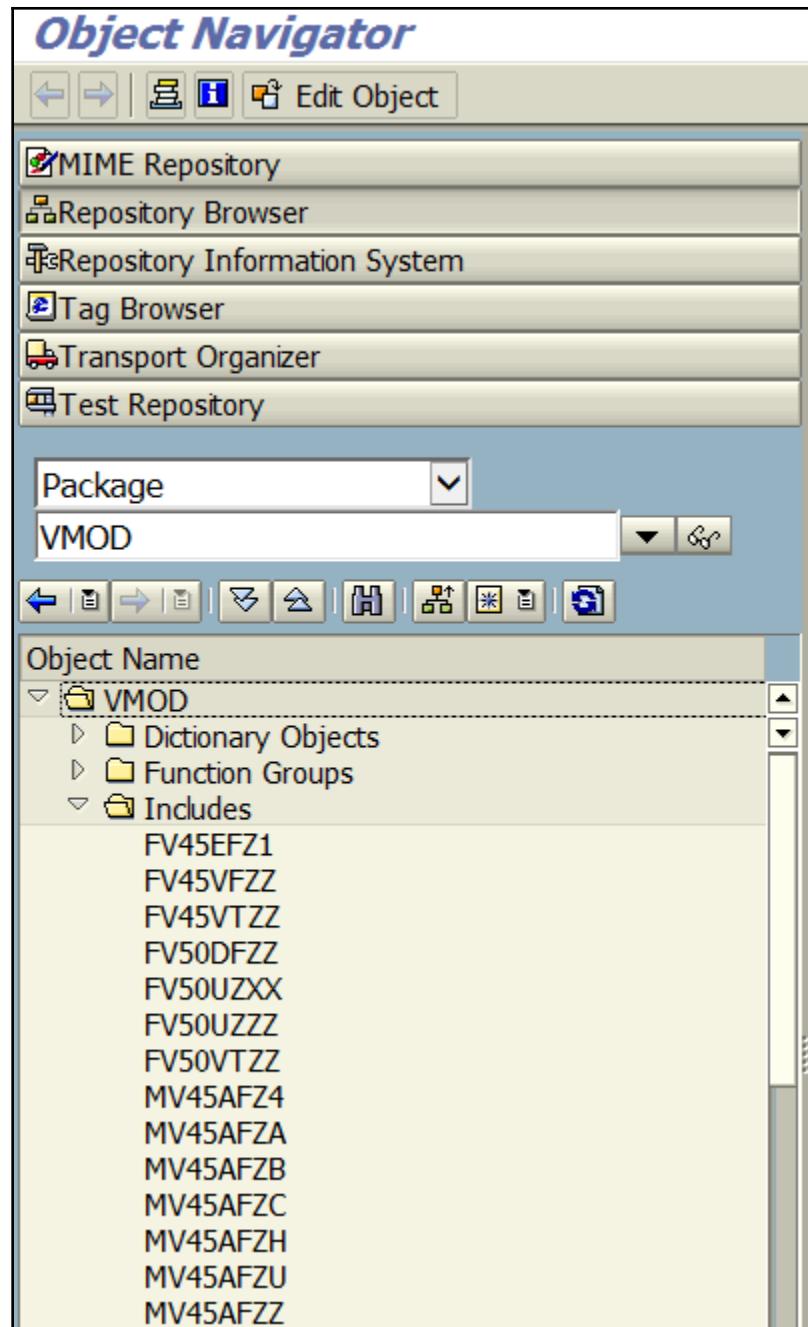
Communication
Language EN English
Telephone
Mobile Phone
Fax
E-Mail
Standard Method

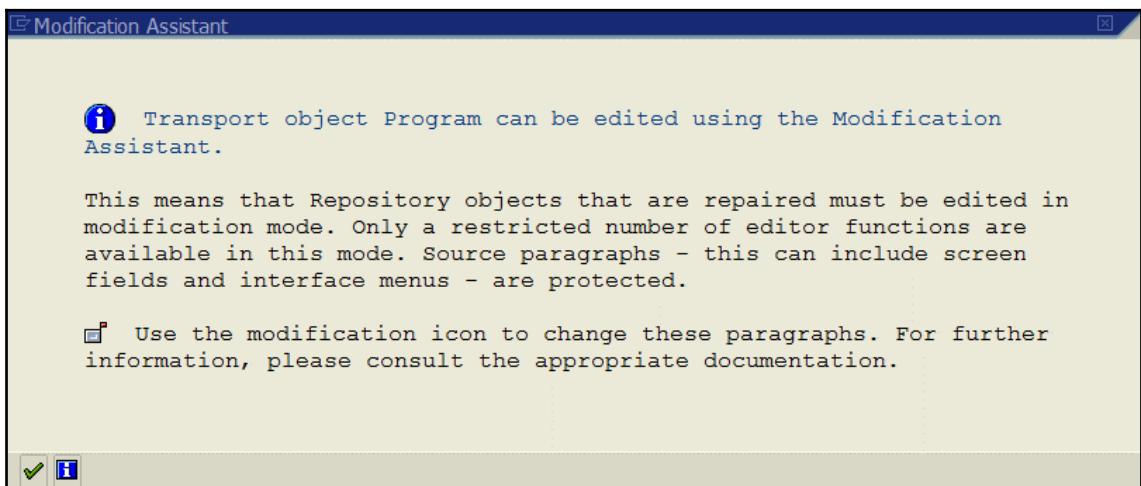
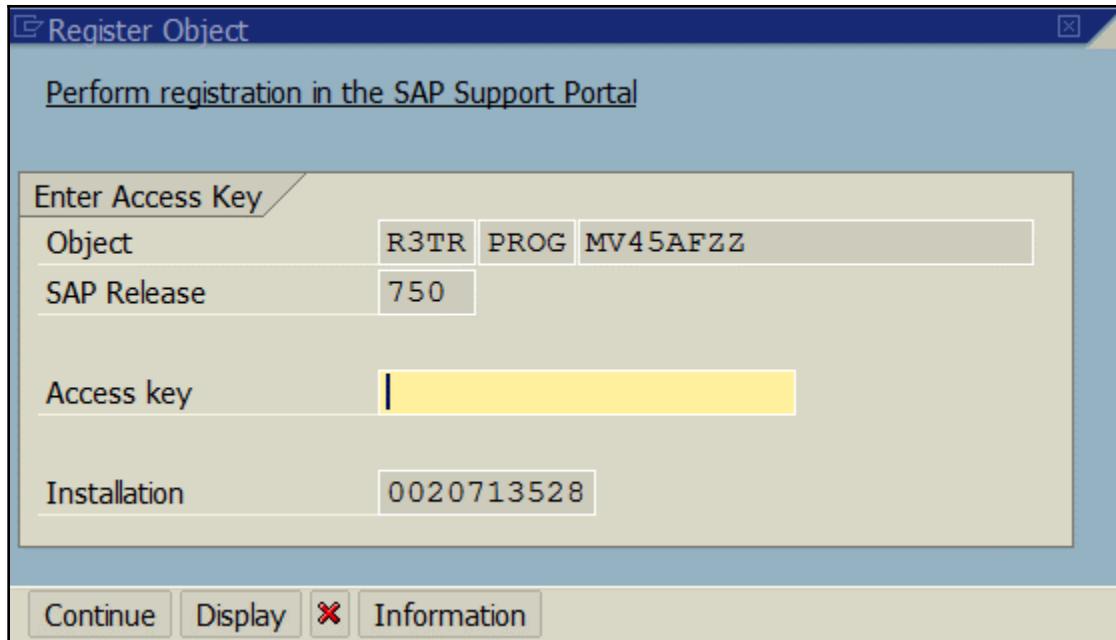
VAT number for this country is obligatory

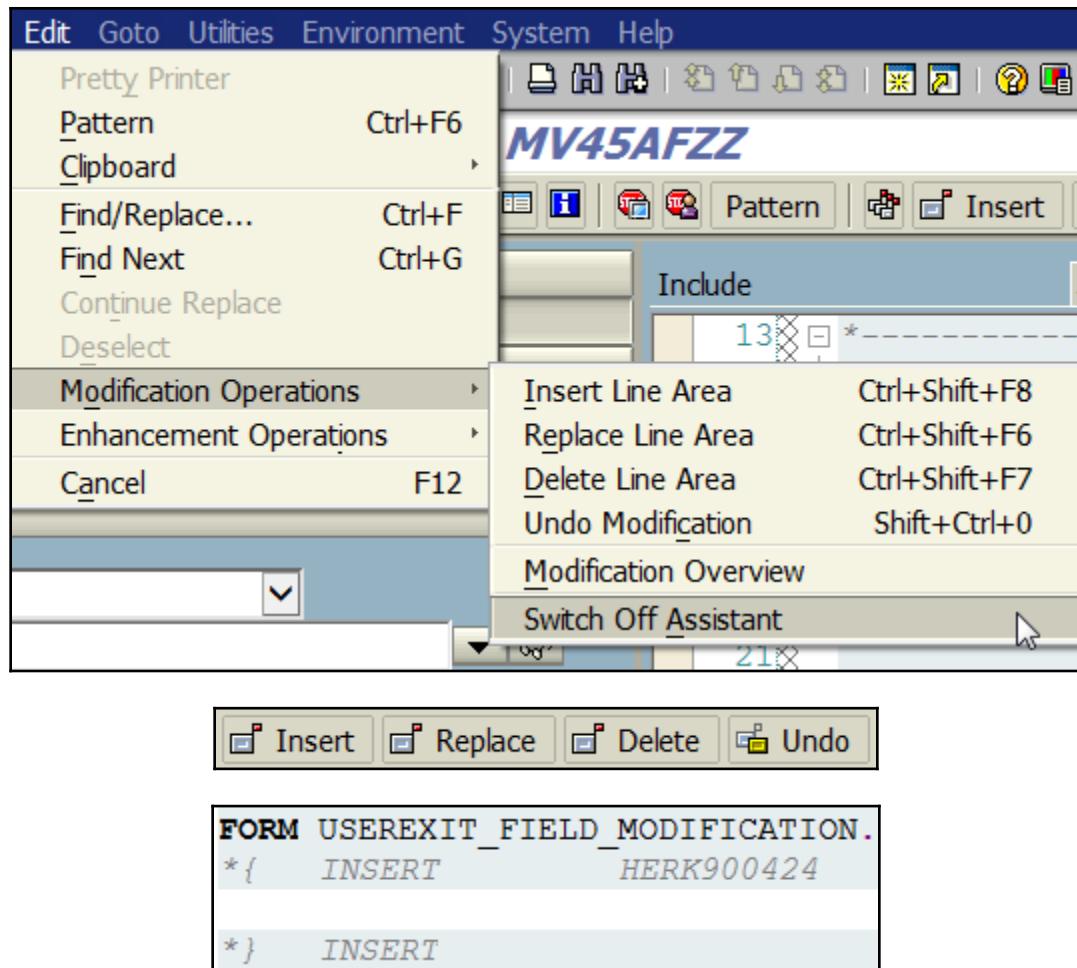
Change View "Customer Products": Overview				
New Entries		Actions		
Product	Text	RFC destination	A	
IS-BEV	Beverage Solution			<input type="checkbox"/>
SEDUNN	Dunning interface - Sweden			<input type="checkbox"/>

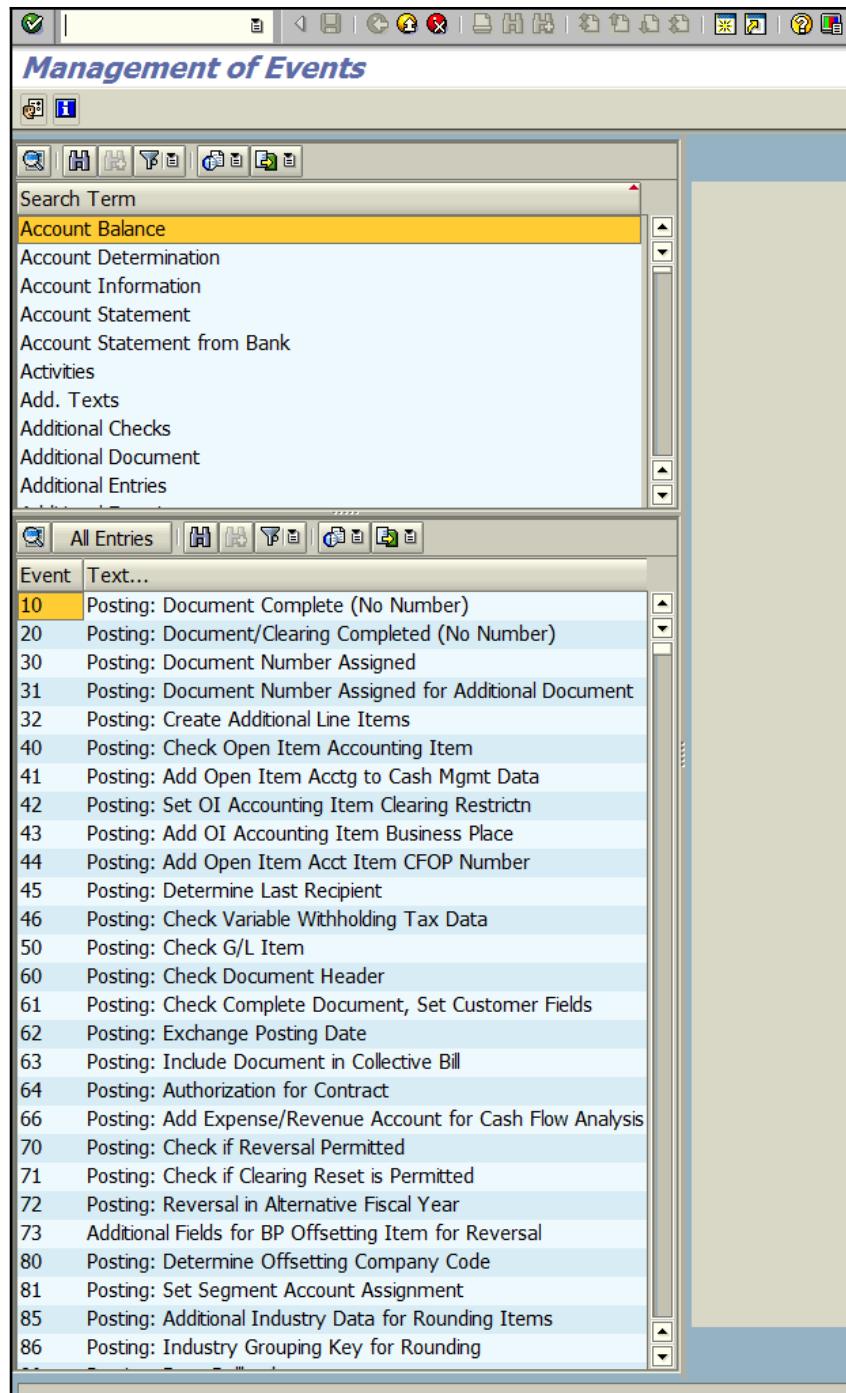
New Entries: Overview of Added Entries				
Actions		Actions		
Product	Text	RFC destination	A	
ZMSA	First BTE Product for FI			<input checked="" type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>

Function Builder: Initial Screen				
Actions		Actions		
Function Module	SAMPLE_INTERFACE_00001030			<input type="button" value="Search"/>
<input type="button" value="Display"/>	<input type="button" value="Change"/>	<input type="button" value="Create"/>		









The screenshot shows a SAP Help System window. At the top, it says "Event 60 Posting: Check Document Header". Below the title bar, there are two tabs: "Documentation" and "Function Modules", with "Function Modules" being the active tab. The main content area is titled "Functionality". It contains the following text:

The function modules called up at Event 0060 can carry out additional checks for a document header. The document header data is made available in transfer parameter **I_FKKKO**.

Notes

If you write function modules to carry out your own checks, use error messages only (MESSAGE E...) and NOT exceptions. If possible avoid setting warnings since these can be responded to only during individual processing online. When using background processing, warnings are treated as error messages.

Programming Restrictions

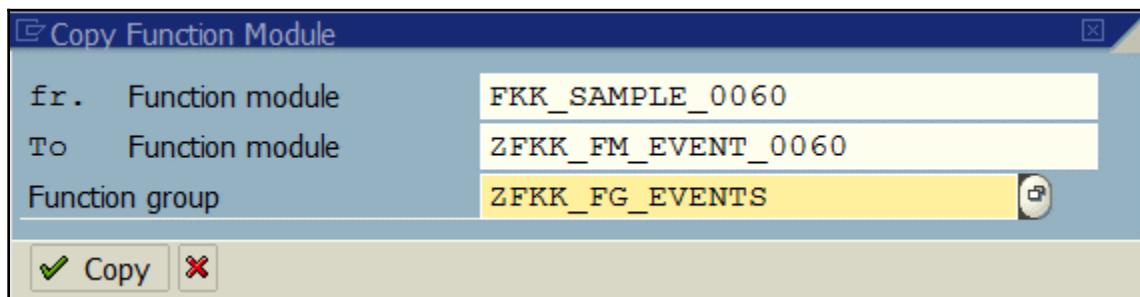
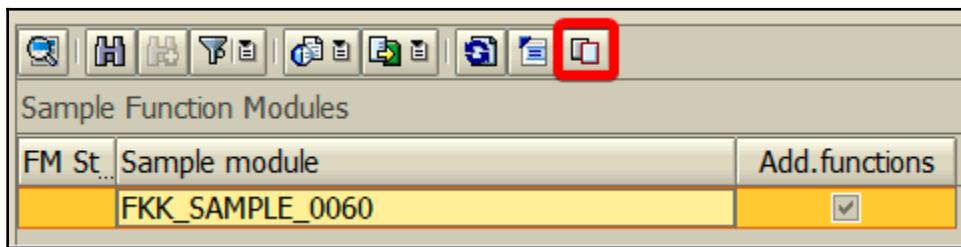
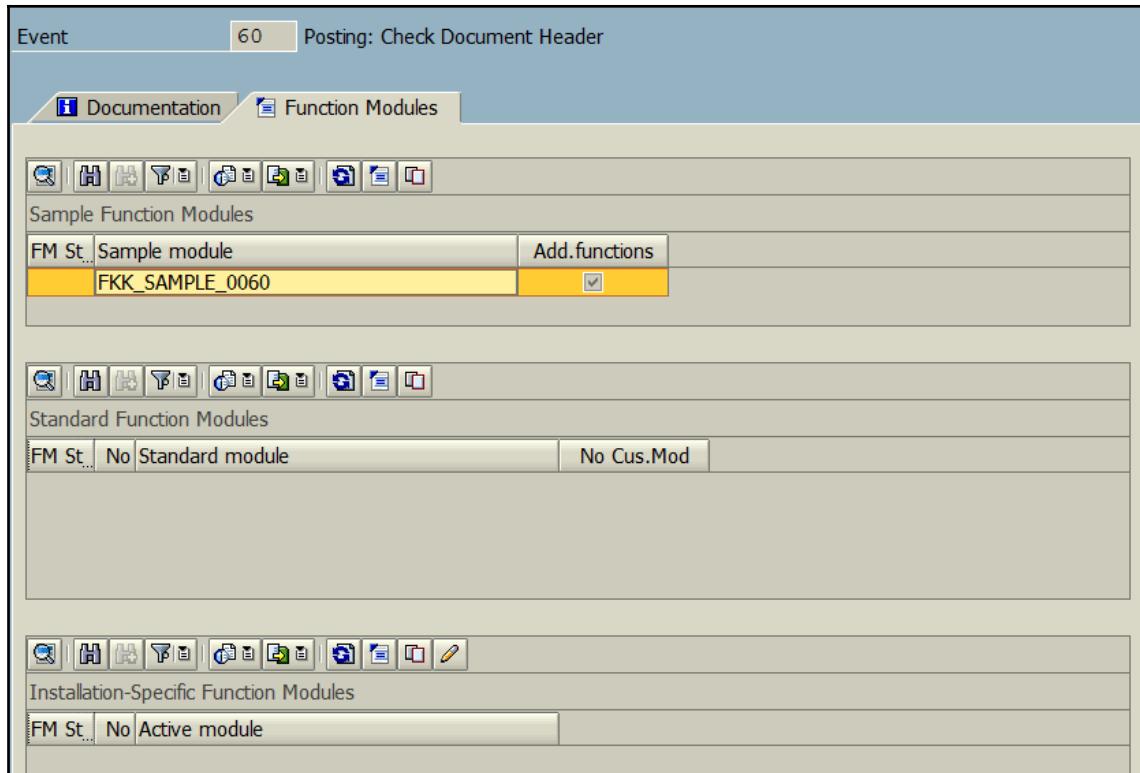
To ensure the consistency of the system, note that you must **not** use the following language elements in events, unless they were explicitly declared to be allowed for the given event:

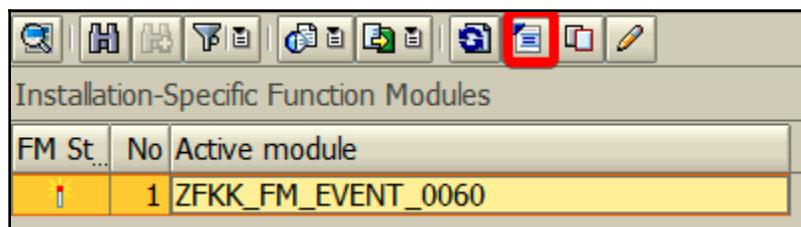
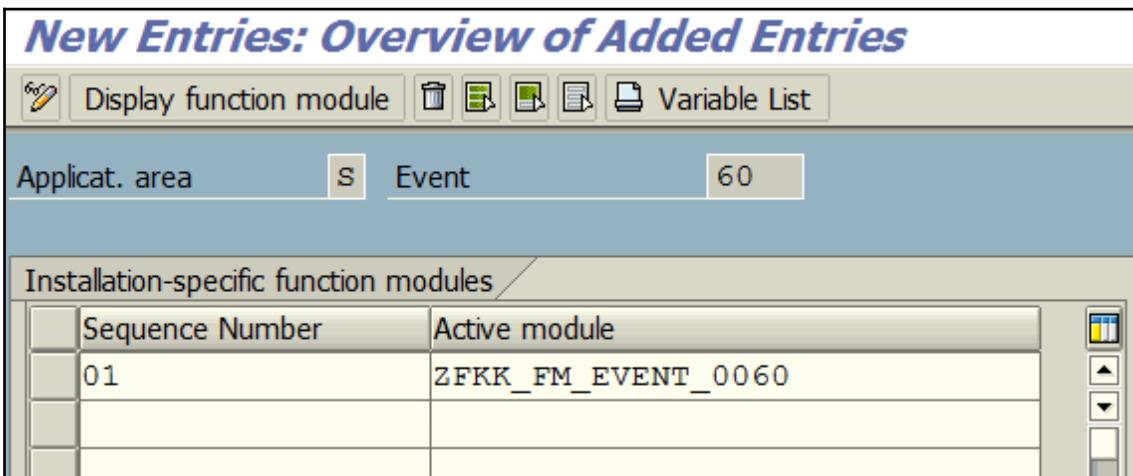
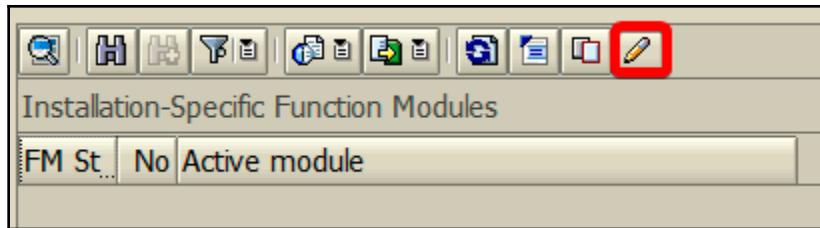
- COMMIT WORK
- ROLLBACK WORK
- CALL FUNCTION 'DEQUEUE ALL'
- Deletion of locks that you have not set yourself
- Implicit database commits triggered by RFC calls or by a WAIT statement

If you update additional data in an event and use the construction **PERFORM commit routine ON COMMIT**, note that:

- At the end of the **commit routine**, all internal tables from which data was updated must be initialized again to prevent a duplicate update in the next call.
- A **PERFORM rollback routine ON ROLLBACK** must also be called.
In the **rollback routine**, initialize the same data that is initialized at the end of the **commit routine**.

If you want to carry out checks in an event, when you issue messages, note that warning messages cause background processing of the process to terminate. You should therefore avoid issuing warning messages if possible. At the most, issue warning messages if the value of **SY-BATCH** is initial.

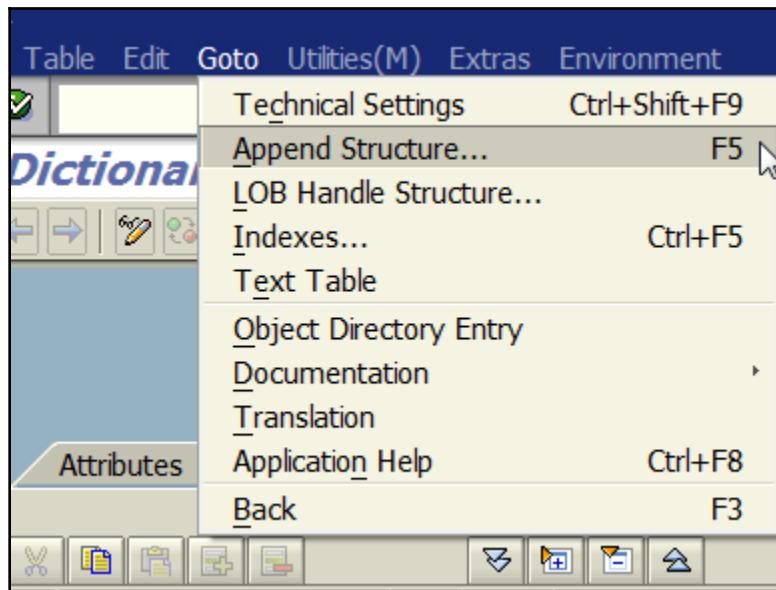




Dictionary: Display Table

The screenshot shows the SAP Dictionary: Display Table interface. At the top, there is a toolbar with various icons and buttons. Below the toolbar, the table name "KNA1" is displayed as "Active". A short description "General Data in Customer Master" is also present. The main area contains tabs: Attributes, Delivery and Maintenance, Fields (which is selected), Entry help/check, and Currency/Quantity Fields. Below these tabs is a detailed table of fields:

Field	Key	Initial	Data element	Data Type	Length	Decimal	Short Description
LIFSD			LIFSD_X	CHAR	2	0	Central delivery block for the customer
LOCOC			LOCOC	CHAR	10	0	City Coordinates
LOEVM			LOEVM_X	CHAR	1	0	Central Deletion Flag for Master Record
NAME3			NAME3_GP	CHAR	35	0	Name 3
NAME4			NAME4_GP	CHAR	35	0	Name 4
NIELS			NIELS	CHAR	2	0	Nielsen ID
ORT02			ORT02_GP	CHAR	35	0	District
PFACH			PFACH	CHAR	10	0	PO Box
PSTL2			PSTL2	CHAR	10	0	P.O. Box Postal Code
COUNC			COUNC	CHAR	3	0	County Code
CITYC			CITYC	CHAR	4	0	City Code
RPMKR			RPMKR	CHAR	5	0	Regional Market
SPERR			SPERR_X	CHAR	1	0	Central posting block
SPRAS			SPRAS	LANG	1	0	Language Key
STCD1			STCD1	CHAR	16	0	Tax Number 1
STCD2			STCD2	CHAR	11	0	Tax Number 2



Create Append Structure for KNA1

Append Name ZZCUSTOM

Append Structure ZZCUSTOM New(Revised)

Short Description Nationality

Attributes Components Entry help/check Currency/quantity fields

Component	Typing Method	Component Type	Data Type	Length	Decimal ...	Short Des
NATIONALITY	1 Types	LAND1				

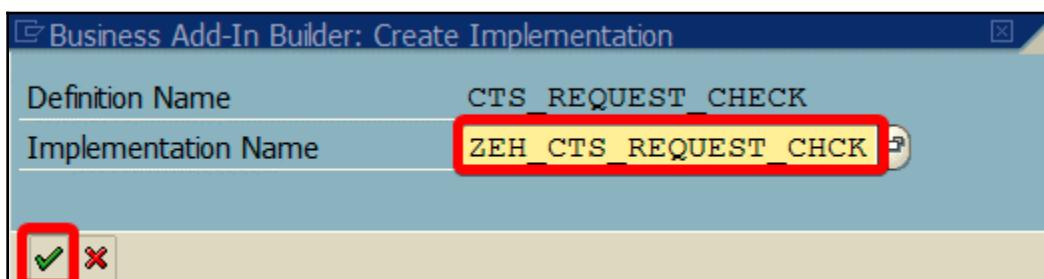
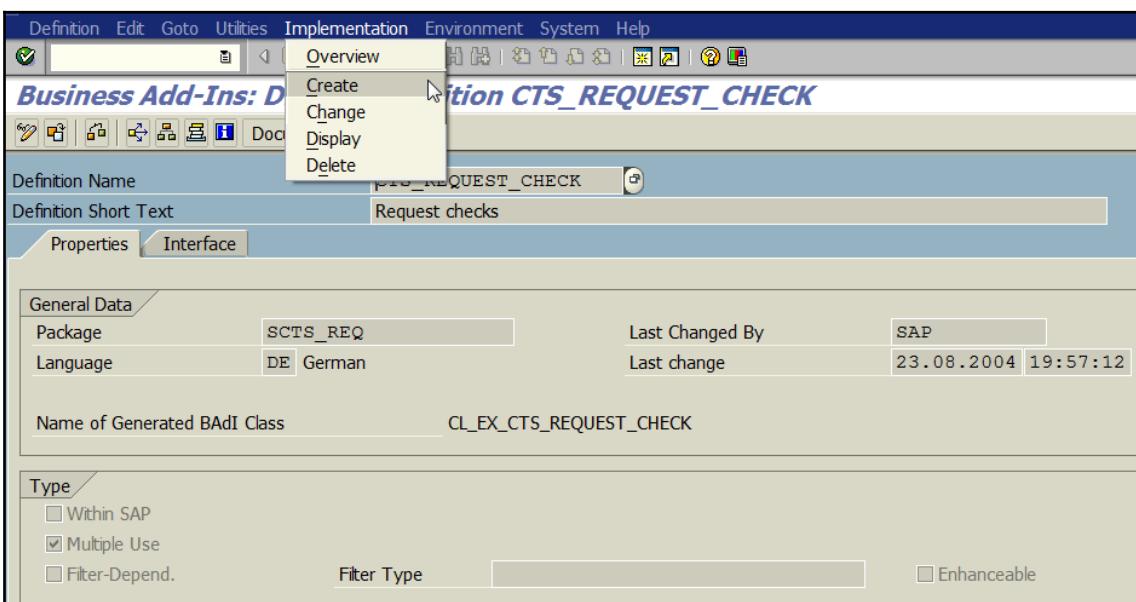
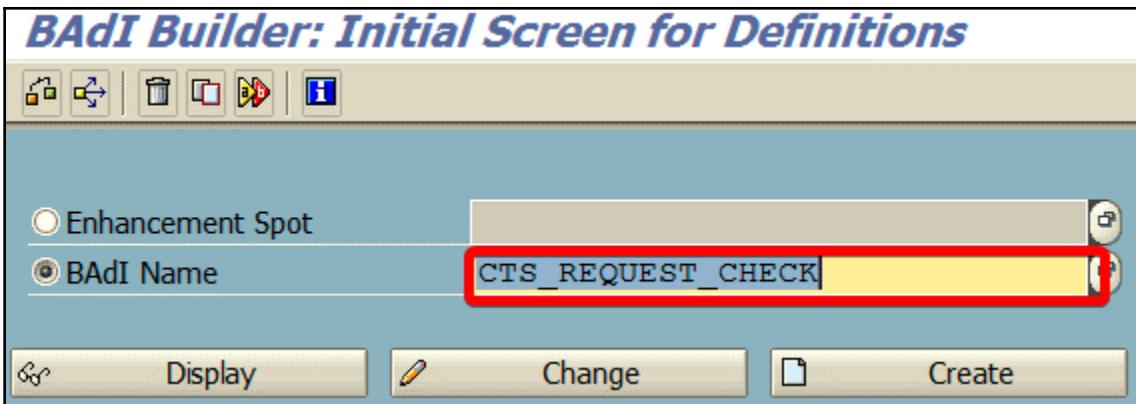
Dictionary: Display Table

Transp. Table KNA1 Active

Short Description General Data in Customer Master

Attributes Delivery and Maintenance Fields Entry help/check Currency/Quantity Fields

Field	Key	Initial...	Data element	Data Type	Length	Decimal ...	Short Description
PSOO4	<input type="checkbox"/>	<input type="checkbox"/>	PSOO1	CHAR	50	0	Description
PSOO5	<input type="checkbox"/>	<input type="checkbox"/>	PSOO1	CHAR	50	0	Description
.APPEND	<input type="checkbox"/>	<input type="checkbox"/>	ZZCUSTOM	STRU	0	0	Nationality
NATIONALITY	<input type="checkbox"/>	<input type="checkbox"/>	LAND1	CHAR	3	0	Country Key



Graphic Bundle

Business Add-In Builder: Change Implementation ZEH_CTS_REQUEST_CHCK

Implementation Name: ZEH_CTS_REQUEST_CHCK Inactive
Implementation Short Text: Transport Request Name Check
Definition Name: CTS_REQUEST_CHECK
Runtime Behavior: Implementation will not be called

Properties Interface

General Data

Package: EN English
Language: EN English
Last Changed By: [redacted]
Last change: 00:00:00

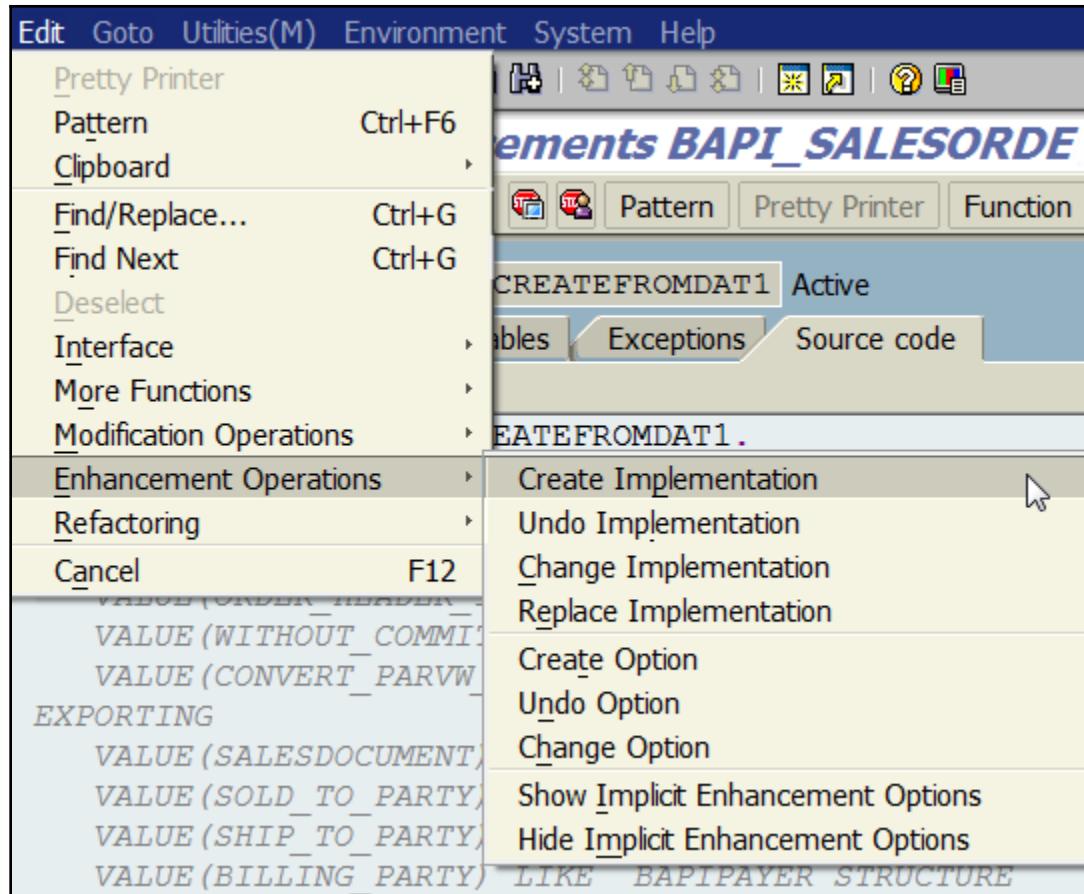
Type

Within SAP
 Multiple Use
 Filter-Depend.

```
25      *"--  
26      ENHANCEMENT-POINT BAPI_SALESORDER_CREATEFROMD_G8 SPOTS ES_SAPL2032 STATIC.  
27      *$*$-Start: BAPI_SALESORDER_CREATEFROMD_G8-----$*$  
28      ENHANCEMENT 3 MGV_GENERATED_BAPI_SALESORD002.      "active version  
29      DATA: T_MGV_FNAMES1 LIKE MGVBAPIFNAMES OCCURS 0 WITH HEADER LINE.  
30      DATA: T_MGV_FNAMES2 LIKE MGVBAPIFNAMES OCCURS 0 WITH HEADER LINE.  
31      ENDENHANCEMENT.  
32      *$*$-End:   BAPI_SALESORDER_CREATEFROMD_G8-----$*$  
33  
34      ENHANCEMENT-POINT BAPI_SALESORDER_CREATEFROMD_G6 SPOTS ES_SAPL2032.  
35      *$*$-Start: BAPI_SALESORDER_CREATEFROMD_G6-----$*$  
36      ENHANCEMENT 1 MGV_GENERATED_BAPI_SALESORD002.      "active version  
37      *(BAPI Begin) generation http://intranet.sap.com/materialversion
```

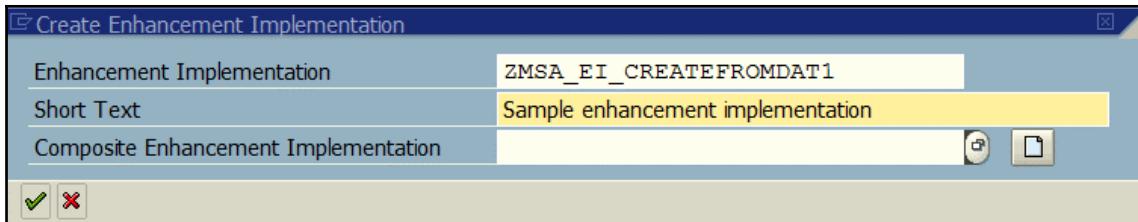
Function Builder: Display BAPI_SALESORDER_

ENHANCEMENT-POINT BAPI_SALESORDER_CREATEFROMD_G8 SPOTS ES_SAPL2032 STATIC.



Select or Create Enhancement Implementation

Enhancement Implementation	Package	Software Component	Beschreibung	Composite Enhancement
MGV_GENERATED_BAPI_SALESORD000	MGV_GENERATED	ECC-DIMP		MGV_GENERATED_SAPL...
MGV_GENERATED_BAPI_SALESORD001	MGV_GENERATED	ECC-DIMP		MGV_GENERATED_SAPL...
MGV_GENERATED_BAPI_SALESORD002	MGV_GENERATED	ECC-DIMP		MGV_GENERATED_SAPL...
MGV_GENERATED_BAPI_SALESORD003	MGV_GENERATED	ECC-DIMP		MGV_GENERATED_SAPL...
MGV_GENERATED_BAPI_SALESORD004	MGV_GENERATED	ECC-DIMP		MGV_GENERATED_SAPL...
MGV_GENERATED_BAPI_SALESORD005	MGV_GENERATED	ECC-DIMP		MGV_GENERATED_SAPL...
MGV_GENERATED_BAPI_SALESORD006	MGV_GENERATED	ECC-DIMP		MGV_GENERATED_SAPL...
/NFM/SD_BAPI_SALESORDER_CREA_1	/NFM/SD	ECC-DIMP	/nfm/sd_BAPI_SALESORDER_CREA_1	/SAPMP/EC
/NFM/SD_BAPI_SALES_ORDER_01	/NFM/SD	ECC-DIMP	/nfm/sd_bapi_sales_order_01	/SAPMP/EC
FSH_BAPI_SALESORDER_CREATE	FSH_SD_SF	EA-RETAIL	Enhacement implementation for BAPI Sales o...	
FSH_SALES_ITEM_ENH	FSH_SD_SF	EA-RETAIL	Enhacement in sales intenal use	

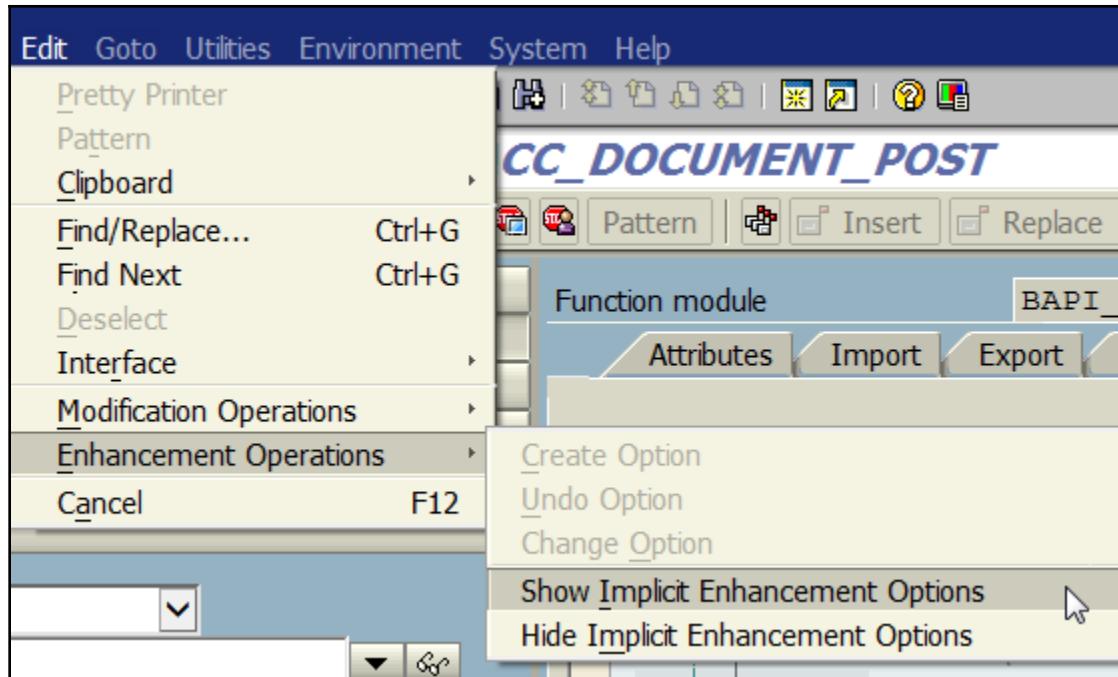


ENHANCEMENT 1 ZMSA_EI_CREATEFROMDAT1. "inactive version
ENDENHANCEMENT.



```

1  FUNCTION bapi_acc_document_post.
2  *"--Local Interface:
3  *"  IMPORTING
4  *"    VALUE(DOCUMENTHEADER) LIKE BAPIACHE09 STRUCTURE BAPIACHE09
5  *"    VALUE(CUSTOMERCPD) LIKE BAPIACPA09 STRUCTURE BAPIACPA09
6  *"    OPTIONAL
7  *"    VALUE(CONTRACTHEADER) LIKE BAPIACCACHD STRUCTURE BAPIACCACHD
8  *"    OPTIONAL
9  *"  EXPORTING
10 *"    VALUE(OBJ_TYPE) LIKE BAPIACHE09-OBJ_TYPE
11 *"    VALUE(OBJ_KEY) LIKE BAPIACHE09-OBJ_KEY
12 *"    VALUE(OBJ_SYS) LIKE BAPIACHE09-OBJ_SYS
13 *"  TABLES
14 *"    ACCOUNTGL STRUCTURE BAPIACGL09 OPTIONAL
15 *"    ACCOUNTRECEIVABLE STRUCTURE BAPIACAR09 OPTIONAL
16 *"    ACCOUNTPAYABLE STRUCTURE BAPIACAP09 OPTIONAL
17 *"    ACCOUNTTAX STRUCTURE BAPIACTX09 OPTIONAL
18 *"    CURRENCYAMOUNT STRUCTURE BAPIACCR09
19 *"    CRITERIA STRUCTURE BAPIACKC09 OPTIONAL
20 *"    VALUEFIELD STRUCTURE BAPIACKEV9 OPTIONAL
21 *"    EXTENSION1 STRUCTURE BAPTAEXTC OPTIONAL
22 *"    RETURN STRUCTURE BAPIRET2
23 *"    PAYMENTCARD STRUCTURE BAPIACPC09 OPTIONAL
24 *"    CONTRACTITEM STRUCTURE BAPIACCAIT OPTIONAL
25 *"    EXTENSION2 STRUCTURE BAPIPAREX OPTIONAL
26 *"    REALESTATE STRUCTURE BAPIACRE09 OPTIONAL
27 *"    ACCOUNTWT STRUCTURE BAPIACWT09 OPTIONAL
28 *"-
29 *"-
```

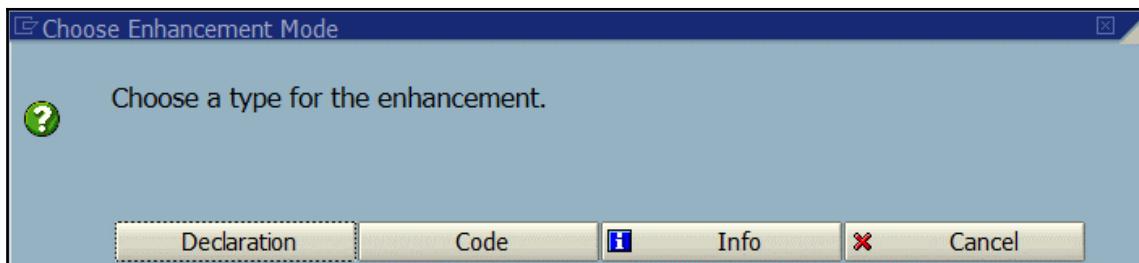
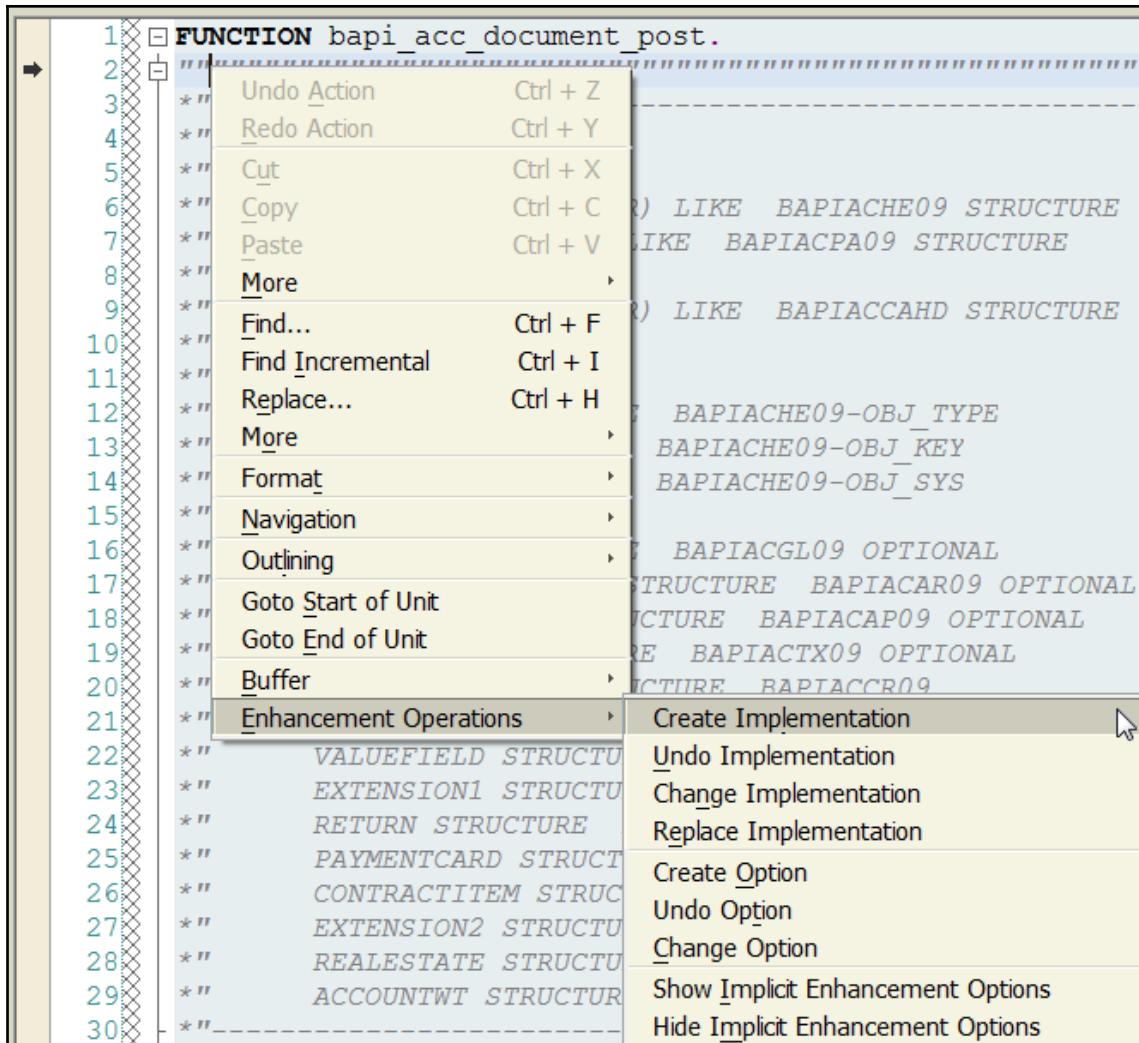


Function module **BAPI_ACC_DOCUMENT_POST** Active

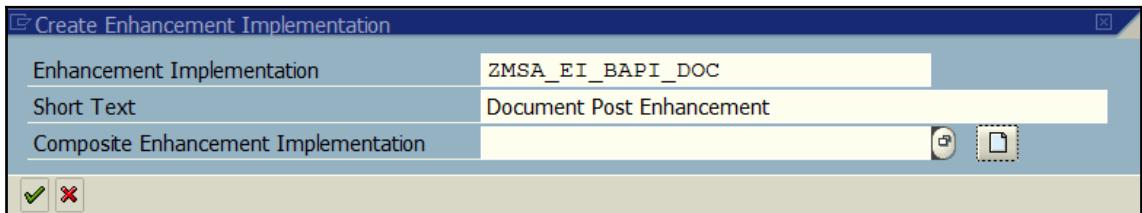
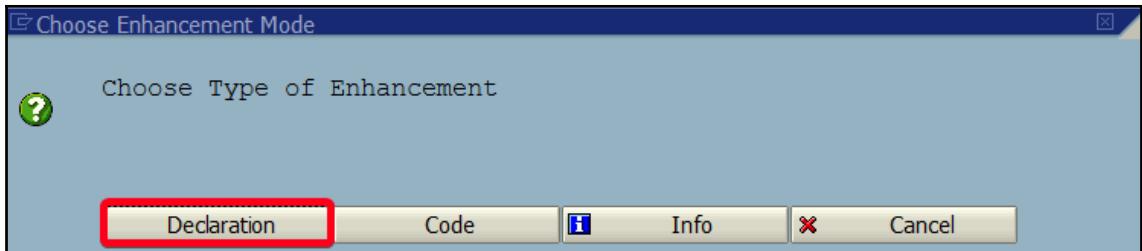
Attributes Import Export Changing Tables Exceptions Source code

```
1 FUNCTION bapi_acc_document_post.  
2 *--  
3 *--  
4 *--**"Local Interface:  
5 *-- IMPORTING  
6 *--   VALUE(DOCUMENTHEADER) LIKE BAPIACHE09 STRUCTURE BAPIACHE09  
7 *--   VALUE(CUSTOMERCPD) LIKE BAPIACPA09 STRUCTURE BAPIACPA09
```





Graphic Bundle

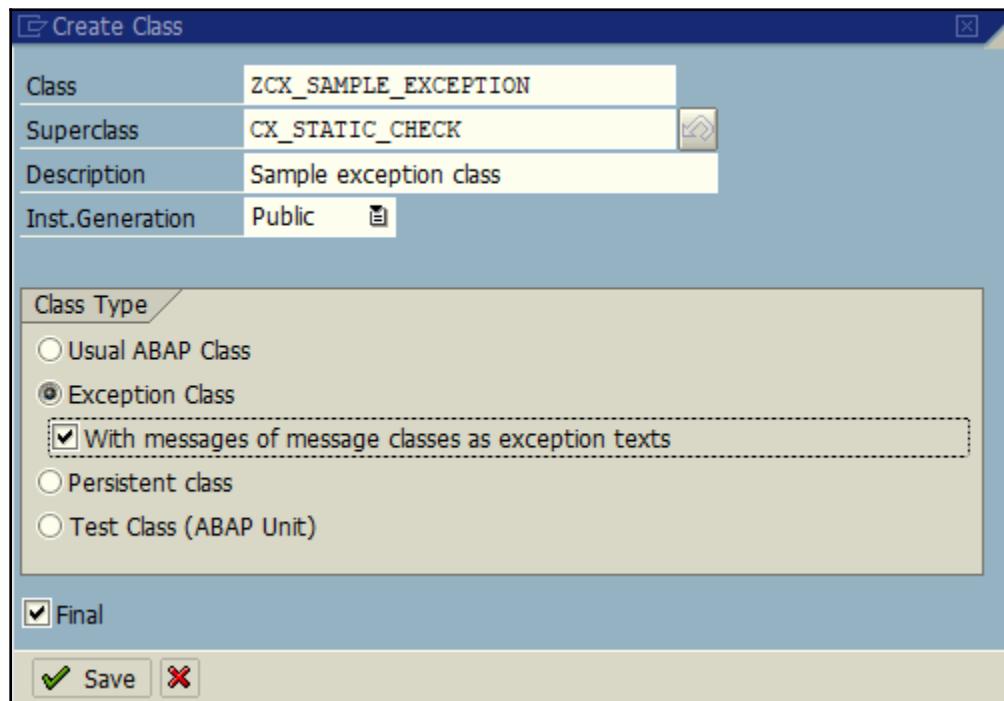
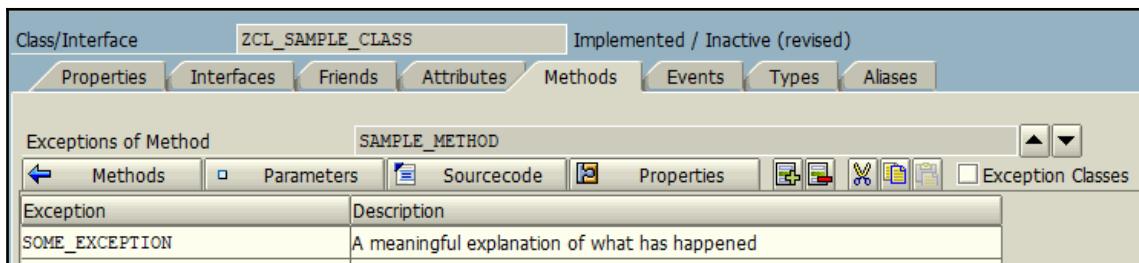
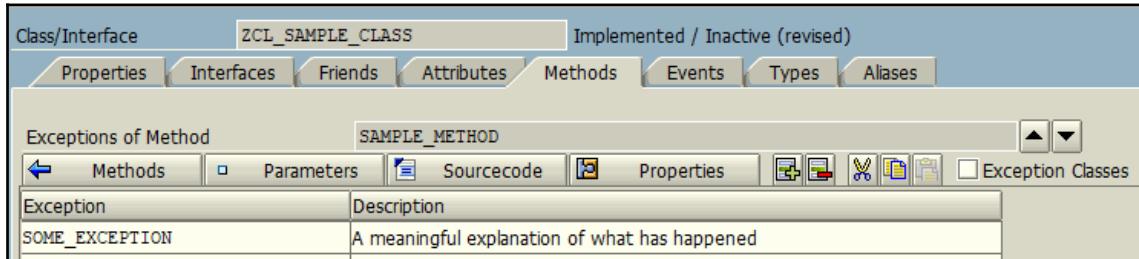


Function module **BAPI_ACC_DOCUMENT_POST** Active (Revised)

Attributes Import Export Changing Tables Exceptions Source code

```
1 | FUNCTION bapi_acc_document_post.  
2 |-----  
3 | *$*$-Start: 9999-----  
4 | ENHANCEMENT 1 ZMSA_EI_BAPI_DOC.      "inactive version  
5 |-----  
6 |-----  
7 |-----  
8 |-----  
9 | ENDENHANCEMENT.  
10|-----  
  | *$*$-End:    9999-----  
  | *"  
-----
```

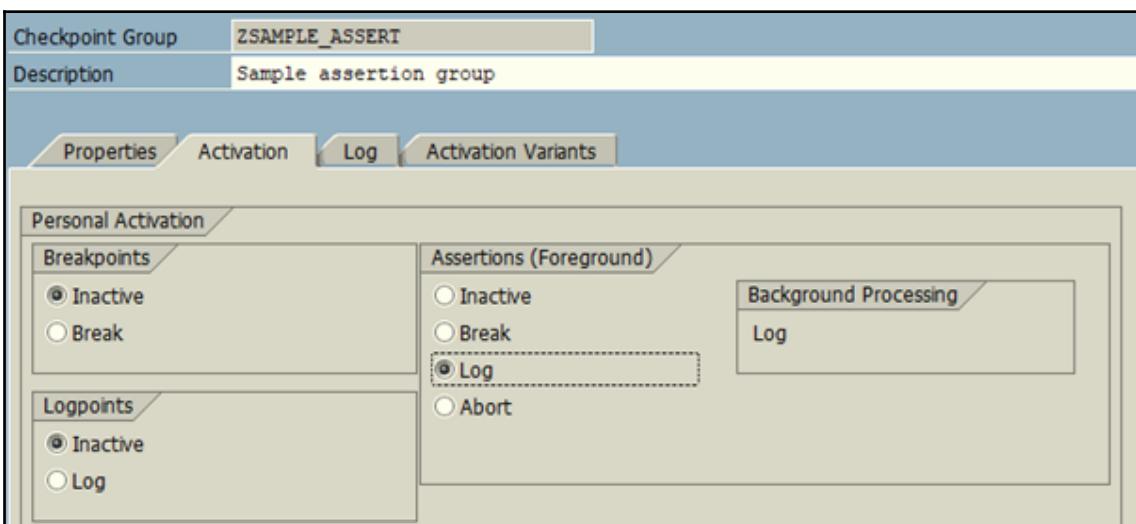
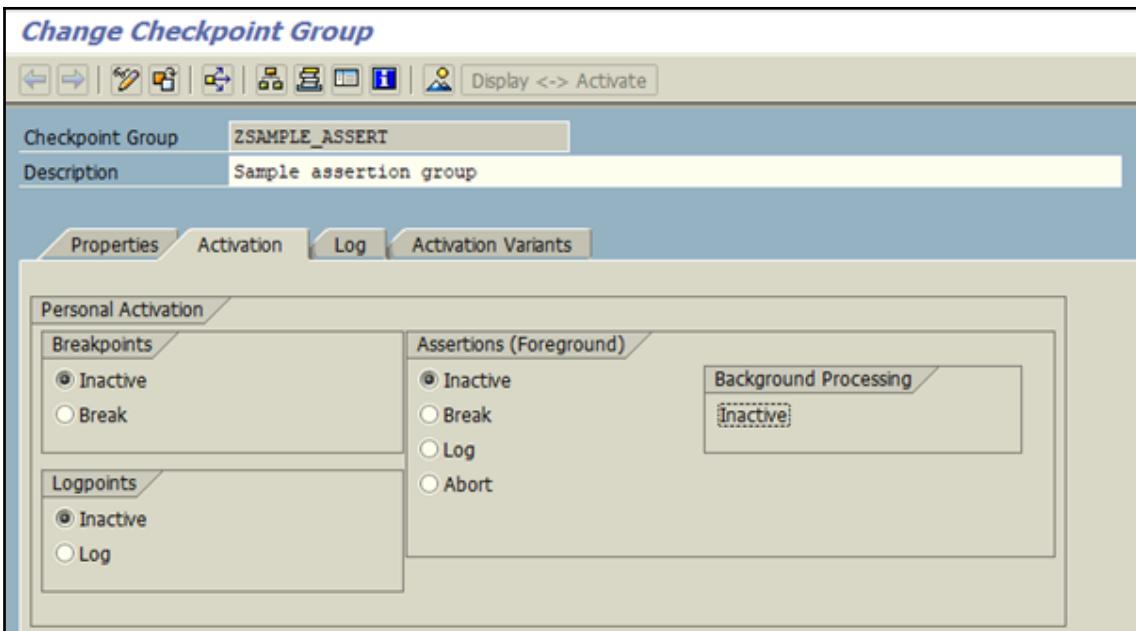
Chapter 11: Handling Exceptions in ABAP

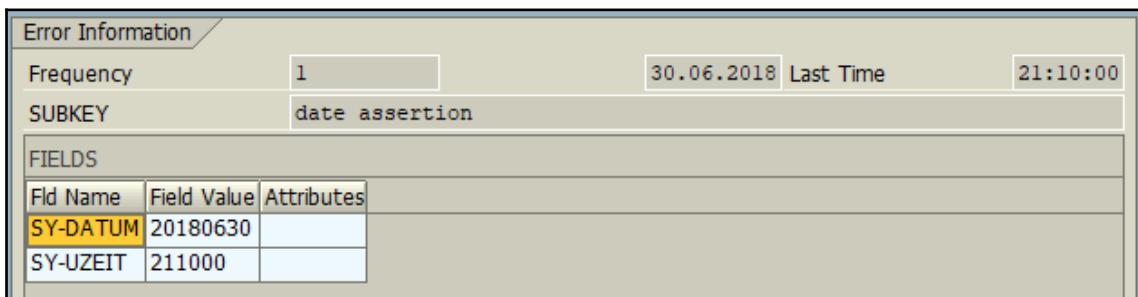
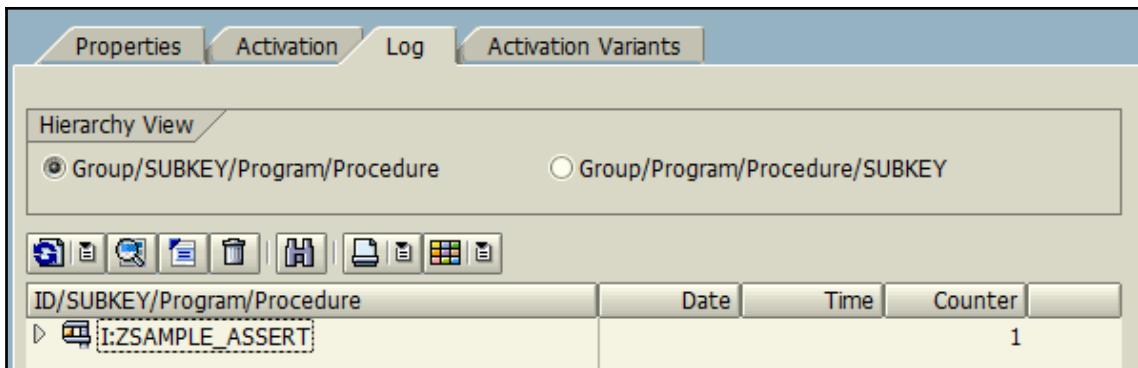


Class/Interface		ZCX_SAMPLE_EXCEPTION	Implemented / Inactive						
Properties		Interfaces	Friends	Attributes	Texts	Methods	Events	Types	Aliases
Properties									
Interface		Abstract	Final	Modeler	Description				
IF_MESSAGE		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Part of Interface for Accessing Message Texts				
IF_SERIALIZABLE_OBJECT		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Serializable Object				
IF_T100_DYN_MSG		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dynamic Access to T100 Texts (with Attributes)				
IF_T100_MESSAGE		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Interface for Accessing T100 Texts				

Checkpoints that Can Be Activated

Checkpoint Group		
Name	ZSAMPLE_ASSERT	
Activation Variant		
Name		From User DPAC00





ABAP Runtime Errors - All Clients

Parameters

Standard

<input type="button" value="Today"/>	0	Runtime Errors
<input type="button" value="Yesterday"/>	0	Runtime Errors

Own selection

Date	<input type="text"/>	<input type="button" value="..."/>	to	<input type="text"/>	<input type="button" value="..."/>
Time	<input type="text" value="00:00:00"/>		to	<input type="text" value="00:00:00"/>	<input type="button" value="..."/>
Host	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
Work Process Index	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
User	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
Client	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
To be stored	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
Runtime Error	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
Terminated Program	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
Exception	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
Transaction ID	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
EPP Full Context ID	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>
EPP Connection ID	<input type="text"/>		to	<input type="text"/>	<input type="button" value="..."/>

These files were investigated for each runtime error:

With Short Text of Runtime Error
 Corresponding Application Component (Long Runtime)
 Use old dump analysis

What happened?

Error in the ABAP Application Program

The current ABAP program "!TESTDUMP" had to be terminated because it has come across a statement that unfortunately cannot be executed.

What can you do?

Note down which actions and inputs caused the error.

To process the problem further, contact your SAP system administrator.

Using Transaction ST22 for ABAP Dump Analysis, you can look at and manage termination messages, and you can also keep them for a long time.

Short text

Division by 0 (type I)

Error analysis

An exception occurred that is explained in detail below.

The exception, which is assigned to class 'CX_SY_ZERODIVIDE', was not caught and

therefore caused a runtime error.

The reason for the exception is:

In the current program "!TESTDUMP", an arithmetic operation ('DIVIDE', '/', 'DIV', or 'MOD') attempted to use operands of type I to divide by 0.

Contents of system fields	
Name	Val.
SY-SUBRC	0
SY-INDEX	0
SY-TABIX	1
SY-DBCNT	0
SY-FDPOS	0
SY-LSIND	0
SY-PAGNO	0
SY-LINNO	1
SY-COLNO	1
SY-PFKEY	
SY-UCOMM	
SY-TITLE	
SY-MSGTY	
SY-MSGID	
SY-MSGNO	000
SY-MSGV1	
SY-MSGV2	
SY-MSGV3	
SY-MSGV4	
SY-MODNO	0
SY-DATUM	20190324
SY-UZEIT	171213
SY-XPROG	RSDBRUNT
SY-XFORM	%_INIT_PBO_FIRST

How to correct the error

If the error occurred in your own ABAP program or in an SAP program you modified, try to remove the error.

If the error occurs in a non-modified SAP program, you may be able to find an interim solution in an SAP Note.

If you have access to SAP Notes, carry out a search with the following keywords:

"COMPUTE_INT_ZERODIVIDE" "CX_SY_ZERODIVIDE"
"ZTESTDUMP" or "ZTESTDUMP"
"START-OF-SELECTION"

If you cannot solve the problem yourself and want to send an error notification to SAP, include the following information:

1. The description of the current problem (short dump)

To save the description, choose "System->List->Save->Local File (Unconverted)".

2. Corresponding system log

Display the system log by calling transaction SM21.

Restrict the time interval to 10 minutes before and five minutes after the short dump. Then choose "System->List->Save->Local File (Unconverted)".

3. If the problem occurs in a problem of your own or a modified SAP program: The source code of the program

In the editor, choose "Utilities->More Utilities->Upload/Download->Download".

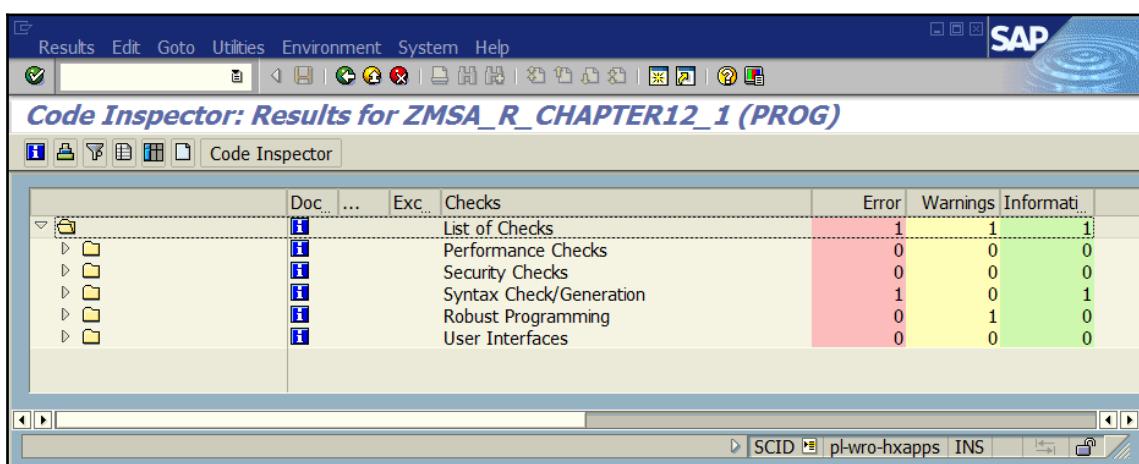
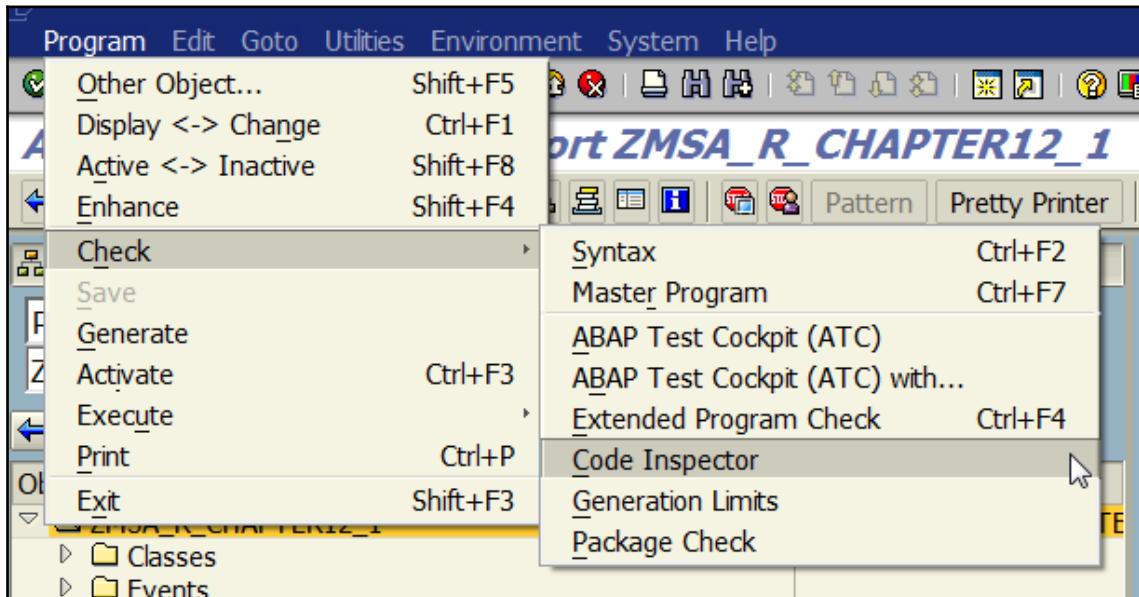
4. Details about the conditions under which the error occurred or which actions and input led to the error.

Source Code Extract	
Line	SourceCode
1	*->
2	*-> Report ZTESTDUMP
3	*->
4	*->
5	*->
6	*->
7	*->
8	
9	REPORT ztestdump.
10	
11	DATA : lv_count TYPE i VALUE 4,
12	lv_div TYPE i,
13	lv_denom TYPE i VALUE 0.
14	
>>>>	lv_div = lv_count / lv_denom.

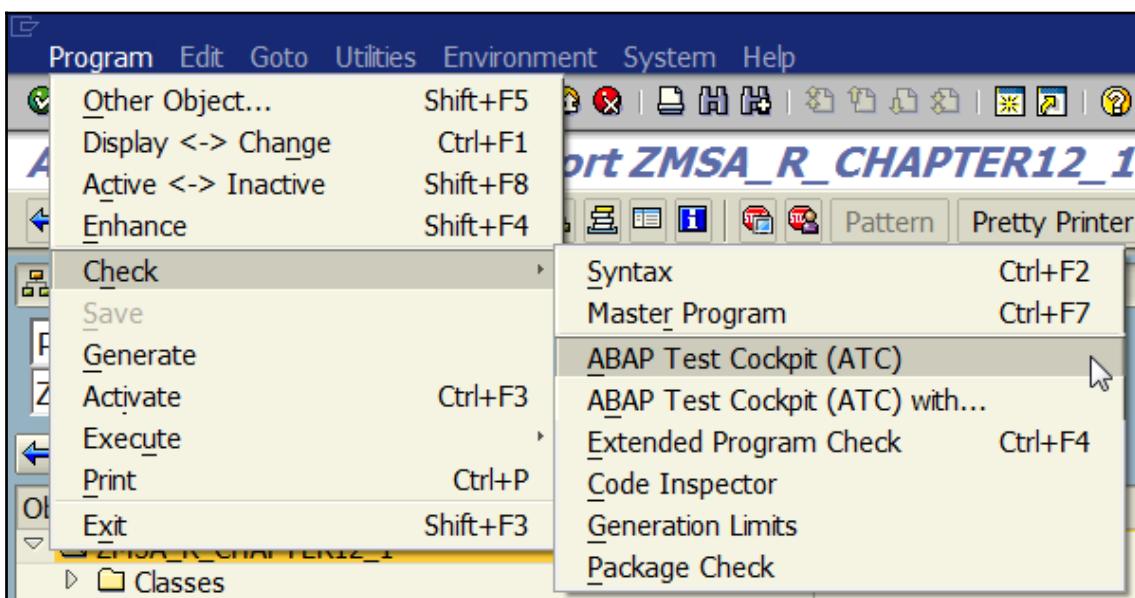
Internal notes

The termination was triggered in function "AbCaliDivr"
of the SAP kernel, in line 5006 of the module
"//bas/722_REL/src/krn/runt/abcalc.c#2".
The internal operation just processed is "ccqi".
Internal mode was started at 20190331145850.

Chapter 12: Testing ABAP programs

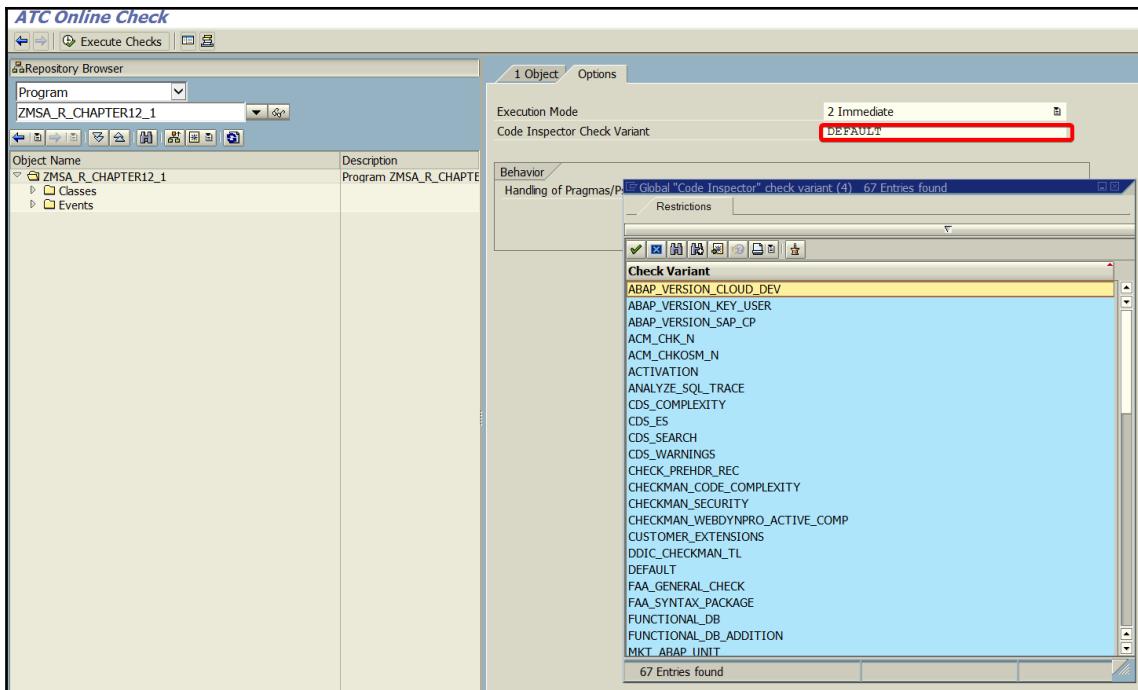


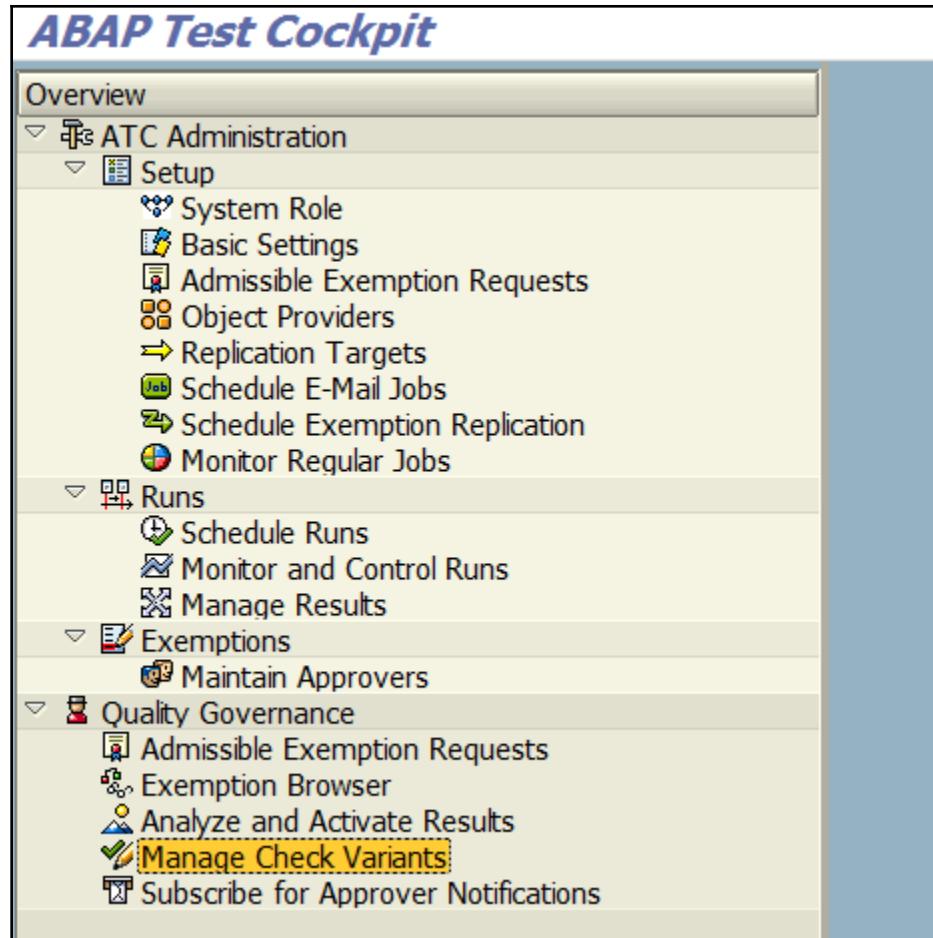
	Doc ...	Exc ...	Checks	Error	Warnings	Information
			List of Checks	1	1	1
			Performance Checks	0	0	0
			Security Checks	0	0	0
			Syntax Check/Generation	1	0	1
			Extended Program Check (SLIN)	1	0	1
			Errors	1	0	0
			Message Code 0103 ==> In PERFORM or CALL FUNCTION "TH_POPUP", the parameter "LV_MESSAGE" is incompatible with the formal parameter "MESSAGE". Internal message code: MESSAGE GUQ Caution: SLIN respects catches of the runtime error... CX_SY_DYN_CALL_ILLEGAL_TYPE.	1	0	0
			Information	0	0	1
			Robust Programming	0	1	0
			User Interfaces	0	0	0

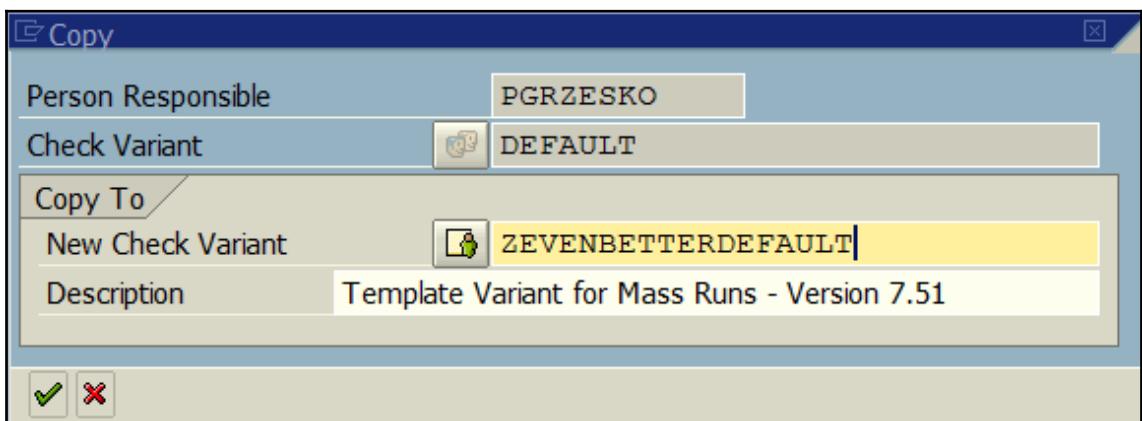
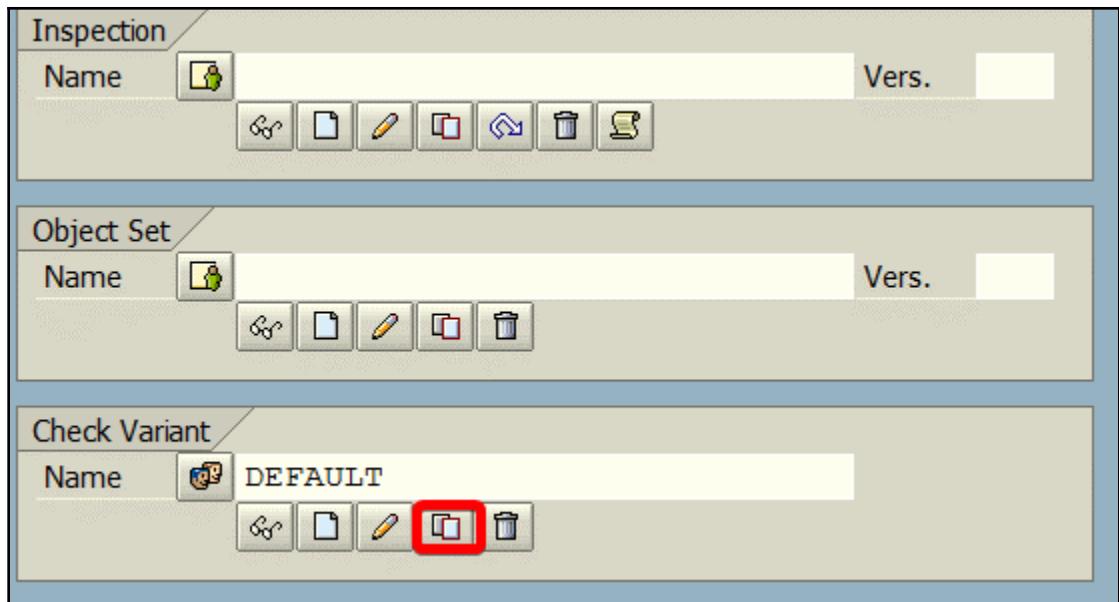


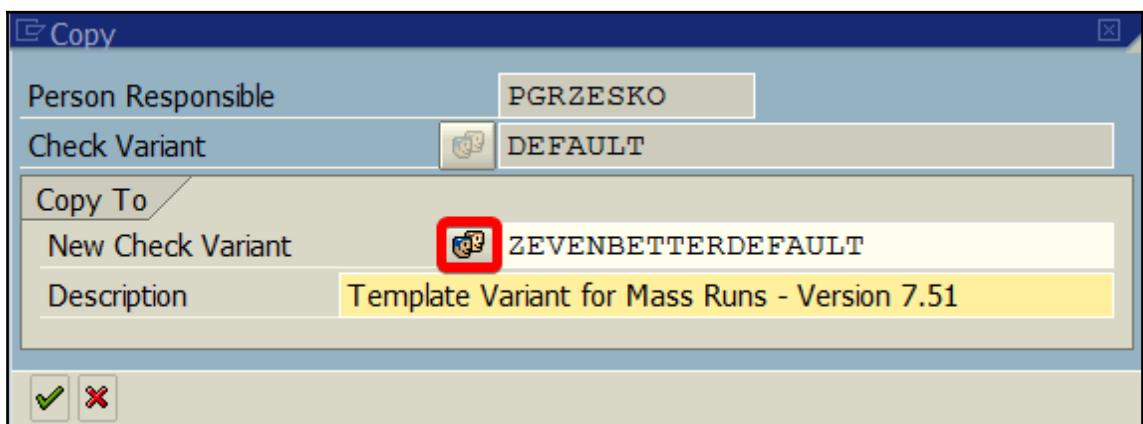
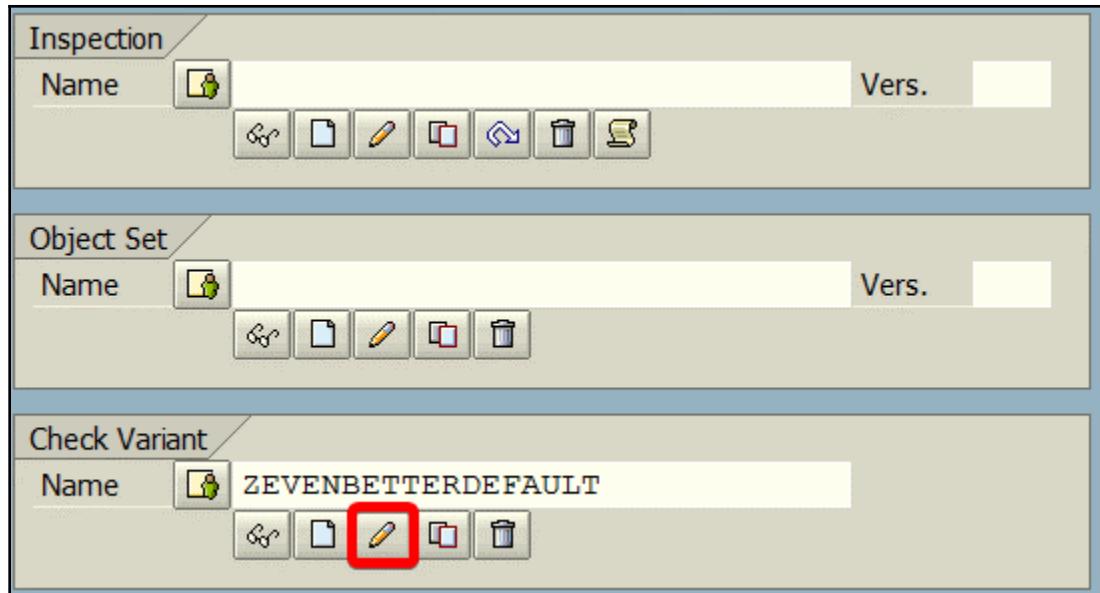
The screenshot shows the SAP ABAP Test Cockpit (ATC) interface. The title bar says 'ATC: ZMSA_R CHAPTER12_1'. The left pane is a 'Repository Browser' showing a tree structure with 'Program' selected, and 'ZMSA_R CHAPTER12_1' is highlighted. The right pane is a 'Findings' list titled 'Unresolved Findings'. It contains three entries:

Pro.	Check Title	Check Message	Object Name	Obj.	Ex	Contact Person	P
1	Extended Program Check (SLI)	Formal parameter incompatible with actual parameter	ZMSA_R CHAPTER12_1	PROG	PGRZESKO	S	
2	Tenuous use of FOR ALL ENT	Possible use of ... without prior content validation	ZMSA_R CHAPTER12_1	PROG	PGRZESKO	S	
3	Extended Program Check (SLI)	Text element missing in a character string	ZMSA_R CHAPTER12_1	PROG	PGRZESKO	S	





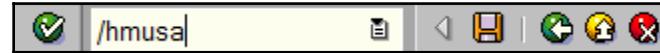
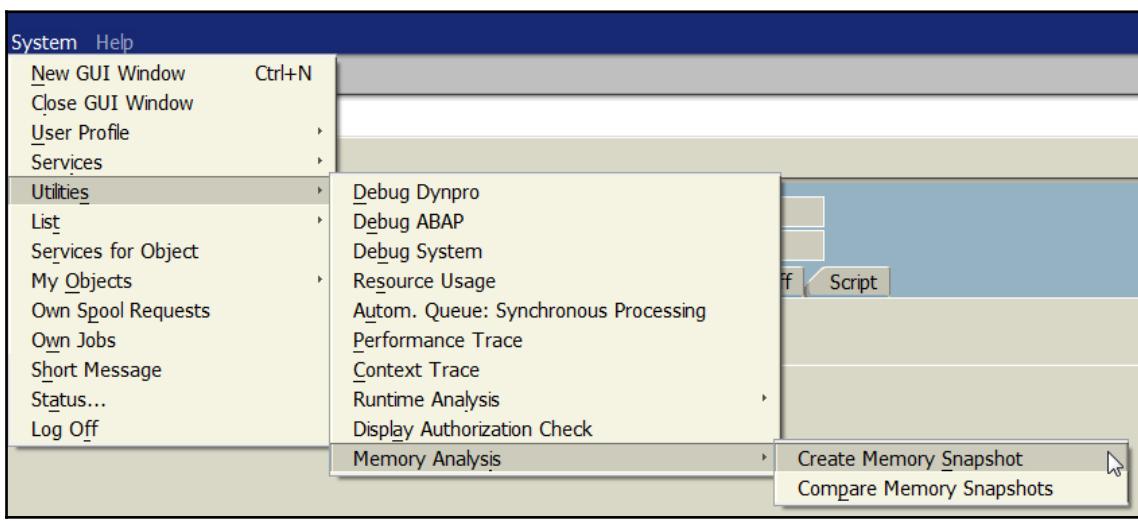
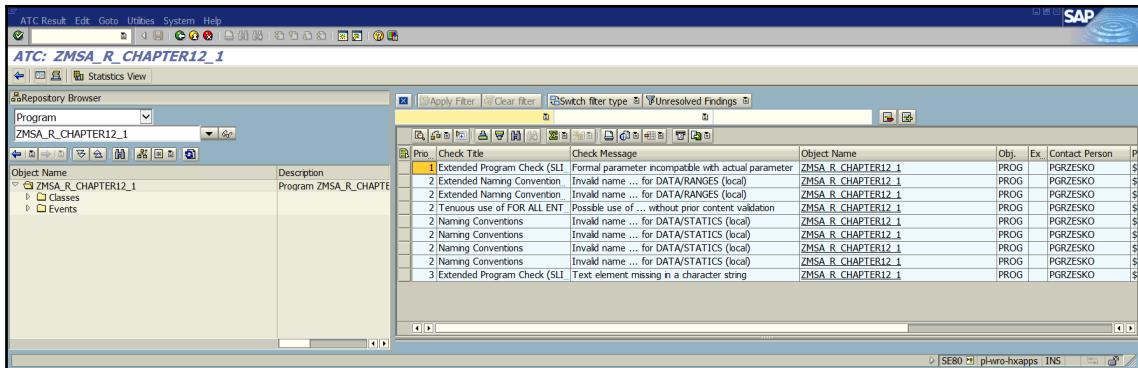




Graphic Bundle



Naming Conventions for ABAP Objects				
Program Global				
DEFINE	[]		to	[]
TYPES	[] T_*		to	[]
CONSTANTS	[] C_*		to	[]
DATA	[] L_*		to	[]
FIELD-SYMBOLS	[] <L_*		to	[]
PARAMETER(S)			to	[]
SELECT-OPTIONS			to	[]
Proced.Local				
TYPES	[] T_*		to	[]
CONSTANTS	[] C_*		to	[]
DATA	[] L_*		to	[]
FIELD-SYMBOLS	[] <L_*		to	[]
Global Classes/Interfaces				
CLASS	[] CL_*		to	[]
INTERFACE	[] IF_*		to	[]
TYPE	[] T_*		to	[]
CONSTANTS	[] C_*		to	[]
DATA	[] L_*		to	[]
CLASS-DATA	[] L_*		to	[]
EVENTS	[] L_*		to	[]
METHODS	[] L_*		to	[]
Local Classes/Interfaces				
CLASS	[] LCL_*		to	[]
INTERFACE	[] LIF_*		to	[]
TYPES	[] T_*		to	[]
CONSTANTS	[] C_*		to	[]
DATA	[] L_*		to	[]
CLASS-DATA	[] L_*		to	[]
EVENTS	[] L_*		to	[]
METHODS	[] L_*		to	[]
Method Parameters				
IMPORTING	[] P_*		to	[]
EXPORTING	[] P_*		to	[]
CHANGING	[] P_*		to	[]
RETURNING	[] P_*		to	[]
<input checked="" type="checkbox"/>	<input type="checkbox"/>			



Graphic Bundle

Memory Inspector - Memory Use Analysis

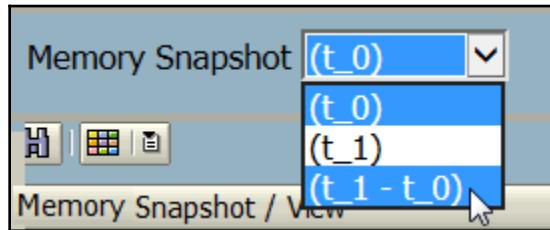
(t_0) (t_1) (t_1 - t_0) Memory Snapshots Navigation Change Number of Hits

File Name	Date	Time	User	Program	Transaction	System	Client	Host	Operating Sys.	File Size
/usr/sap/HEC/D20/data/abDbgMemory_003_0008	17.11.2018	23:29:31	PGRZESKO	ZMSA_R_CHAPTE...	WB_NEW_W...	HEC	800	pl-wro-hxapps	Linux	28.258
/usr/sap/HEC/D20/data/abDbgMemory_002_0006	17.11.2018	23:29:09	PGRZESKO	ZMSA_R_CHAPTE...	WB_NEW_W...	HEC	800	pl-wro-hxapps	Linux	28.245

Memory Snapshot (t_0) Display Limit: Tables 100

Memory Snapshot / View Filter Number

Memory Object	Rank	Lines (Allocated)	Lines (Used)	Usage - Lines (%)	Bound (Allocated)	Bound (Used)
Tables	1	452	450	100	463.144	460.404
GT_USR	2	29	24	83	1.592	1.180
CURRENT_SCR-EXCL	3	12	8	67	712	462
SPECIAL_CHARS	4	5	1	20	2.464	544
SCREEN_PROGS[]	5	1	1	20	1.400	368
RESTORE[]	6	4	1	25	184	112
M_CONSUMERS	7	4	1	25	184	112
GUI_PROPS_CONSUMER[]	8	1	1	100	616	588



Memory Snapshot (t_1 - t_0) Display Limit: Tables 100

Memory Snapshot / View Filter Number

Memory Object	Rank	Lines (Allocated)	Lines (Used)	Usage - Lines (%)	Bound (Allocated)	Bound (Used)
Tables	1	644(+ 560)	639(+ 568)	99(+ 14)	659.720(+ 573.536)	653.626(+ 580.872)
GT_USR	1	644	639	99	659.720	653.626

Report ZMSA_R CHAPTER12_3 Active

```
19 CLASS-METHODS main.
20  ENDMETHODS.
21
22  CLASS lcl_demo IMPLEMENTATION.
23    METHOD main.
24      DATA: lt_usr TYPE TABLE OF usr02.
25      DATA: ls_usr TYPE usr02.
26      DATA: lv_monday TYPE datum.
27      DATA: lv_sunday TYPE datum.
28
29      SELECT * FROM usr41 INNER JOIN usr02 ON usr41~bname = usr02~bname
30          APPENDING CORRESPONDING FIELDS OF TABLE lt_usr.
31
32    LOOP AT lt_usr INTO ls_usr.
33    IF ls_usr-bname <> sy-uname.
```

Desktop 1 Desktop 2 Desktop 3 Standard Structures Tables Objects Detail Data Explorer Break./Watchpoints Diff Script

Script Trace Files

Start Script Load Script

Save As

Name ZFIRSTSCRIPT

Trigger

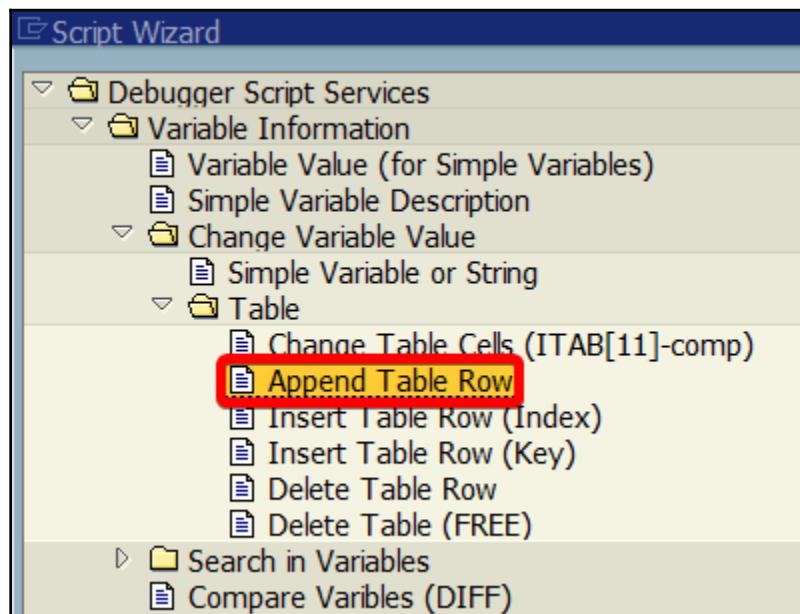
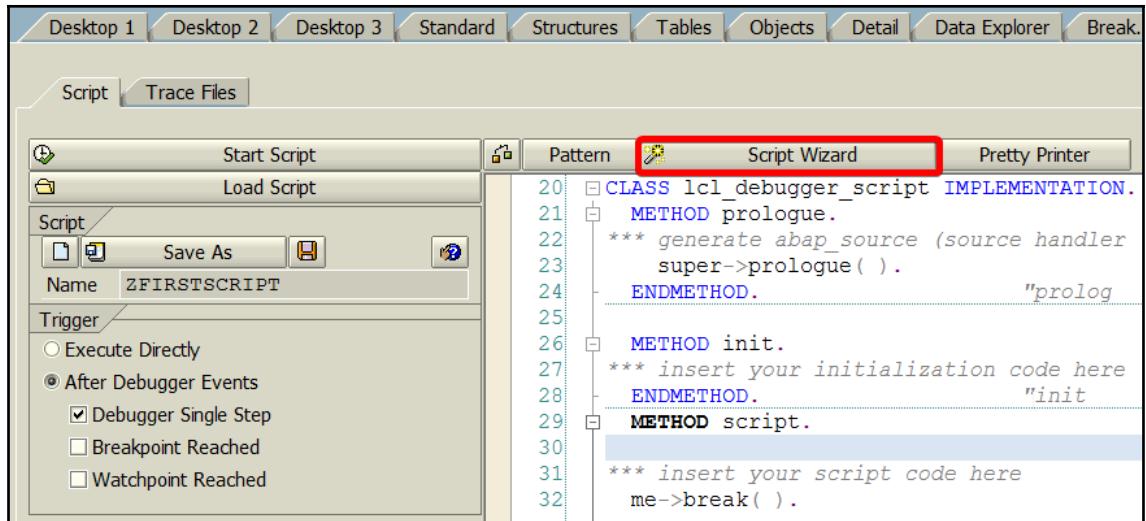
Execute Directly

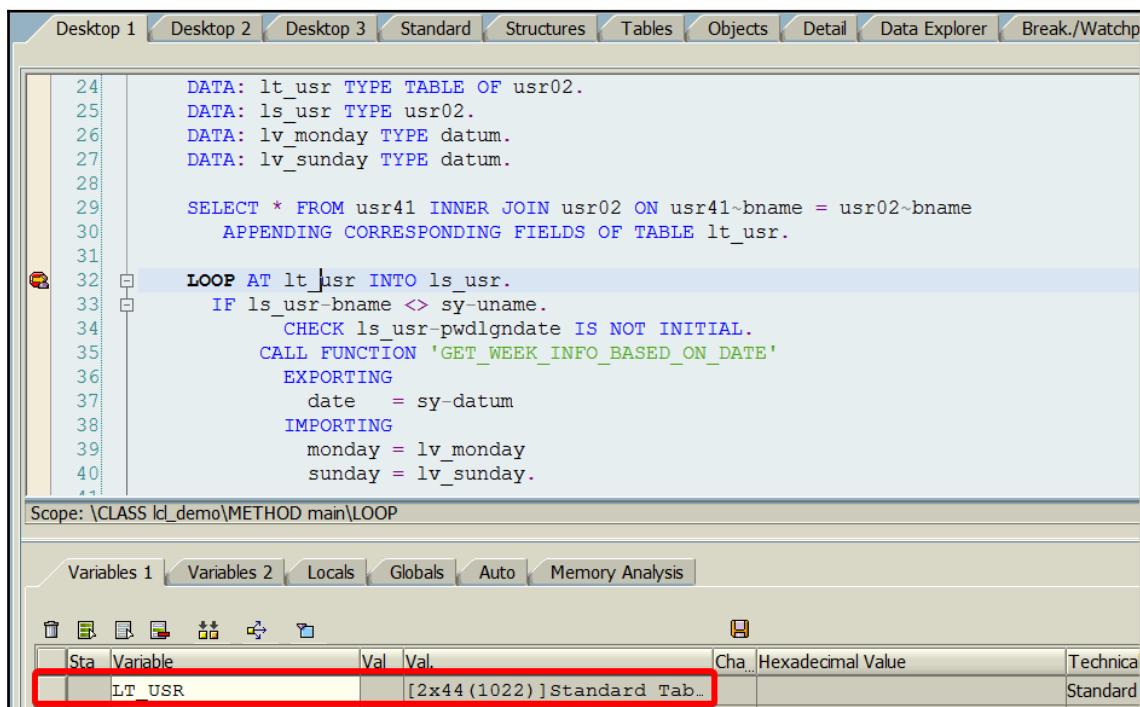
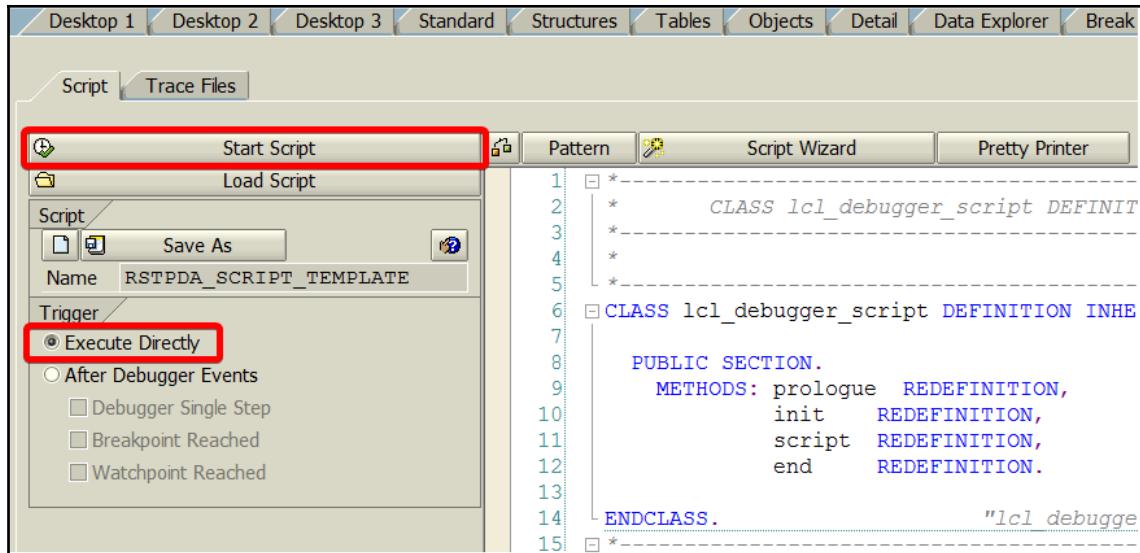
After Debugger Events

- Debugger Single Step
- Breakpoint Reached
- Watchpoint Reached

Pattern Script Wizard Pretty Printer

```
1  *-----
2  *      CLASS lcl_debugger_script DEFINITION
3  *-----
4  *
5  *-----
6  CLASS lcl_debugger_script DEFINITION INHERITING FROM cl_tpda_s
7
8  PUBLIC SECTION.
9    METHODS: prologue REDEFINITION,
10           init   REDEFINITION,
11           script REDEFINITION,
12           end   REDEFINITION.
```





Graphic Bundle

The screenshot shows the SAP SE11 interface with the 'Tables' tab selected. The table being viewed is 'LT_USR'. The attributes are listed as 'Standard [2x44(1022)]'. A red box highlights the 'TESTUSR1' entry in the 'BNAME' column of the second row.

Row	MANDT [C(3)]	BNAME [C(12)]	BCODE [X(8)]	GLTGV [D(8)]	GLTGB [D(8)]
1	800	PGRZESKO	000000000000000000	00000000	00000000
2		TESTUSR1	000000000000000000	00000000	00000000

Program ZMSA_R CHAPTER12_3

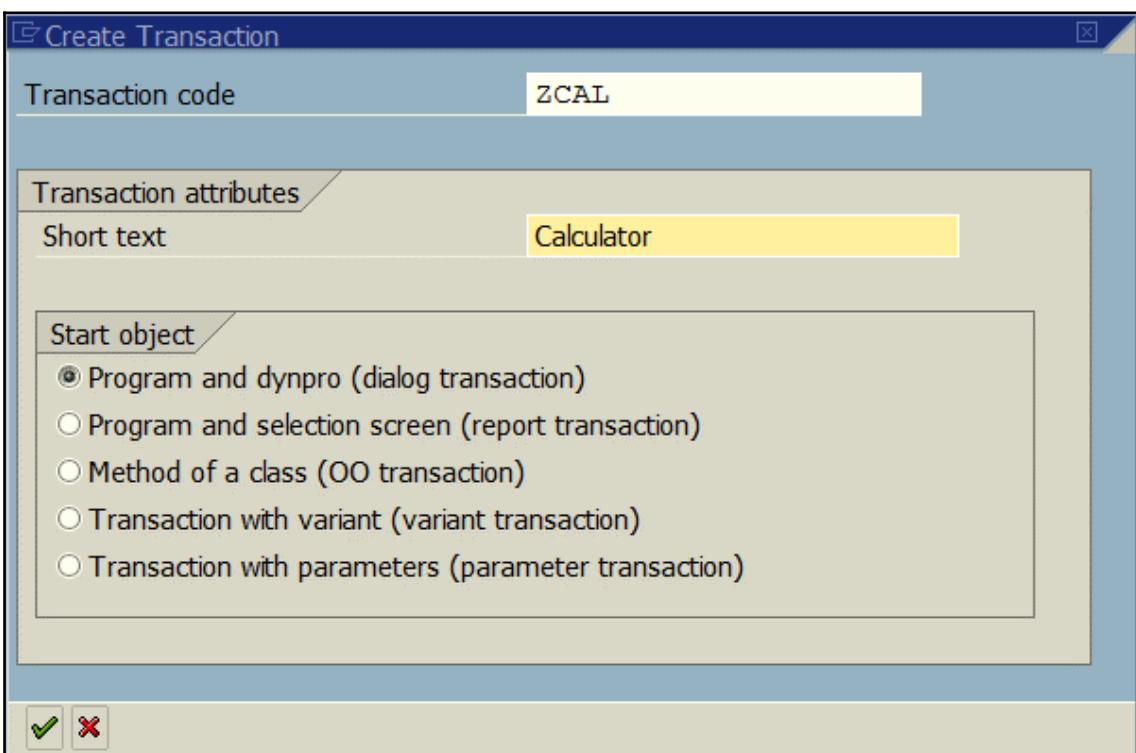
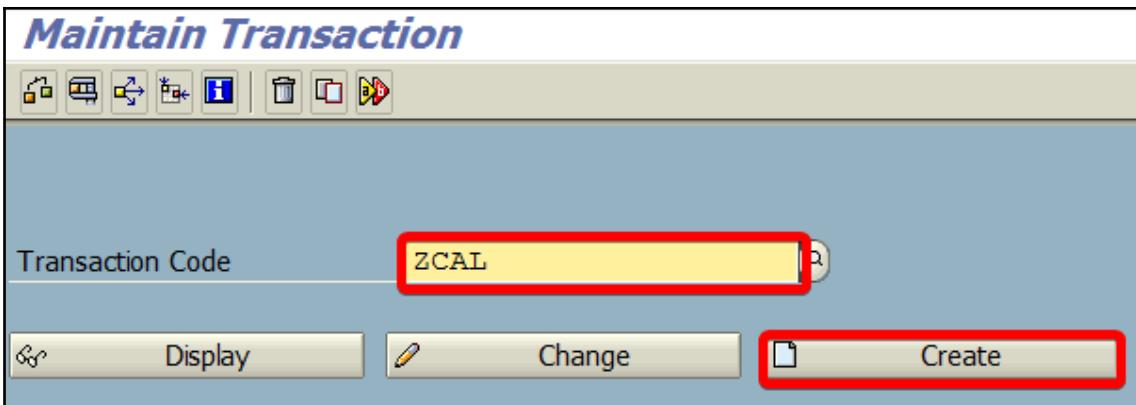
Program ZMSA_R CHAPTER12_3

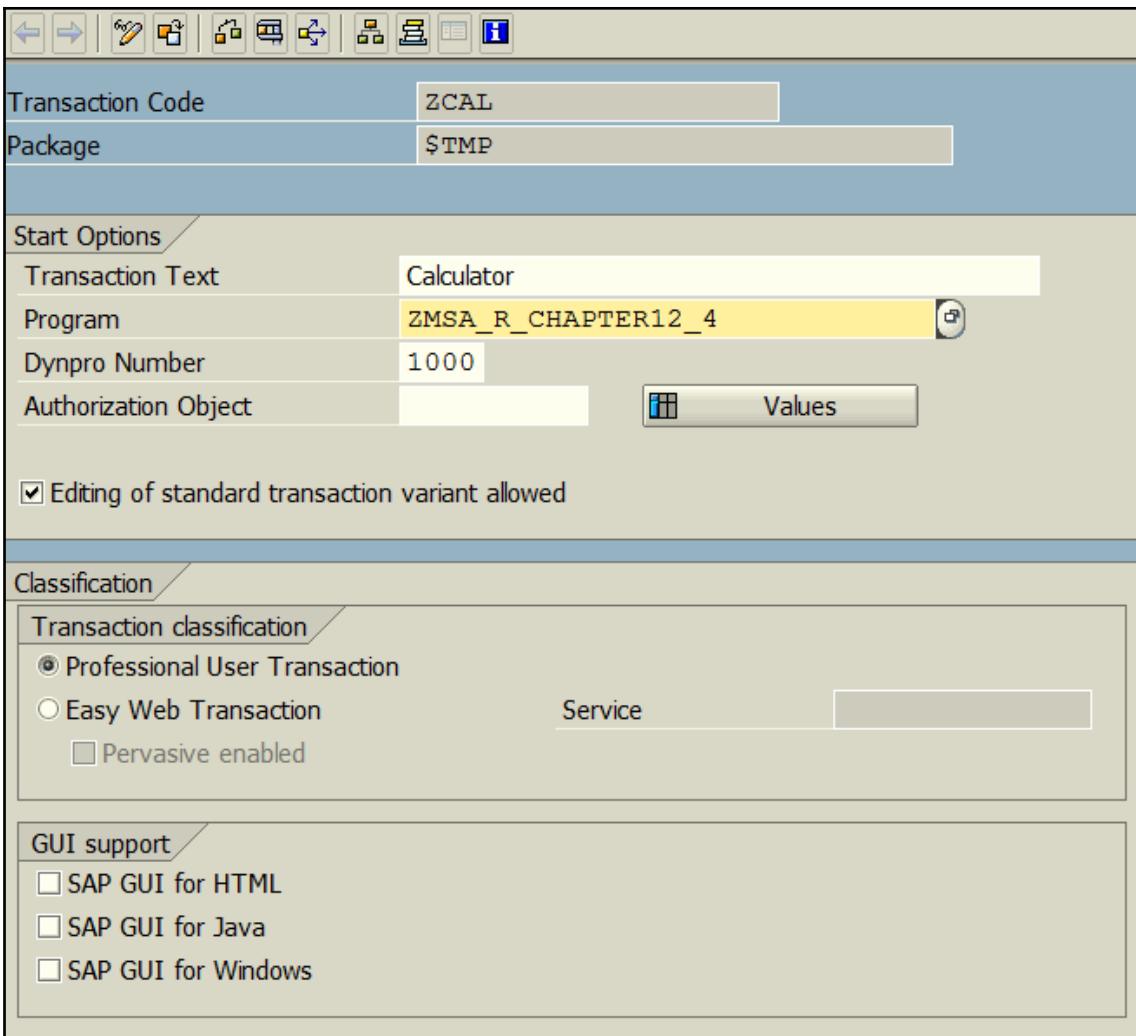
This user last password change was within this week:
TESTUSR1

Texts Language English

The screenshot shows the SAP SE11 interface with the 'Texts' tab selected. The program is 'ZMSA_R CHAPTER12_4'. The 'List Headings' tab is selected. A red box highlights the 'Program ZMSA_R CHAPTER12_4' entry in the 'Text' column of the first row.

Description	Name	Text	DDIC Referen...
Program ZMSA_R CHAPTER12_4	P_NUM1	Number 1	<input type="checkbox"/>
	P_NUM2	Number 2	<input type="checkbox"/>
	P_RADIO1	Addition	<input type="checkbox"/>
	P_RADIO2	Subtraction	<input type="checkbox"/>
	P_RADIO3	Multiplication	<input type="checkbox"/>
	P_RADIO4	Division	<input type="checkbox"/>





The screenshot shows the SAP transaction configuration dialog for transaction code ZCAL. The dialog is divided into several sections:

- Top Bar:** Contains standard SAP navigation icons.
- Transaction Details:** Transaction Code: ZCAL, Package: \$TMP.
- Start Options:**
 - Transaction Text: Calculator
 - Program: ZMSA_R CHAPTER12_4 (highlighted in yellow)
 - Dynpro Number: 1000
 - Authorization Object: [empty field]
- Checkboxes:** Editing of standard transaction variant allowed
- Classification:**
 - Professional User Transaction (radio button selected)
 - Easy Web Transaction (radio button)
 - Pervasive enabled
- Service:** [empty field]
- GUI support:**
 - SAP GUI for HTML
 - SAP GUI for Java
 - SAP GUI for Windows

Graphic Bundle

Extended Computer Aided Test Tool: Initial Screen

Choose Object

Test Configuration

Test Script

Validation Object

Test Data

System Data

Start Profile

Favorites Object History Log History

Last used Test Scripts of User: Paweł Grzeskowiak

Type- Object Name Version Title Acc. Access Date Acc.

TIPS AND TRICKS

WELCOME TO eCATT

Did you know...?

Download XML-DATA from eCATT Logs

This function is available in the eCATT log tree as context menu for command interfaces, parameters and other nodes that contain an XML-DATA-nn entry (nn = 01, 02, 03, ...).

WHAT'S NEW

Log API

Get access to eCATT log data from your ABAP application with our Log API.
Read more...

LEARN MORE

- eCATT Documentation
- eCATT Space @ SCN
- eCATT Wiki @ SCN
- eCATT Security Guide

TDC Change History

Create Test Script ZCALTEST (1)

Test Script ZCALTEST Version 1 Target System Local Maintenance Instance HEC (800) (E)

Editor Attributes

General Data Versioning Data Extras Restrictions Test Objects

Header Data

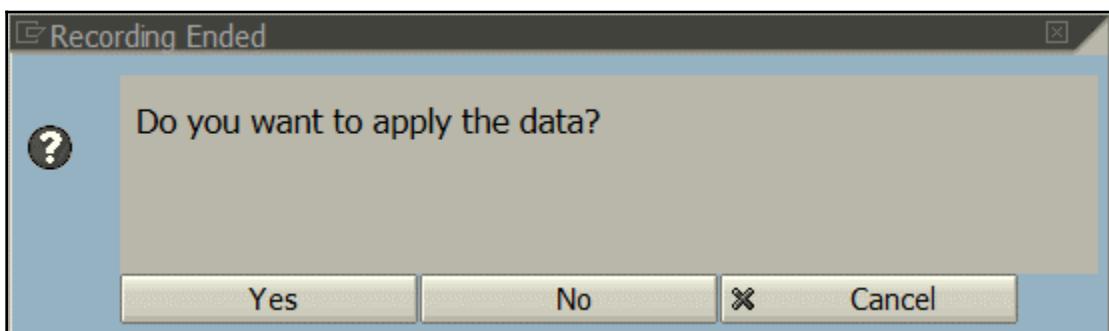
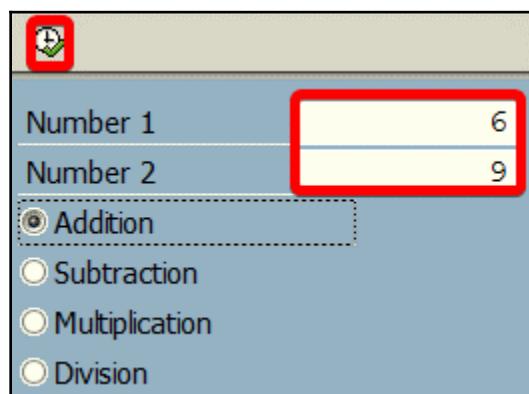
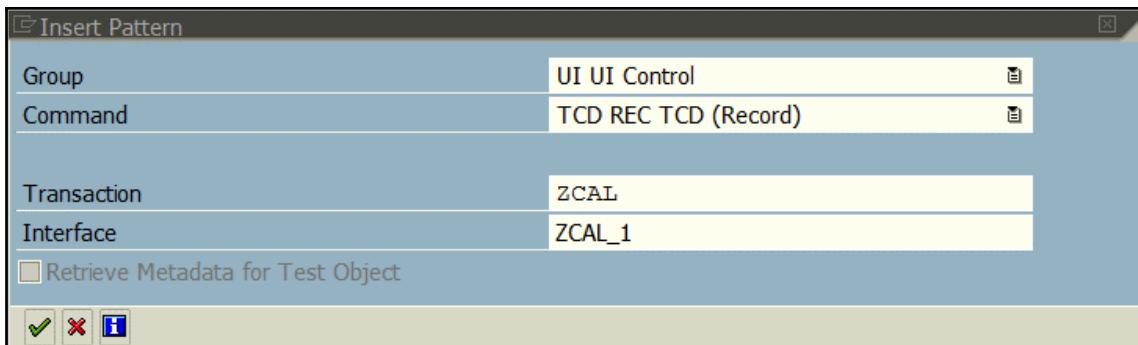
Title Calculator

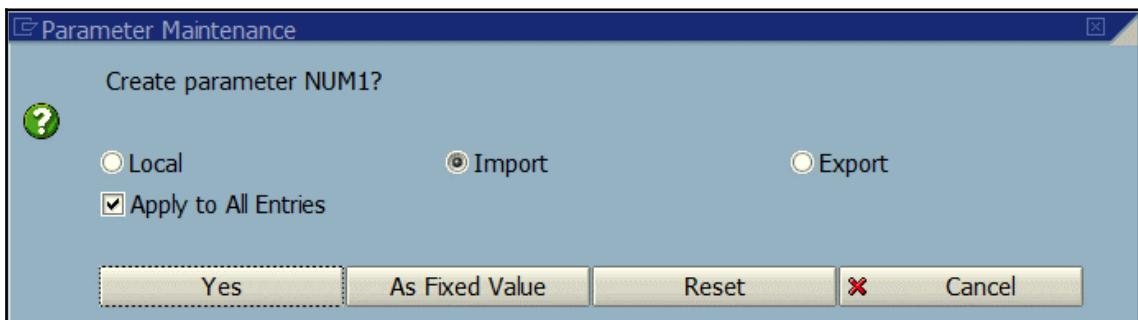
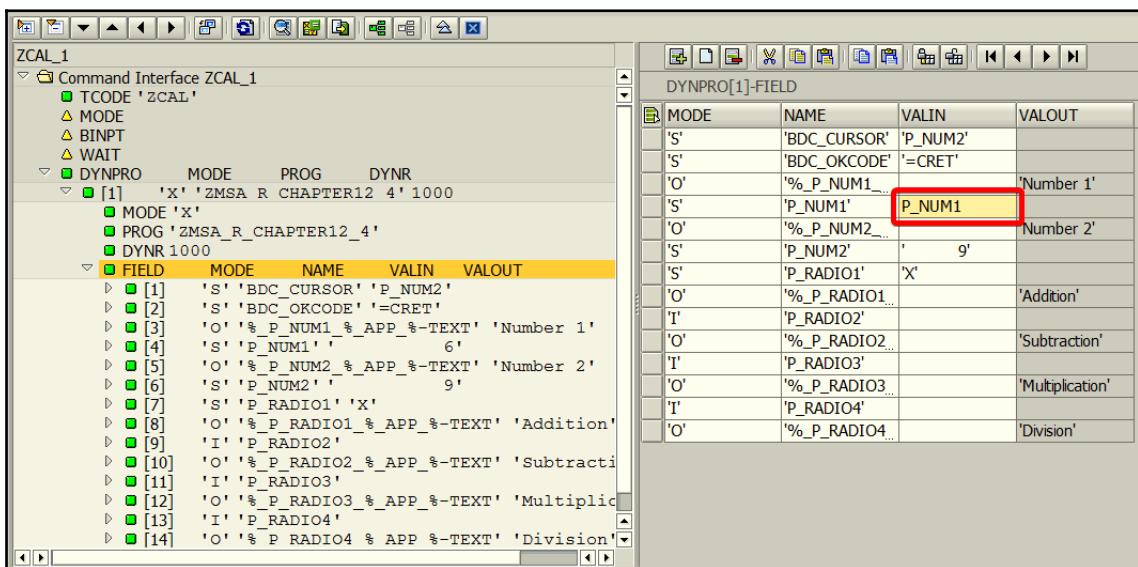
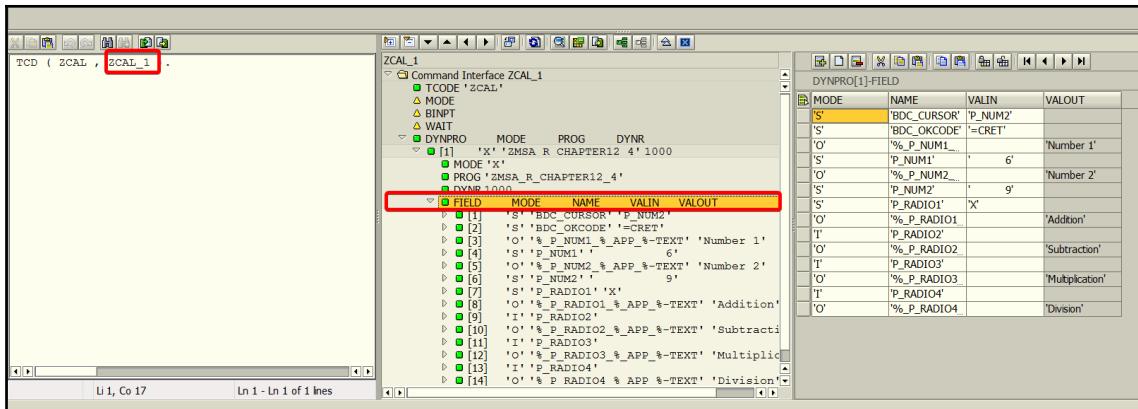
Package PGRZESKO Person Responsible Paweł Grzeskowiak Application Component FI

Change Test Script ZCALTEST (1)

Test Script ZCALTEST Version 1

Title Calculator



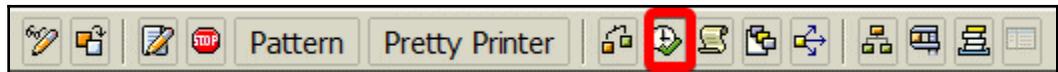


DYNPRO[1]-FIELD

MODE	NAME	VALIN	VALOUT
'S'	'BDC_CURSOR'	'P_NUM2'	
'S'	'BDC_OKCODE'	=CRET	
'O'	'%_P_NUM1_...		'Number 1'
'S'	'P_NUM1'	P_NUM1	
'O'	'%_P_NUM2_...		'Number 2'
'S'	'P_NUM2'	P_NUM2	
'S'	P_RADIO	'X'	
'O'	'%_P_RADIO1_...		'Addition'
'T'	'P_RADIO2'		
'O'	'%_P_RADIO2_...		'Subtraction'
'T'	'P_RADIO3'		
'O'	'%_P_RADIO3_...		'Multiplication'
'T'	'P_RADIO4'		
'O'	'%_P_RADIO4_...		'Division'

Parameter	Description	Parameter Value	Vsiblty	Parameter Reference	Alas	Target System	ABAP Type	Length	Dec.Pl...	Group
P_NUM1	BDC field value		I	BDC_FVAL			C	132		
P_NUM2	BDC field value		I	BDC_FVAL			C	132		
P_RESULT	Result Field		I	STRING			I	9		
P_RADIO	Field name	P_RADIO1	I	FNAM_4			C	132		

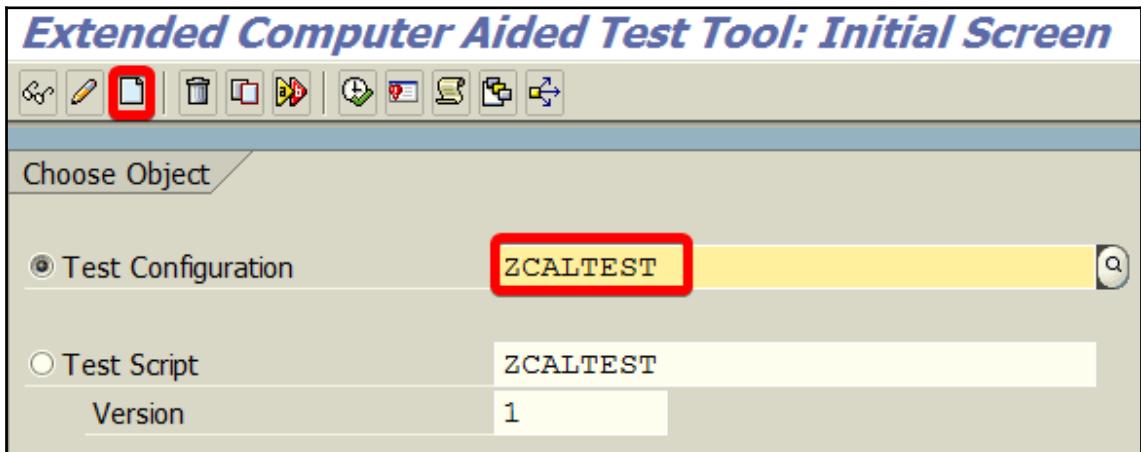
TCD (ZCAL , ZCAL_1).
 CHEVAR (ZCAL_1-MSG[1]-MSGV1 = P_RESULT).



Graphic Bundle

Graphic Bundle					
General		Parameters		UI Control	
				Breakpoints	
				Cov. Measurement	
Parameter	Description	Default Parameter Value	Parameter Value	Parameter Reference	
P_NUM1	BDC field value		5	BDC_FVAL	
P_NUM2	BDC field value		10	BDC_FVAL	
P_RESULT	Result Field		15	STRING	
P_RADIO	Field name	P_RADIO1		FNAM_____4	

```
0000000005 Test Script ZCALTEST Version 1 - SECATT [W/o Interruption] [1 s]
  HEC 800 PGRZESKO (Pawel Grzeskowiak) E 752 pl-wro-hxapps Linux HDB 20.11.2018 12:38:27
  Test Caller
  Start Options XML-DATA-01
  ZCALTEST Version 1 [      0,118] My first
    IMPORT ZCALTEST
    TCD ZCAL [0,050 / SUT: 0,003 N] Calculator
    S00001 15
    CHEVAR ( ZCAL_1-MSG[1]-MSGV1 = P_RESULT )
    EXPORT ZCALTEST
```



Configuration Variants Attributes

General Data Extras Restrictions Attachments

Header Data

Title	My First Calculator Test Configuration
Package	
Person Responsible	PGRZESKO
Application Component	FI

Configuration Variants Attributes

Test Script

Test Script	ZCALTEST
Tool Name	ECATT

System Data

System Data Cont.	
Target System	

Mode Internal Variants

External Variants / Path C:\Users\pgrzesko\Documents\SAP\SAP GUI
File

Execute	Variant	Descriptn	Attachment	P_NUM1	P_NUM2	P_RESULT	P_RADIO
<input type="checkbox"/>	1			1	2	3	P_RADIO1
<input type="checkbox"/>	2			5	8	13	P_RADIO1
<input type="checkbox"/>	3			3	2	1	P_RADIO2
<input type="checkbox"/>	4			13	15	2-	P_RADIO2
<input type="checkbox"/>	5			2	2	4	P_RADIO3
<input type="checkbox"/>	6			5	100	500	P_RADIO3
<input type="checkbox"/>	7			25	5	5	P_RADIO4
<input type="checkbox"/>	8			200	0	N/A	P_RADIO4
<input checked="" type="checkbox"/>	ECATTDEFAULT						P_RADIO1

Graphic Bundle

General Variants UI Control Breakpoints Cov. Measurement

Mode

Path C:\Users\pgrzesko\Documents\SAP\SAP GUI

External	Object Type	Alias	Object Name	Title
<input checked="" type="checkbox"/>	Test Configuration		ZCALTEST	My First Calculator Test Configuration

Selection of Internal Variants

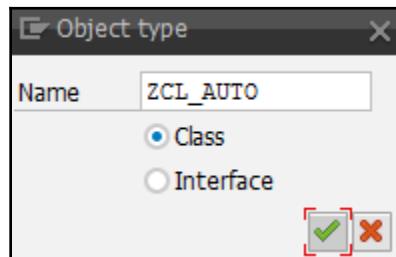
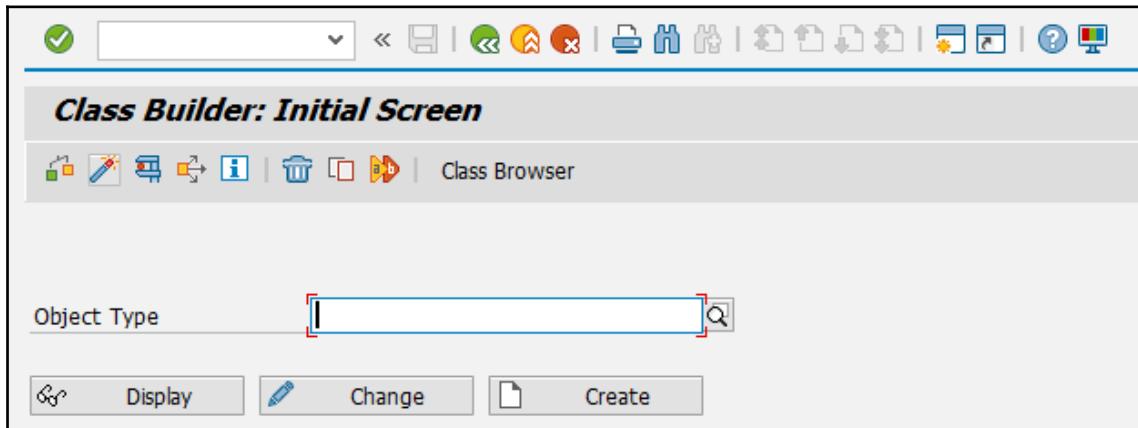
Special, Generic

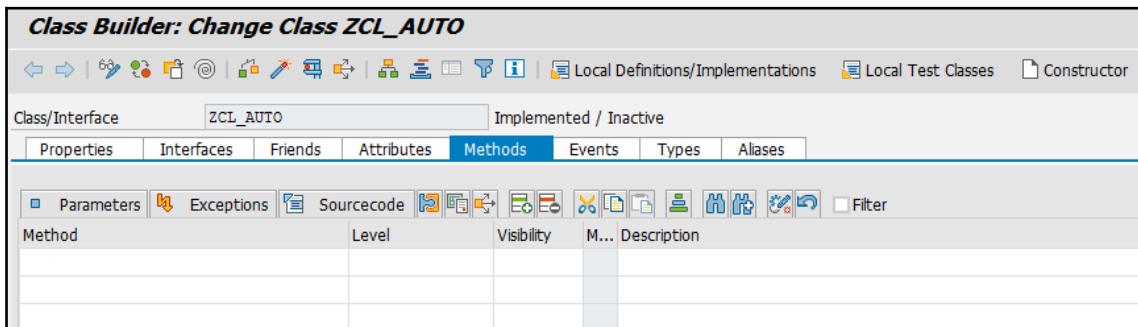
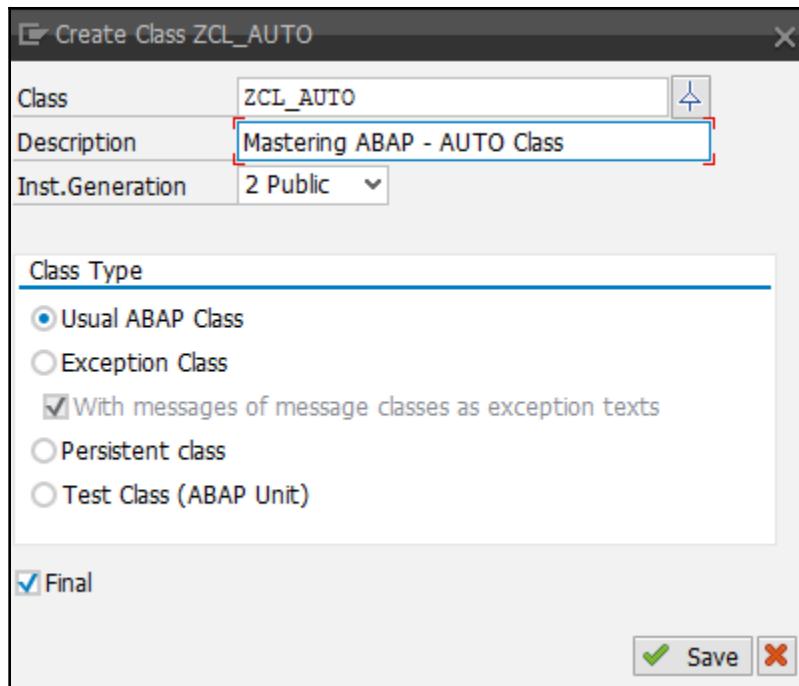
Execute	Variant	Description	Attachment	P_NUM1	P_NUM2	P_RESULT	P_RADIO
<input type="checkbox"/>	ECATTDEFAULT						P_RADIO1
<input type="checkbox"/>	ECATTDEFAULTRUN	Default Values for Start Process					
<input checked="" type="checkbox"/>	1			1	2	3	P_RADIO1
<input checked="" type="checkbox"/>	2			5	8	13	P_RADIO1
<input checked="" type="checkbox"/>	3			3	2	1	P_RADIO2
<input checked="" type="checkbox"/>	4			13	15	2-	P_RADIO2
<input checked="" type="checkbox"/>	5			2	2	4	P_RADIO3
<input checked="" type="checkbox"/>	6			5	100	500	P_RADIO3
<input checked="" type="checkbox"/>	7			25	5	5	P_RADIO4
<input checked="" type="checkbox"/>	8			200	0	N/A	P_RADIO4

2 Expand Levels ▲ Expand Error

- 000000000007 Test Configuration ZCALTEST - SECATT [W/o Interruption] [3 s]
 - HEC 800 PGRZESKO (Pawel Grzeskowiak) E 752 pl-wro-hxapps Linux HDB 20.11.2018 12:56:17
 - Test Caller
 - Start Options XML-DATA-01
 - ZCALTEST [2,036] My First Calculator Test Configuration
 - Version Finding -> XML-DATA-05
 - ZCALTEST Version 1 [0,196] Variant 1
 - ZCALTEST Version 1 [0,063] Variant 2
 - ZCALTEST Version 1 [0,063] Variant 3
 - ZCALTEST Version 1 [0,063] Variant 4
 - ZCALTEST Version 1 [0,132] Variant 5
 - ZCALTEST Version 1 [0,064] Variant 6
 - ZCALTEST Version 1 [0,173] Variant 7
 - IMPORT 7
 - TCD ZCAL [0,047 / SUT: 0,003 N] Calculator S00001 5
 - CHEVAR (ZCAL 1-MSG[1]-MSGV1 = P RESULT)
 - ZCAL_1-MSG[1]-MSGV1 = 5
 - P RESULT = 5
 - EXPORT 7
 - ZCALTEST Version 1 [0,238] Variant 8

Chapter 13: Advanced Techniques in ABAP Objects





Class Builder: Change Class ZCL_AUTO

Local Definitions/Implementations Local

Class/Interface ZCL_AUTO Implemented / Active

Properties Interfaces Friends Attributes Methods Events Types Aliases

Attribute	Level	Visibility	R...	Typing	Associated Type	Initial Value
TANK_CAP	Constant	Public	<input type="checkbox"/>	Type	T_FUEL	70
BRAND	Instance Attribute	Public	<input type="checkbox"/>	Type	T_BRAND	
NUMB_OF_CARS	Static Attribute	Public	<input type="checkbox"/>	Type	I	
FUEL	Instance Attribute	Private	<input type="checkbox"/>	Type	T_FUEL	

Class Builder: Change Class ZCL_AUTO

Local Definitions/Implementations Local

Class/Interface ZCL_AUTO Implemented / Active

Properties Interfaces Friends Attributes Methods Events Types Aliases

Method	Level	Visibility	M...	Description
CONSTRUCTOR	Instance Method	Public		CONSTRUCTOR
REFUEL	Instance Method	Public		
GET_FUEL_STATUS	Instance Method	Public		
CHECK_SPACE	Instance Method	Private		

Class Builder: Change Class ZCL_AUTO

Class/Interface **ZCL_AUTO** Implemented / Active

Properties Interfaces Friends Attributes Methods Events Types Aliases

Type	Visibility	Typing	Associated...	Description
T_BRAND	Public	Type	CHAR20	Char 20
T_FUEL	Public	Type	I	
T_MODEL	Public	Type	CHAR20	Char 20

Class Builder: Change Class ZCL_AUTO

Class/Interface **ZCL_AUTO** Implemented / Active

Properties Interfaces Friends Attributes Methods Events Types Aliases

Parameters of Method **REFUEL**

Parameter	Type	P...	O...	Typing	Method	Associated Type
IV_FUEL	Importing			Type		T_FUEL
				Type		
				Type		
				Type		
				Type		

Class Builder Class ZCL_AUTO Change

Parameter Typing Description

IV_FUEL	TYPE T_FUEL	
NO_SPACE		

Method REFUEL Active

```
1 METHOD refuel.
2   IF check_space( iv_fuel ) >= iv_fuel.
3     ADD iv_fuel TO fuel.
4   ELSE.
5     RAISE no_space.
6   ENDIF.
7 ENDMETHOD.
```

Class Builder: Change Class ZCL_AUTO

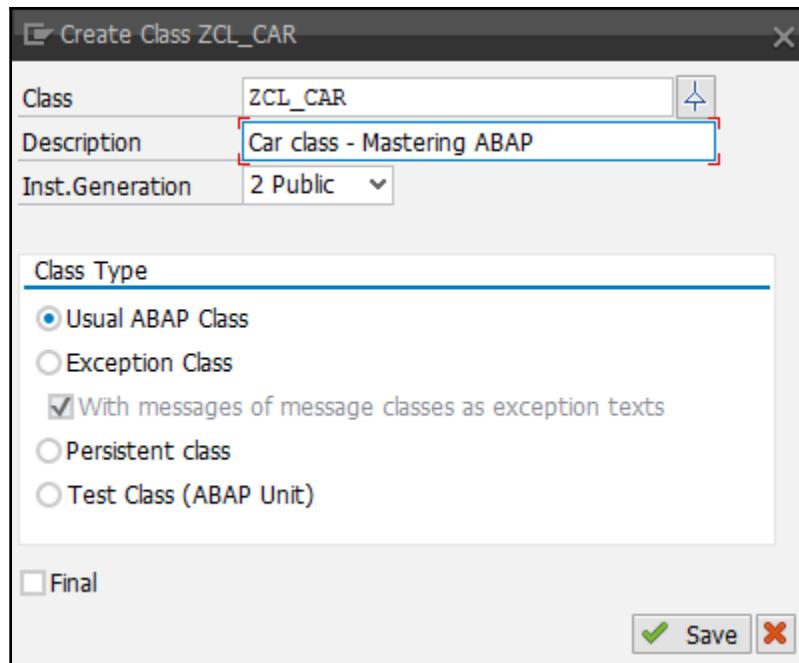
Local Definitions/Implementations Local Test Classes Class

Class/Interface ZCL_AUTO Implemented / Active

Properties Interfaces Friends Attributes Methods Events Types Aliases

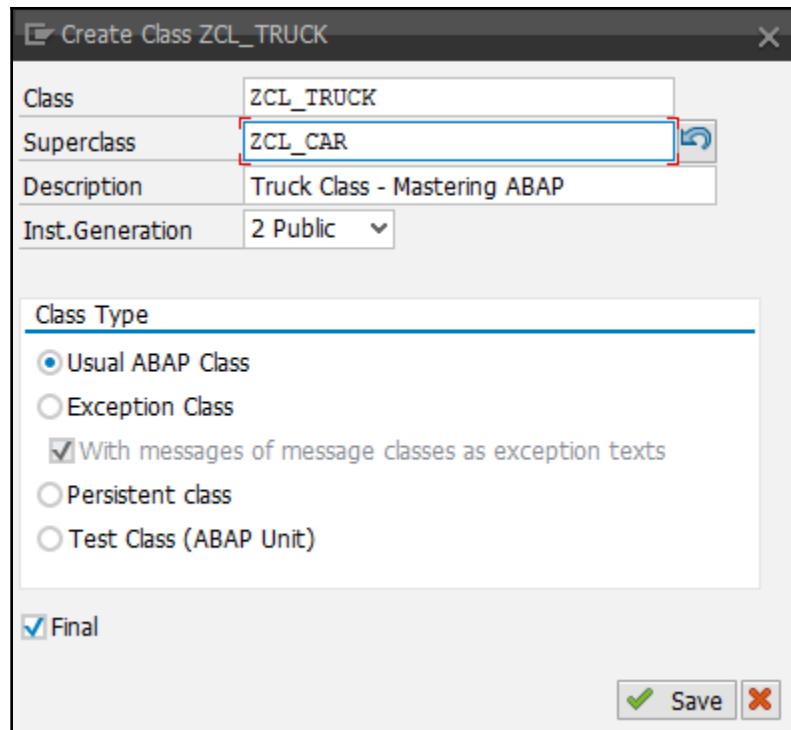
Properties Filter

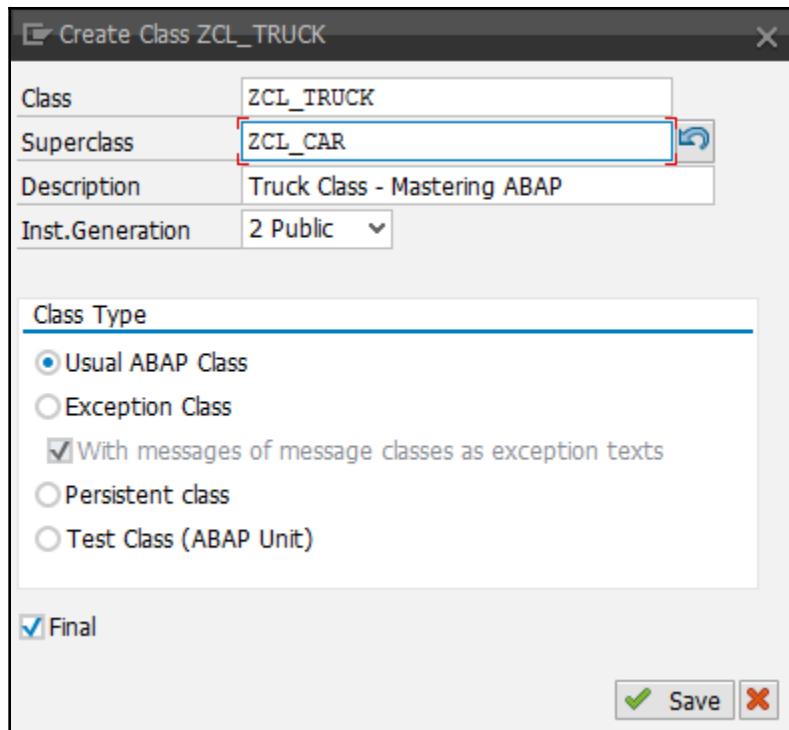
Attribute	Level	Visibility	R...	Typing	Associated Type	Description
TANK_CAP	Constant	Public	<input type="checkbox"/>	Type	T_FUEL	
BRAND	Instance Attribute	Public	<input type="checkbox"/>	Type	T_BRAND	Char 20
NUMB_OF_CARS	Static Attribute	Public	<input type="checkbox"/>	Type	I	
FUEL	Instance Attribute	Private	<input type="checkbox"/>	Type	T_FUEL	
GR_ENGINE	Instance Attribute	Private	<input type="checkbox"/>	Type Ref To	ZCL_ENGINE	Engine class



The screenshot shows the 'Class Builder: Change Class ZCL_CAR' interface. The top navigation bar includes icons for back, forward, search, and various file operations, along with links for 'Local Definitions/Implementations' and 'Local Test'. The main area shows the class name 'ZCL_CAR' and status 'Implemented / Active'. A tab bar at the top of the main area includes 'Properties', 'Interfaces', 'Friends', 'Attributes' (selected), 'Methods', 'Events', 'Types', and 'Aliases'. Below this is a toolbar with icons for properties, interfaces, friends, attributes, methods, events, types, and aliases, followed by a 'Filter' checkbox. A table lists four attributes:

Attribute	Level	Visibility	R...	Typing	Associated Type
NUMBERS_OF_WHEELS	Instance Attribute	Public	<input type="checkbox"/>	Type	I
TYPE_OF_ENGINE	Instance Attribute	Public	<input type="checkbox"/>	Type	C
TANK_CAPACITY	Instance Attribute	Public	<input type="checkbox"/>	Type	I
MAX_SPEED	Instance Attribute	Public	<input type="checkbox"/>	Type	I

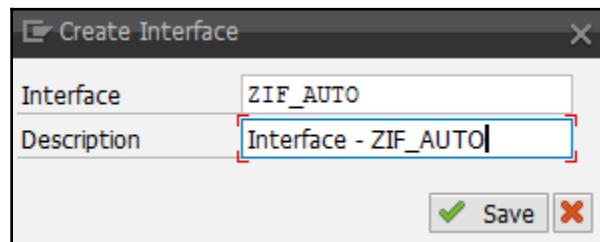
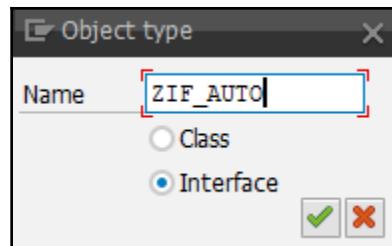




The screenshot shows the 'Class Builder: Change Class ZCL_TRUCK' interface. The top navigation bar includes icons for back, forward, search, and various file operations, along with tabs for 'Local Definitions/Implementations' and 'Local'. The main area shows the 'Class/Interface' as 'ZCL_TRUCK' under the 'Implemented / Active' tab. Below is a table of attributes:

Attribute	Level	Visibility	R...	Typing	Associated Type
NUMBERS_OF_WHEELS	Instance Attribute	Public	<input type="checkbox"/>	Type	I
TYPE_OF_ENGINE	Instance Attribute	Public	<input type="checkbox"/>	Type	C
TANK_CAPACITY	Instance Attribute	Public	<input type="checkbox"/>	Type	I
MAX_SPEED	Instance Attribute	Public	<input type="checkbox"/>	Type	I



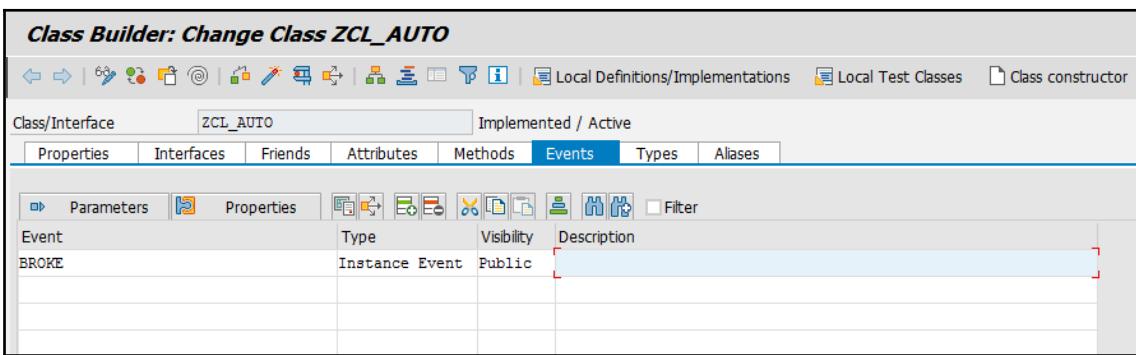
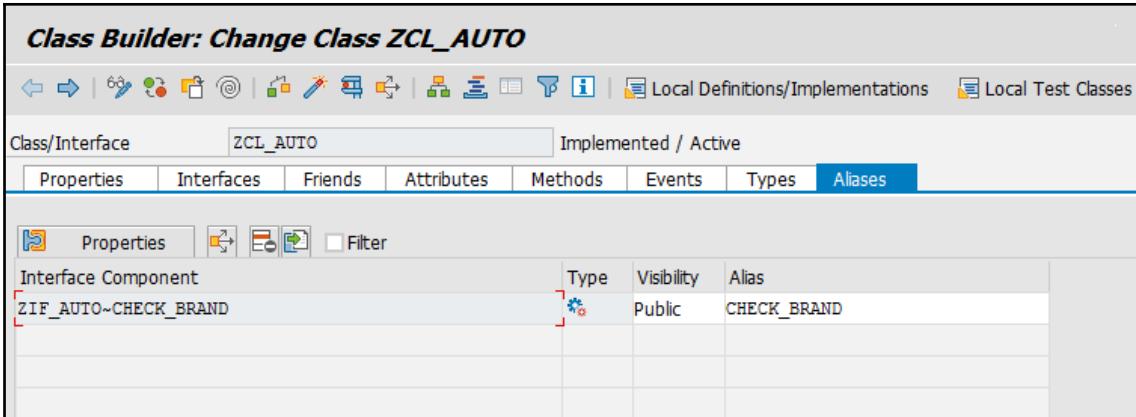


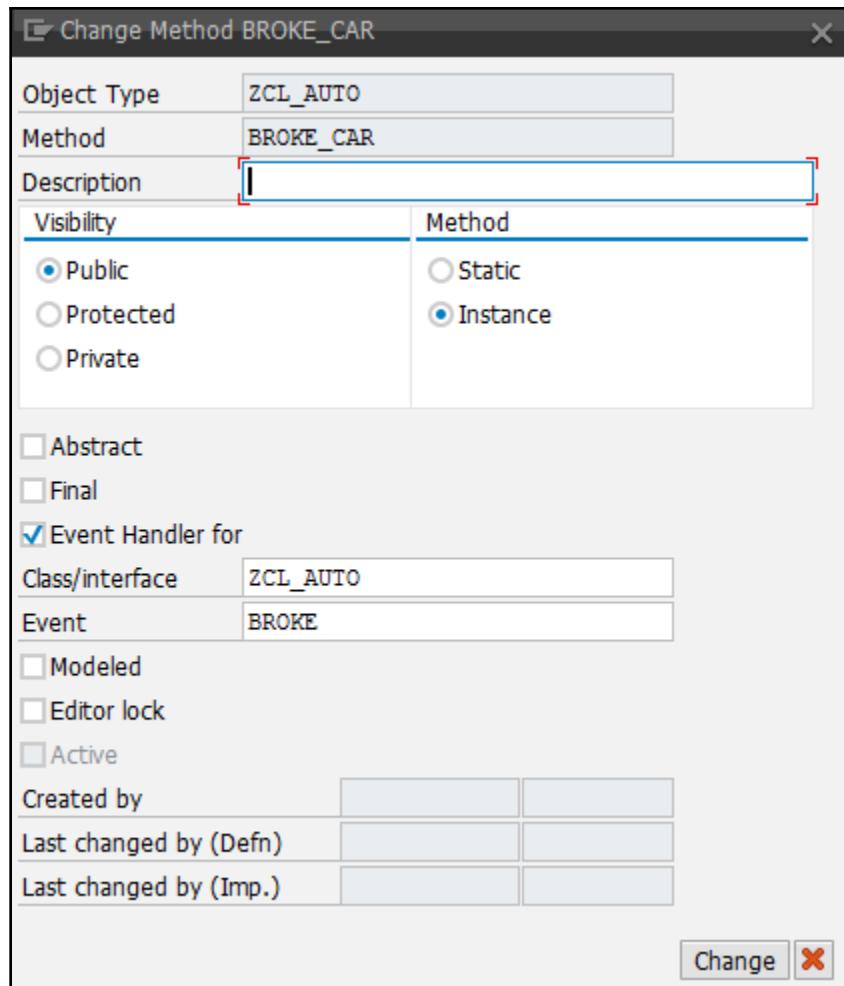
Class Builder: Change Interface ZIF_AUTO

The screenshot shows the 'Class Builder' interface for changing the 'ZIF_AUTO' interface. The top navigation bar includes icons for back, forward, search, and various tools, along with tabs for 'Source Code-Based' and 'Interface documentation'. The main area shows the 'Interface' tab selected with 'ZIF_AUTO' and 'Implemented / Inactive' status. Below are tabs for 'Properties', 'Interfaces', 'Attributes', 'Methods' (which is active), 'Events', 'Types', and 'Aliases'. The 'Methods' tab displays a table with columns: Method, Level, and Description. The 'Method' column header is highlighted with a red box. The table body is currently empty, showing only the header row.

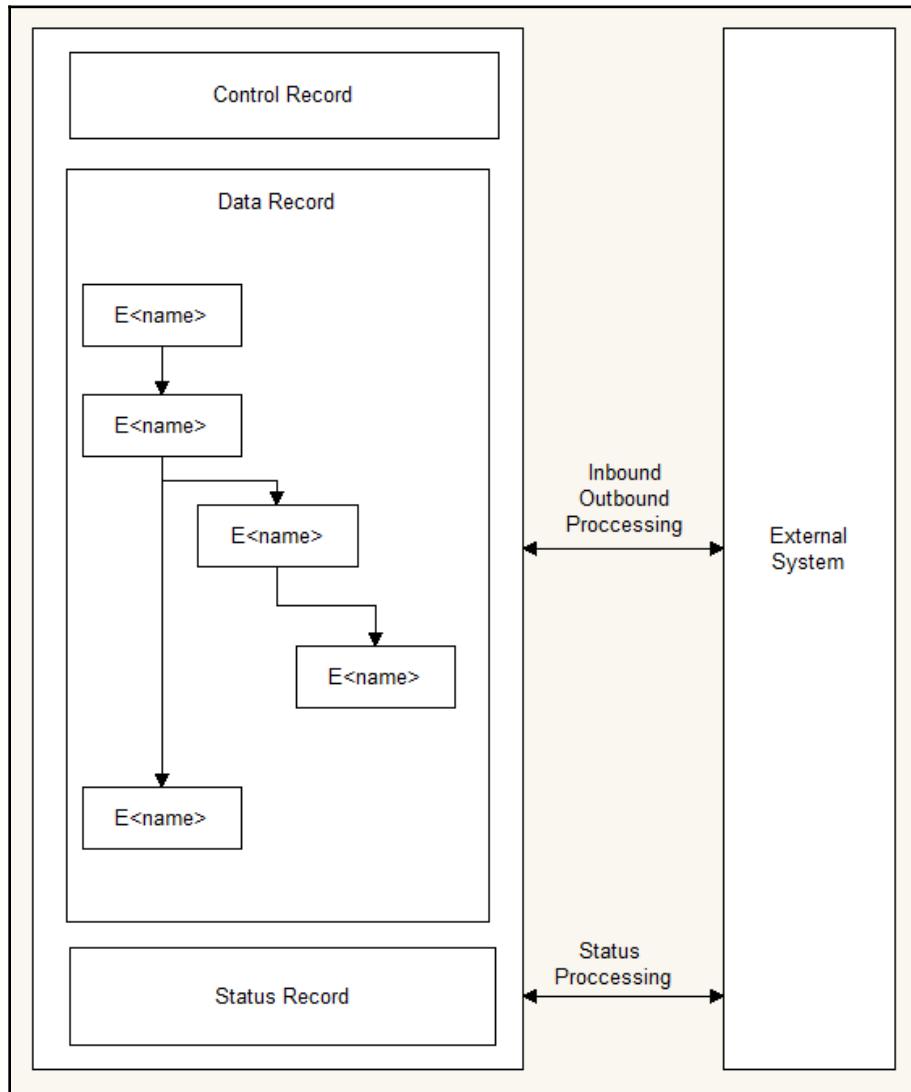
Graphic Bundle

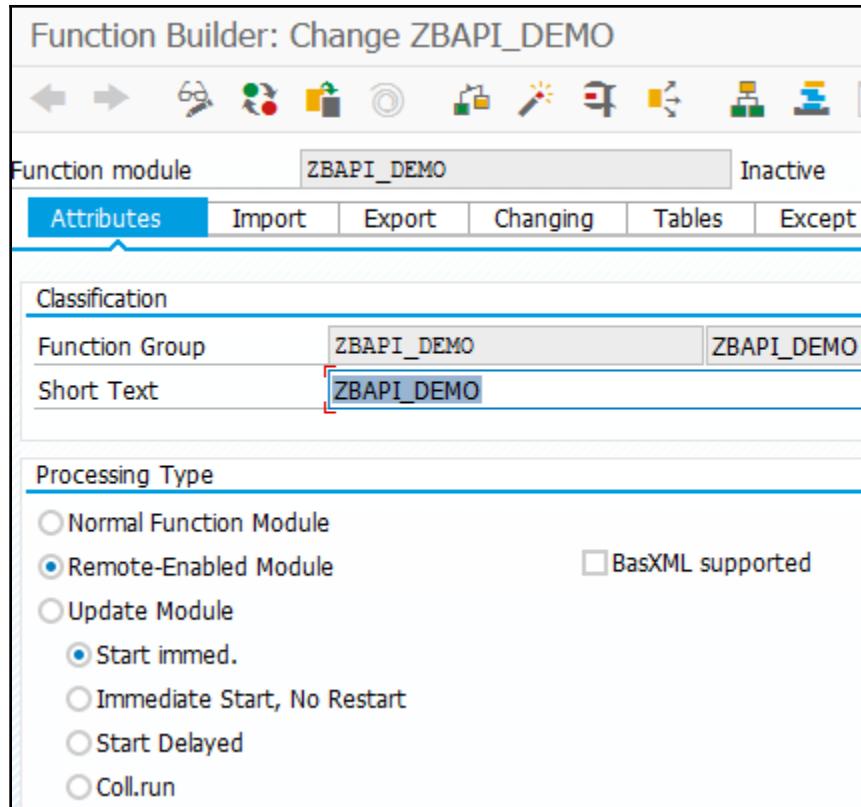
Class/Interface		ZCL_AUTO	Implemented / Active							
			Properties	Interfaces	Friends	Attributes	Methods	Events	Types	Aliases
Parameters	Exceptions	Sourcecode								
ZIF_AUTO~CHECK_BRAND			Method	Instance			Visibility		M...	Description
CONSTRUCTOR			Method	Instance			Public			CONSTRUCTOR
REFUEL			Method	Instance			Public			
GET_FUEL_STATUS			Method	Instance			Public			
CHECK_SPACE			Method	Instance			Private			





Chapter 14: Integrating SAP with Third-Party Systems





Function Builder: Display ZBAPI_DEMO

Function module **ZBAPI_DEMO** Active

Attributes Import Export Changing Tables Exceptions Source code

Parameter Name	Type...	Associated Type	Default value	Op...	Pa...	Short text	Lo...
CARRID	TYPE	ZBAPISFLIGHT-PLANETYPE		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Total of current bookings	

Graphic Bundle

Function Builder: Change ZBAPI_DEMO

Function module **ZBAPI_DEMO** Inactive (Revised)

Attributes Import **Export** Changing Tables Exceptions Source code

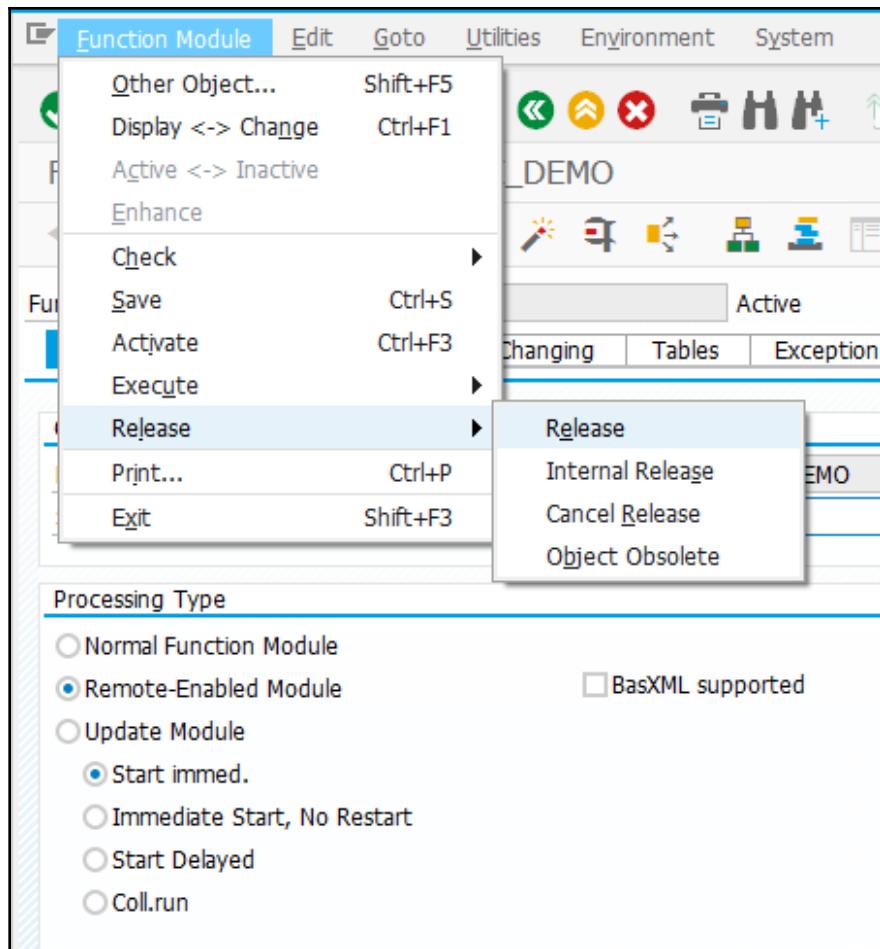
Parameter Name	Typing	Associated Type	Pass Val...	Short text	Long T...
RETURN	TYPE	BAPIRET2	<input checked="" type="checkbox"/>	Return Parameter	Cr...

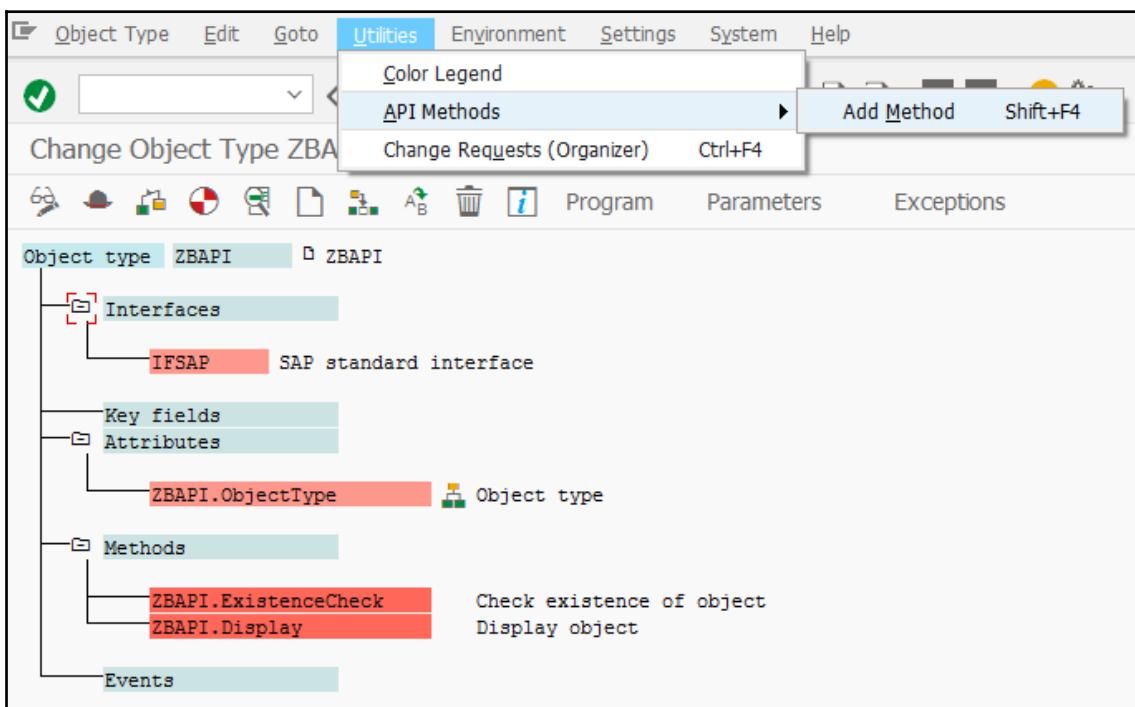
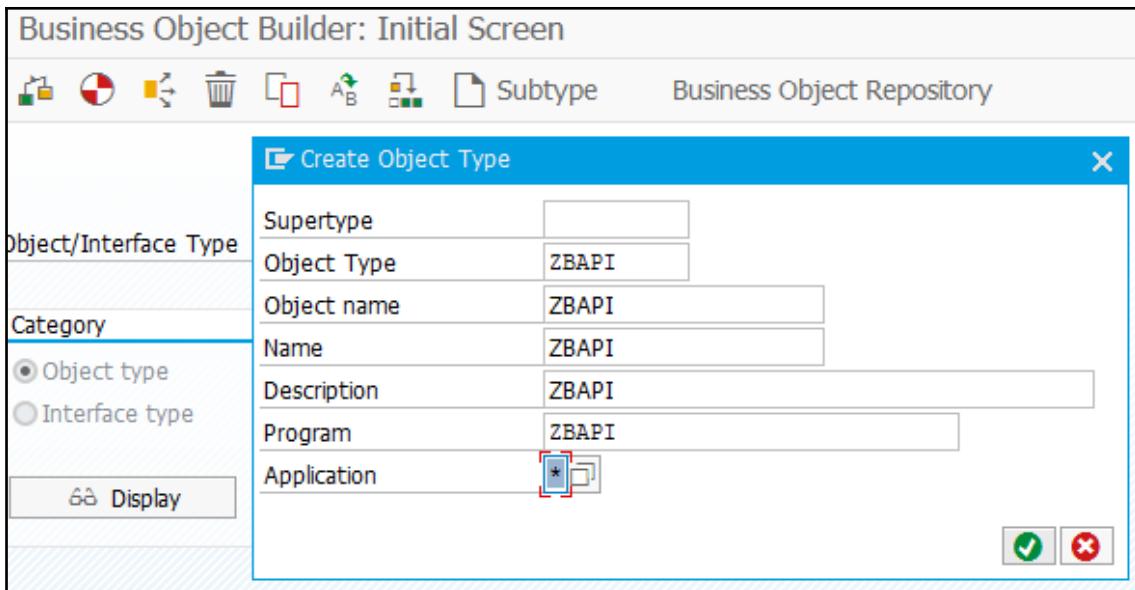
Function Builder: Display ZBAPI_DEMO

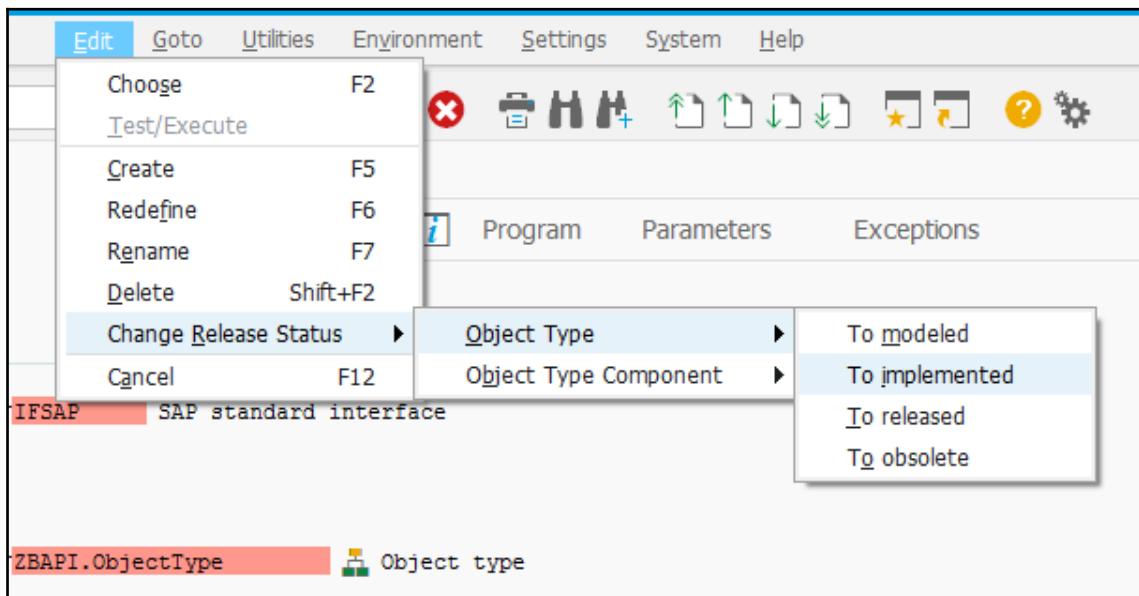
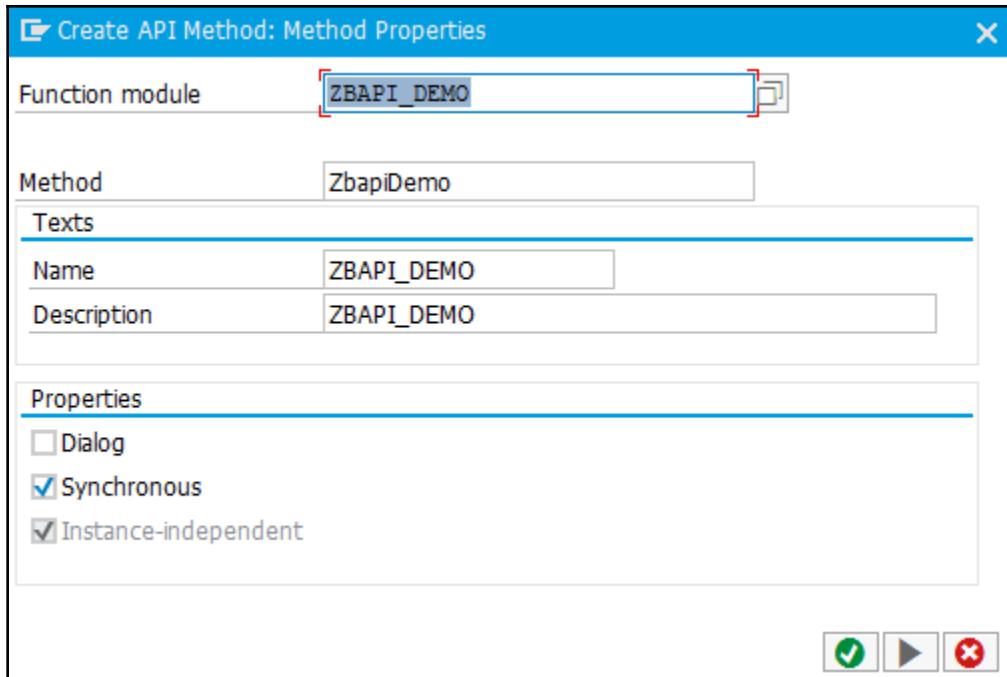
Function module **ZBAPI_DEMO** Active

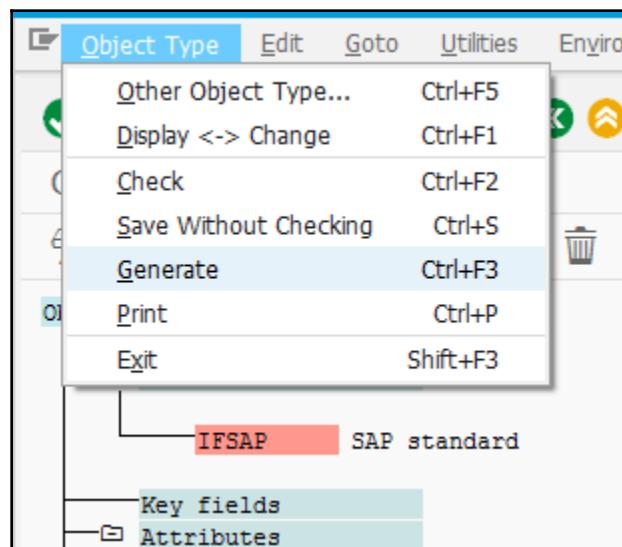
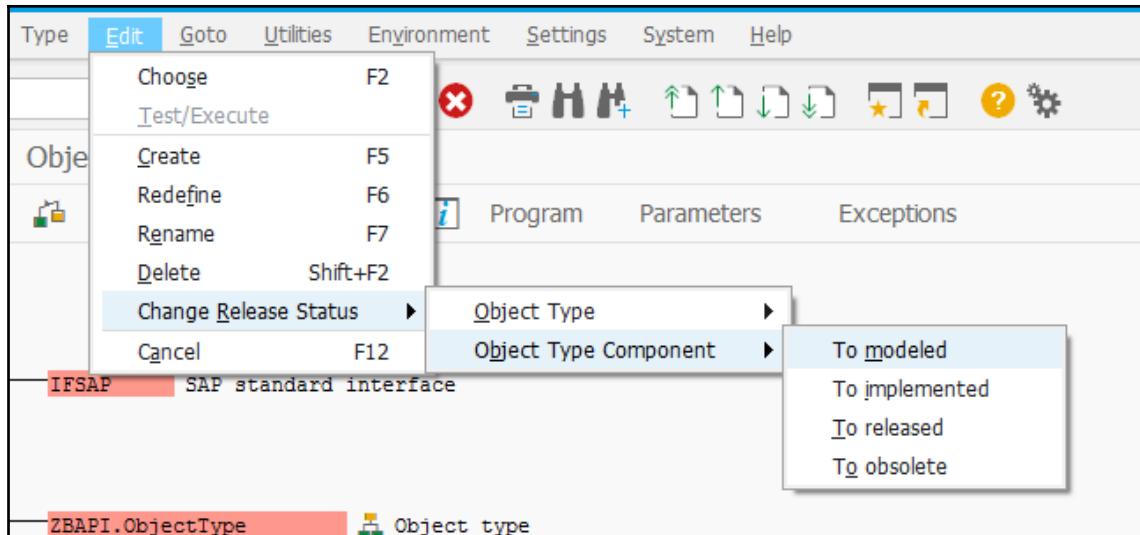
Attributes Import Export Changing **Tables** Exceptions Source code

Parameter Name	Typing	Associated Type	Optional	Short text	Long T...
ZSFLIGHT	LIKE	ZBAPISFLIGHT	<input type="checkbox"/>		









Graphic Bundle

Activate and Maintain Services

The screenshot shows the SAP Activate and Maintain Services interface. The top navigation bar includes icons for Add Service, Delete Service, Service Details, Load Metadata, Error Log, Request Statistics, Refresh Catalog, OAuth, Soft State, and Processing. Below the navigation is a toolbar with icons for ICF Node, Call Browser, and SAP Gateway Client.

Service Catalog

Type	Technical Service Name	Ver.	Service Description	External Service Name	Namespace	OAuth	Soft State	Status	Processing Mode
BEP	/IWEND/SG MED CATALOG	1	Catalog Service	CATALOGSERVICE	/IWEND/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Routing-based
BEP	/IWEND/SG MED CATALOG	2	Catalog Service Version 2	CATALOGSERVICE	/IWEND/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Routing-based
BEP	/IWEND/GWDEMO_SP2	1	ZCL_ZTEST_GWDEMO_DPC_EXT	GWDEMO SP2	/IWBEPE/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Routing-based
BEP	/IWEND/SG MGW NOTIFY STORE	1	ODATA Channel Notification Store	NOTIFICATIONSTORE	/IWEND/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Routing-based
BEP	/IWEND/SUBSCRIPTIONMANAGEMENT	2	MOC enabled Subscription Management Service	SUBSCRIPTIONMANAGEMENT	/IWBEPE/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Routing-based
BEP	/IWEND/USAGEEXTRACTOR	1	Metering Usage Extractor	USAGEEXTRACTOR	/IWEND/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Routing-based
BEP	/IWEND/SG USER SERVICE	1	Information Worker - User Service	USERSERVICE	/IWEND/	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Routing-based

ICF Nodes

Status	ICF Node	Session Time-out	Soft State	Description
	ODATA	00:00:00	<input type="checkbox"/>	Standard Mode

System Aliases

SAP System Alias	Description	Default System	Metadata	User Role
------------------	-------------	----------------	----------	-----------

SAP Gateway Client

The SAP Gateway Client interface includes a toolbar with Execute, Select, Service Administration, Service Implementation, EntitySets, and Add URI Option. It also features radio buttons for HTTP Method (GET, POST, PUT, PATCH, MERGE, DELETE) and checkboxes for Reuse HTTP Connection and Test Case.

HTTP Request

Header Name	Value
-------------	-------

HTTP Response

Header Name	Value
-------------	-------

SAP Gateway: Error Log

The SAP Gateway: Error Log interface has a toolbar with various icons for managing logs. The Overview section includes a search bar for Line, Entry, Date, Time, User, and T100 Error ID, along with download/upload options for Active Source, XML, and PC.

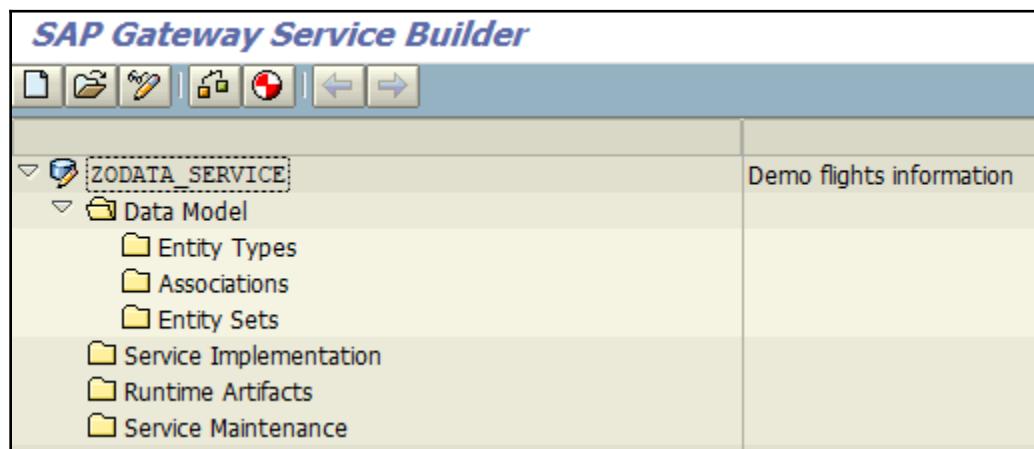
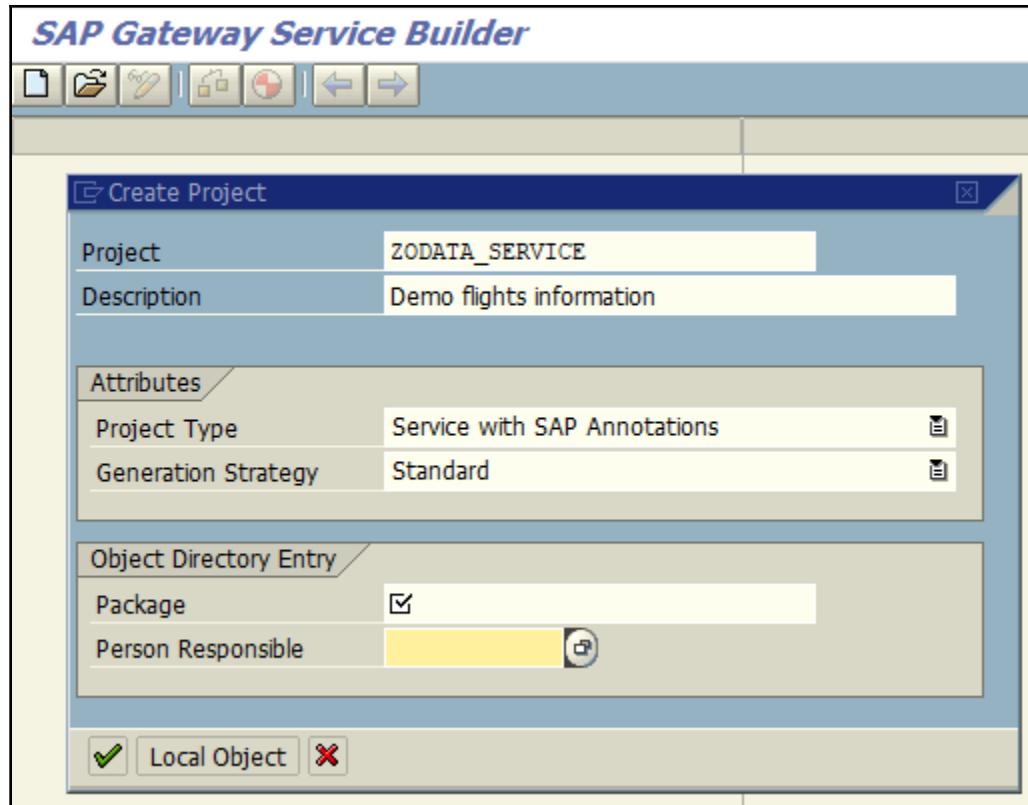
SAP Gateway Service Builder

The screenshot shows the SAP Gateway Service Builder interface. On the left, the project tree displays a hierarchy under /IWBEP/EPM_DEV_SCENARIO_2, including Data Model, Service Implementation, and Runtime Artifacts. The Data Model node is expanded, showing Entity Types like Customer, Product, PurchaseOrderHeader, etc. The Customer entity type is selected, and its Properties tab is visible on the right, listing fields such as CustomerId (Is Key), EmailAddress, PhoneNumber, City, PostalCode, Street, HouseNumber, Country, FirstName, LastName, and DateOfBirth.

```

<edmx:Edmx xmlns:edmx="http://schemas.microsoft.com/ado/2007/06/edmx" xmlns:m="http://schemas.microsoft.com/ado/2008/09/metadata">
  <edmx:DataServices m:DataServiceVersion="2.0">
    <Schema xmlns="http://schemas.microsoft.com/ado/2008/09/edm" Namespace="Z_ODATA_SERVICE" xml:lang="pl">
      <EntityType Name="Material" sap:content-version="1">
        <Key>
          <PropertyRef Name="MANDT"/>
          <PropertyRef Name="MATNR"/>
        </Key>
        <Property Name="MANDT" Type="Edm.String" Nullable="false" MaxLength="3"/>
        <Property Name="MATNR" Type="Edm.String" Nullable="false" MaxLength="18"/>
        <Property Name="MTART" Type="Edm.String" MaxLength="4"/>
        <Property Name="MBRSH" Type="Edm.String" MaxLength="1"/>
        <Property Name="MATKL" Type="Edm.String" MaxLength="9"/>
      </EntityType>
      <EntityContainer Name="Z_ODATA_SERVICE_Entities" m:IsDefaultEntityContainer="true">
        <EntityType Name="MaterialSet" EntityType="Z_ODATA_SERVICE.Material" sap:content-version="1"/>
      </EntityContainer>
      <atom:link xmlns:atom="http://www.w3.org/2005/Atom" rel="self"
        <atom:link xmlns:atom="http://www.w3.org/2005/Atom" rel="latest-version"/>
    </Schema>
  </edmx:DataServices>
</edmx:Edmx>

```



SAP Gateway Service Builder

The screenshot shows the SAP Gateway Service Builder interface. On the left, the navigation tree displays the service **ZODATA_SERVICE** under **Data Model**, specifically the **Entity Types** section where **CrewMember** is selected. To the right is the **Entity Types** table:

Name	ABAP Structure
CrewMember	
Flight	

The screenshot shows the properties of the **CrewMember** entity type. The table includes columns for Name, Is Key, Edm Core Type, Prec., Scale, Max..., Unit Property Name, and various creation/updating/sorting/NULL/Filter checkboxes. The properties listed are:

Name	Is Key	Edm Core Type	Prec.	Scale	Max...	Unit Property Name	Create...	Upda...	Sorta...	Nulla...	Filt.
CarrierId	<input checked="" type="checkbox"/>	Edm.String	0	0	3		<input type="checkbox"/>				
ConnectionId	<input checked="" type="checkbox"/>	Edm.String	0	0	4		<input type="checkbox"/>				
FlightDate	<input checked="" type="checkbox"/>	Edm.DateTime	7	0	0		<input type="checkbox"/>				
MemberId	<input checked="" type="checkbox"/>	Edm.String	0	0	10		<input type="checkbox"/>				
FirstName	<input type="checkbox"/>	Edm.String	0	0	35		<input type="checkbox"/>				
LastName	<input type="checkbox"/>	Edm.String	0	0	35		<input type="checkbox"/>				

The screenshot shows the properties of the **Flight** entity type. The table includes columns for Name, Is Key, Edm Core Type, Prec., Scale, Max..., Unit Property Name, and various creation/updating/sorting/NULL/Filter checkboxes. The properties listed are:

Name	Is Key	Edm Core Type	Prec.	Scale	Max...	Unit Property Name	Create...	Upda...	Sorta...	Nulla...	Filt.
CarrierId	<input checked="" type="checkbox"/>	Edm.String	0	0	3		<input type="checkbox"/>				
ConnectionId	<input checked="" type="checkbox"/>	Edm.String	0	0	4		<input type="checkbox"/>				
DepartureAirport	<input type="checkbox"/>	Edm.String	0	0	20		<input type="checkbox"/>				
DestinationAirport	<input type="checkbox"/>	Edm.String	0	0	20		<input type="checkbox"/>				
FlightTime	<input type="checkbox"/>	Edm.Int32	0	0	0		<input type="checkbox"/>				
FlightDate	<input checked="" type="checkbox"/>	Edm.DateTime	7	0	0		<input type="checkbox"/>				

The screenshot shows the **Wizard Step 1 of 3: Create Association** dialog. It is titled **Create Association** and has the association name **FlightToCrew**. The dialog is divided into two main sections: **Principal Entity** and **Dependent Entity**.

Principal Entity:

- Entity Type Name: Flight
- Cardinality: 1
- Create related Navigation Property
- Navigation Property: Crew

Dependent Entity:

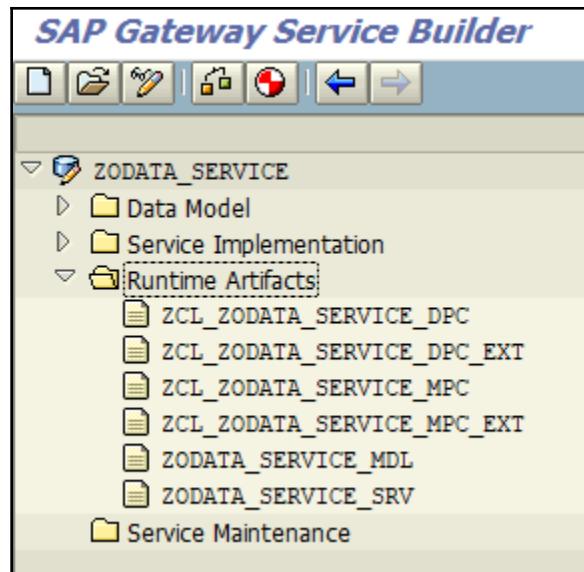
- Entity Type Name: CrewMember
- Cardinality: 1..n
- Create related Navigation Property
- Navigation Property: (empty)

Graphic Bundle

SAP Gateway Service Builder

The screenshot shows the SAP Gateway Service Builder interface. On the left, the navigation tree displays a project structure under '/IWBEP/EPM_DEV_SCENARIO_2'. The 'Entity Types' node is expanded, showing 'Customer', 'Product', 'PurchaseOrderHeader', 'PurchaseOrderItem', 'SalesOrderHeader', 'SalesOrderItem', 'Stock', and 'Supplier'. Below these are 'Associations', 'Entity Sets', 'Association Sets', and 'Function Imports'. The 'Service Implementation' node is also expanded, listing 'Customers', 'Products', 'PurchaseOrderHeaders', 'PurchaseOrderItems', 'SalesOrderHeaders', 'SalesOrderItems', 'Stocks', and 'Suppliers'. The 'Runtime Artifacts' node lists several files: '/IWBEP/CL_EPM_DEV_SC2_DPC', '/IWBEP/CL_EPM_DEV_SC2_DPC_EXT', '/IWBEP/CL_EPM_DEV_SC2_MPC', and '/IWBEP/CL_EPM_DEV_SC2_MPC_EXT'. On the right, the 'Properties' tab is active, showing a table of properties for the 'Customer' entity type. The table includes columns for Name, Is Key, Edm Core Type, Prec., Scale, and Max. The 'CustomerId' property is highlighted as the primary key.

Name	Is Key	Edm Core Type	Prec.	Scale	Max ...
CustomerId	<input checked="" type="checkbox"/>	Edm.String	0	0	10
EmailAddress	<input type="checkbox"/>	Edm.String	0	0	255
PhoneNumber	<input type="checkbox"/>	Edm.String	0	0	30
City	<input type="checkbox"/>	Edm.String	0	0	40
PostalCode	<input type="checkbox"/>	Edm.String	0	0	10
Street	<input type="checkbox"/>	Edm.String	0	0	60
HouseNumber	<input type="checkbox"/>	Edm.String	0	0	10
Country	<input type="checkbox"/>	Edm.String	0	0	3
FirstName	<input type="checkbox"/>	Edm.String	0	0	40
LastName	<input type="checkbox"/>	Edm.String	0	0	40
DateOfBirth	<input type="checkbox"/>	Edm.DateTime	0	0	0



Add Service

Service

Technical Service Name	ZODATA_SERVICE
Service Version	1
Description	Demo flights information
External Service Name	ZODATA_SERVICE
Namespace	
External Mapping ID	
External Data Source Type	C

Model

Technical Model Name	ZODATA_SERVICE_MDL
Model Version	1

Creation Information

Package Assignment	Local Object
--------------------	--------------

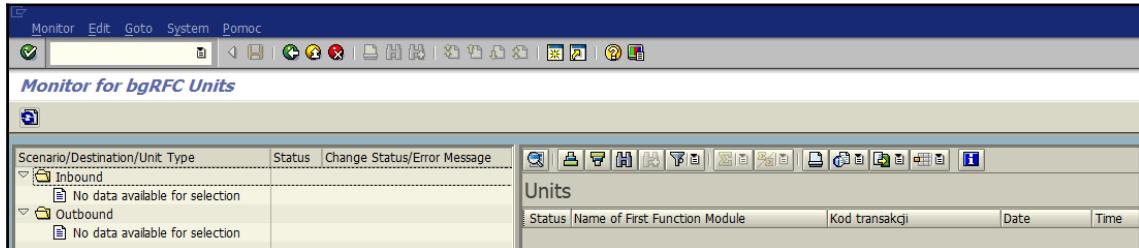
ICF Node

<input checked="" type="radio"/> Standard Mode	<input type="radio"/> None
<input checked="" type="checkbox"/> Set Current Client as Default Client in ICF Node	

OAuth enablement

<input type="checkbox"/> Enable OAuth for Service

Chapter 15: The Background Processing of ABAP Programs



The screenshot shows the "Define Background Job" configuration screen. At the top, there are several tabs: "Start condition", "Step", "Job selection", "Own jobs", "Job wizard", and "Standard jobs". The "Job selection" tab is active. The main area is divided into sections: "General data", "Job start", "Job frequency", and "Job steps". In the "General data" section, fields include "Job name" (empty), "Job class" (C), "Status" (Scheduled), "Exec. Target" (empty), and "Spool list recipient" (empty). The "Job start" and "Job frequency" sections are currently empty. The "Job steps" section is also empty.



Create Step 1

User WCIESIELSKI

Program values

ABAP program External command External program

ABAP program

Name ZBACKGROUND_JOB
Variant
Language EN

External Command (command predefined by system administrator)

Name
Parameters
OS
Target Server

External Program (command entered directly by system administrator)

Name
Parameters
Target Server

Check Print specifications

Step List Overview

Toolbar: Pencil, Copy, Paste, Delete, Spool, Back, Forward, Home

No.	Program name/command	Prog. type	Spool list	Parameters	User	Lang.
1	ZBACKGROUND_JOB	ABAP			WCIESIELSKI	EN

Start Time

Buttons: Immediate, Date/Time, After Job, After Event, At Operation Mode,

Date/Time

Scheduled Start: Date 2019-05-02, Time
No Start After: Date , Time

Choose Time dialog:

After Job

Time selection: HH 12 : MM 20 : SS 36

Buttons:

Operation Mode

After Event

Periodic Job

Buttons: Check , Period values , Restrictions

Define Background Job

Start condition Step Job selection Own jobs Job wizard

General Data

Job Name	ZTEST_BJ
Job Class	C
Status	Scheduled
Exec. Target	Spool List Recipient

Job Start

Planned Start	
Date	2019-05-02
Time	12:20:36

Job Frequency

Job Steps

1 Step(s) defined

Simple Job Selection

Job Name	ZTEST_BJ
User Name	WCIESIELSKI

Job Status

Sched. Released Ready Active Finished Canceled

Job Start Condition

From	12	2019-05-02	To	12	2019-05-02
From	(+)		To	(+)	

or after event:

Job Step

ABAP Program Name:

Job Overview

Job overview from: 2019-05-02 at: : :
 to: 2019-05-03 at: : :

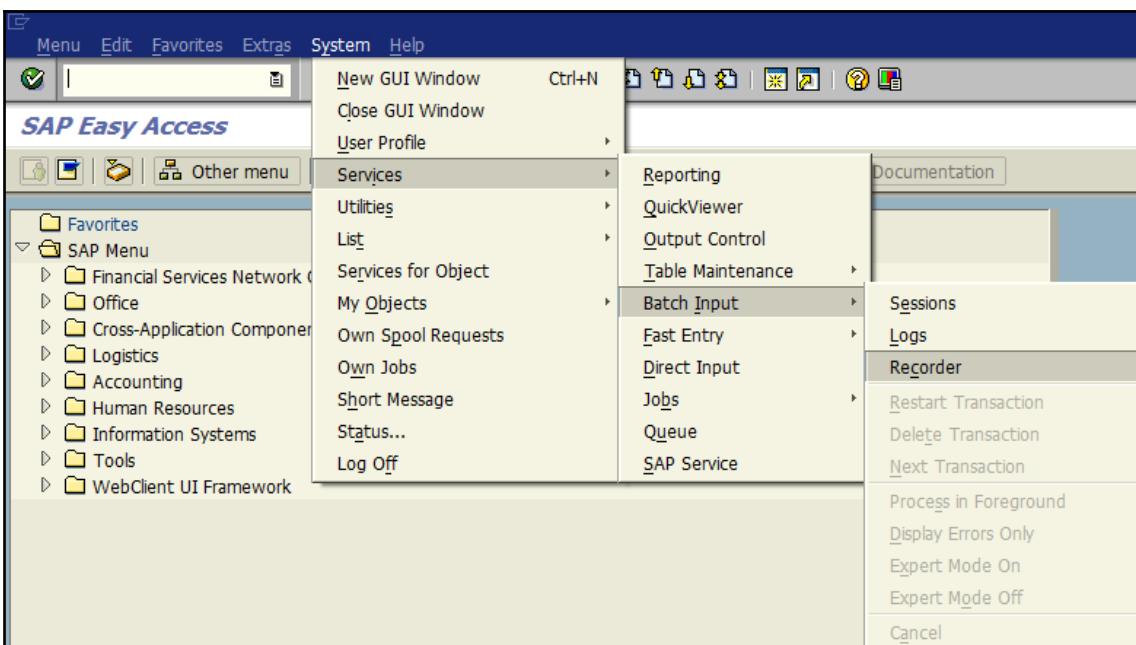
Selected job names: ZTEST_BJ
 Selected user names: WCIESIELSKI

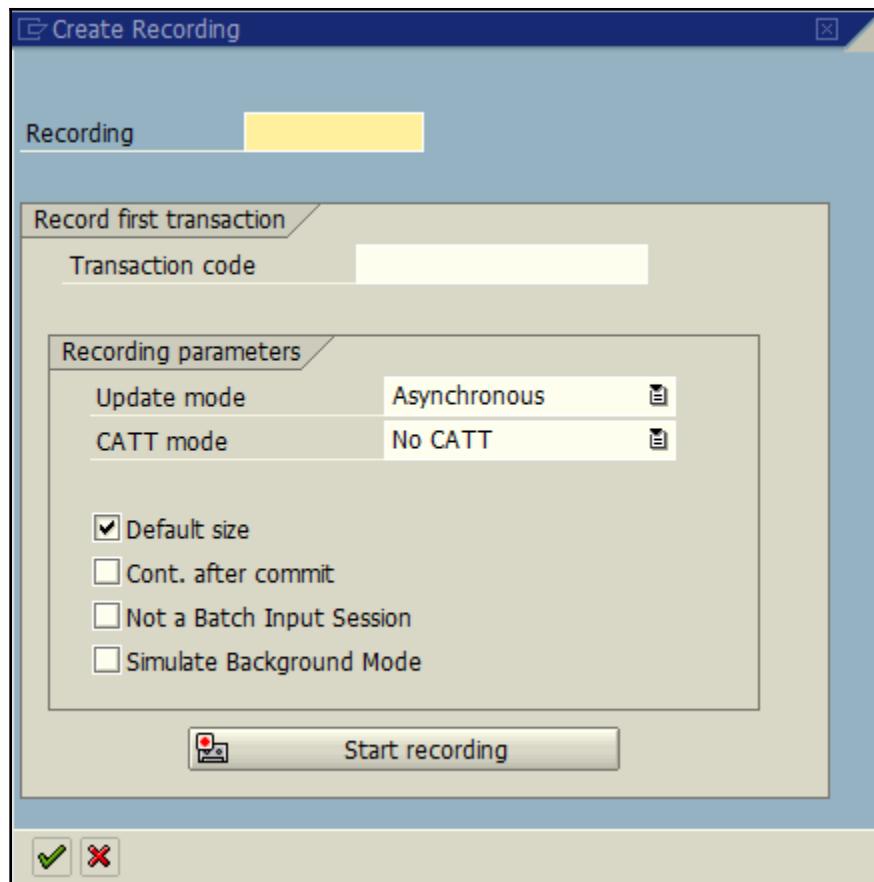
Scheduled Released Ready Active Finished Canceled
 Event-Driven Event ID:
 ABAP program Program name :

JobName	Spool	Job doc	Job CreatedB	Status	Start date	Start Time	Duration(sec.)	Delay (sec.)
ZTEST_BJ			WCIESIELSKI	Finished	2019-05-02	12:21:34	0	58
*Summary							0	58

Graphic Bundle

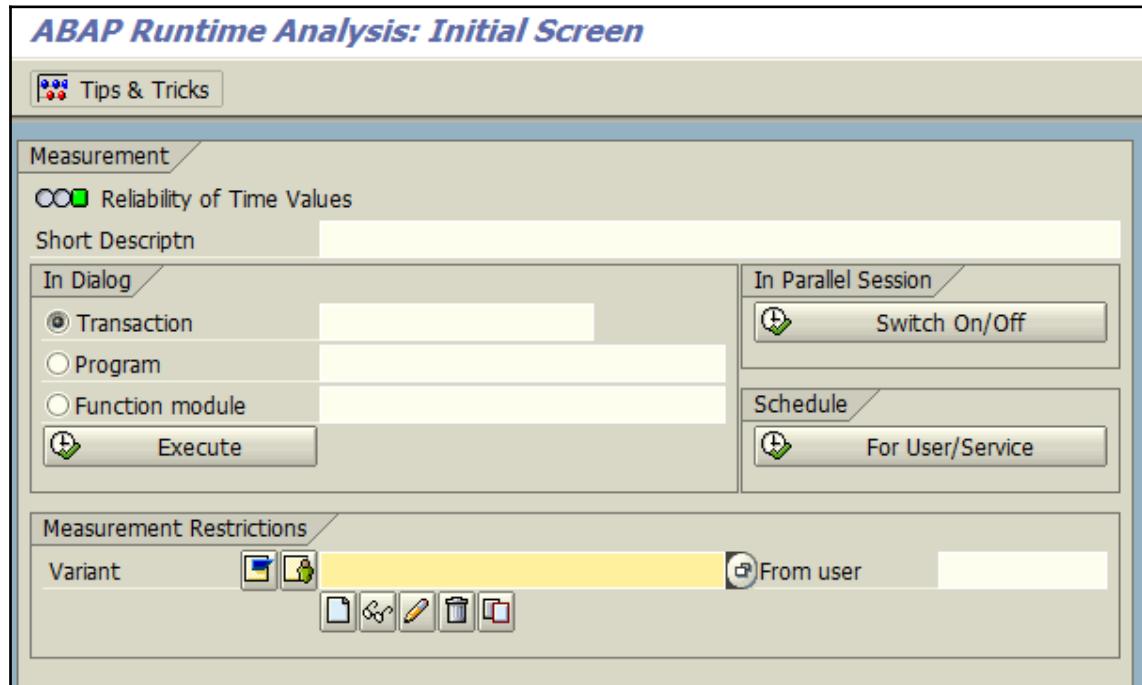
Job Log Entries for ZTEST_BJ / 12161000				
		Long text	Previous Page	Next page
Date	Time	Message text	Message class	Message no.
2019-05-02	12:21:34	Job started	00	516
2019-05-02	12:21:34	Step 001 started (program ZBACKGROUND_JOB, variant , user ID WCIESIELSKI)	00	550
2019-05-02	12:21:34	Job finished	00	517

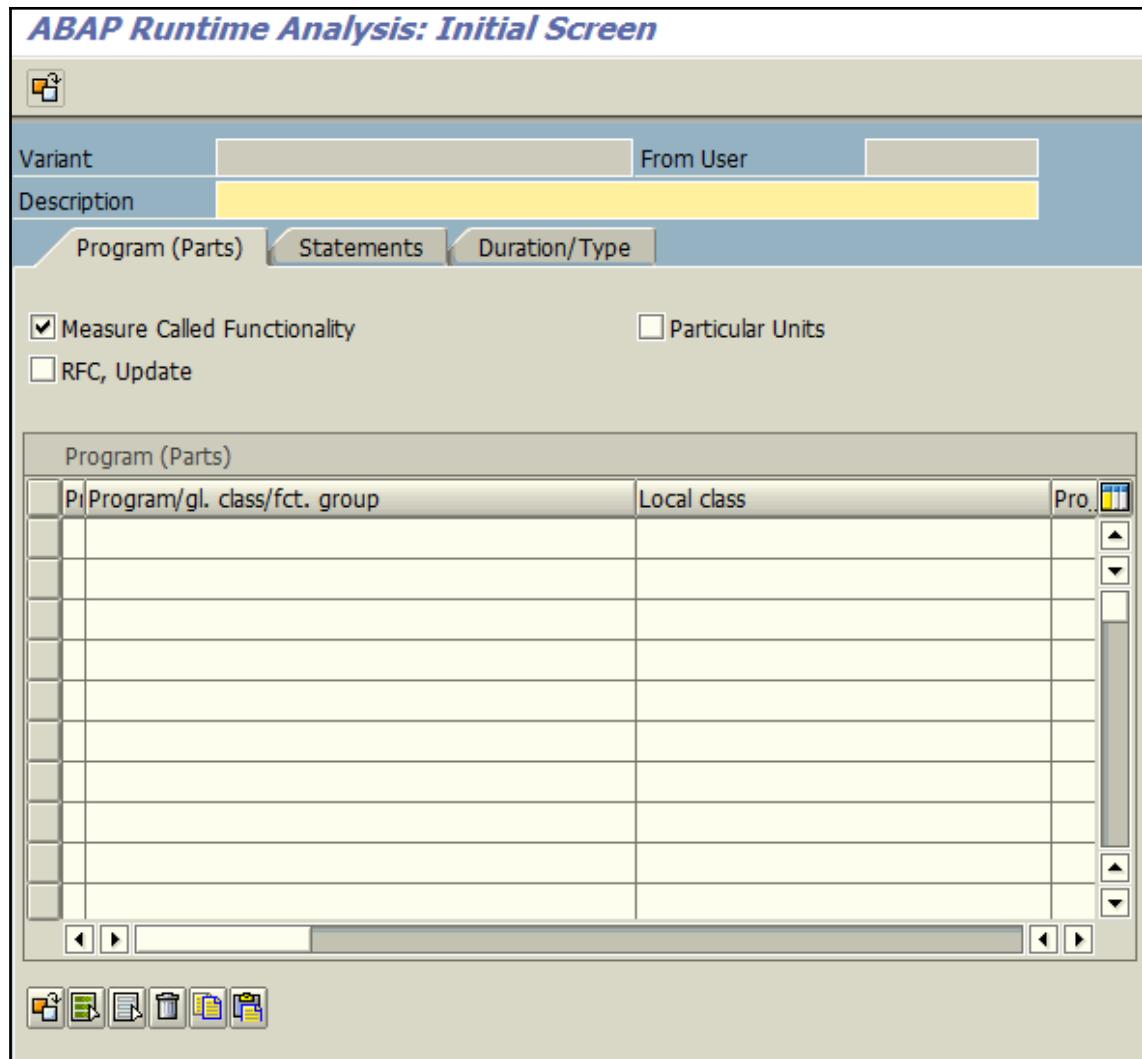




Line	Program	Screen	St..	Field name	Field value	
1			T	MM03		
2	SAPLGMGMM	0060	X			
3				BDC_CURSOR	RMMG1-MATNR	
4				BDC_OKCODE	=ENTR	
5				RMMG1-MATNR	MZ-PROC-MC-HT-3104	
6	SAPLGMGMM	0070	X			
7				BDC_CURSOR	MSICHTAUSW-DYTXT(02)	
8				BDC_OKCODE	=ENTR	
9				MSICHTAUSW-KZSEL(01)	X	
10				MSICHTAUSW-KZSEL(02)	X	
11	SAPLGMGMM	4004	X			
12				BDC_OKCODE	=BABA	
13				BDC_SUBSCR	SAPLGMGMM	2004TABFRA1
14				BDC_SUBSCR	SAPLGMGD1	1002SUB1
15				BDC_CURSOR	RMMG1-MATNR	
16				BDC_SUBSCR	SAPLGMGD1	2001SUB2
17				BDC_SUBSCR	SAPLGMGD1	2561SUB3
18				BDC_SUBSCR	SAPLGMGD1	2007SUB4
19				BDC_SUBSCR	SAPLGMGD1	2005SUB5
20				BDC_SUBSCR	SAPLGMGD1	2011SUB6
21				BDC_SUBSCR	SAPLGMGD1	2033SUB7
22				BDC_SUBSCR	SAPLGMGD1	0001SUB8
23				BDC_SUBSCR	SAPLGMGD1	0001SUB9
24				BDC_SUBSCR	SAPLGMGD1	0001SUB10

Chapter 16: Performance and Optimization of ABAP Code





ABAP Runtime Analysis: Initial Screen

Variant From User

Description

Program (Parts) Statements Duration/Type

Modularization Units

- Methods
- Events (OO)
- Function Modules
- Subroutines

Database accesses

- Open SQL
- Native SQL
- Contexts
- DB-level ops

Data transfer

- EXPORT/IMPORT
- DATASET

Screen

- Flow logic
- Formatting for frontend
- Modules
- Message handling

Internal tables

- Read Operations
- Change operations

Programs/Transactions/C Routines

Generation>Loading

- Generate
- LOAD

Miscellaneous

- ASSIGN, PF-STATUS, SET LOCALE, ...
- Statistics
- Kernel-level runtime administration

ABAP Runtime Analysis: Initial Screen

Variant From User

Description

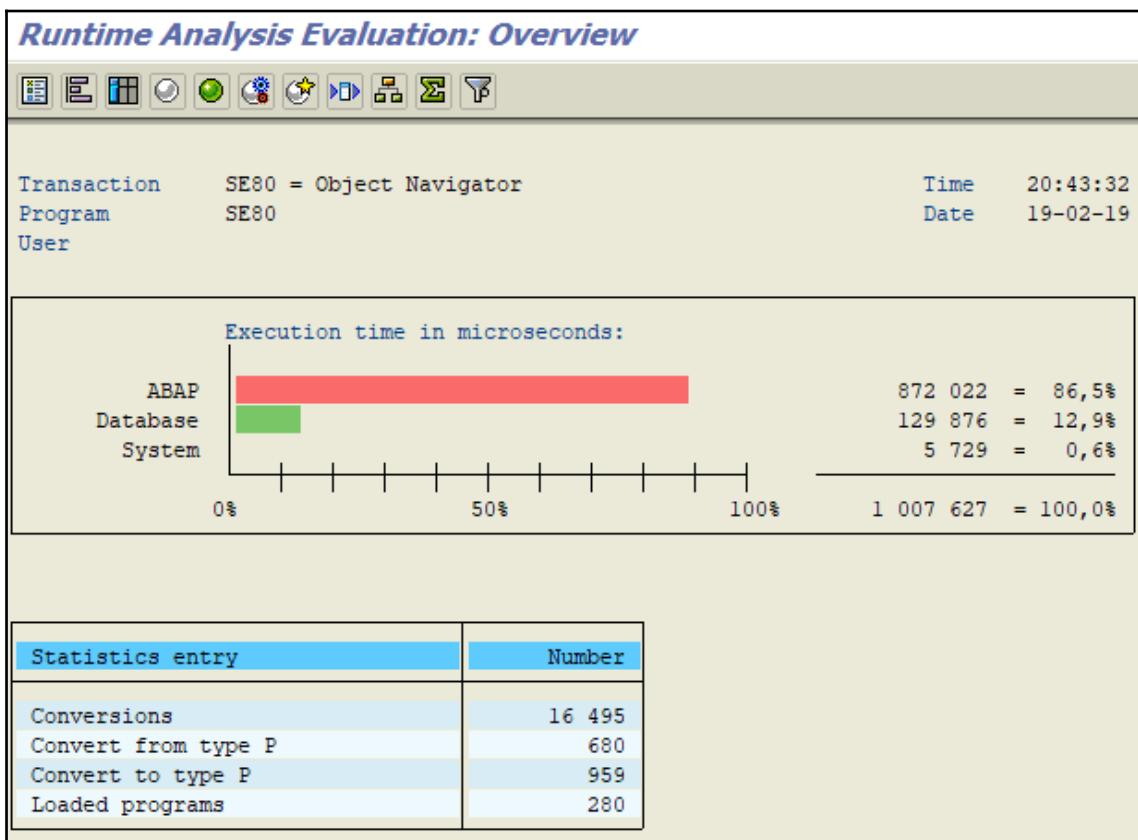
Program (Parts) Statements Duration/Type

Max. size of file 2 000 KB
Maximum runtime 1 800 Seconds

Aggregation Full Per Call Position None

With memory use (if aggregation not used)

Performance Data File	
Application	SE80
Short description	Sample measurement
Measurement date	2019-02-19 22:37:25
File size in KB	1 493
Evaluate Other File... File Info... Delete...	



Runtime Analysis Evaluation: Group Hit List			
No.	Gross	Net	CALL METHOD
1	938 278	15	CL_WB_STARTUP=>START
1	937 442	34	CL_WB_STARTUP=>START_INTERNAL
1	934 507	39	CL_WB_MANAGER=>IF_WB_MANAGER~SET_WORKSPACE
1	934 335	63	CL_WB_MANAGER=>PROCESS_REQUEST_QUEUE
8	850 246	233	CL_WB_MANAGER=>PROCESS_WB_REQUEST
1	643 702	7	CL_WB_NAVIGATOR_VIS_AS_DYNPRO=>DO_THE_NAVIGATION
1	643 693	34	CL_WB_NAVIGATOR=>DO_THE_NAVIGATION
1	640 115	6	CL_WB_INITIAL=>IF_WB_PROGRAM~PROCESS_WB_REQUEST
1	640 109	7	CL_WB_INITIAL=>DISPLAY
1	457 779	1 005	CL_WB_INITIAL=>SHOW_CONTROLS
1	456 741	5	CL_WB_INITIAL=>SHOW_WB_PICTURE
1	455 539	455 420	CL_GUI_PICTURE=>LOAD_PICTURE_FROM_URL
7	204 160	70	CL_WB_NAVIGATOR=>DO_THE_NAVIGATION
1	159 739	15	CL_WB REP_BROWSER_RADA=>IF_WB_PROGRAM~PROCESS_WB_REQUEST
1	84 662	43	CL_WB REP_BROWSER_RADA=>DISPLAY
1	82 004	51	CL_WB REP_BROWSER_VIS_RADA=>IF_WB_REPBROWSER_VIS~SHOW
1	75 053	7	CL_WB REP_BROWSER_RADA=>GET_OBJECT_TREE_FROM_REQUEST
1	74 317	13	CL_WB OBJECT_TREE_RADA=>CREATE_FROM_TREENAME
1	73 632	40	CL_WB OBJECT_TREE_RADA=>CONSTRUCTOR
1	66 017	132	CL_WB REP_BROWSER_VIS_RADA=>SHOW_TREE
1	59 588	46	CL_WB_BROWSER_SELECTION1=>IF_WB_BROWSER_SELECTION~SHOW_SELECTION
518	59 550	1 027	CL_WB_REGISTRY=>INITIALIZE
No.	Gross	Net	RAISE EVENT
1	58 961	8	CL_WB_MANAGER=>IF_WB_MANAGER~MANAGER_FINISHED
1	2 692	5	CL_GUI_CONTAINER_BAR_WB=>EMPTY
4	110	30	CL_GUI_CONTAINER_BAR_WB=>CLICKED
1	24	2	CL_WB_WINDOW_EVENTS=>WINDOW_ACTIVATED
1	7	4	CL_WB_MANAGER=>IF_WB_MANAGER~MANAGER_PBO_PROCESSED

Graphic Bundle

Runtime Analysis Evaluation: DB Tables							
Tab./View	#Access	Runtime	Class	Buffering	SQL tab.	Description	Package
EUOBJT	4	15 055	TRANSF	Single rec		Workbench: Development Objects	SEU
SEOSCOMPO	192	11 428	TRANSF			Class/Interface component	SEO
SEOSUBCODE	36	10 451	TRANSF			Definition class/interface subcomponent	SEO
SEOCOMPDEF	60	10 084	TRANSF			Definition class/interface component	SEO
OBJH	4	8 822	TRANSF	Single rec		Object: Header	SCTS_OBJ
BDSPHIO2	63	6 855	TRANSF			BDS: Instances of Physical Information Objects	SBDS
SEOSUBCO	64	4 395	TRANSF			Class/interface subcomponent	SEO
EUOBJEDIT	8	3 336	TRANSF	full		Workbench: Assignment Development Object Type -> Editor	SEU
OBJT	4	3 131	TRANSF			Description of Type I Objects (Separate Transaction)	SCTS_OBJ
BDSPHF2	32	2 756	TRANSF			BDS: Files of Physical Information Objects	SBDS
EUOBJJ	6	2 672	TRANSF	full		Workbench: Development Objects	SEU
WBTOOLTYPE	160	2 156	TRANSF	full		Visualization types for tools	SWBM_INTERNAL
SEOSUBCTX	36	2 003	TRANSF	generic		Class/interface subcomponent short description	SEO
BDS_CONN05	20	1 957	TRANSF			BDS: Link Table Default for Undefined Classes	SBDS
ENOBJJV	4	1 946	VIEW	full		Generated Table for View	SEU
RSEIMOD	2	1 833	TRANSF			Settings for ABAP Workbench	SEU
BDSPHFR2	20	1 822	TRANSF			BDS: Attributes of Physical Information Objects	SBDS
BDSPHR2	20	1 734	TRANSF			BDS: Outgoing Relationships of Physical Information Objects	SBDS
WBREGISTRY	4	1 716	TRANSF	full		Registry ABAP Workbench	SWBM_INTERNAL
BDSCHKO2	20	1 688	TRANSF			BDS: Check out data for a Physical Information Object	SBDS
BDSLOI02	5	1 604	TRANSF			BDS: Instances of Logical Information Objects	SBDS
BDSLOIOT2	20	1 596	TRANSF			BDS: Descriptions of Logical Information Objects	SBDS
TOLE	216	1 592	TRANSF	full		OLE Applications	SOLE
SEOCOMPDTX	64	1 429	TRANSF	generic		Short description class/interface component	SEO
DIRREE	7	1 288	TRANSF			Free administration	SEU

Runtime analysis evaluation: Class hit list							
Object Type Name	No.	Gross	=	Net	Gross (%)	Net (%)	Program Name
CL_WB_STARTUP	2	1 875 720		49	186,2	0,0	SAPLWB_MANAGER
CL_WB_MANAGER	47	1 815 371		791	180,2	0,1	CL_WB_MANAGER=====CP
CL_WB_INITIAL	2	1 096 850		12	108,9	0,0	CL_WB_INITIAL=====CP
CL_WB_MANAGER	2	937 275		45	93,0	0,0	CL_WB_STARTUP=====CP
CL_WB_NAVIGATOR_VIS_AS_DYNPRO	1	643 702		7	63,9	0,0	CL_WB_MANAGER=====CP
CL_WB_NAVIGATOR	1	643 693		34	63,9	0,0	CL_WB_NAVIGATOR_VIS_AS_DYNPRO=CP
CL_WB_INITIAL	1	640 115		6	63,5	0,0	CL_WB_NAVIGATOR=====CP
CL_WB_INITIAL	1	457 779	1 005	45,4	0,1	SAPLWB_INITIAL_TOOL	
CL_GUI_PICTURE	3	456 000	455 881	45,3	45,2	SAPLWB_INITIAL_TOOL	
CL_WB REP_BROWSER_RADA	7	219 396		97	21,8	0,0	CL_WB REP_BROWSER_RADA=====CP
CL_WB_NAVIGATOR	15	204 185		95	20,3	0,0	CL_WB_MANAGER=====CP
CL_WB REP_BROWSER_RADA	1	159 739		15	15,9	0,0	CL_WB_NAVIGATOR=====CP
CL_WB REP_BROWSER_VIS_RADA	3	141 234	1 663	14,0	0,2	CL_WB REP_BROWSER_RADA=====CP	
CL_WB REP_BROWSER_VIS_RADA	9	84 559	5 353	8,4	0,5	CL_WB REP_BROWSER_VIS_RADA=====CP	
CL_WB OBJECT_TREE_RADA	1	74 317		13	7,4	0,0	CL_WB REP_BROWSER_RADA=====CP
CL_WB OBJECT_TREE_RADA	1	73 632		40	7,3	0,0	CL_WB OBJECT_TREE_RADA=====CP
CL_WB_WINDOW	58	71 319	4 763	7,1	0,5	CL_WB_WINDOW_MANAGER=====CP	
CL_WB_REGISTRY	1 560	71 234	8 129	7,1	0,8	CL_WB_REGISTRY=====CP	
CL_WB_BROWSER_SELECTION1	3	69 528	1 510	6,9	0,1	CL_WB REP_BROWSER_VIS_RADA=====CP	
CL_WB_WINDOW	15	67 437	3 061	6,7	0,3	CL_WB_WINDOW=====CP	
CL_GUI_CONTAINER_BAR_WB	25	63 339	21 783	6,3	2,2	CL_WB_WINDOW=====CP	
CL_WB_REGISTRY_SHM_METADATA	1 272	61 868	16 239	6,1	1,6	CL_WB_REGISTRY_SHM_METADATA==CP	
CL_WB_REGISTRY	98	60 126	614	6,0	0,1	CL_WB OBJECT_TYPE=====CP	
CL_WB OBJECT_TYPE	3	58 972	69	5,9	0,0	SAPLWB_MANAGER	

Graphic Bundle

Runtime Analysis Evaluation: Instance Hit List								
Inst.	Object Type Name	No.	Gross	=	Net	Gross (%)	Net (%)	Program Name
41	CL_WB_MANAGER	47	1 815 371		791	180,2	0,1	CL_WB_MANAGER=====CP
283	CL_WB_INITIAL	2	1 096 850		12	108,9	0,0	CL_WB_INITIAL=====CP
0	CL_WB_STARTUP	1	938 278		15	93,1	0,0	SAPLWB_MANAGER
9	CL_WB_STARTUP	1	937 442		34	93,0	0,0	SAPLWB_MANAGER
41	CL_WB_MANAGER	1	934 507		39	92,7	0,0	CL_WB_STARTUP=====CP
280	CL_WB_NAVIGATOR_VIS_AS_DYNPRO	1	643 702		7	63,9	0,0	CL_WB_MANAGER=====CP
280	CL_WB_NAVIGATOR	1	643 693		34	63,9	0,0	CL_WB_NAVIGATOR_VIS_AS_DYNPRO=CP
283	CL_WB_INITIAL	1	640 115		6	63,5	0,0	CL_WB_NAVIGATOR=====CP
283	CL_WB_INITIAL	1	457 779		1 005	45,4	0,1	SAPLWB_INITIAL_TOOL
286	CL_GUI_PICTURE	3	456 000		455 881	45,3	45,2	SAPLWB_INITIAL_TOOL
123	CL_WB REP_BROWSER_RADA	7	219 396		97	21,8	0,0	CL_WB REP_BROWSER_RADA=====CP
65	CL_WB_NAVIGATOR	2	190 008		31	18,9	0,0	CL_WB_MANAGER=====CP
123	CL_WB REP_BROWSER_RADA	1	159 739		15	15,9	0,0	CL_WB_NAVIGATOR=====CP
67	CL_WB REP_BROWSER_VIS_RADA	3	141 234		1 663	14,0	0,2	CL_WB REP_BROWSER_RADA=====CP
67	CL_WB REP_BROWSER_VIS_RADA	9	84 559		5 353	8,4	0,5	CL_WB REP_BROWSER_VIS_RADA=====CP
0	CL_WB_OBJECT_TREE_RADA	1	74 317		13	7,4	0,0	CL_WB REP_BROWSER_RADA=====CP
126	CL_WB_OBJECT_TREE_RADA	1	73 632		40	7,3	0,0	CL_WB_OBJECT_TREE_RADA=====CP
35	CL_WB_REGISTRY	1 510	71 127		8 023	7,1	0,8	CL_WB_REGISTRY=====CP
99	CL_GUI_CONTAINER_BAR_WB	25	63 339		21 783	6,3	2,2	CL_WB_WINDOW=====CP

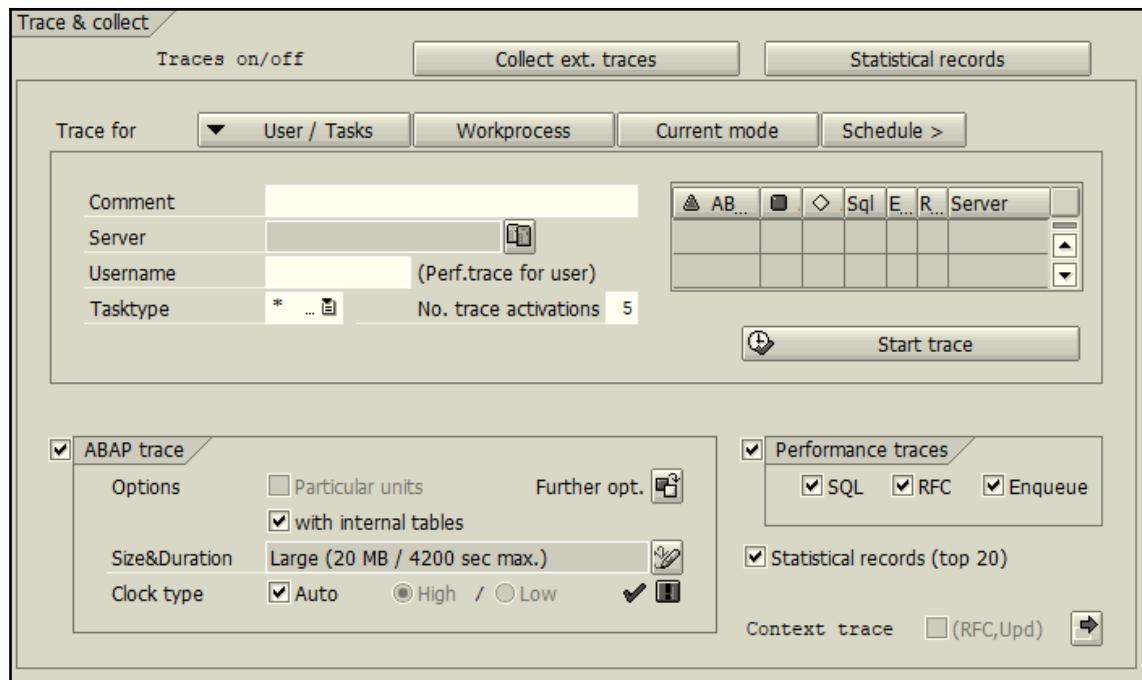
Runtime Analysis Evaluation: Method Hitlist									
S/I	C1.	Interface Component	No.	Gross	=	Net	Gross (%)	Net (%)	Program Name
④	CL_WB_STARTUP	START	1	938 278		15	93,1	0,0	SAPLWB_MANAGER
④	CL_WB_STARTUP	START_INTERNAL	1	937 442		34	93,0	0,0	SAPLWB_MANAGER
④	CL_WB_MANAGER	IF_WB_MANAGER->SET_WORKSPACE	1	934 507		39	92,7	0,0	CL_WB_STARTUP=====CP
④	CL_WB_MANAGER	PROCESS_REQUEST_QUEUE	1	934 335		63	92,7	0,0	CL_WB_MANAGER=====CP
④	CL_WB_MANAGER	PROCESS_WB_REQUEST	8	850 246		233	84,4	0,0	CL_WB_MANAGER=====CP
④	CL_WB_NAVIGATOR_VIS_AS_DYNPRO	DO_THE_NAVIGATION	1	643 702		7	63,9	0,0	CL_WB_MANAGER=====CP
④	CL_WB_NAVIGATOR	DO_THE_NAVIGATION	1	643 693		34	63,9	0,0	CL_WB_NAVIGATOR_VIS_AS_DYNPRO=CP
④	CL_WB_INITIAL	IF_WB_PROGRAM-PROCESS_WB_REQUEST	1	640 115		6	63,5	0,0	CL_WB_NAVIGATOR=====CP
④	CL_WB_INITIAL	DISPLAY	1	640 109		7	63,5	0,0	CL_WB_INITIAL=====CP
④	CL_WB_INITIAL	SHOW_CONTROLS	1	457 779		1 005	45,4	0,1	SAPLWB_INITIAL_TOOL
④	CL_WB_INITIAL	SHOW_WB_PICTURE	1	456 741		5	45,3	0,0	CL_WB_INITIAL=====CP
④	CL_GUI_PICTURE	LOAD_PICTURE_FROM_URL	1	455 539		455 420	45,2	45,2	SAPLWB_INITIAL_TOOL
④	CL_WB_NAVIGATOR	DO_THE_NAVIGATION	7	204 160		70	20,3	0,0	CL_WB_MANAGER=====CP
④	CL_WB REP_BROWSER_RADA	IF_WB_PROGRAM-PROCESS_WB_REQUEST	1	159 739		15	15,9	0,0	CL_WB_NAVIGATOR=====CP
④	CL_WB REP_BROWSER_RADA	DISPLAY	1	84 662		43	8,4	0,0	CL_WB REP_BROWSER_RADA=====CP
④	CL_WB REP_BROWSER_VIS_RADA	IF_WB REP_BROWSER_VIS-SHOW	1	82 004		51	8,1	0,0	CL_WB REP_BROWSER_RADA=====CP
④	CL_WB REP_BROWSER_RADA	GET_OBJECT_TREE_FROM_REQUEST	1	75 053		7	7,4	0,0	CL_WB REP_BROWSER_RADA=====CP

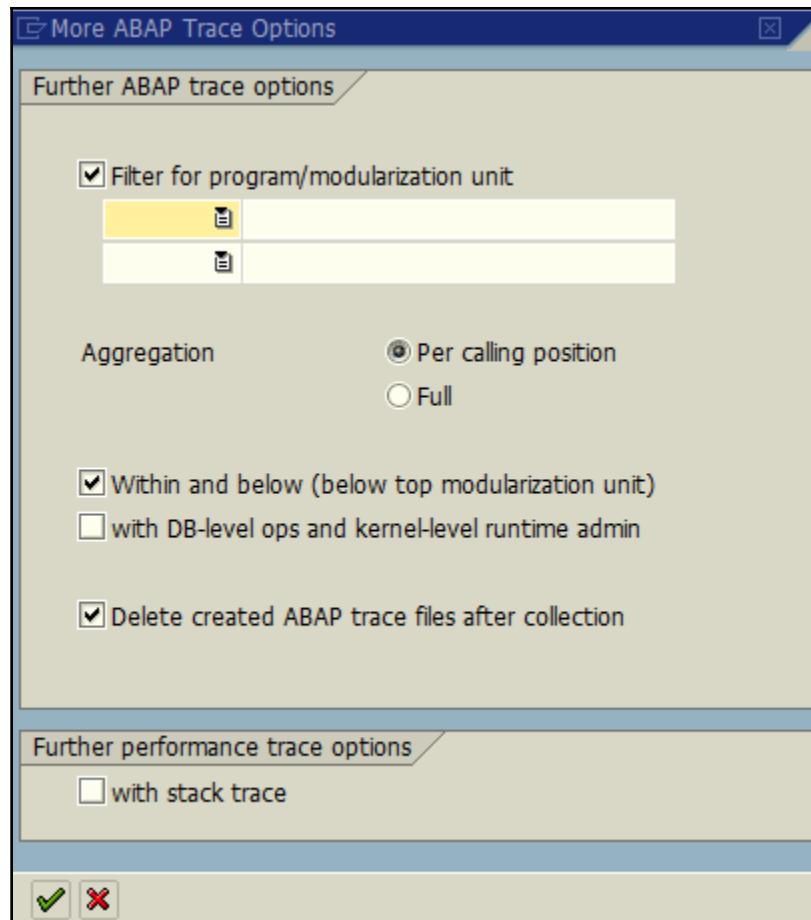
Runtime Analysis Evaluation: Event Hit List									
S/I	C1.	Interface Component	No.	Gross	=	Net	Gross (%)	Net (%)	Program Name
④	CL_WB_MANAGER	IF_WB_MANAGER-MANAGER_FINISHED	1	58 961		8	5,9	0,0	CL_WB_MANAGER=====CP
④	CL_GUI_CONTAINER_BAR_WB	EMPTY	1	2 692		5	0,3	0,0	CL_GUI_CONTAINER_BAR_WB=====CP
④	CL_GUI_CONTAINER_BAR_WB	CLICKED	4	110		30	0,0	0,0	CL_GUI_CONTAINER_BAR_WB=====CP
④	CL_WB_WINDOW_EVENTS	WINDOW_ACTIVATED	1	24		2	0,0	0,0	CL_WB_WINDOW_EVENTS=====CP
④	CL_WB_MANAGER	IF_WB_MANAGER-MANAGER_PBO_PROCESSED	1	7		4	0,0	0,0	CL_WB_MANAGER=====CP

Runtime Analysis Evaluation: Internal Table Hit List

Int. tab.	No.	Gross	= Net	Gross (%)	Net (%)	Program
List contains no data						

Gross	Net	Lv	Call Hierarchy	Program	Mem. Reqmt (B)
2 245		70	Load Report SAPLWB_CUSTOMIZING	SAPLWB_MANAGER	795 920
		67	CALL FUNCTION RS_WORKBENCH_CUSTOMIZING	SAPLWB_MANAGER	1 060 048
		2	IMPORT FROM MEMORY RSEUMOD	SAPLWB_CUSTOMIZING	1 135 008
	1 201	3	SELECT SINGLE RSEUMOD	SAPLWB_CUSTOMIZING	1 135 008
		26	EXPORT TO MEMORY RSEUMOD	SAPLWB_CUSTOMIZING	1 135 008
		13	Load Report SAPLSTR9	SAPLWB_CUSTOMIZING	1 137 312
936	8	3	CALL FUNCTION TR_SYS_PARAMS	SAPLWB_CUSTOMIZING	1 138 016
		3	SUPPLY GCON_TR_SYS_PARAMS	SAPLSTR9	1 138 016
925	96	4	DEMAND GCON_TR_SYS_PARAMS	SAPLSTR9	1 138 016
		8	Load Report CONTEXT_X_TR_SYS_PARAMS	SAPLSTR9	1 138 016
		22	READ TABLE TCONT	CONTEXT_X_TR_SYS_PARAMS	1 139 696
799	15	5	CALL FUNCTION TR_SYS_PARAMS_CONTEXT_MODULE	CONTEXT_X_TR_SYS_PARAMS	1 145 184
	426	6	SELECT SINGLE TADIR	SAPLSCTS_SYSTEM_CONTEXT	1 145 184
		5	CALL C_C_SAPGPARAM	SAPLSCTS_SYSTEM_CONTEXT	1 145 184
	353	6	SELECT SINGLE T000	SAPLSCTS_SYSTEM_CONTEXT	1 145 184
		13	Load Report CL_WB_REQUEST=====CP	SAPLWB_MANAGER	1 154 080
59 282	73	2	CALL FUNCTION WB_GET_BROWSER_REQUESTS	SAPLWB_MANAGER	1 154 272
70	21	3	CALL METHOD CL_WB_REQUEST=>CONSTRUCTOR	SAPLWB_MANAGER	1 154 752
		13	Load Report CL_WB_OPERATION=====CP	CL_WB_REQUEST=====CP	1 155 040
36	8	4	CALL METHOD CL_WB_OPERATION=>CONSTRUCTOR	CL_WB_REQUEST=====CP	1 155 920
		28	SELECT SINGLE WB ACTIONS	CL_WB_OPERATION=====CP	1 155 920





The interface shows a table of collected trace analyses. The first row is highlighted with a yellow background and contains the text 'Selected trace analysis'. The table has columns for State, Startdate, Comment, Content, Duration, and Tasktype. The 'Content' column lists several entries starting with 'ATRA SQL SSUM ENQ RFC STA...'. The 'Duration' column shows values like 5 013, 7 172, 1 529, 442, and 104. At the bottom, there are tabs for 'Evaluate', 'ABAP trace' (selected), 'Performance traces', 'SQL summary', 'Stat. records', and icons for export.

Selected trace analysis	
State	Finished&col...
Startdate	2019-02-23
Comment	
Content	ATRA SQL SSUM ENQ RFC STAT [Tr...
Duration	5 013
Tasktype	[]

	Content	An	Duration o...
[]	ATRA SQL SSUM ENQ RFC STA...		5 013
[]	ATRA SQL SSUM ENQ RFC STA...		7 172
[]	ATRA SQL SSUM ENQ RFC STA...		1 529
[]	ATRA SQL SSUM ENQ RFC STA...		442
[]	ATRA SQL SSUM ENQ RFC [Us...		104

Graphic Bundle

Trace analysis 2019-02-19(1) - ABAP Trace Per Call							
Transaction SE80 = Object Navigator Traced user		ABAP		1 401 410 = 91,7% 121 976 = 8,0% 5 443 = 0,4% Total 1 528 829 = 100,0%			
Execution times in microseconds							
Call	No.	Gross	=	Net	Gross (\$)	Net (\$)	Program (called program)
Runtime analysis	1	1 528 829		0	100,0	0,0	
CALL TRANSACTION SE80	1	1 528 656		1 132	100,0	0,1	Testframe
Program SAPMSEU0	1	1 527 524		233	99,9	0,0	
System Event <Generic Identifier>	5	1 523 213		39	99,6	0,0	SAPMSEU0
Dynpro Entry PROCESS DARK	1	1 522 909		64	99,6	0,0	SAPMSSY0
PAI Dynpro 1000	2	1 522 662		11	99,6	0,0	SAPMSSY0
CALL FUNCTION WB_NEW_WORKBENCH_START	1	1 522 544		33	99,6	0,0	SAPLWB_MANAGER
CALL METHOD CL_WB_STARTUP=>START	1	1 422 895		12	93,1	0,0	CL_WB_STARTUP=====
CALL FUNCTION WB_MANAGER_START	1	1 422 882		12	93,1	0,0	SAPLWB_MANAGER
CALL SCREEN 0200	1	1 422 870		51	93,1	0,0	SAPLWB_MANAGER
Dynpro Entry <Generic Identifier>	2	1 422 819		127	93,1	0,0	SAPLWB_MANAGER
PAI Dynpro 0200	2	1 422 192		9	93,0	0,0	SAPLWB_MANAGER
Module PAI_MANAGER_START	1	1 422 126		8	93,0	0,0	SAPLWB_MANAGER
CALL METHOD CL_WB_STARTUP=>START_INTERNAL	1	1 422 116		6	93,0	0,0	CL_WB_STARTUP=====
CALL METHOD CL_WB_MANAGER=>IF_WB_MANAGER->SET_WORKS	1	1 418 711		19	92,8	0,0	CL_WB_MANAGER=====
CALL METHOD CL_WB_MANAGER=>PROCESS_REQUEST_QUEUE	1	1 418 597		20	92,8	0,0	CL_WB_MANAGER=====
LOOP AT ME->REQUEST_QUEUE	1	1 334 057		42	87,3	0,0	CL_WB_MANAGER=====

Performance Analysis: Trace Display (Main Records)							
	hh:mm:ss...	Duration	Records	Program Name	Object Name	Statement	
▪ 1 454 168 ▪ 29 439							
	198	0				OTHER (SQL)	
19:18:24.403	76 285	0	R_ST05_TRACE_MAIN			COMMIT (forced)	
19:18:24.484	293	1	WPBHELP_REGISTRATION	WPBHELP_URL		SELECT WHERE "MANDT" =	
19:18:24.487	594	1	SAPLWB_CUSTOMIZING	RSEUMOD		SELECT WHERE "UNAME" =	
19:18:24.491	10 252	1 257	SAPLTR_OBJECTS	OBJH		SELECT WHERE "OBJECTTYP	
19:18:24.499	4 053	1	SAPMSSYC	USR02		SELECT WHERE "MANDT" =	
19:18:24.501	2 799	1 255	SAPLTR_OBJECTS	OBJT		SELECT WHERE "OBJECTTY	
19:18:24.518	56	0	SAPMSSYC			COMMIT	
19:18:24.519	8 081	1 257	SAPLTR_OBJECTS	OBJH		SELECT WHERE "OBJECTTYP	
19:18:24.520	1 418	823	CL_WB_REGISTRY_SHM_METADAT...	WBREGISTRY		SELECT	
19:18:24.525	1 435	661	CL_WB_REGISTRY_SHM_METADAT...	EUOBJ		SELECT	
19:18:24.528	2 039	924	SAPLTR_OBJECTS	OBJT		SELECT WHERE "OBJECTTY	
19:18:24.529	17 213	7 965	CL_WB_REGISTRY_SHM_METADAT...	EUOBJT		SELECT	

Graphic Bundle

SQL Statement with no parameters

Full Screen On/Off | Display <-> Change | Explain | ABAP code | Table detail | SSMS | XML

Connected to: []

SQL Code | Explain Tree | Text Explain

Explain method: Estimated execution plan for statement with literals

Statement Text	Logical Operation	Argument	Est. I/O Cost
Query Plan			
SELECT			
Merge Join	Inner Join		1
Clustered Index Scan	Clustered Index Scan	[EUOBJEDIT].[EUOBJEDIT~0]	0,003865740
Sort	Sort	ORDER BY: [EUOBJ].TYPE ASC	0,011261300
Clustered Index Scan	Clustered Index Scan	[EUOBJ].[EUOBJ~0]	0,003865740

Property	Value
Statement Text	SELECT "ID", "E071", "TADIR" FROM "EUOBJV" /* R3:SAPLSEWB_CONTROL:21280 T:EUOBJV M:800 */ /*unc. rd.*/
Argument	1
Estimated Rows	480,7870000000
Average Row Size	0
Total Subtree Cost	0,0383023000000
Operation Type	SELECT
Estimated Executions	0

Runtime Analysis



Variant	ZVARIANT	From User	WCIESIELSKI
Description	ZVARIANT		

Duration and Type **Statements** **Program Parts**

Size Limits

Maximum Size of File	10 000 KB
Maximum Execution Time	1 800 Seconds

Aggregation

None
 Per Call Position

Options

Measure RFC and Update Calls
 Explicit Switching On and Off of Measurement
 Measure Memory Use

 Default Setting

Variant **ZVARIANT** From User **WCIESIELSKI**

Description **ZVARIANT**

Duration and Type **Statements** Program Parts

Processing Blocks

- Methods
- Events (ABAP Objects)
- Function Modules
- Subroutines

Database Accesses

- Open SQL
- Native SQL
- Contexts
- Database-Related Operations

Screen

- Flow Logic
- Formatting for frontend
- Modules
- Message Handling

Internal Tables

- Read Operations
- Change Operations

Data Transfer

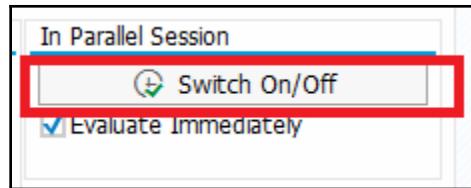
- EXPORT/IMPORT
- DATASET

Miscellaneous

- Additional ABAP Statements
- Statistics
- Kernel Runtime Administration
- C calls

Generate and Load

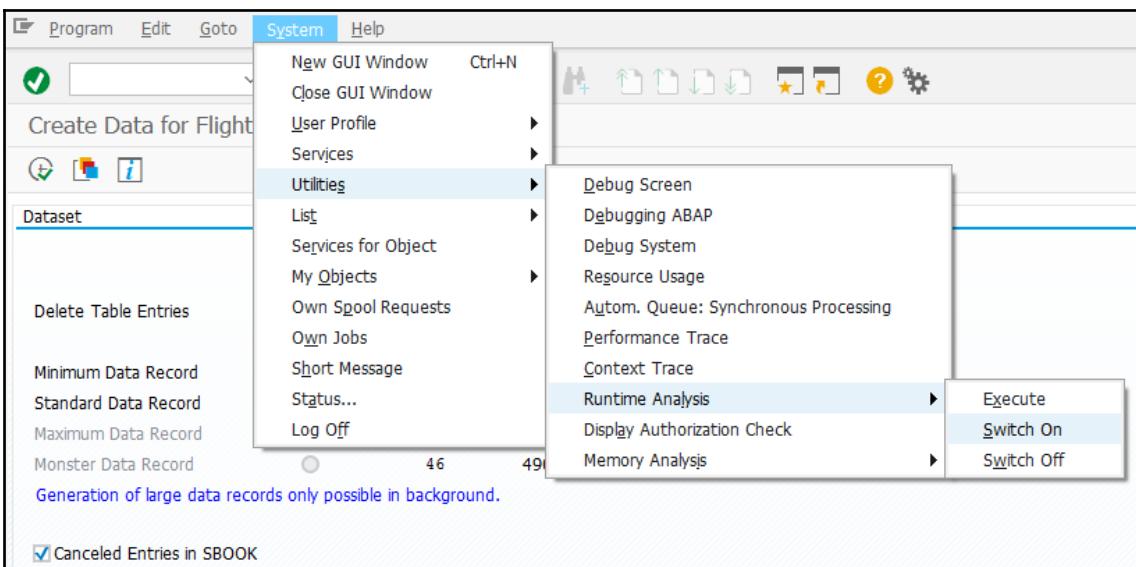
- GENERATE
- LOAD



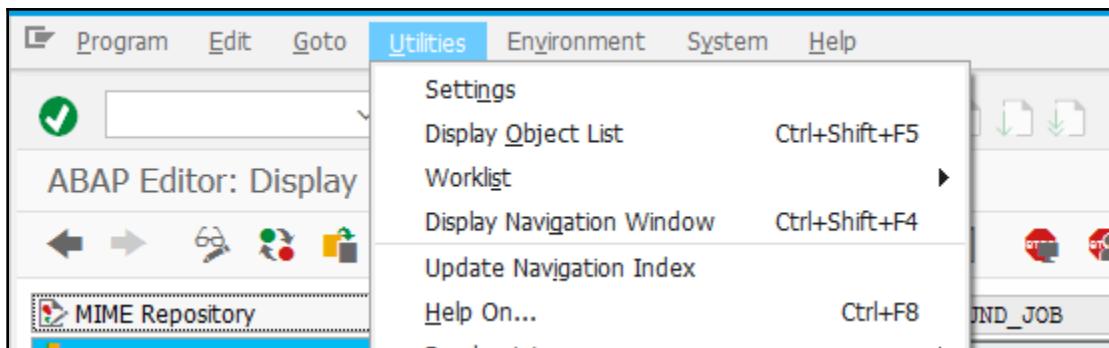
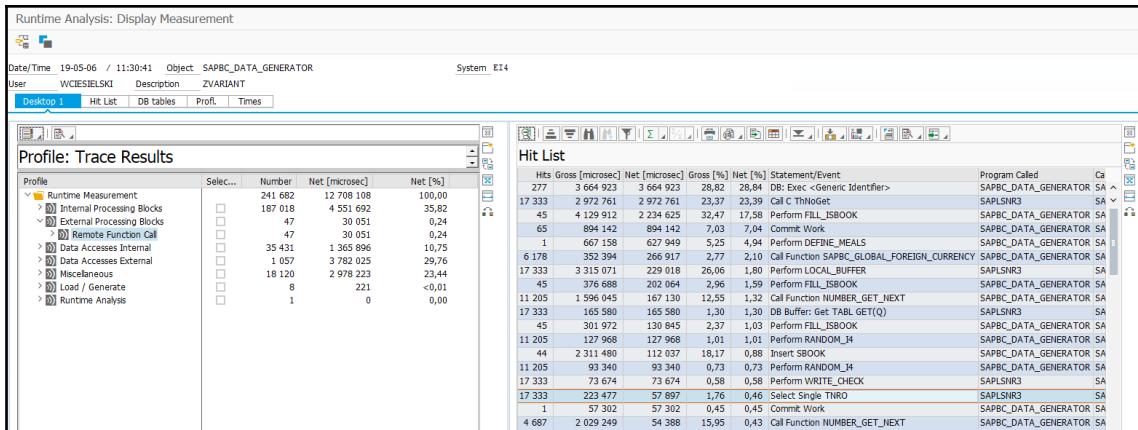
Switching measurement on/off for process (Local Server)

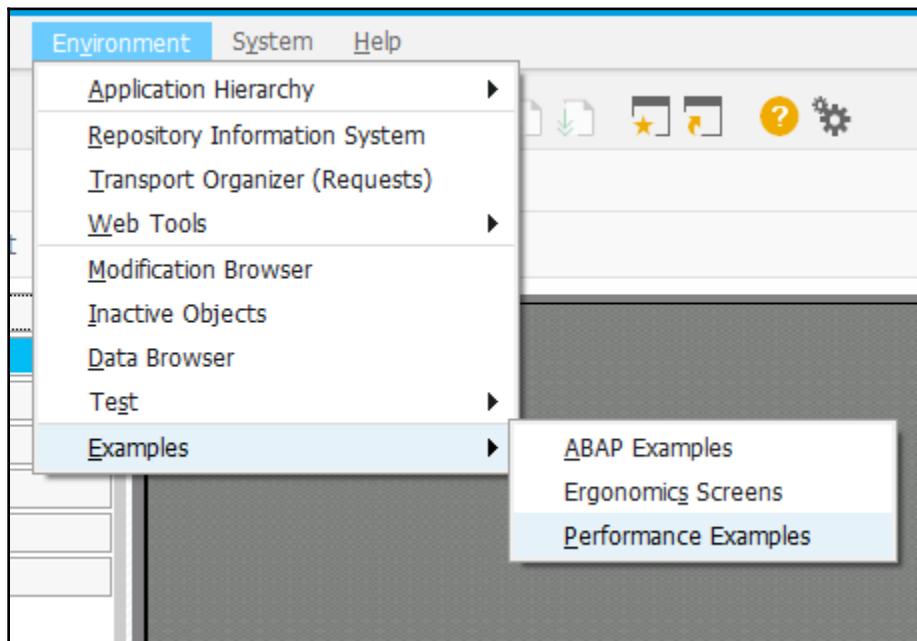
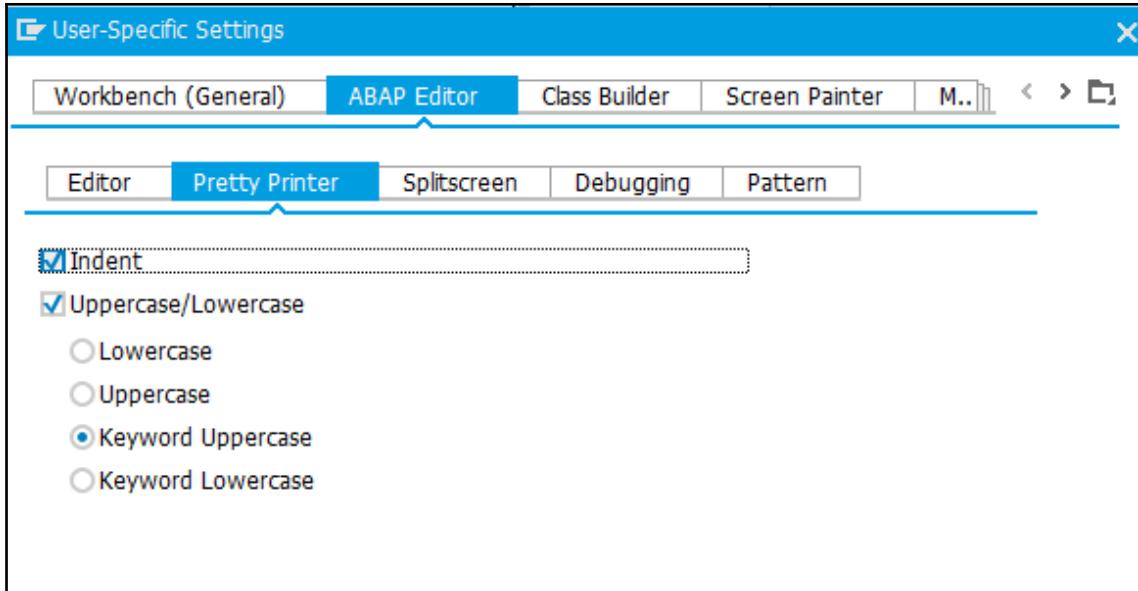
All Processes Server Selection

Number	On	Type	Status	Reason	Time	User Names	Report	Action	Table	KB	Name
8		DIA	Running		800	WCIESIELSKI	SAPLTHFB				
11		DIA	Running		800	WCIESIELSKI	SAPBC_DATA_GENERATOR				



Graphic Bundle





Select aggregates

Measure runtime Global Variables

ABAP Objects Performance Examples

- SQL Interface
 - Select ... Where vs. Select + Ch
 - Test Existence
 - Select aggregates
 - Select with select list
 - Column Update
- Index and Buffer Support
- Array Operations (internal tables)
- Select over more than one table
- Context
- Internal Tables
 - Using explicit work areas
 - Linear search vs. binary search
 - Dynamic vs. static key access
 - Secondary indices
 - Key access to multiple lines
 - Sorted and Hashed Tables
 - Building unique standard tables
 - Building unique sorted/hashed tables
 - Modifying single lines
 - Using the Assigning Command
 - Building condensed tables
 - Array Operations
 - Sorting internal tables
 - Simple Algorithms
 - Typing
 - If, Case, ...
 - Field Conversion
 - Character/String Manipulation
 - ABAP Objects
 - Methods vs Subroutines
 - Methods vs Function Modules
 - Local Methods vs global Method

Select ... Where + Check

```

DATA: MAX_MSGNR type t100-msgnr.
MAX_MSGNR = '000'.
SELECT * FROM T100 INTO T100_NA
WHERE SPRSL = 'D' AND
      ARGBB = '00'.
CHECK: T100_NA-MSGNR > MAX_MSGNR.
MAX_MSGNR = T100_NA-MSGNR.
ENDSELECT.

```

Select using an aggregate function

```

DATA: MAX_MSGNR type t100-msgnr.
SELECT MAX( MSGNR ) FROM T100 INTO max_msgnr
WHERE SPRSL = 'D' AND
      ARGBB = '00'.

```

Documentation

If you want to find the maximum, minimum, sum and average value or the count of a database column, use a select list with aggregate functions instead of computing the aggregates yourself. Network load is considerably less.

Assessments

