

Developing database apps using WKA Studio

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About Bank Application

This app is demo application to understand about how to develop basic database applications using just CSV data files in few steps. First of all, all required data files for application must be created in CSV format. These CSV files are imported into MySQL database using data import interface of WKA Studio. Once data is imported into MySQL, the database application can be created using few clicks. In this application, there are three CSV files are used 1> customer data file containing customer details, 2> account data file containing customer accounts and 3> transaction file containing the accounts transactions.

1. Developing Database Application

1.1 Preparing CSV File to Create Database Application

Three CSV files are used: *Customer*, *Account* and *Transaction* as shown in Figure 1, Figure 2 and Figure 3.

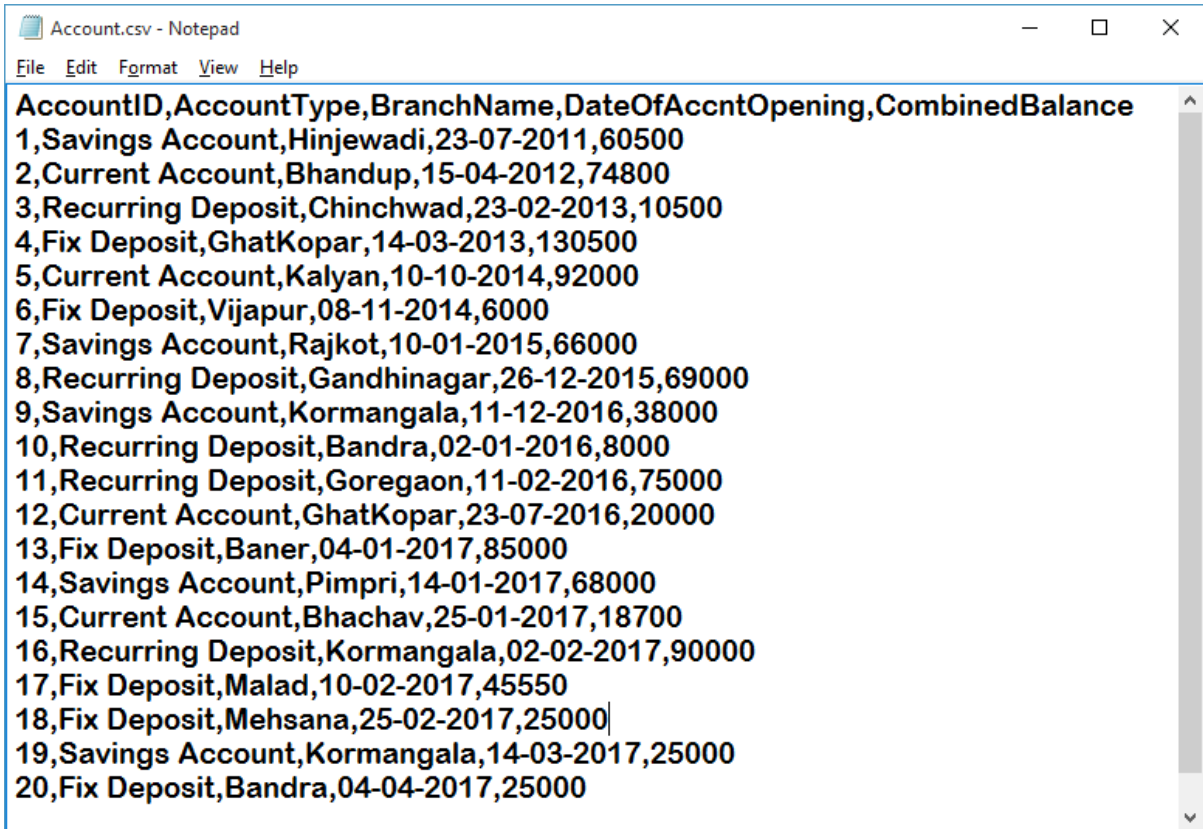
Note: Excel file with three separate worksheets containing data corresponding to *Customer*, *Account* and *Transaction* entities can be created instead of three CSV files. This excel file can be uploaded on server and further to MySQL database using *Data Import & Transfer* Interface.

Following data set in CSV format has been used in the figures below.



```
CustomerID,FirstName,LastName,Gender,AccountID,Address,City,State>Password,DateOfAccntOpening,Email,MobileNo
101,Prajakta,Mahadik,Female,4,Irish Apt Vidyavihar,Mumbai,Maharashtra,FDH33UYR,23-07-2011,prajaktam@gmail.com,9844593584
102,Deepthi,Prabhu,Female,5,LakshmanChaya Apt Dombiwali,Mumbai,Maharashtra,H5FH8DG2,15-04-2012,deepthi7856@gmail.com,8956451236
103,Pradip,Rai,Male,1,Aashirwad Niwas Haweli,Pune,Maharashtra,BVDFV23,23-02-2013,raipradeep26@gmail.com,7875059533
104,Nisha,Jadhav,Female,9,Jagannath Apt Kormangala,Banglore,Karnataka,D43GGHDD,14-03-2013,nishaj24@gmail.com,9422572276
105,Ronak,Thakkar,Male,7,MatruChaya Sadan Virpur,Rajkot,Gujrat,BVNMA24V,10-10-2014,ronakt22@gmail.com,9422572009
106,Devang,Patel,Male,8,NandanVihar Complex Alampur,Gandhinagar,Gujrat,HFGIYRU33,08-11-2014,patel2233@gmail.com,9665809040
107,Aparna,Joshi,Female,2,Sandhya Niketan Bhandup,Mumbai,Maharashtra,MBFNJGKY5,10-01-2015,aparna62@gmail.com,8934026210
108,Manavi,Agarwal,Female,3,Shamal Society Chinchwad,Pune,Maharashtra,HKDG4334,26-12-2015,manavia@gmail.com,7276631110
109,Aniket,Marathe,Male,6,"Raghuvir Society,Mahisana",Vijapur,Karnataka,NGUTTH532,11-12-2016,admarathe96@gmail.com,9771340764
110,Rishi,Verma,Male,10,Parvati Heritage Bandra,Mumbai,Maharashtra,HKG4353GF,02-01-2016,rishi12@gmail.com,8974562315
111,Sanket,Mali,Male,11,Gokuldharm Nagar Goregaon,Mumbai,Maharashtra,RDT35TJHMJ,11-02-2016,malisanket@gmail.com,8456321563
112,Ashish,Mahadik,Male,12,Indu Apt Vidyavihar,Mumbai,Maharashtra,FHJV2342345,23-07-2016,prajaktam@gmail.com,9850713584
113,Amarendra,Kale,Male,13,"Raghuvir Society,Sadashiv Peth",Pune,Maharashtra,HFKDG23GYR,04-01-2017,amarkale@gmail.com,7271340764
114,Nupur,Nikam,Female,14,LakshmiNarayan Apt Dhanori,Pune,Maharashtra,VNHG3GHJV,14-01-2017,nupur24@gmail.com,7825451236
115,Suarabh,Shah,Male,15,"NavDurg Society,Bhachav",Gandhinagar,Gujrat,FDGHDH2FDF,25-01-2017,suarabh@gmail.com,8456231456
116,Kamini,Gaur,Female,16,"Ramanandan Niwas,Kormangala",Banglore,Karnataka,VFSGH22F,02-02-2017,kamini@gmail.com,7748563258
117,Sahil,Verma,Male,17,Sunshine Apt. Malad,Mumbai,Maharashtra,MGHVC312C,10-02-2017,sahil@gmail.com,8745698632
118,Nirmithi,Sarode,Female,18,"DreamPark Society,Mehsana",Vijapur,Karnataka,SFGA4123CS,25-02-2017,nirmithi@gmail.com,9456852315
119,Mariya,John,Female,19,"Willington Society,Kormangala",Banglore,Karnataka,RYTT5476GF,14-03-2017,mariya@gmail.com,9856321451
120,Zubaida,Shiekh,Female,20,"Ayat Manzilla,Bandra",Mumbai,Maharashtra,RY4354BFDF,04-04-2017,zubaida@gmail.com,9654856321
```

Figure 1: Customer.csv File

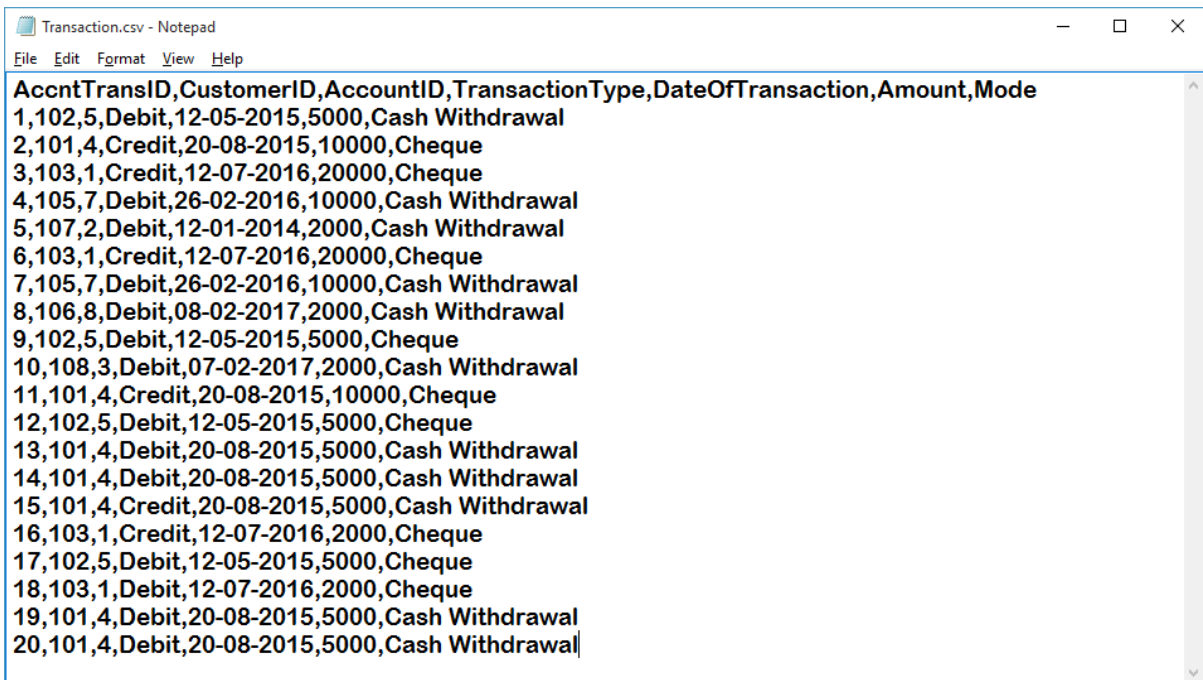


Account.csv - Notepad

File Edit Format View Help

```
AccountID,AccountType,BranchName,DateOfAcctOpening,CombinedBalance
1,Savings Account,Hinjewadi,23-07-2011,60500
2,Current Account,Bhandup,15-04-2012,74800
3,Recurring Deposit,Chinchwad,23-02-2013,10500
4,Fix Deposit,GhatKopar,14-03-2013,130500
5,Current Account,Kalyan,10-10-2014,92000
6,Fix Deposit,Vijapur,08-11-2014,6000
7,Savings Account,Rajkot,10-01-2015,66000
8,Recurring Deposit,Gandhinagar,26-12-2015,69000
9,Savings Account,Kormangala,11-12-2016,38000
10,Recurring Deposit,Bandra,02-01-2016,8000
11,Recurring Deposit,Goregaon,11-02-2016,75000
12,Current Account,GhatKopar,23-07-2016,20000
13,Fix Deposit,Baner,04-01-2017,85000
14,Savings Account,Pimpri,14-01-2017,68000
15,Current Account,Bhachav,25-01-2017,18700
16,Recurring Deposit,Kormangala,02-02-2017,90000
17,Fix Deposit,Malad,10-02-2017,45550
18,Fix Deposit,Mehsana,25-02-2017,25000
19,Savings Account,Kormangala,14-03-2017,25000
20,Fix Deposit,Bandra,04-04-2017,25000
```

Figure 2: Account.csv File



Transaction.csv - Notepad

File Edit Format View Help

```
AcctTransID,CustomerID,AccountID,TransactionType,DateOfTransaction,Amount,Mode
1,102,5,Debit,12-05-2015,5000,Cash Withdrawal
2,101,4,Credit,20-08-2015,10000,Cheque
3,103,1,Credit,12-07-2016,20000,Cheque
4,105,7,Debit,26-02-2016,10000,Cash Withdrawal
5,107,2,Debit,12-01-2014,2000,Cash Withdrawal
6,103,1,Credit,12-07-2016,20000,Cheque
7,105,7,Debit,26-02-2016,10000,Cash Withdrawal
8,106,8,Debit,08-02-2017,2000,Cash Withdrawal
9,102,5,Debit,12-05-2015,5000,Cheque
10,108,3,Debit,07-02-2017,2000,Cash Withdrawal
11,101,4,Credit,20-08-2015,10000,Cheque
12,102,5,Debit,12-05-2015,5000,Cheque
13,101,4,Debit,20-08-2015,5000,Cash Withdrawal
14,101,4,Debit,20-08-2015,5000,Cash Withdrawal
15,101,4,Credit,20-08-2015,5000,Cash Withdrawal
16,103,1,Credit,12-07-2016,2000,Cheque
17,102,5,Debit,12-05-2015,5000,Cheque
18,103,1,Debit,12-07-2016,2000,Cheque
19,101,4,Debit,20-08-2015,5000,Cash Withdrawal
20,101,4,Debit,20-08-2015,5000,Cash Withdrawal
```

Figure 3: Transactions.csv File

1.2 Importing CSV File

After preparing CSV file, CSV files need to be imported in WKA Studio MySQL database. Steps for importing CSV files.

1. Go to *Main Menu -> Database Interfaces -> Data Import & Transfer*.

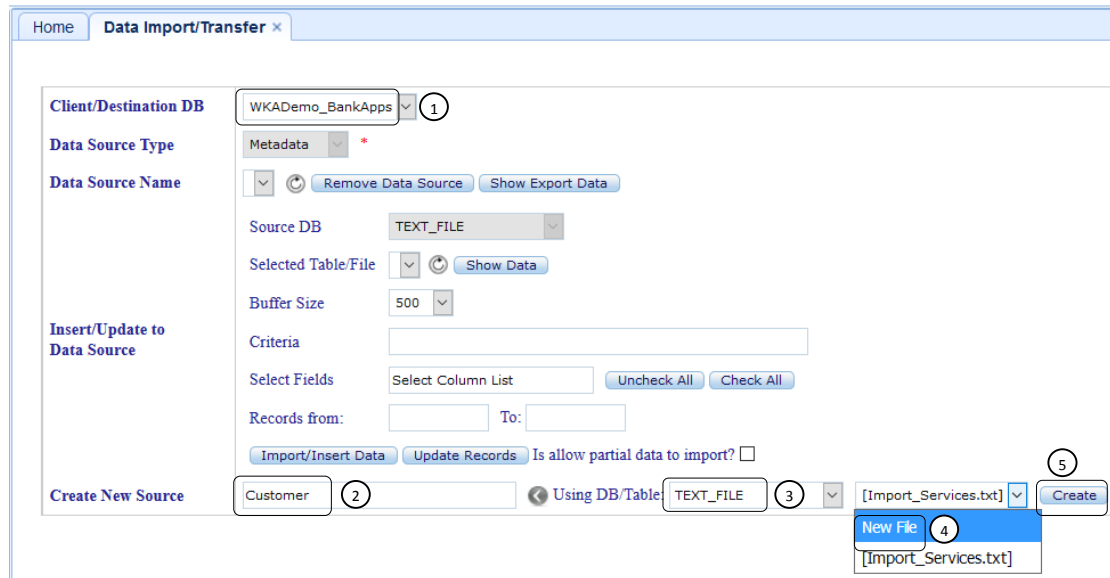


Figure 4: Data Import Interface

2. Select the destination database (in which CSV data will be imported). In this example, *WKADemo_BankApps* is MySQL database connection connects to the database in which tables will be created and data from CSV file will be imported.
3. To import *Customer.csv* file, enter the source name (a unique name given to recognize the data source, MySQL database table henceforth called as 'MySQL table' will be created with this name) in *Create New Source* field (Example: Customer) and select DB *TEXT_FILE* and *New File* option from drop down menu.
4. To create data source, click *Create* button.
5. Popup is opened to select CSV file. To choose the CSV file from specified location, click *Browse*.



Figure 5: Uploading CSV file

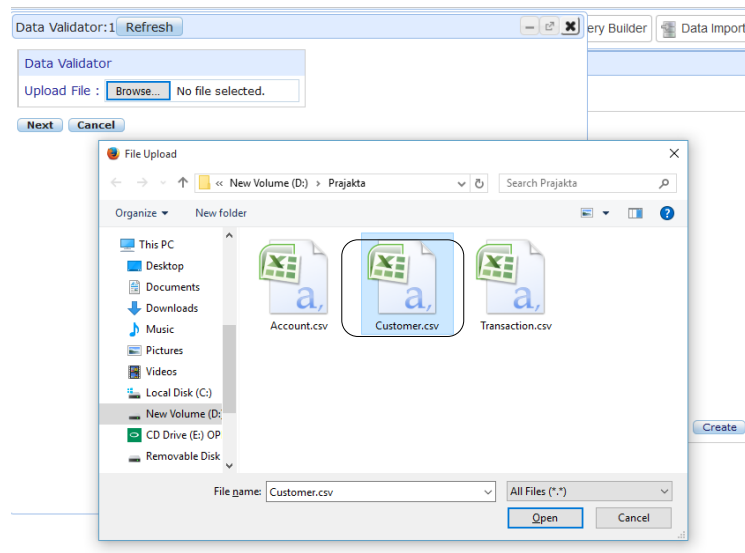


Figure 5: Selecting CSV file to upload

6. Select the required CSV file (example: Customer.csv) and click *Open*. Selected CSV file is displayed in *Browse* field.



Figure 6.a: Selecting CSV file to upload

7. Click Next and the following screen is displayed. Select the required option (Example: Is first Row header? Is replace header spaces with _? and Do not add extra fields?). Select delimiter (comma, tab, semicolon... etc.) used in the file.
 - *Is first Row header?* - First row of the file can be taken as header name or column name. Note that column name and field name are alternate names used (when used in excel sheets called as column names in database they are called field names).
 - *Is replace header spaces with _?* - Space in header name will be replaced with “_”
 - *Do not add extra fields?* - It avoids extra fields like *CL_ID*, *CL_MATCH* in table to be used for advanced functionalities using AI algorithms.

- *Is set field size from current data being imported?* – To set the data size of columns check this option. The interface will check maximum size of data of each column in imported CSV file and set the data size of corresponding column.

This file contains comma separated values, the delimiter *Comma* is set by default otherwise select the delimiter.

CustomerID	FirstName	LastName	Gender	AccountID	Address	City	State	Password	DateOfAcctOpening	Email	MobileNo
101	Prajakta	Mahadik	Female	4	Irish Apt Vidyavihar	Mumbai	Maharashtra	FDH33UYR	23-07-2011	prajaktam@gmail.com	9844593584
102	Deepti	Prabhu	Female	5	LakshmanChaya Apt Dombiwali	Mumbai	Maharashtra	HSFH8DG2	15-04-2012	deepti7856@gmail.com	8956451236
103	Pradip	Rai	Male	1	Aashirwad Niwas Haweli	Pune	Maharashtra	BVDFV823	23-02-2013	raipradeep26@gmail.com	7875059533
104	Nisha	Jadhav	Female	9	Jagannath Apt Kormangala	Banglore	Karnataka	D43GGHDD	14-03-2013	nishaj24@gmail.com	9422572276
105	Ronak	Thakkar	Male	7	MatruChaya Sadan Virpur	Rajkot	Gujrat	BVNMA24V	10-10-2014	ronakt22@gmail.com	9422572009
106	Devang	Patel	Male	8	NandanVihar Complex Alampur	Gandhinagar	Gujrat	HFGIYRU33	08-11-2014	patel2233@gmail.com	9665809040
107	Aparna	Joshi	Female	2	Sandhya Niketan Bhandup	Mumbai	Maharashtra	MBFNJGKY5	10-01-2015	aparna62@gmail.com	8934026210
108	Manavi	Agarwal	Female	3	Shamal Society Chinchwad	Pune	Maharashtra	HKDGY4334	26-12-2015	manavia@gmail.com	7276631110
109	Aniket	Marathe	Male	6	Raghuvir Society, Mahisana	Vijapur	Karnataka	NGUTTH532	11-12-2016	admarathe96@gmail.com	9771340764
110	Rishi	Verma	Male	10	Parvati Heritage Bandra	Mumbai	Maharashtra	HKG4353GF	02-01-2016	nishi12@gmail.com	8974562315
111	Sanket	Mali	Male	11	Gokuldharm Nagar Goregaon	Mumbai	Maharashtra	RDT35TIHMJ	11-02-2016	malisanket@gmail.com	8456321563
112	Ashish	Mahadik	Male	12	Indu Apt Vidyavihar	Mumbai	Maharashtra	FHJV2342345	23-07-2016	prajaktam@gmail.com	9850713584

Figure 7: Data Import: showing data in CSV file

8. Click *Next* and the following screen is shown. It shows default data types and data sizes.

Select	Primary Key	Unique Key	Column Name	New Column Name	Data Type	Data Size
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CustomerID	CustomerID	int	10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FirstName	FirstName	varchar	255
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LastName	LastName	varchar	255
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gender	Gender	varchar	255
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AccountID	AccountID	int	10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Address	Address	varchar	255
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	City	City	varchar	255
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	State	State	varchar	255
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Password	Password	varchar	255
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DateOfAcctOpening	DateOfAcctOpening	char	25
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Email	Email	varchar	255
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MobileNo	MobileNo	float	20

Figure 8: Data Import: showing column names, data types and sizes

9. Select and enter the required information as explained in table below:

Table 1: Fields of Data Validator Screen

Fields	Description
Select	By default, for all column names this option is checked. If unchecked then that column name will not be imported.
Primary Key	If this option is checked then corresponding field is set as primary key of the <i>MySQL table</i> .
Unique Key	If this option is checked then corresponding field is treated uniquely.
Column Name	Name of the column in CSV file.
New Column Name	Field name that will be created in <i>MySQL table</i> and mapped to column name of CSV file.
Data Type	Sets data type of the field in <i>MySQL table</i> .
Data size	Sets data size of the field in <i>MySQL table</i> .,

10. Set *Primary key* (a unique key used to recognize a row/record e.g. *CustomerID*; this key will be used to retrieve, update records) and *Unique key* (a unique key for each record e.g. *CustomerID*). If CSV files does not have unique key, import interface automatically adds column 'ID' to *MySQL table*. The data type of 'ID' is auto-increment (it automatically maintain numbers starting from 0 and incremented by one when record is added to the table). Edit *Data type & Data Size* for *MySQL table* field. If the option *Is set field size from current data being imported?* (Refer Figure 8) is not checked then the data size of fields can be changed if necessary.

The screenshot shows the 'Data Validator' window with the following configuration:

- Date and Time: Date Order: DMY, Month Format: Short Name (ex. Jan), Four Digit Years checked.
- Date Delimiter: /, Is Time Present: unchecked.

Select	Primary Key	Unique Key	Column Name	New Column Name	Data Type	Data Size
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CustomerID	CustomerID	int	10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FirstName	FirstName	varchar	15
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LastName	LastName	varchar	15
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gender	Gender	varchar	6
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AccountID	AccountID	int	10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Address	Address	varchar	50
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	City	City	varchar	20
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	State	State	varchar	30
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Password	Password	varchar	10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DateOfAccntOpening	DateOfAccntOpening	date	25
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Email	Email	varchar	30
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MobileNo	MobileNo	varchar	10

Buttons: Previous, Next, Cancel

Figure 7: Setting primary key, unique key, new field names, data type, data size for fields

11. Click *Next* to transfer data from CSV file to *MySQL* table. If there is any error in creating table or transferring the data, error will be shown.

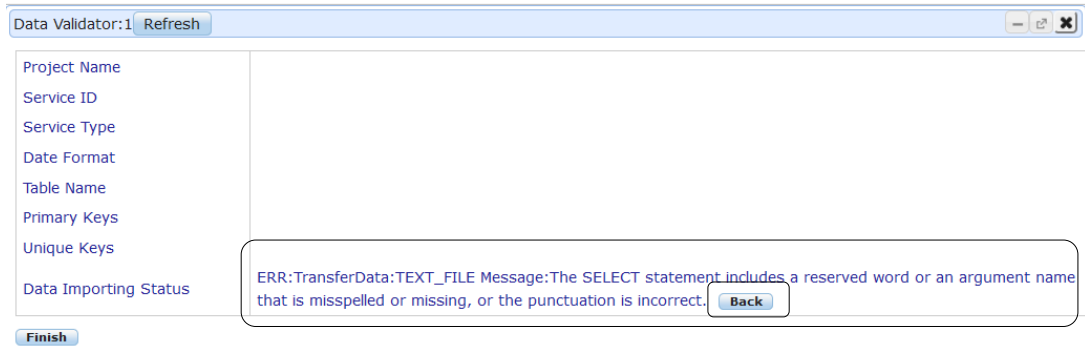


Figure 8: Data Importing Status: MySQL reserved word: ‘password’

12. In case of errors, Back button can be used to go back to previous screen. After correction (e.g. change the new column names), the next screen below shows the data importing status i.e. Project Name, Selected Date Format, Table Name, Primary & Unique key field and total number of imported records.

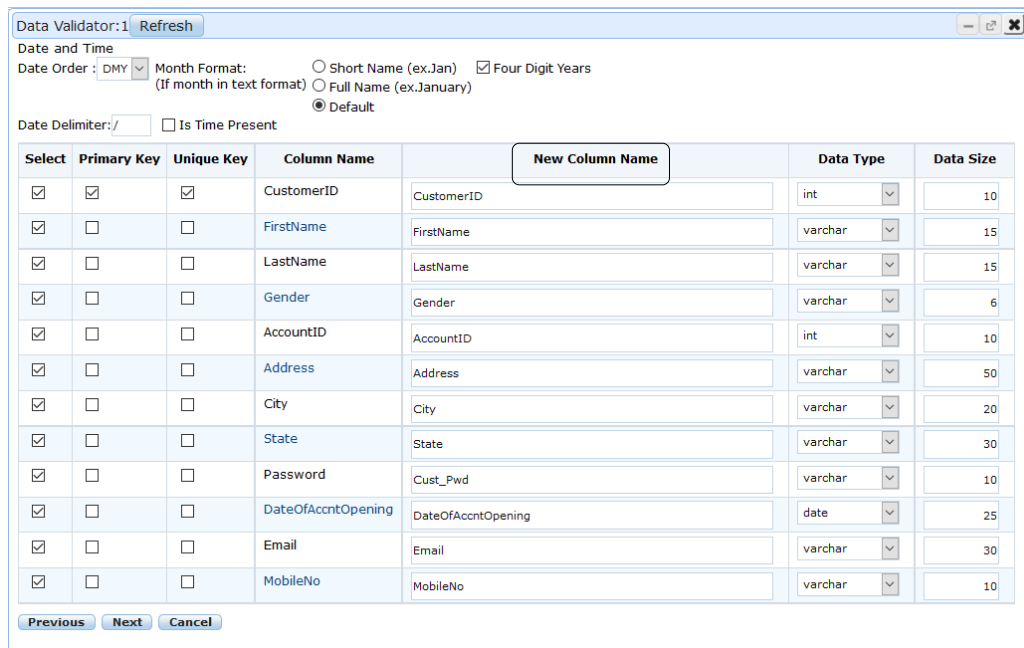


Figure 9: Data Importing Status: MySQL reserved word: password

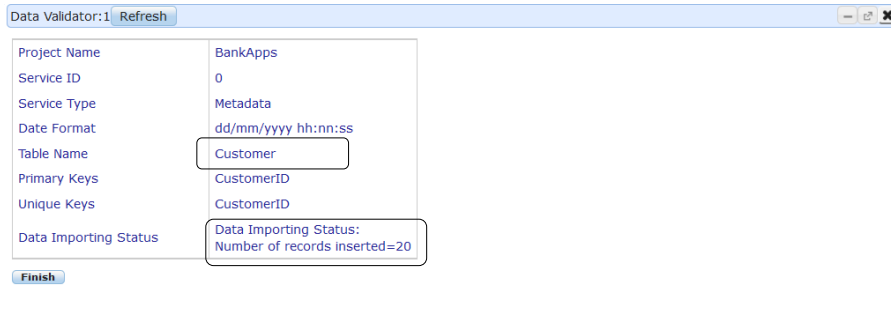


Figure 10: Data Importing Status

13. Close the screen by clicking popup close button on top right.

Note: Follow the same steps to import data for Accounts and Transactions tables by creating data two data sources.

14. To view table created, go to *Main Menu -> Database Interfaces -> Query Builder*. Under *WKADemo_BankApps* database, *Customer* table is created with its fields.

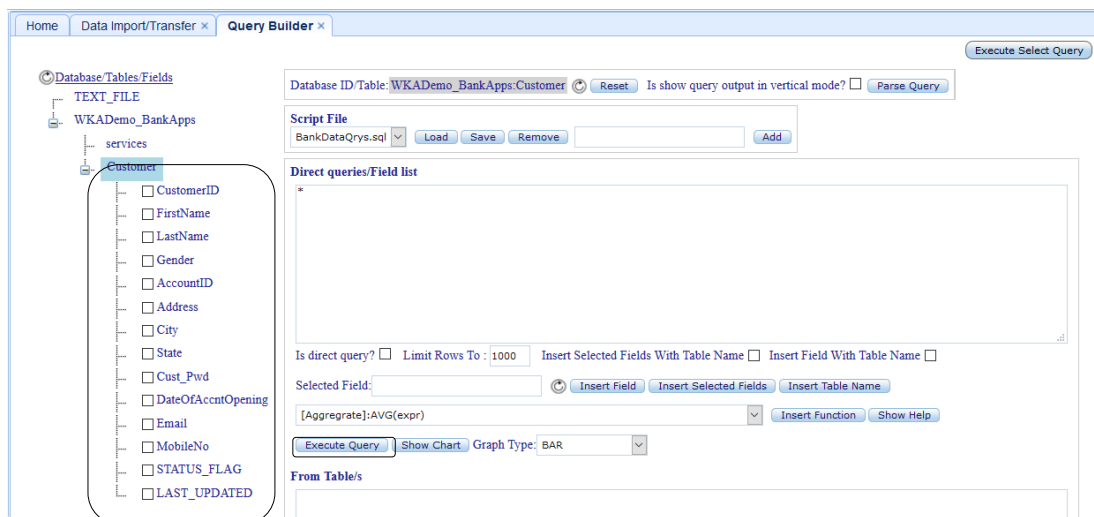


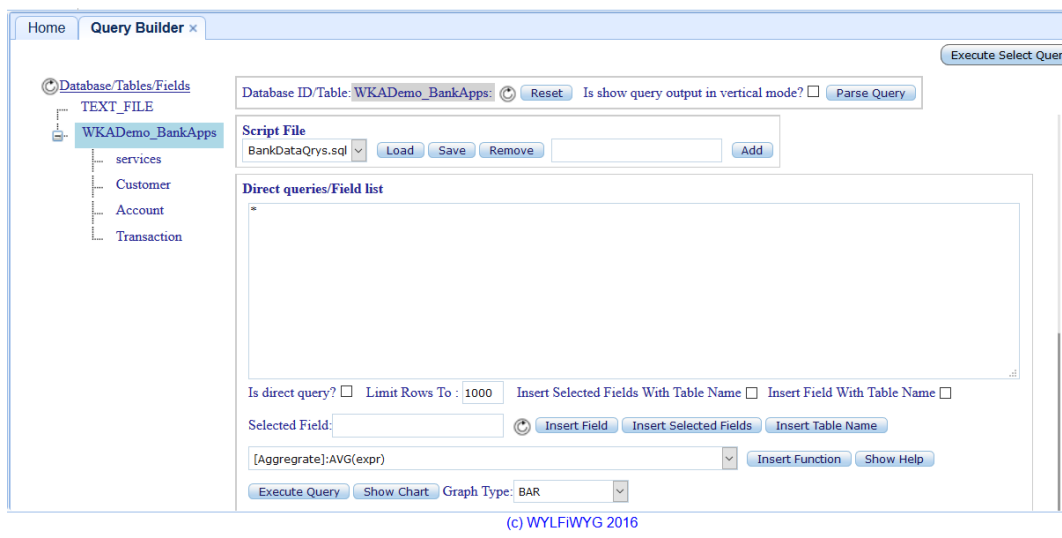
Figure 11: Viewing the tables using Query Builder

15. To view records of *customer* table, click *Execute Query*.

S.No.	CustomerID	FirstName	LastName	Gender	AccountID	Address	City	State	Cust_Pwd	DateOfAcctOpening	Email	MobileNo
1	101	Prajakta	Mahadik	Female	4	Irish Apt Vidyavihar	Mumbai	Maharashtra	FDH33UYR	23/07/2011	prajaktam@gmail.com	9844590000
2	102	Deepti	Prabhu	Female	5	LakshmanChaya Apt Dombiwali	Mumbai	Maharashtra	HSFH8DG2	15/04/2012	deepti7856@gmail.com	8956450000
3	103	Pradip	Rai	Male	1	Aashirwad Niwas Haweli	Pune	Maharashtra	BVDFVB23	23/02/2013	raipradeep26@gmail.com	7875060000
4	104	Nisha	Jadhav	Female	9	Jagannath Apt Kormangala	Banglore	Karnataka	D43GGHDD	14/03/2013	nishaj24@gmail.com	9422570000
5	105	Ronak	Thakkar	Male	7	MatruChaya Sadan Virpur	Rajkot	Gujrat	BVNMA24V	10/10/2014	ronakt22@gmail.com	9422570000
6	106	Devang	Patel	Male	8	NandanVihar Complex Alampur	Gandhinagar	Gujrat	HFGIYRU33	08/11/2014	patel2233@gmail.com	9665810000
7	107	Aparna	Joshi	Female	2	Sandhya Niketan Bhandup	Mumbai	Maharashtra	MBFNJGKY5	10/01/2015	aparna62@gmail.com	8934030000
8	108	Manavi	Agarwal	Female	3	Shamal Society Chinchwad	Pune	Maharashtra	HKDGY4334	26/12/2015	manavia@gmail.com	7276630000
9	109	Aniket	Marathe	Male	6	Raghuvir Society,Mahisana	Vijapur	Karnataka	NGUTTH532	11/12/2016	admarathe96@gmail.com	9771340000
10	110	Rishi	Verma	Male	10	Parvati Heritage Bandra	Mumbai	Maharashtra	HKG4353GF	02/01/2016	rishi12@gmail.com	8974560000

Figure 12: Executing the Query

Note: Similarly, Account and Transaction table can be viewed under WKADemo_BankApps database.



2. Creating Master App

After importing CSV files, create DB app to execute DB operations on three tables. First create one *master app* (BankApp) that will integrate all three *sub-apps* (CustomerApp, AccountApp & TransApp).

2.1 App Create Option

To create an app, click the following tabs:

1. Go to Main Menu -> System and App Setup -> Create and Manage Apps, select tab App Create Options if not selected.

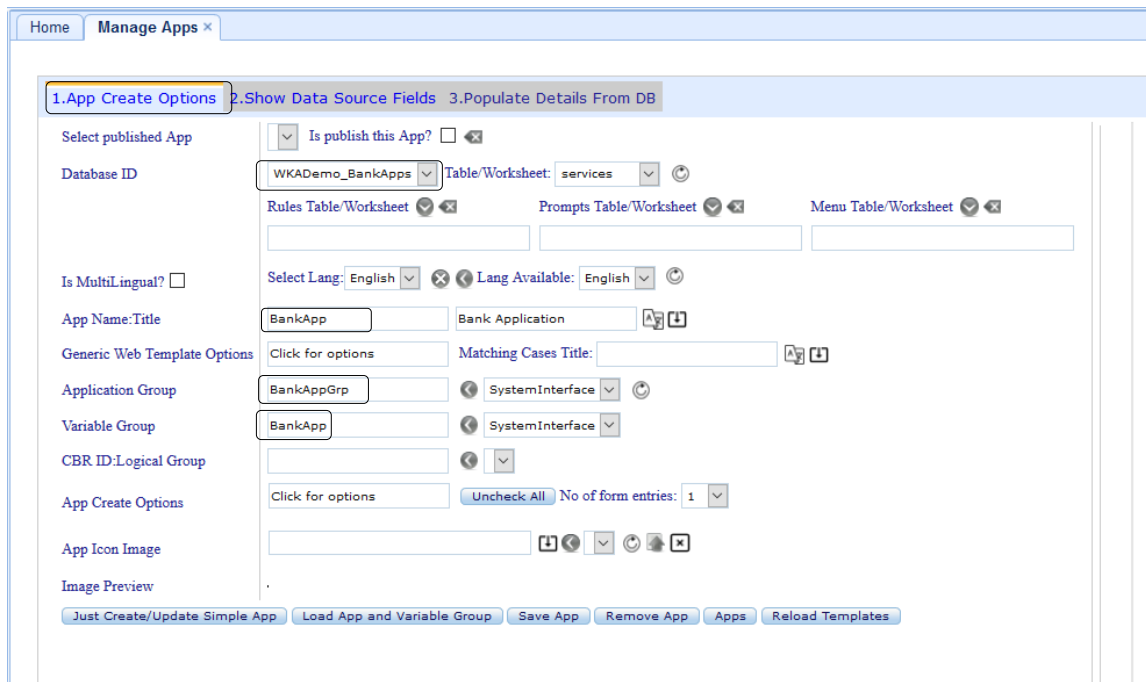


Figure 13: App Create Options Interface

2. Enter the required information as explained in table below:

Fields	Description
Database ID	Select Database ID from dropdown menu (Example: WKADemo_BankApps).
Table/Worksheet	App variables, data types etc. are created from the table/spreadsheet. This option allows selecting the spreadsheet or table from the dropdown menu based on the Database ID created. For Example: Select tables' <i>accounts, customer, and transaction</i> .
AppName:Title	Enter the AppName and App Title (this will appear in the list).
Generic Web Template Options	This option allows adding buttons to be included in web pages. To select required buttons click 'Click for Options' present in <i>Generic Web Template Options</i> dropdown menu.
Application Group	Enter the application group name. It contains different application group created.
Variable Group	Enter the variable group name. It contains variables created corresponding to each field in <i>MySQL table</i> .
App Create Options	Check the required options. Initially, click the button <i>Uncheck All</i> to uncheck the already checked options. As shown in figure below, check two options which are mandatory to create an application: <ul style="list-style-type: none"> <i>Is create generic templates?:</i> It creates generic templates in application folder. These Templates are prefixed with AppName_ in application directory (can be seen using <i>System and App Setup->Manage Files</i>). <i>Is create individual web pages?:</i>It creates individual web pages.

3. Enter the required *App Name: Title* (Example: BankApp: Bank Application), *Application Group* name (Example: BankAppGrp) and *Variable Group* name (Example: BankAppInfo) for master app.
4. Select the required option from *Web Template Options, Options* dropdown menu as shown in the following figures (explained in table 2 above):

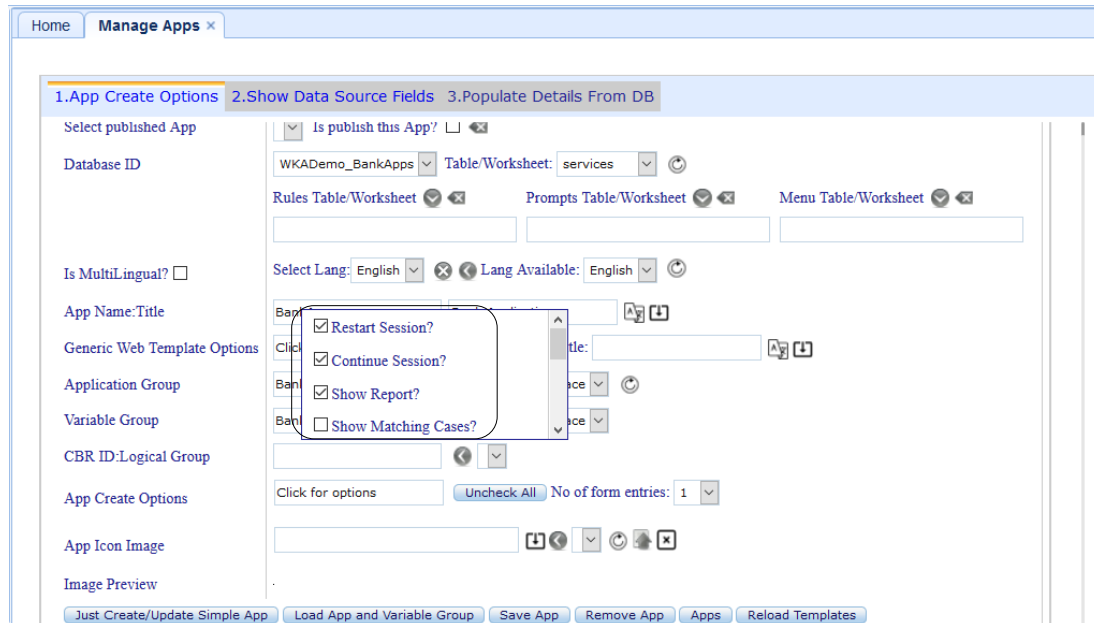


Figure 14 : Generic Web Template Options Dropdown Menu

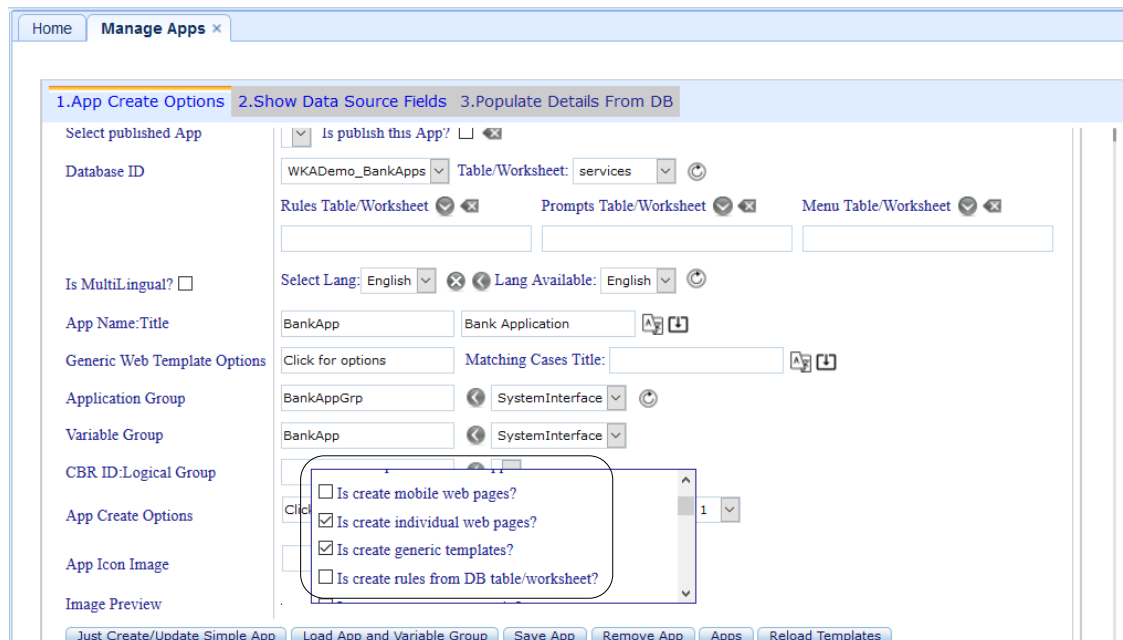


Figure 15: App Create Options Dropdown Menu

- To add image as icon to the application using, click image upload button, select image file by clicking on browse. Refresh image file list and click *upload* button and move it to 'App Icon Image' text box.

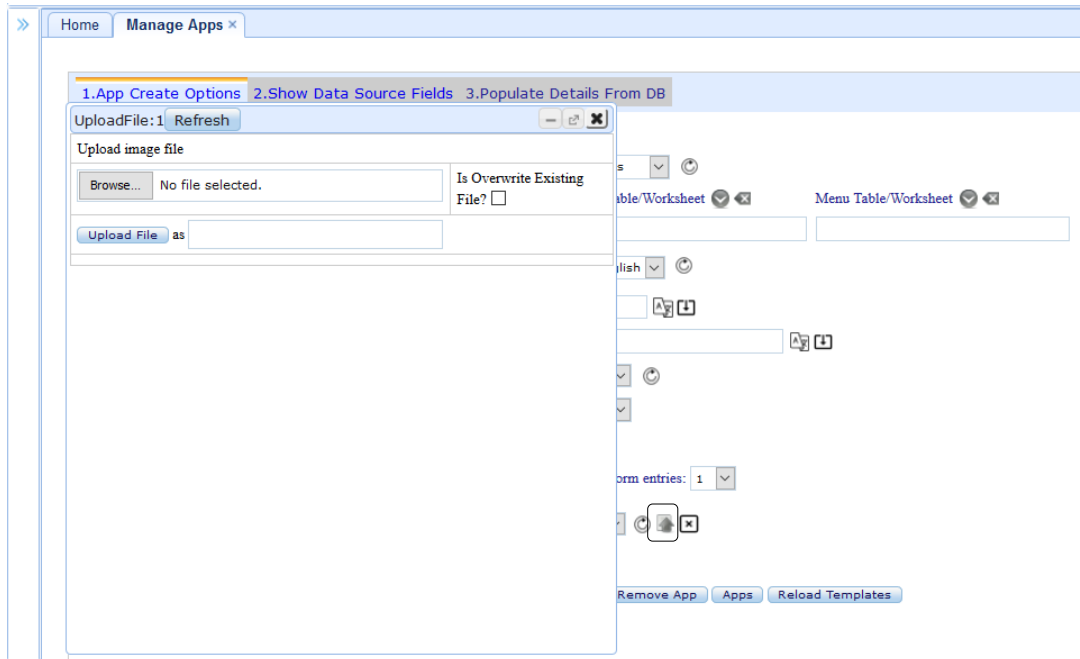


Figure 16: Add image file as app icon

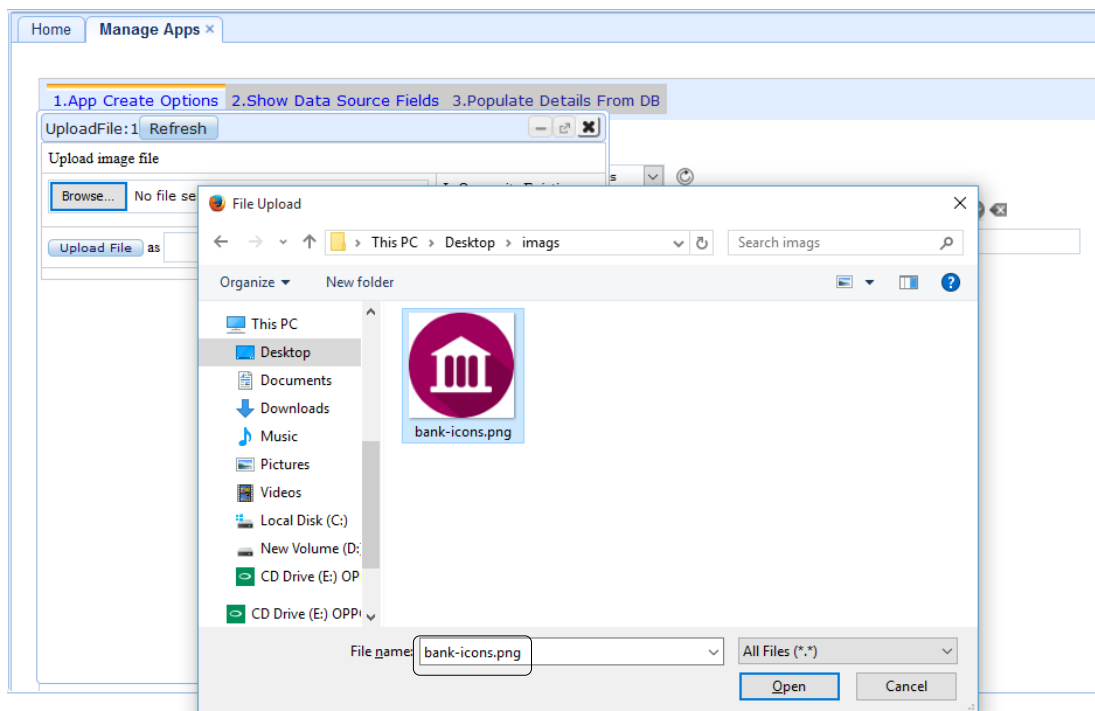


Figure 17: Select image file

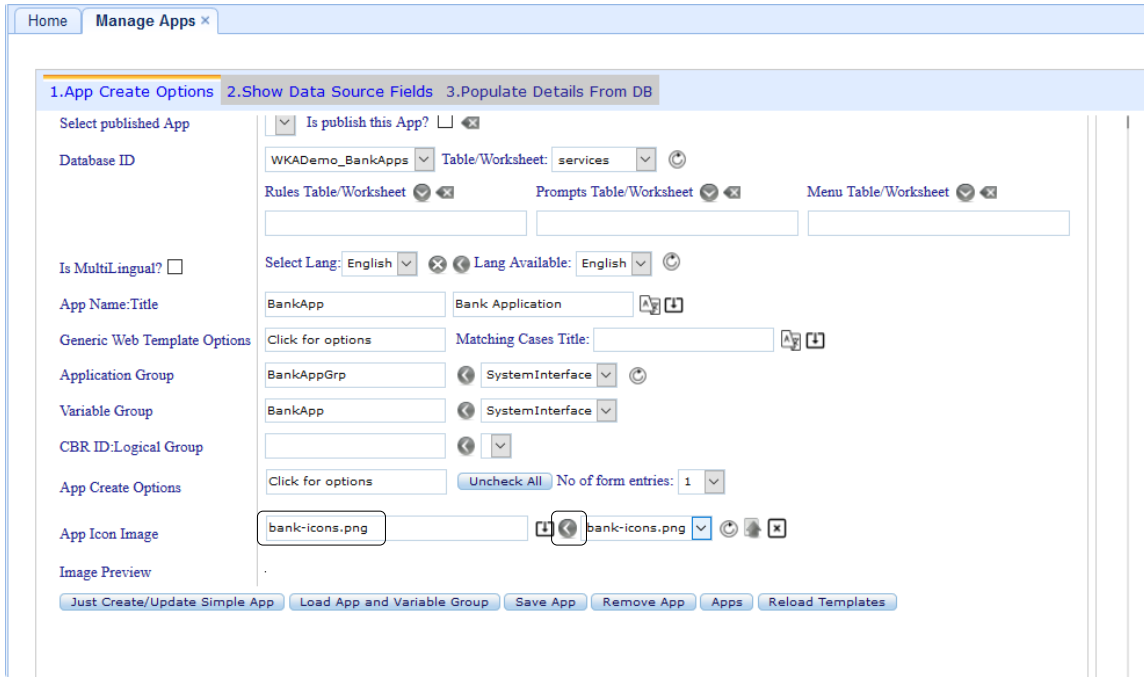


Figure 18: Move image file from drop down to text box

6. To create an app, click *Just Create/Update Simple App*.

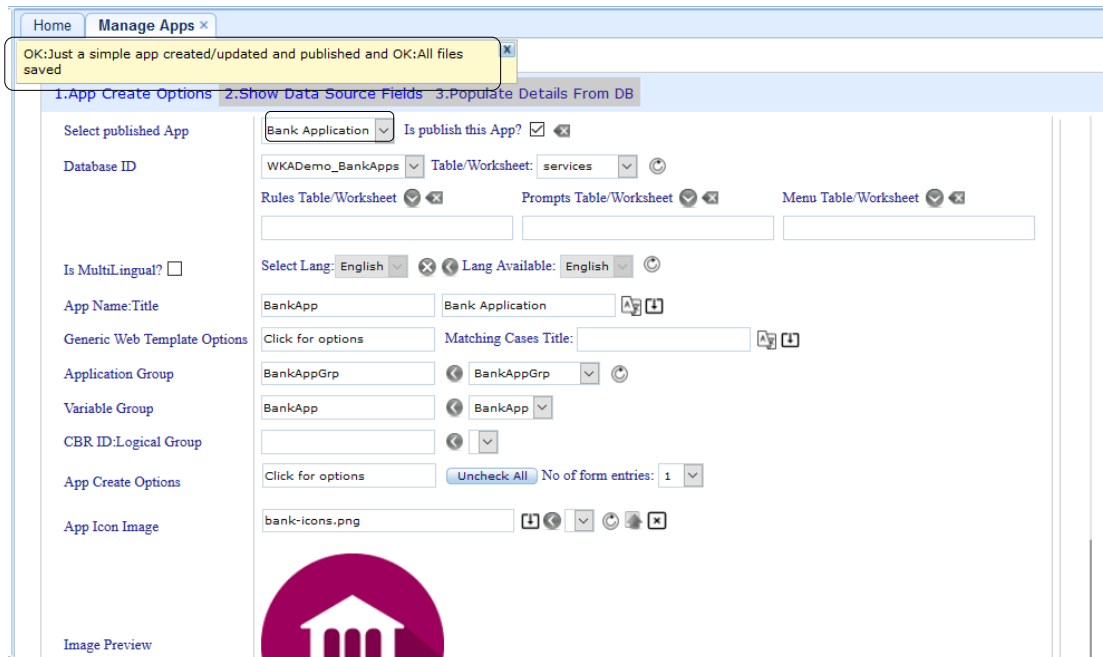


Figure 19: Simple App Created

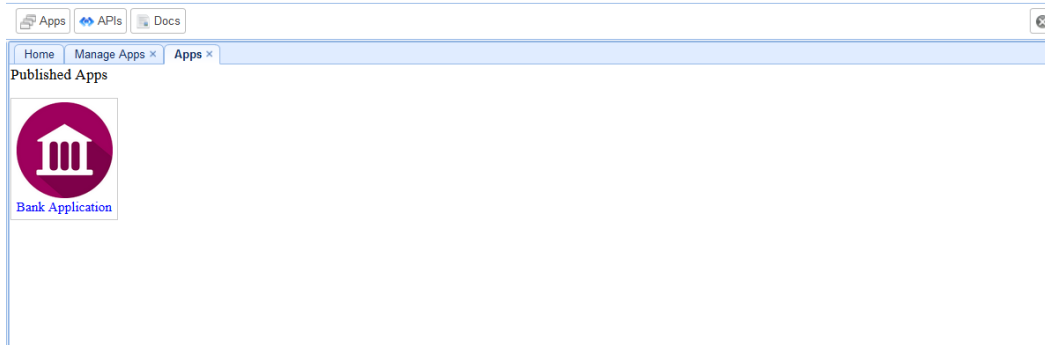


Figure 20: App is published

Note: In screen shots (Figure 19, Figure 20) below, when simple app is created, at least two variables (BankApp and Welcome Text) and one rule (Start BankApp) is created by default.

- To check the variables created, go to *Main Menu -> Domain Vocabulary -> Global variables* and select the application created from the list of application groups. For Example: Select *BankAppGrp-> BankApp*.

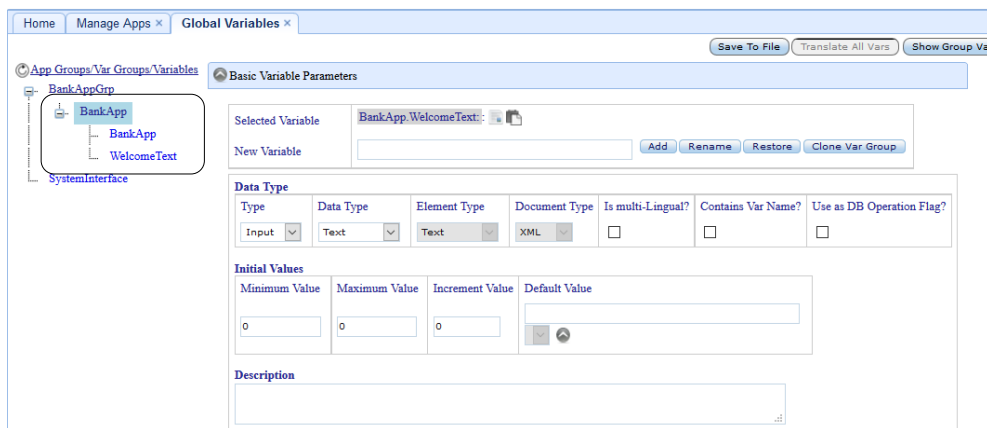


Figure 21: Global Variables Interface

- To check the rules created for this application, click *Main Menu -> Core Engine Configs -> Expert Systems*.

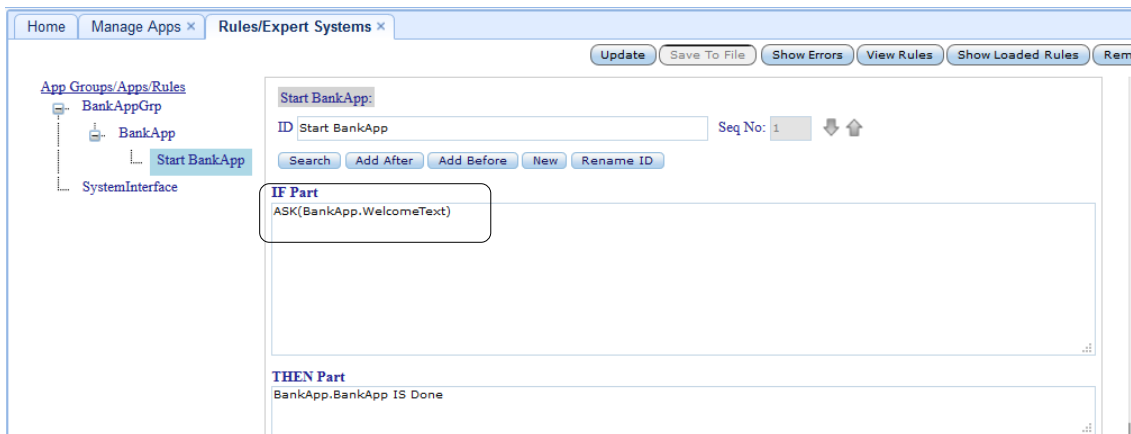




Figure 22: Rules/Expert System Interface

3. Creating Sub App

To create sub apps: *AccountApp*, *CustomerApp* and *TransApp* under master app *BankApp* app (this app contains other apps called as sub-apps, it has just one rule to start with). Let us create *CusomerApp* first. Steps to create:

1. Go to *Main Menu -> System and App Setup -> Create and Manage Apps -> App Create Options* and select master app *Bank Application* from *Selected Published App* dropdown menu.

Figure 23: Defining parameters to create sub-app

2. Select the database ID (*WKADemo_BankApps*) from *Database ID* dropdown menu.
3. Select *MySQL table* (*customer*) from *Table/Worksheet* dropdown menu. If it does not appear in the list refresh the list by clicking refresh button on right hand side.
4. Enter the desired *App Name: Title* for *CusomerApp*.
5. Select from *Application Group* dropdown menu, the required application group name. Use same application group name that is application group of master app (*BankAppGrp*). In case if *Application Group* is not visible then click refresh button . Click the button , the application group name gets populated into the textbox.
6. Enter the variable group in *Variable Group* field (Example: *Customer*) in above screen shot. Variable group name can be different.
7. Select the required option from *Generic Web Template Options, App Create Options* dropdown menu as shown in the following figures (explained in table 3 below):

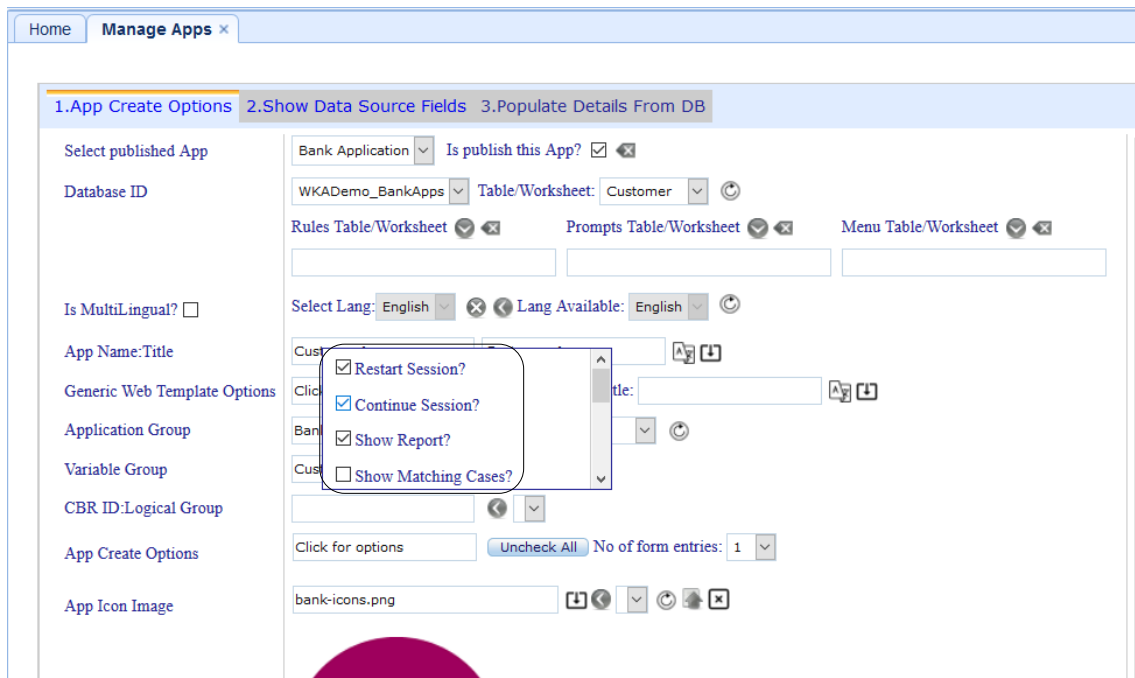


Figure 24: Generic Web Template Options Dropdown Menu

8. After entering the required information, go to *Show Data Source* fields tab as explained in further section.

3.2 Show Data Source Fields

After the required information is entered in *App Create Options*, *Show Data Source Fields* tab shows the list of field names, field expressions with predefined settings based on various field characteristics. For example, it sets *Is Create Menu* if field of text data type, has limited possible values and size of field data does not exceed 50 characters. May need to look into.

Table 2: Explaining App Create Options Dropdown Menu

App Create Options	Description
Is sub-app (within selected App)?	The corresponding application is created under selected application and rules are created under that application group. For e.g. <i>CusomerApp</i> becomes a sub app of <i>Bank Application</i> .
Is create generic templates?	This option is used to create web page templates.
Is create individual web pages?	Web pages for each input variables can be created.
Is create form?	If this option is selected, interface creates form for data entry which can be invoked during expert system execution or through form

	interface data entry option. It creates view suffixed with DE.
Is include DB operation?	When this option is selected, interface creates rule which helps to invoke data entry form. Option Is Create Form? must be selected when it is to be used.

Figure 25: App create options for sub-app

Check to create variable prefix with	Field expr for query access	Prefix_field_with	CBR Feature Type	Numeric feature	Symbo Numeric feature
<input checked="" type="checkbox"/> CustomerID	CustomerID	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> FirstName	FirstName	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> LastName	LastName	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Gender	Gender	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> AccountID	AccountID	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Address	Address	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> City	City	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> State	State	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Cust_Pwd	Cust_Pwd	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> DateOfAcctOpening	DateOfAcctOpening	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Email	Email	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> MobileNo	MobileNo	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> STATUS_FLAG	Click for options	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> LAST_UPDATED	Click for options	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Figure 26: Data Source Fields tab


Note: If selected table fields from Table/Worksheet in App Create Options is not populated then use  button to populate the fields. In case selected wrong worksheet/table go back to 'App Create options' tab, change it, come back to this tab and click Refresh Button.

Table 3: Fields of Show Data Source Fields Interface

Fields	Description
Check to create variable prefix with	This column contains the list of field names. By default, for all field names this option is checked. Also, the user can uncheck the field names if it is not required.
Field expr for query access	This column contains the list of fields and corresponding to each field there are list of options. Field expressions can be used instead of field names.
Prefix_field_with	Check when field name is to be prefixed with entered prefix. By default these options are checked.

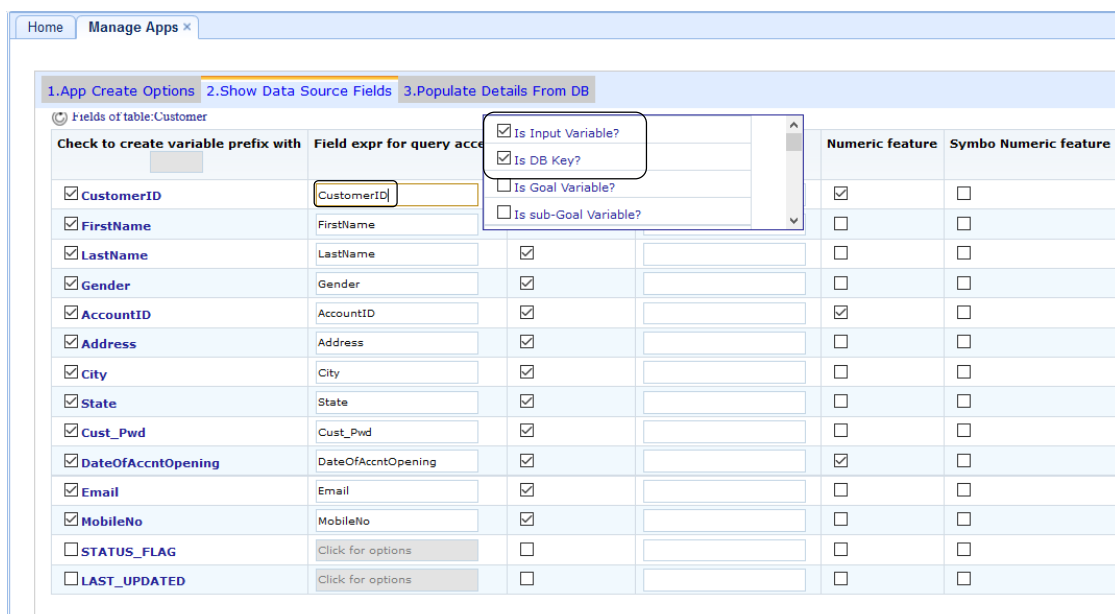


Figure 27: Field Name and its Options

In the screen shot below, for field name *FirstName*, uncheck the option *Is Create Menu?* If drop down is not to be created for first when input is asked through form.

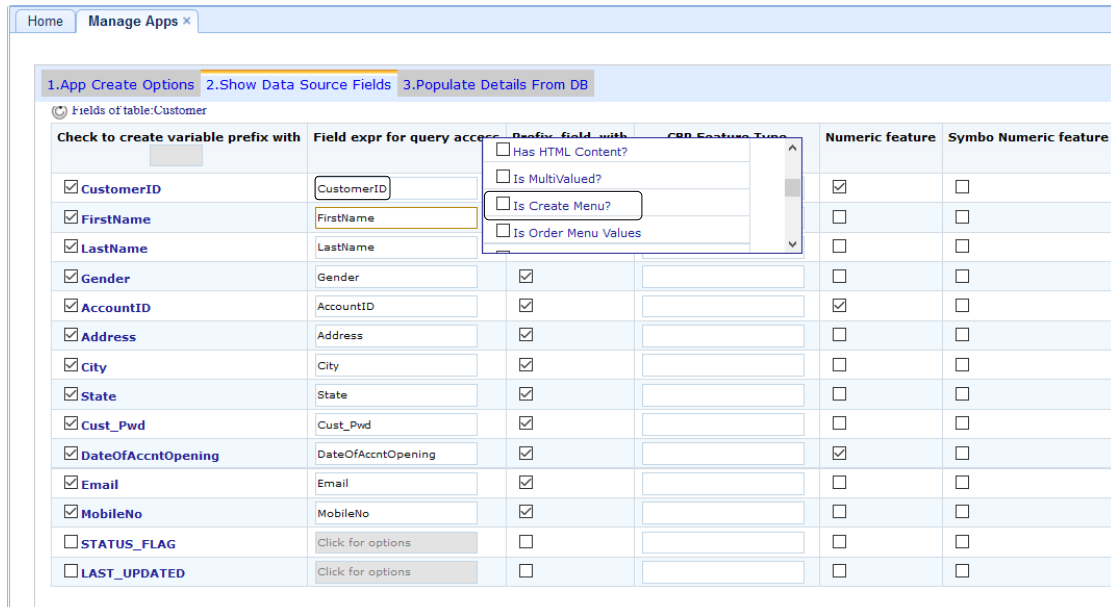


Figure 28: Field Name and its Options

In the screen shot below, if any field represents *password* then check the option *Is Storing Password?*

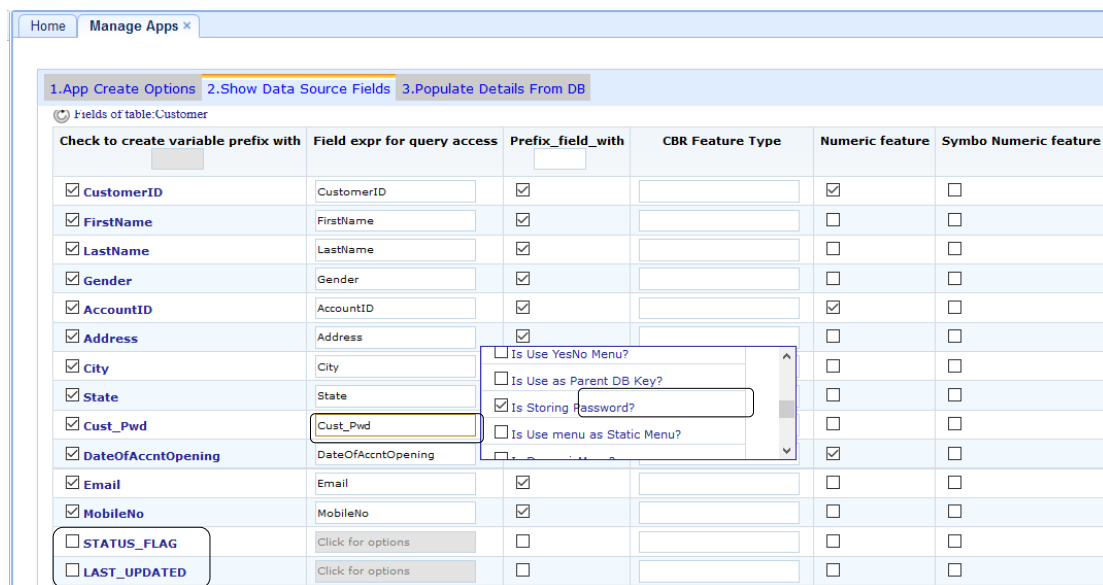


Figure 29: Field Name and its Options

3.3 Populate Details From DB

After the field names and its features are defined, *Populate Details From DB* facilitates to set various properties of variables such as default, min value, max value, feature name (it is a *variable name* corresponding to field name, field will be linked to this variable), field name etc. based on DB schema of each fields.

1. Click *Populate Details From DB*.

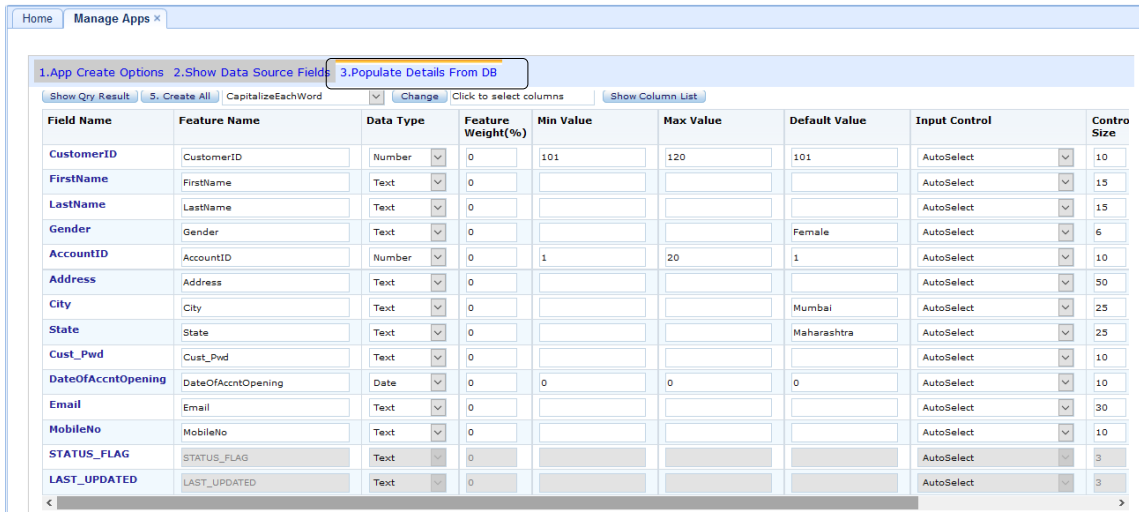


Figure 30: Populate Details From DB Interface

- In the screen shot above *Feature Name*, *Max Value*, *Min Value* & *Default Value* for *CustomerID* and *AccountID* can be set.

Fields	Description
Field Name	Displays the name of the field as defined in <i>Show Data Source Fields</i> tab.
Feature Name	Displays the name of the variables corresponding to field name/column name.
Min Value	Gets the minimum value for each field from database.
Max Value	Gets the maximum value for each field from database.
Default Value	Gets the default value for each field from database.

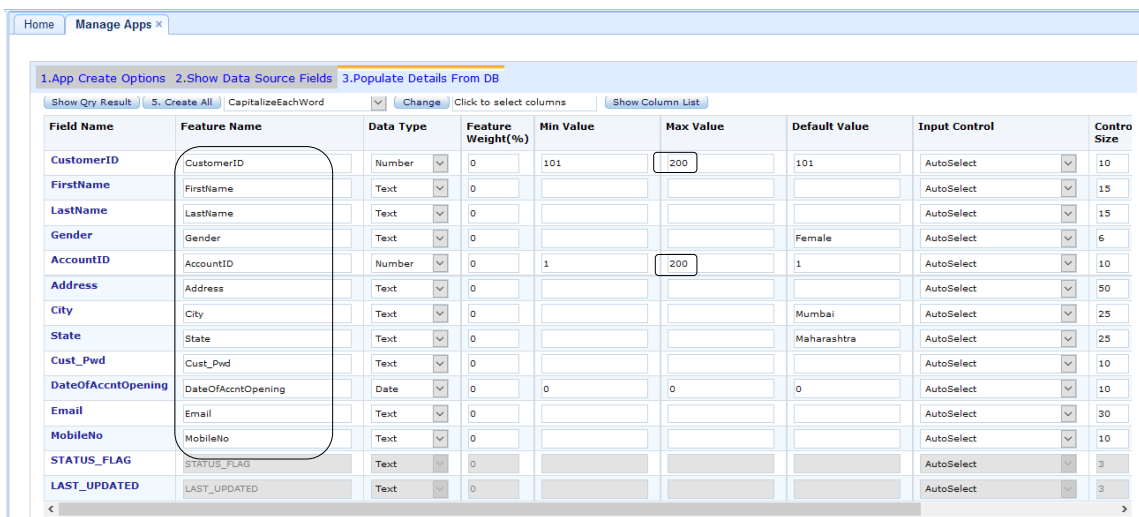


Figure 31: Set Maximum Value, Minimum Value and Default Value

- After all the required information is defined and edited, to create an application click *Create All* and a popup is shown on screen:

- After clicking *Create All* button, following popup is displayed.

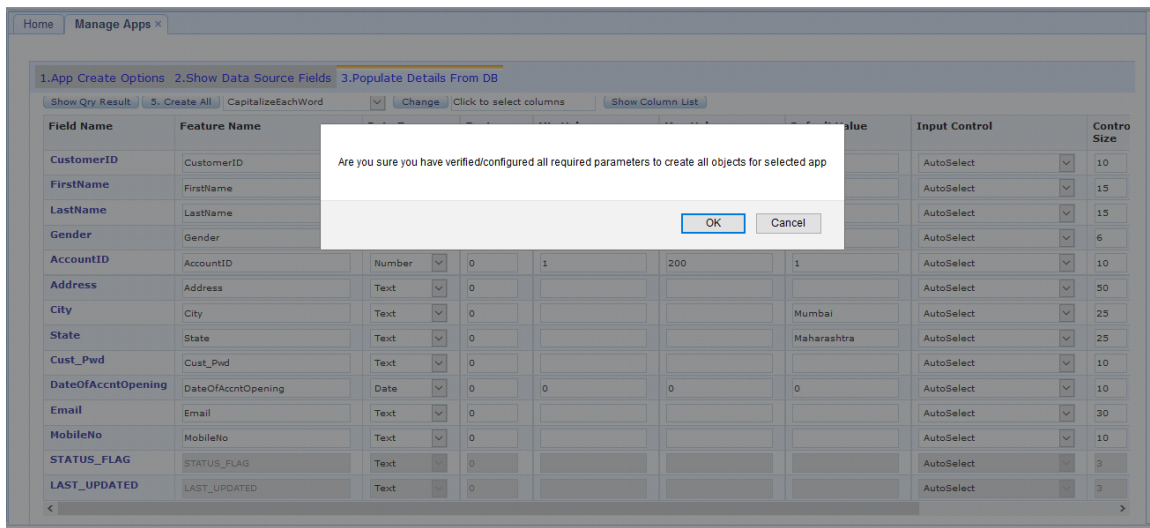


Figure 32: Create All Interface

- Click OK to continue and all objects (variables, rules, menus, dynamic queries etc.) required for this application are created and also it displays the message on screen:

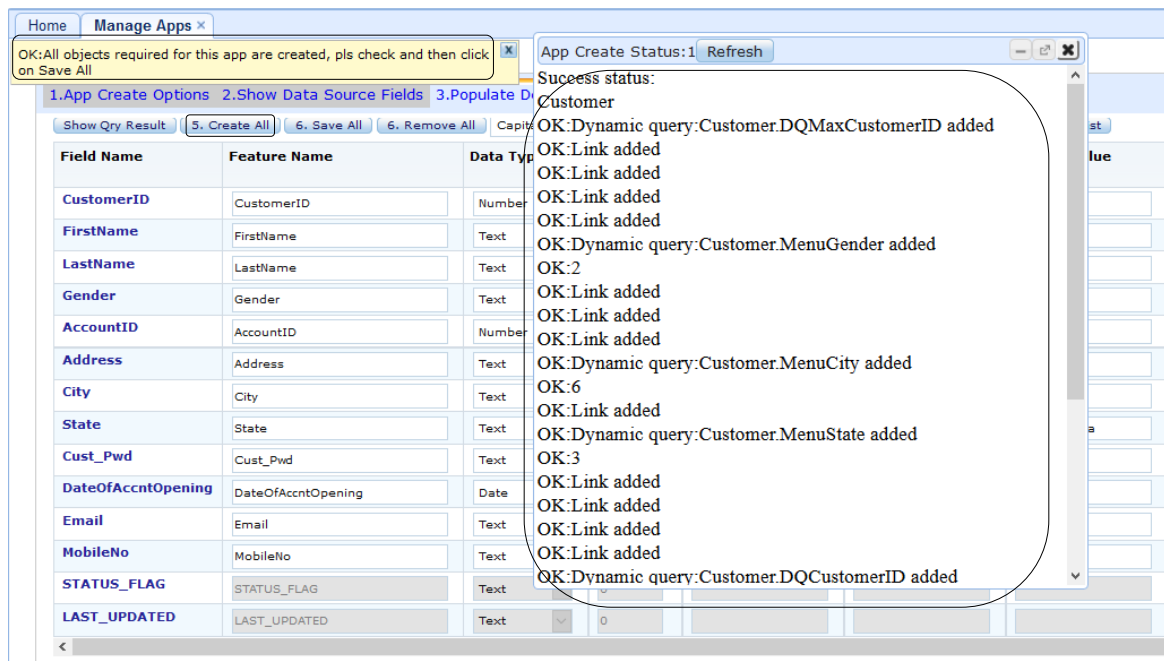


Figure 33: App create status

Note: As soon as the user clicks 'Create All' button, the application, its variables, dynamic queries and menus are created and Save all button is populated on the screen.

- The figure shows the application create status and *Failed Status* as None which indicates that there is no error.

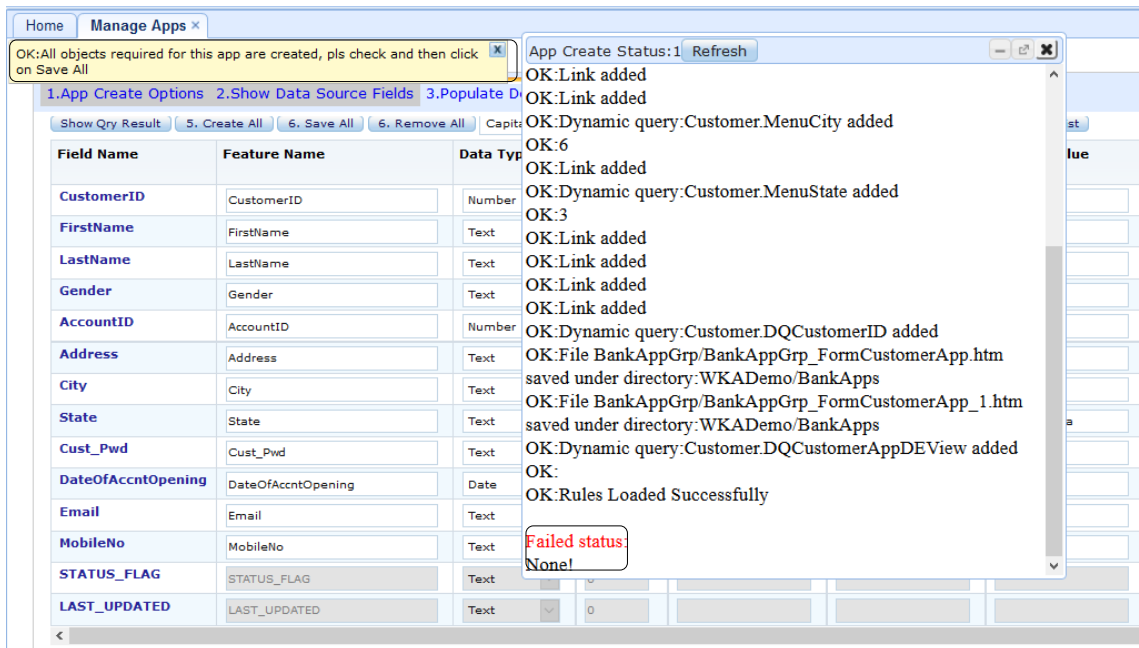


Figure 34: App Create Status

- Before saving the application, to check the rules are created properly or not, go to *Main Menu -> Core Engine Configs -> Expert systems -> Rules/Expert Systems*. Following figure shows rules created. There is a rule for each database operation, DB OPR stands for database operation, these rules can be modified later on to add more business logic.

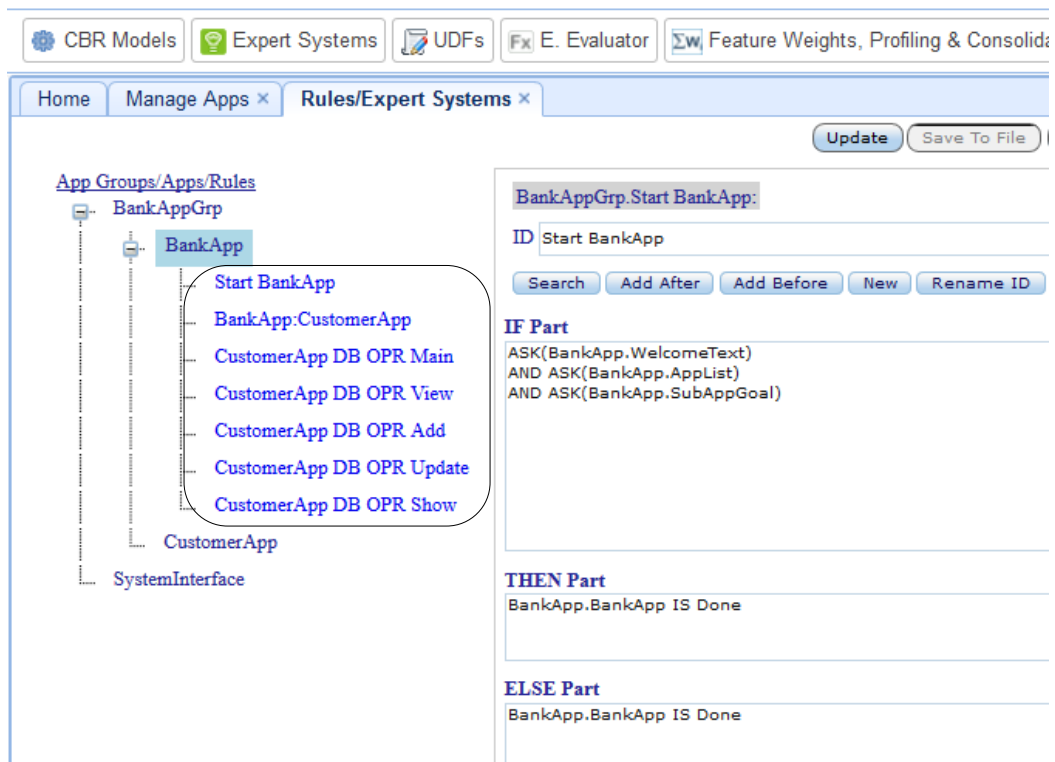


Figure 35: Rules/Expert Systems Interface

- After the rules are checked, check the variables created, go to *Main Menu -> Domain Vocabulary -> Global Variables*. Variables corresponding to database fields are created. There are additional variables created prefixed by app name used in rules and user defined functions.

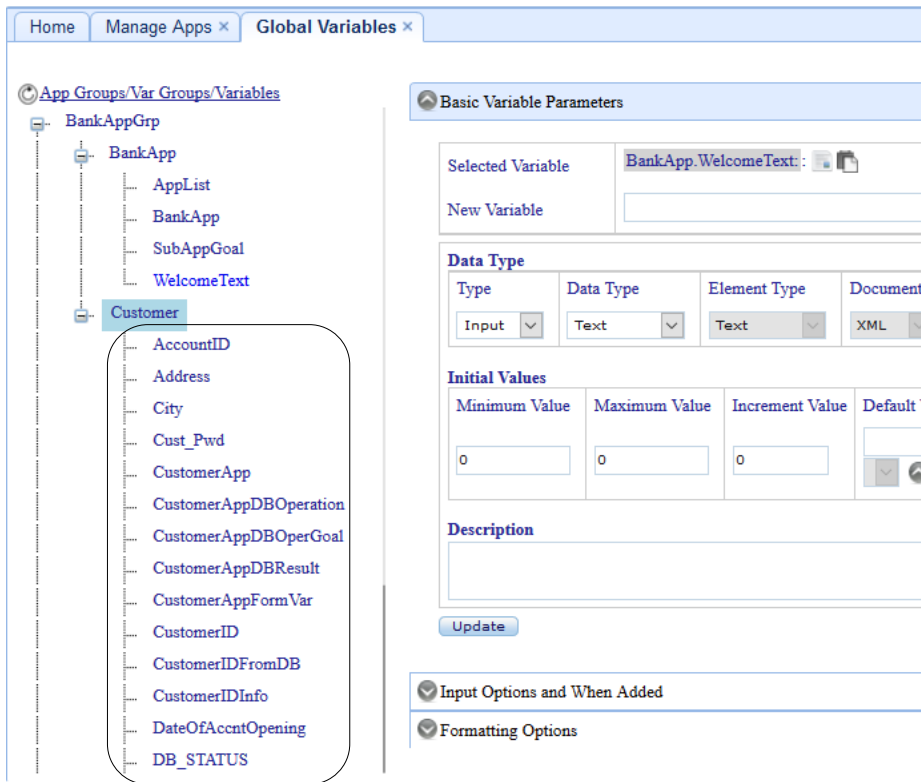


Figure 36: Variables created

- After the dynamic queries are checked, check the *Menus & Lists*. Go to *Main Menu -> Domain Vocabulary -> Menus & Lists*. Store possible values of variables.

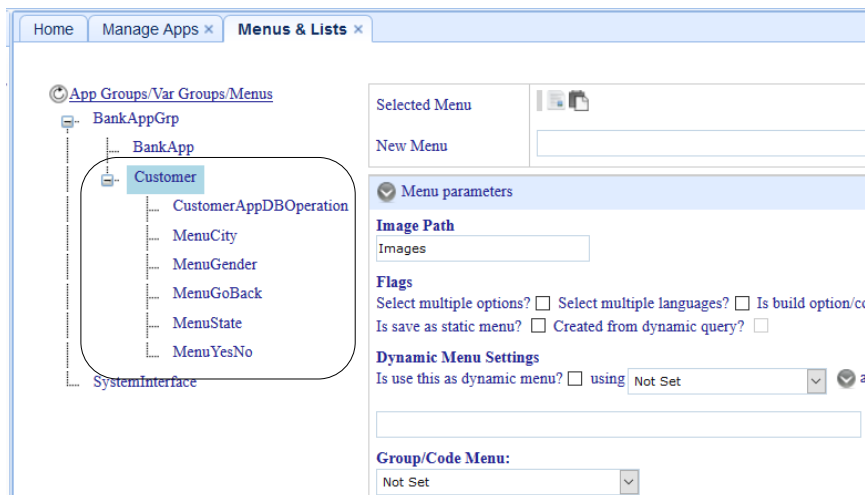


Figure 37: Menus created

10. To check mapping between WKA variables and database fields, go to *Main Menu* -> *Database Interface* -> *Variable DB-Mapping*. The following screen shot shows Read-Only & Update mapping for *AccountID* field in *CustomersInfo* variable group. This mapping is used to convert field into variables and vice-a-versa and also to transform values.

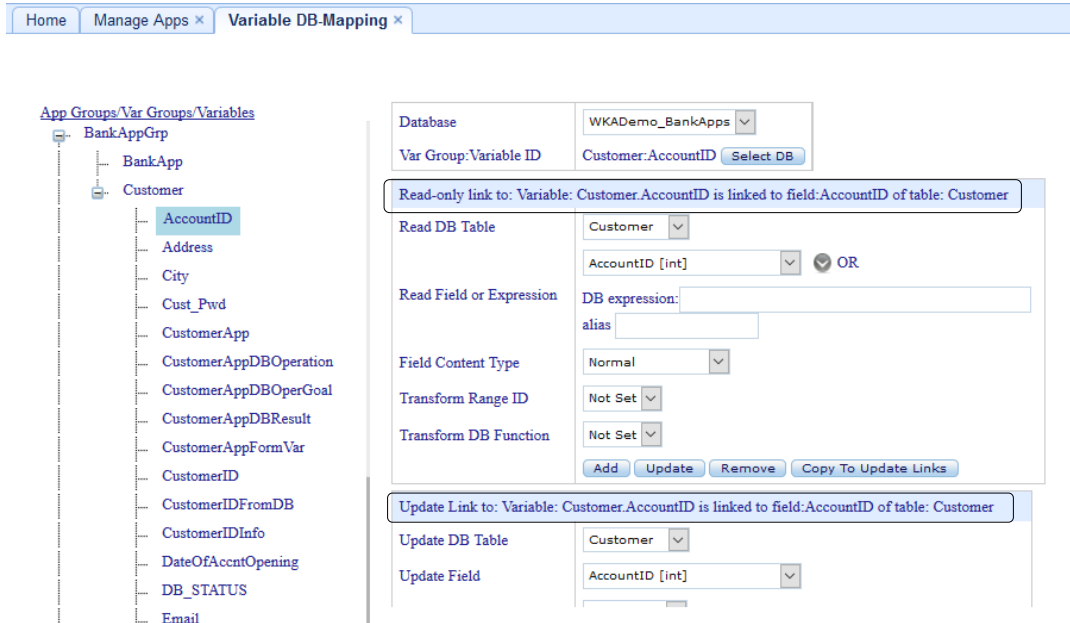


Figure 38: Variable DB-Mappings

11. To check all linked variables, click *Show Linked Variables*.

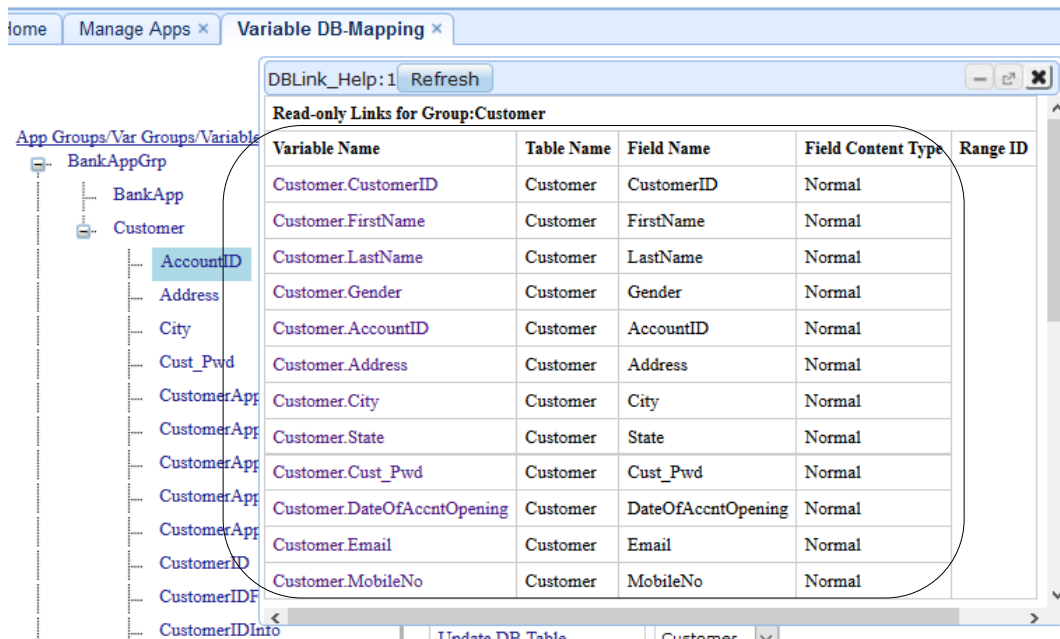


Figure 39: Read-Only variable-db links

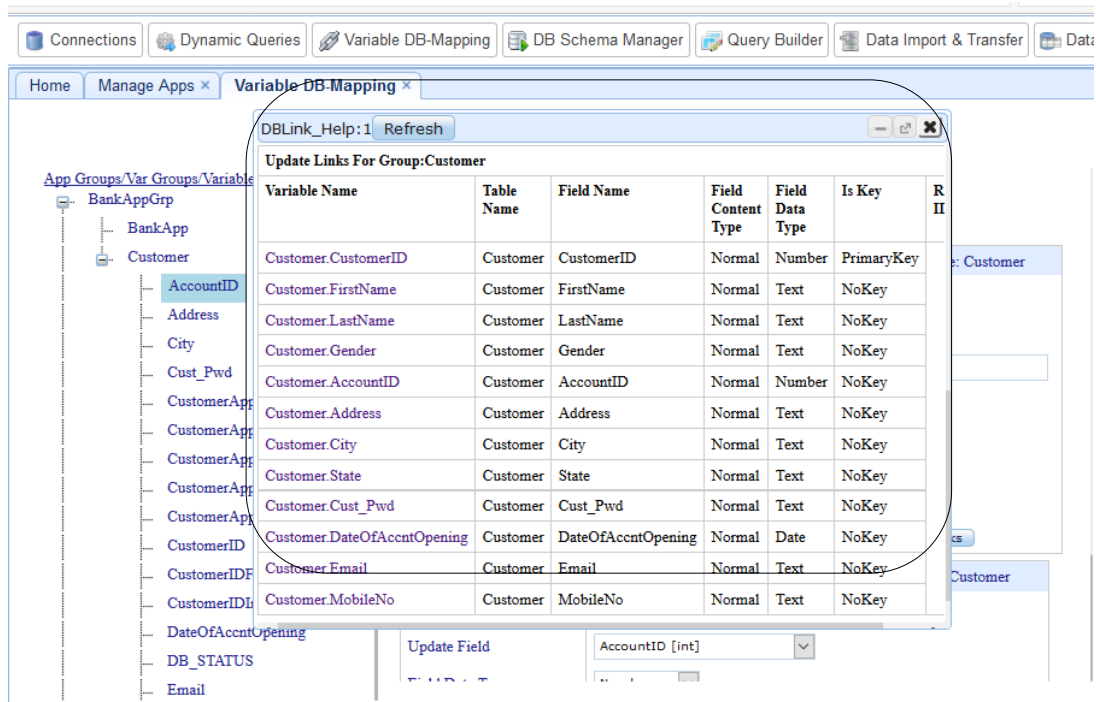


Figure 40: Update variable-db links

2.3.1 Running the Application

Once app is created successfully, it is automatically added to the published apps list (if you don't see newly added app, may use *refresh* icon on right top). To run the app:

1. Go to Main Menu -> Apps, API's and Docs -> Apps and click Bank Application.

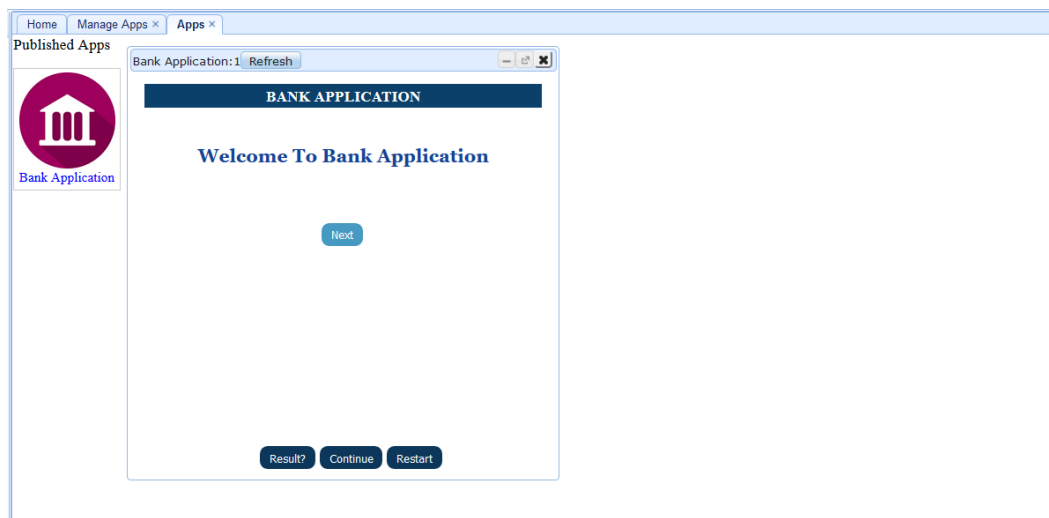


Figure 41: Welcome Page for Application

2. At the time of app creation, the selection of option *Is sub app (within selected app)?* creates menu at the start of app which asks which sub app needs to be run. Since only one sub-app is added so it will have only one option. Select the sub-app as *CustomerApp* and click *Next*.

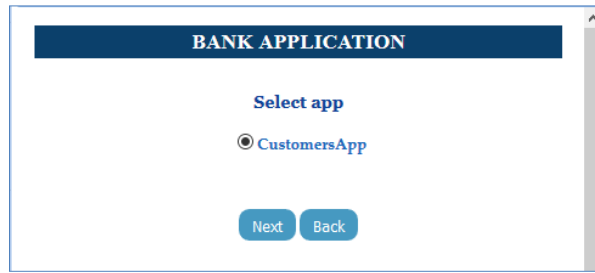


Figure 42: Sub-Application Menu

3. Select Add Operation from *DB Operation* dropdown menu and click *Next*.

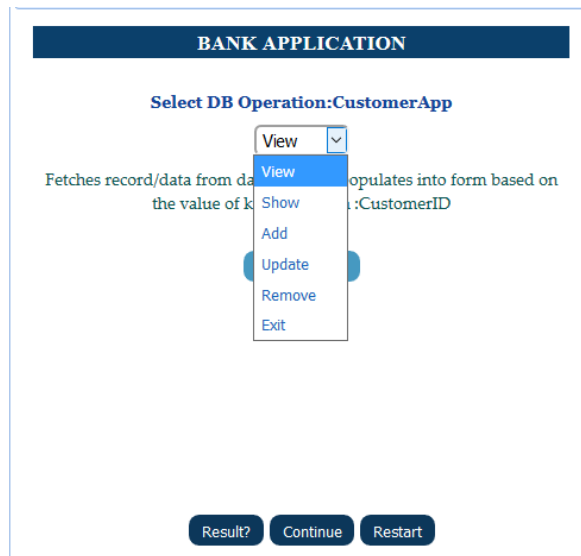


Figure 43: Selecting Add Operation

4. Enter the desired *Customer ID* and click *Next*.

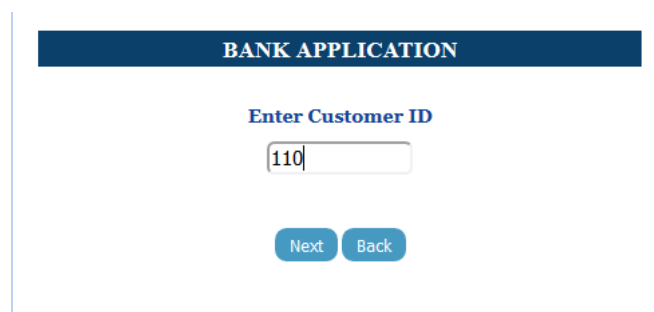


Figure 44: Entering Customer ID

5. After clicking *Next*, the following *Bank Application* forms are displayed.

BANK APPLICATION

Customer Data

Enter Customer ID: 110

Enter First Name: Rishi

Enter Last Name: Verma

Select Gender: Female Male

Enter Account ID: 10

Enter Address: Parvati Heritage Bandra

Select City: Mumbai

Select State: Maharashtra Karnataka Gujrat

Enter Cust_Pwd:

Enter Date Of Acct Opening: 02/01/2016

Result? Continue Restart

Figure 45: Form to view customer data

BANK APPLICATION

Male

Enter Account ID: 10

Enter Address: Parvati Heritage Bandra

Select City: Mumbai

Select State: Maharashtra Karnataka Gujrat

Enter Cust_Pwd:

Enter Date Of Acct Opening: 02/01/2016

Enter Email: rishi12@gmail.com

Enter Mobile No: 8974560000

Instruction: Press 'Back' button to view another record

Next Back

Result? Continue Restart

Figure 46: Form to view customer data

6. Fill the desired information in *Bank Application* form.

BANK APPLICATION

DB Operation Result:OK:Values loaded
What you want to do?

Main DB operation menu
 Exit DB operations

Click on 'Back' button to go back to Main DB Menu

Next Back

Figure 47: Next screen after customer data form

7. After clicking Next, the status of DB operation is shown as *DB Operation Result: OK: Values Loaded* means data about the customer was found and values were fetched from database. Click Back button. As shown in above screen shot, if Main DB

operation menu is selected then to go back to the DB operation menu click Back button.

8. After clicking *Back* button, the following screen is shown. Let us add a new customer data. Select Add from the menu and click Next. Enter new customer ID and blank data entry form appears to enter customer data.

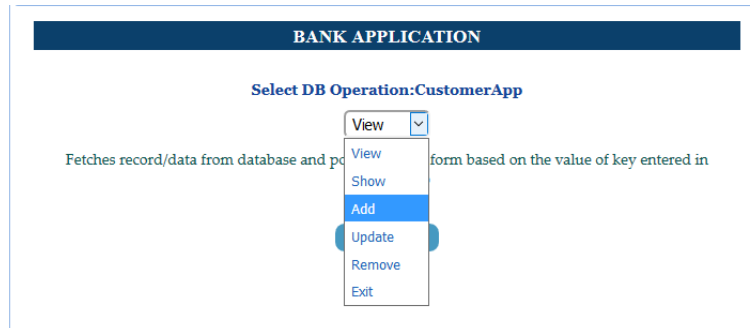


Figure 48: Adding new customer data

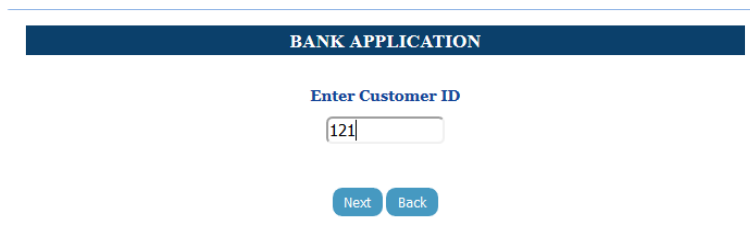


Figure 49: Enter new customer ID

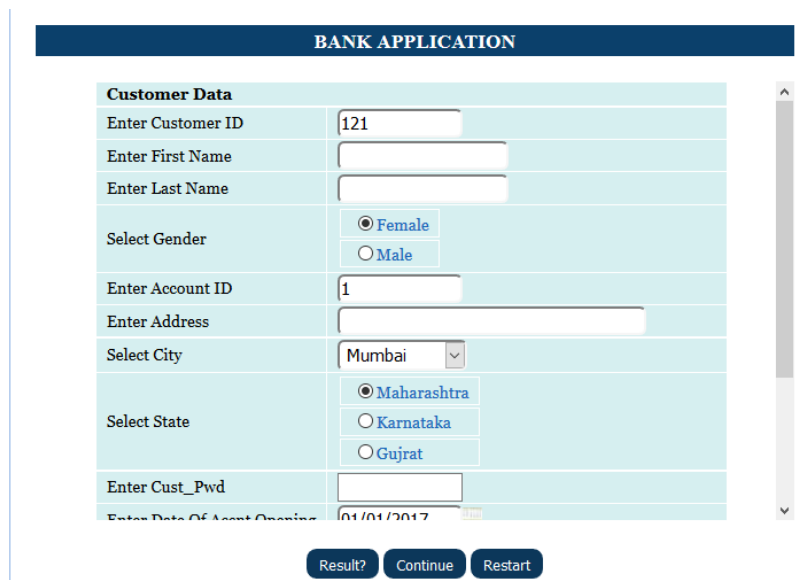


Figure 50: Blank customer form with defaults

BANK APPLICATION	
Customer Data	
Enter Customer ID	121
Enter First Name	Sayami
Enter Last Name	Gaur
Select Gender	<input checked="" type="radio"/> Female <input type="radio"/> Male
Enter Account ID	21
Enter Address	Sunshine Apt, Bandra
Select City	Mumbai
Select State	<input checked="" type="radio"/> Maharashtra <input type="radio"/> Karnataka <input type="radio"/> Gujrat
Enter Cust_Pwd	•••••
Enter Date Of Acct Opening	11/05/2017
<input type="button" value="Result?"/> <input type="button" value="Continue"/> <input type="button" value="Restart"/>	

Figure 51: Customer data filled in form

BANK APPLICATION	
	<input type="radio"/> Male
Enter Account ID	21
Enter Address	Sunshine Apt, Bandra
Select City	Mumbai
Select State	<input checked="" type="radio"/> Maharashtra <input type="radio"/> Karnataka <input type="radio"/> Gujrat
Enter Cust_Pwd	•••••
Enter Date Of Acct Opening	11/05/2017
Enter Email	sayami@gmail.com
Enter Mobile No	7865231596
Instruction	Press 'Next' button to add current record to database
<input type="button" value="Next"/> <input type="button" value="Back"/>	
<input type="button" value="Result?"/> <input type="button" value="Continue"/> <input type="button" value="Restart"/>	

Figure 52: Customer data filled in form

- After clicking *Next*, the status of DB operation is shown as *DB Operation Result: OK:1* means customer data is added into the database successfully, 1 means one record is added. As shown in above screen shot, if Main DB operation menu is selected then to go back to the DB operation menu click Back button. The menu *MenuGoBack* is linked to the variable *GoBack* and option Is use to backtrack? is checked through the Global Variable interface. So after clicking Back button it backtracks to the main DB operation. If Next button is clicked, session report is displayed.

BANK APPLICATION

DB Operation Result:OK:1
What you want to do?

Main DB operation menu
 Exit DB operations

Click on 'Back' button to go back to Main DB Menu

Figure 53: Exit DB Operations

10. Let us update existing customer details. Select Update operation, click Next and then enter customer ID to update.

BANK APPLICATION

Select DB Operation:CustomerApp

- View
- Show
- Add
- Update
- Remove
- Exit

Fetches record/data from database key ent... es into form based on the value of omerID

BANK APPLICATION

Enter Customer ID

BANK APPLICATION

Enter Account ID	<input type="text" value="10"/>
Enter Address	<input type="text" value="Parvati Heritage Bandra"/>
Select City	<input type="text" value="Mumbai"/>
Select State	<input checked="" type="radio"/> Maharashtra <input type="radio"/> Karnataka <input type="radio"/> Gujrat
Enter Cust_Pwd	<input type="password" value="....."/>
Enter Date Of Acent Opening	<input type="text" value="02/01/2016"/>
Enter Email	<input type="text" value="rishi12@gmail.com"/>
Enter Mobile No	<input type="text" value="9865234589"/>
Instruction	Press 'Next' button to update changes made to current record to database

Figure 54: Updating customer record

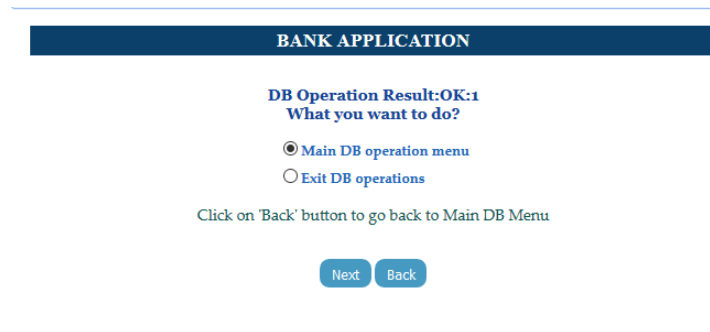


Figure 55: Update status

3.3.2 Saving the Application

After the application is created, all the required parameters are checked and application is tested, the user needs to save the application. To save the changes:

1. Go to *Main Menu -> System and App Setup -> Populate Details from DB* and click *Save All*.

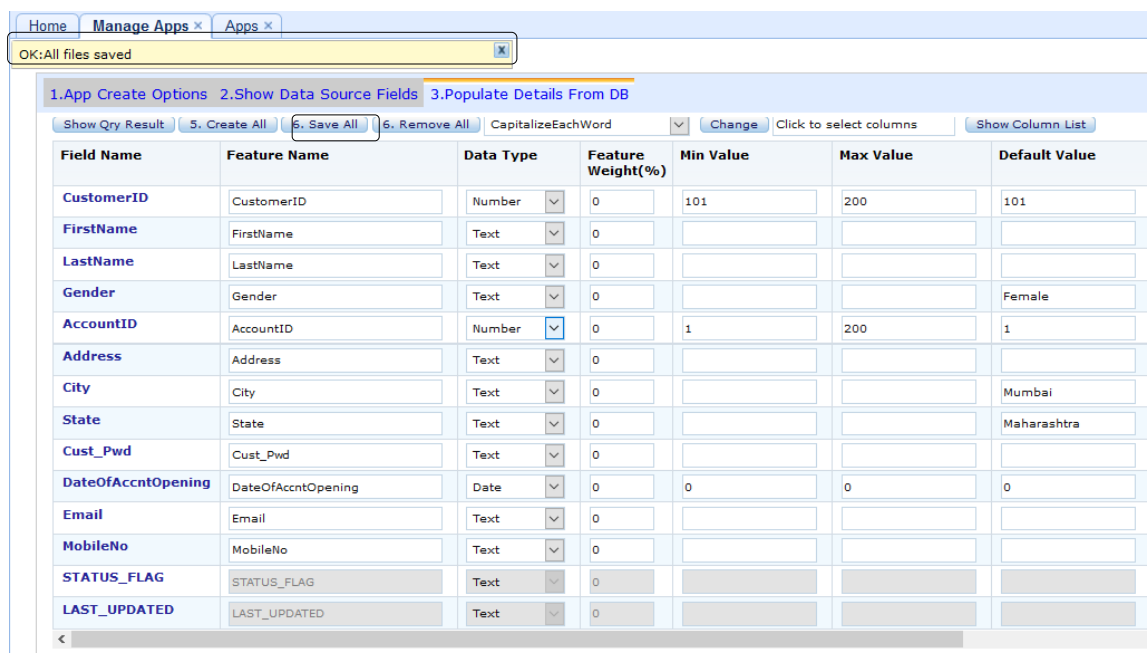


Figure 56: Saving the Application Interface

Note: If Manage App tab is closed without saving the application then go to App Create Options tab and click Save App to save the application or else click Remove App to remove all objects created in the application.

If Save All button is not clicked, then it will not allow creating another application until user saves the application.

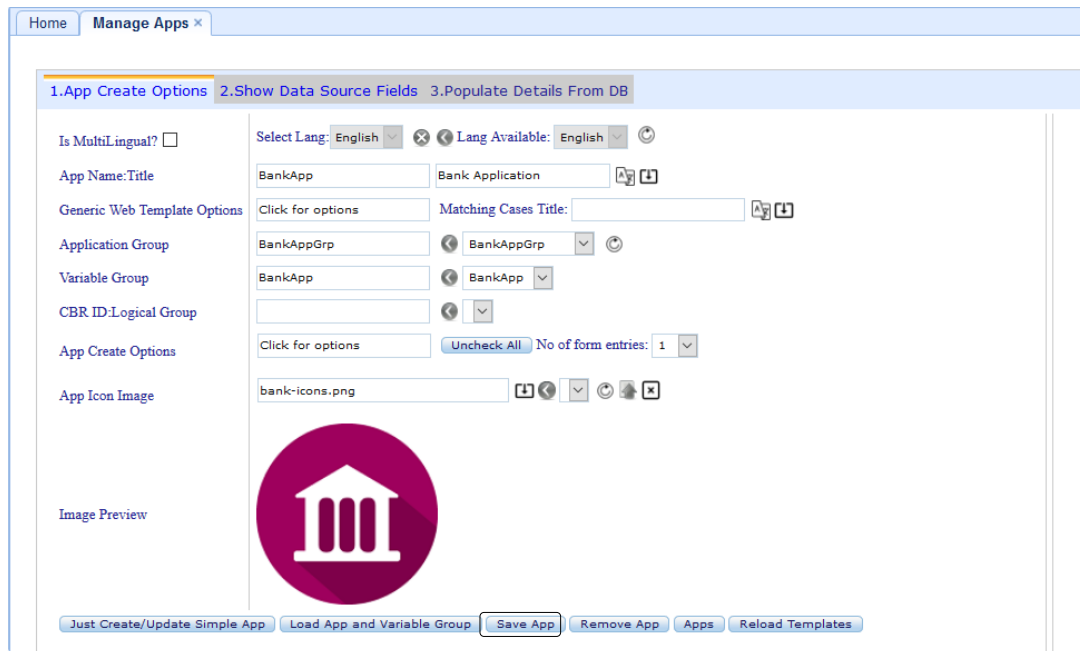


Figure 57: Alternate Way to Save the Application

Note: Follow the same procedure to create an app for AccountApp & TransApp as explained for CustomerApp

After all the three applications (AccountApp, CustomerApp, TransApp) are created, rules, variables, menus and dynamic queries for all the three apps under *BankApp* application group formed can be viewed.

1. To view rules for all the three apps, go to *Main Menu -> Core Engine Configs -> Expert Systems -> Rules/Expert Systems*.

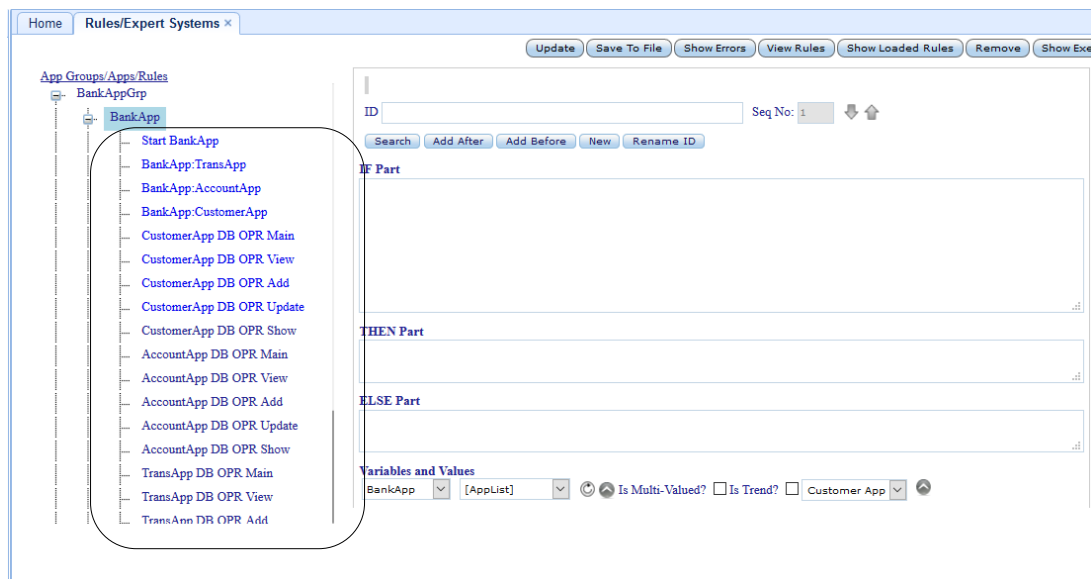


Figure 58: Viewing rules of sub-apps

- To view variables for AccountApp and TransApp, go to *Main Menu -> Domain Vocabulary ->Global Variables*.

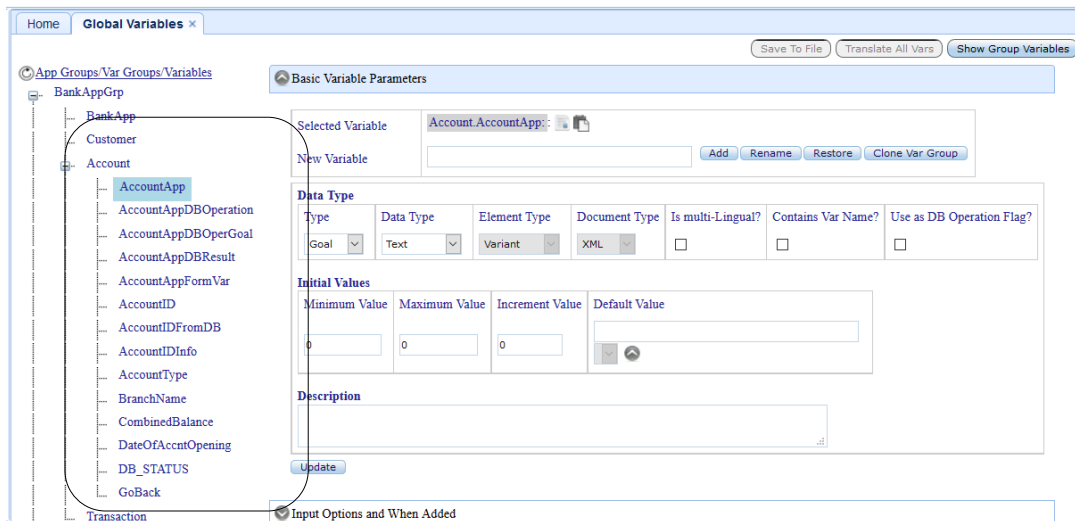


Figure 59: Viewing variables of AccountApp

- To view menus for AccountApp and TransApp, go to *Main Menu -> Domain Vocabulary ->Menus & Lists*.

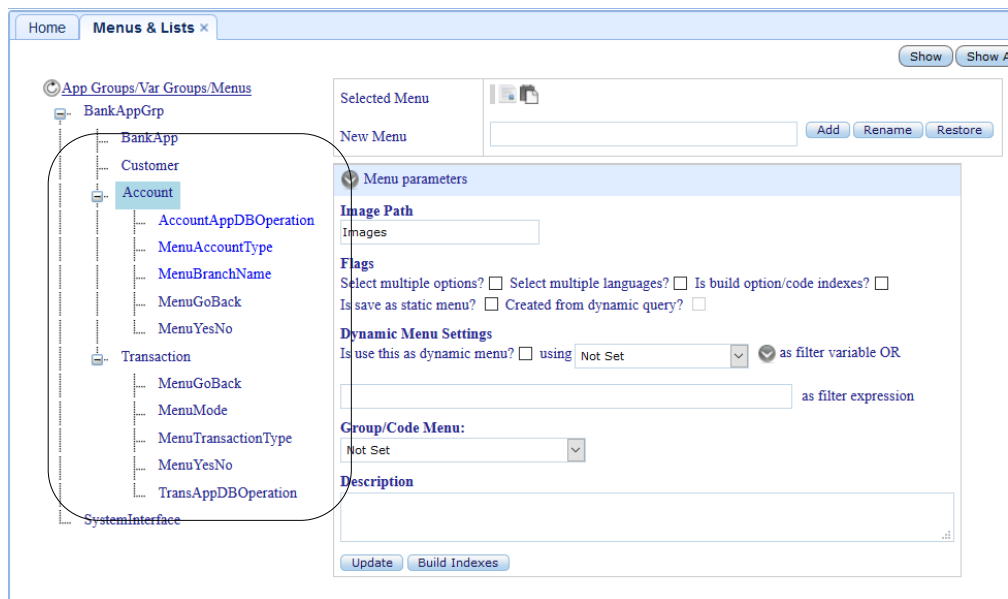


Figure 60: Viewing Menus for AccountApp and TransApp

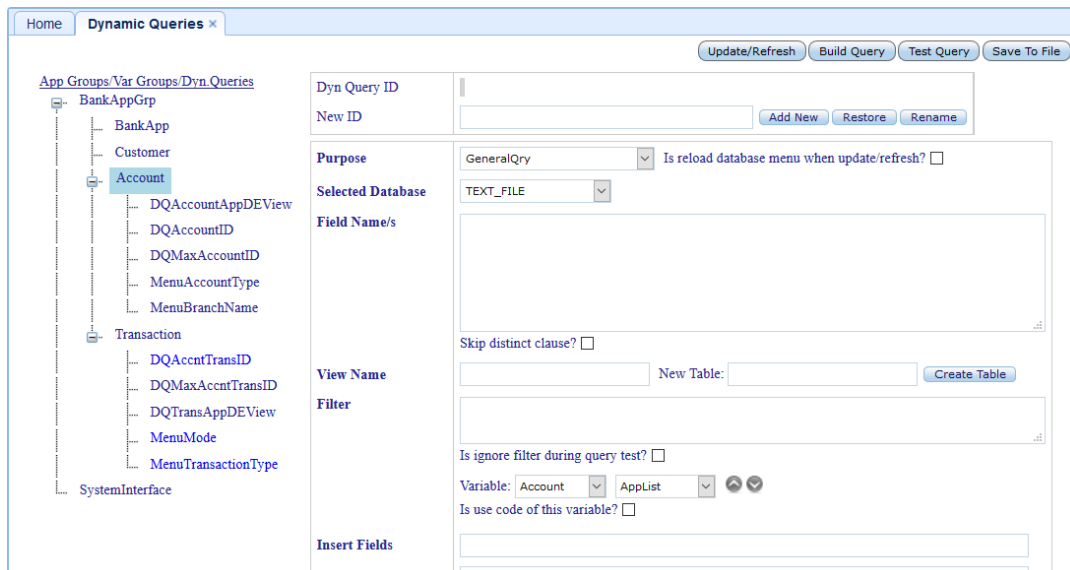


Figure 61: Viewing Queries for *AccountApp* and *TransApp*

- dynamic queries for *AccountApp* and *TransApp*, go to *Main Menu -> Database Interfaces-> Dynamic Queries*

3. Running the Application

Once all the three apps (*AccountApp*, *CustomerApp*, *TransApp*) are created successfully, run the application.

- To run the application, go to *Main Menu -> Apps, API's and Docs -> Apps* and click *Bank Application*.

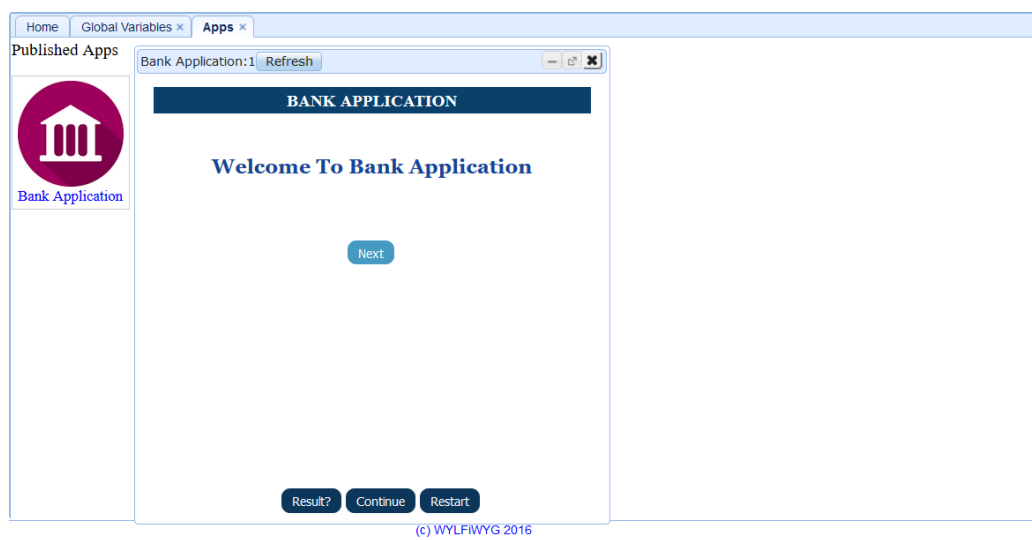


Figure 62: Welcome Page for Application

- Select *CustomerApp* from the list of apps and click *Next* to proceed further.

Figure 63: Sub-Application Menu

3. Select DB operation (Example: View) from the list of DB operations.

Figure 64: Select database operation for account app

4. Enter the desired CustomerID and click Next.

Figure 65: Entering account ID

5. Click Next to proceed further.

BANK APPLICATION	
Account Data	
Enter Account ID	<input type="text" value="5"/>
Select Account Type	<input type="radio"/> Savings Account <input checked="" type="radio"/> Current Account <input type="radio"/> Recurring Deposit <input type="radio"/> Fix Deposit
Select Branch Name	<input type="text" value="Kalyan"/>
Enter Date Of Acct Opening	<input type="text" value="10/10/2014"/>
Enter Combined Balance	<input type="text" value="92000"/>
Instruction	Press 'Back' button to view another record
<input type="button" value="Next"/> <input type="button" value="Back"/>	

Figure 66: Viewing account details

BANK APPLICATION	
DB Operation Result:OK:Values loaded What you want to do?	
<input checked="" type="radio"/> Main DB operation menu <input type="radio"/> Exit DB operations	
Click on 'Back' button to go back to Main DB Menu	
<input type="button" value="Next"/> <input type="button" value="Back"/>	

Figure 67: DB operation status

6. Let us add a new customer account.

BANK APPLICATION	
Select DB Operation:AccountApp	
Fetches record/data from da the value of 1	<input type="button" value="View"/> <ul style="list-style-type: none"> View Show <li style="background-color: #0070C0; color: white;">Add Update Remove Exit
populates into form based on n:AccountID	

Figure 68: Selecting DB Add operation

7. Enter account ID.

BANK APPLICATION

Enter Account ID

21

Next Back

Figure 69: DB Operation Status

8. Enter account details. Click Next.

BANK APPLICATION

Account Data

Enter Account ID	21
Select Account Type	<input type="radio"/> Savings Account <input checked="" type="radio"/> Current Account <input type="radio"/> Recurring Deposit <input type="radio"/> Fix Deposit
Select Branch Name	Bandra
Enter Date Of Acct Opening	11/05/2017
Enter Combined Balance	56000
Instruction	Press 'Next' button to add current record to database

Next Back

Figure 70: Entering new account details

BANK APPLICATION

DB Operation Result:OK:1
What you want to do?

Main DB operation menu
 Exit DB operations

Click on 'Back' button to go back to Main DB Menu

Next Back

Figure 71: DB operation status

9. Let us perform some operations on *TransApp*.

BANK APPLICATION

Select app

Customer App

Account App

Trans App

Next Back

10. Click *Next* and the following screen is shown. Since the customer id entered is not available in database so the message Record not found is displayed as shown in screen shot below.

11. Click *Back* button to go back to the DB Operation screen. Select DB Operation Show from DB Operation list.

Bank Application:1 Refresh

BANK APPLICATION

Select DB Operation:TransApp

Fetches record/data from database based on the value of key: :AcctTransID

View

View

Show

Add

Update

Remove

Exit

Figure 72:DB Operation on transaction

BANK APPLICATION

Enter Acct Trans ID

10

Next Back

BANK APPLICATION	
Transaction Data	
Enter Acct Trans ID	<input type="text" value="10"/>
Enter Customer ID	<input type="text" value="108"/>
Enter Account ID	<input type="text" value="3"/>
Select Transaction Type	<input checked="" type="radio"/> Debit <input type="radio"/> Credit
Enter Date Of Transaction	<input type="text" value="07/02/2017"/>
Enter Amount	<input type="text" value="2000"/>
Select Mode	<input checked="" type="radio"/> Cash Withdrawal <input type="radio"/> Cheque
Instruction	Press 'Back' button to view another record
<input type="button" value="Next"/> <input type="button" value="Back"/>	

Figure 73:DB form for transaction