

# SAP ABAP

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# OBJECTIVES

To get acquainted with SAP ABAP and implement its functionalities

## INTRODUCTION TO SAP ABAP

SAP can be used to manage Enterprise Resource Planning(ERP).

SAP ABAP can be used to develop application programs such as reports.

## REPORTS

Report is the combination of given inputs to the selection-screen retrieving the data from data base based on the given input & display the output in a predefined format.

## SMARTFORMS

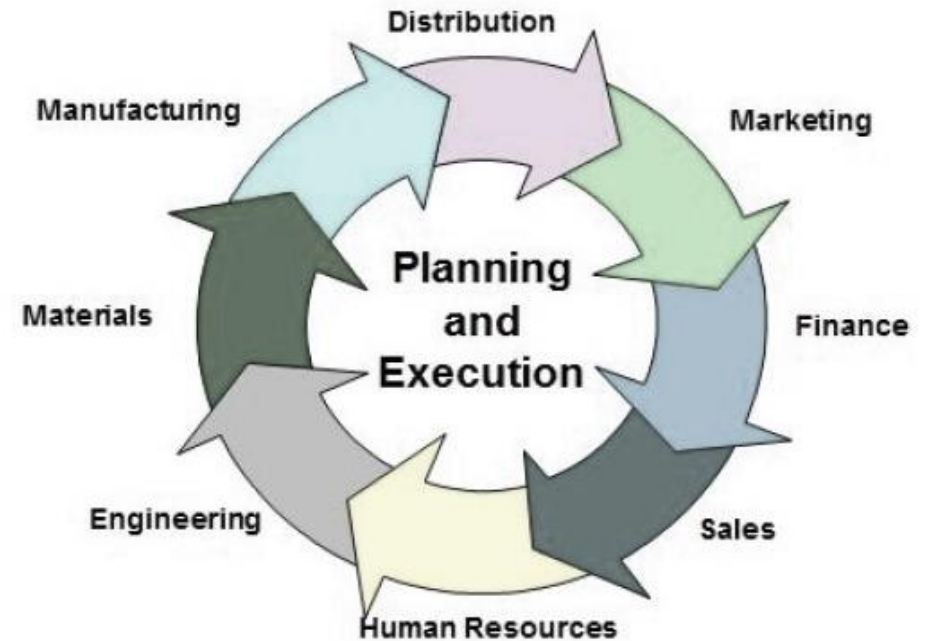
Smart forms are used to design the business documents such as invoices, purchase orders, sales orders etc.

# INTRODUCTION TO ERP AND SAP ABAP

SAP is a market leader in providing **ERP** (Enterprise Resource and Planning) solutions and services.

The ERP package is designed to support and integrate almost every functional area of a business process.

**R/3** is an integrated suite of applications designed to handle the data processing for large corporations.



# SAP R/3 ARCHITECTURE

R/3(R-> real time data processing ; 3-> 3-tier) is an integrated suite of applications designed to handle the data processing for large corporations.



## PRESENTATION LAYER

- Provides graphical screen to user.
- User enters data on the screen.
- Shows processed data to the user.



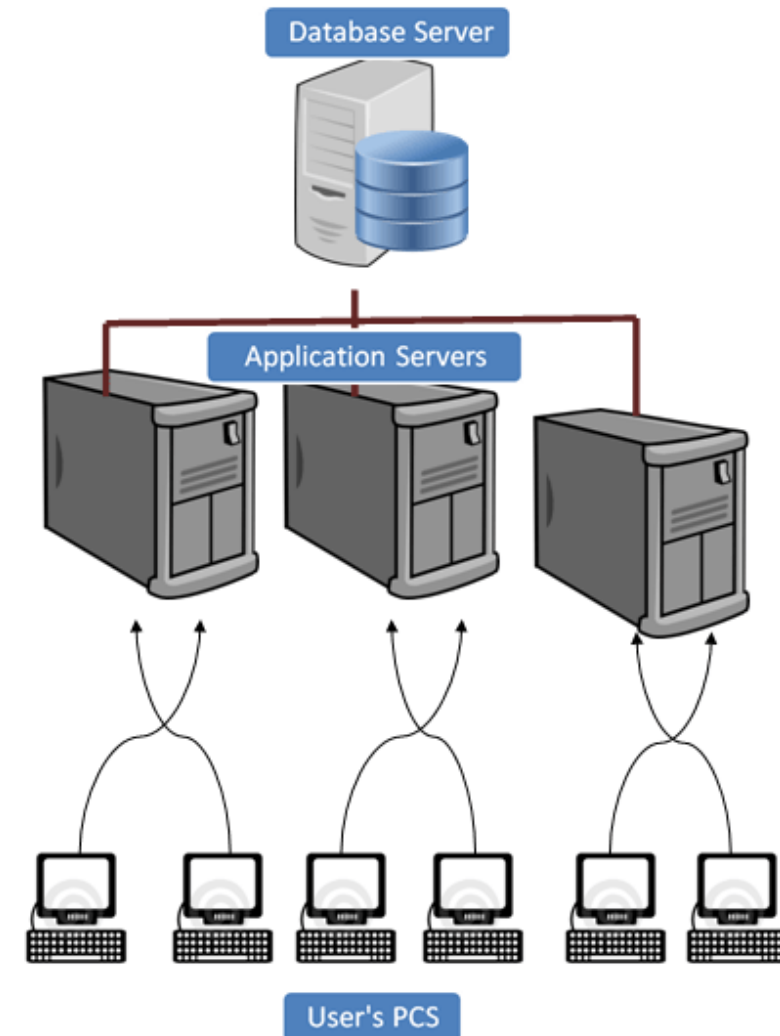
## APPLICATION LAYER

- Process data using application logic.
- Communicate with both layers.
- Read/write from database.



## DATABASE LAYER

- Stores data.



# REPORTS

## TYPES OF REPORTS

### Classical Reports

- Non interactive reports.
- Consist of one program that create a single list.

### Interactive Reports

- Has a secondary list, which can lead to another list.
- We can sort the output we want.

### ALV Reports (ABAP list viewer)

- ALV is used to display the output with predefined functionalities.

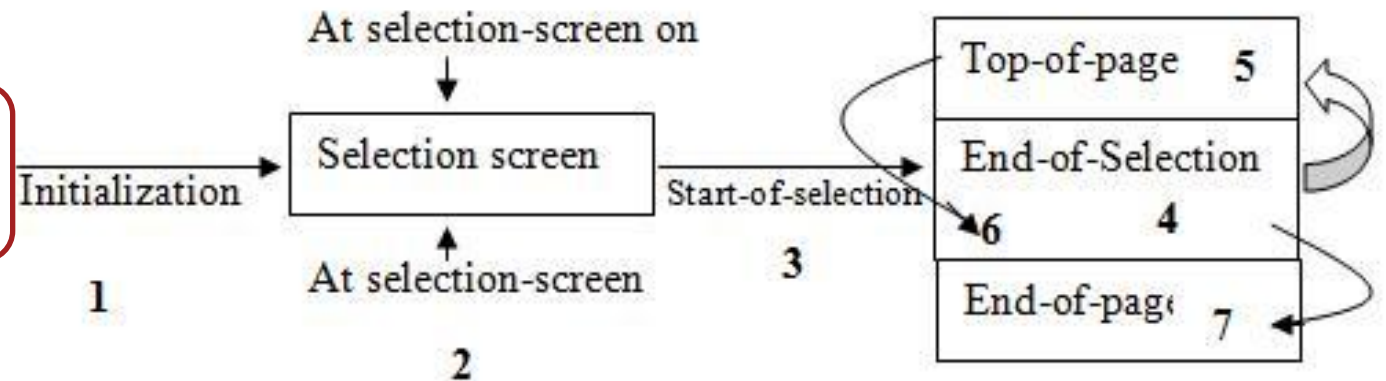
# EVENTS IN REPORTS

- SAP ABAP is an event driven programming language.

S.No.	EVENT and DESCRIPTION
1.	<b>INITIALIZATION :</b> <ul style="list-style-type: none"><li>- Triggered before displaying the selection screen.</li><li>- Used to provide the default values to the selection-screen.</li></ul>
2.	<b>AT SELECTION – SCREEN :</b> <ul style="list-style-type: none"><li>- It's an event which is triggered after provide the input to the screen and before leaving the selection-screen.</li><li>- Used to validate the given input.</li></ul>
3.	<b>AT SELECTION-SCREEN ON :</b> <ul style="list-style-type: none"><li>- It's an event which is triggered at the selection-screen based on particular input field.</li><li>- Used to validate the particular input field.</li></ul>
4.	<b>START-OF-SELECTION :</b> <ul style="list-style-type: none"><li>- It's an event which is triggered after leaving the selection-screen &amp; before display the output.</li><li>- Used to fetch the data from data base &amp; place into internal table.</li><li>- It is the default event in classical report.</li></ul>

5. **END-OF-SELECTION :**
  - It's an event which is triggered after completion of the logic.
  - Used to display the output.
6. **TOP-OF-PAGE :**
  - It's an event which is triggered of the top of the each page.
  - Used to display the header information.
7. **END-OF-PAGE :**
  - It's an event which is triggered of the end of each page.
  - Used to display the footer information.

## PROCESS FLOW OF EVENTS





# WORK DONE

## Tables created and used in designing various reports:

Transparent Table: ZNEWTABLE Active

Short Description: demo table for classical reports

Attributes Delivery and Maintenance Fields Input Help/Check Currency/Quantity Fields

	Field	K...	Initi...	Data element	Data Type	Length	Decim...	Short Description
<input type="checkbox"/>	<u>MANDT</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>MANDT</u>	CLNT	3	0	Client
<input type="checkbox"/>	<u>SNO</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>CHAR5</u>	CHAR	5	0	R/2 table
<input type="checkbox"/>	<u>NAME</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>ZCHAR_DE</u>	CHAR	20	0	DATA ELEMENTS FOR ZCHAR_DE
<input type="checkbox"/>	<u>INSTITUTE</u>	<input type="checkbox"/>	<input type="checkbox"/>	<u>ZCHAR_DE</u>	CHAR	20	0	DATA ELEMENTS FOR ZCHAR_DE
<input type="checkbox"/>	<u>ROLLNO</u>	<input type="checkbox"/>	<input type="checkbox"/>	<u>ZNUM1_DE</u>				
<input type="checkbox"/>	<u>MARKS</u>	<input type="checkbox"/>	<input type="checkbox"/>	<u>ZNUM_DE</u>				
<input type="checkbox"/>	<u>BRANCH</u>	<input type="checkbox"/>	<input type="checkbox"/>	<u>CHAR5</u>				

**Znewtable** contains the fields regarding a student's basic information.

**Znewtable1** contains a new field for 'phoneno' which uses 'sno' and 'name' as the key fields.

Transparent Table: ZNEWTABLE1 Active

Short Description: NEW TABLE CONTAINING STUDENT'S PHONE NUMBER

Attributes Delivery and Maintenance Fields Input Help/Check Currency/Quantity Fields

	Field	K...	Initi...	Data element	Data Type	Length	Decim...	Short Description
<input type="checkbox"/>	<u>MANDT</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>MANDT</u>	CLNT	3	0	Client
<input type="checkbox"/>	<u>SNO</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>CHAR5</u>	CHAR	5	0	R/2 table
<input type="checkbox"/>	<u>NAME</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>ZCHAR_DE</u>	CHAR	20	0	DATA ELEMENTS FOR ZCHAR_DE
<input type="checkbox"/>	<u>PHONENO</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>CHAR10</u>	CHAR	10	0	Character Field Length = 10

# CLASSICAL REPORT to display the student data

<

SAP

classical report

Save as Variant...

More

☒ DISPLAY

☐ DON'T DIS

S\_SNO: 1

to: 5

When the program is executed, it produces the following result.

<

SAP

classical report

More

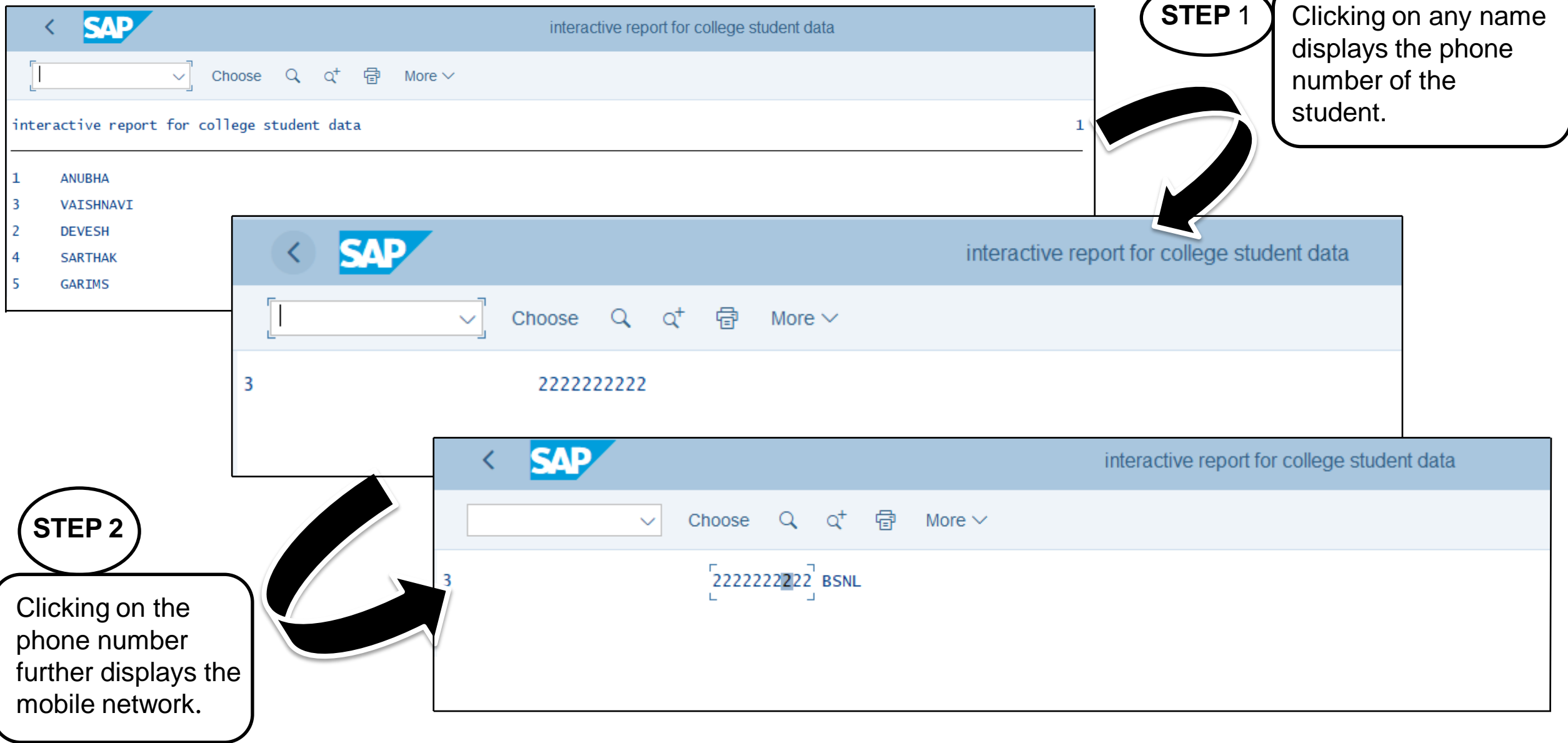
classical report

1

hello

ANUBHA	JUIT	366	97
VAISHNAVI	JIIT	322	100
DEVESH	JUIT	369	83
SARTHAK	JUIT	326	75
GARIMS	JUET	377	71

# INTERACTIVE REPORT to display the phone numbers and mobile networks used.



# ALV REPORT

## Blocked ALV: -

Blocked ALV is used to display the output in a block wise.

SNO		PHONE NO			
2		1111111111			
3		2222222222			
4		4444444444			
5		5555555555			
1		0000000000			

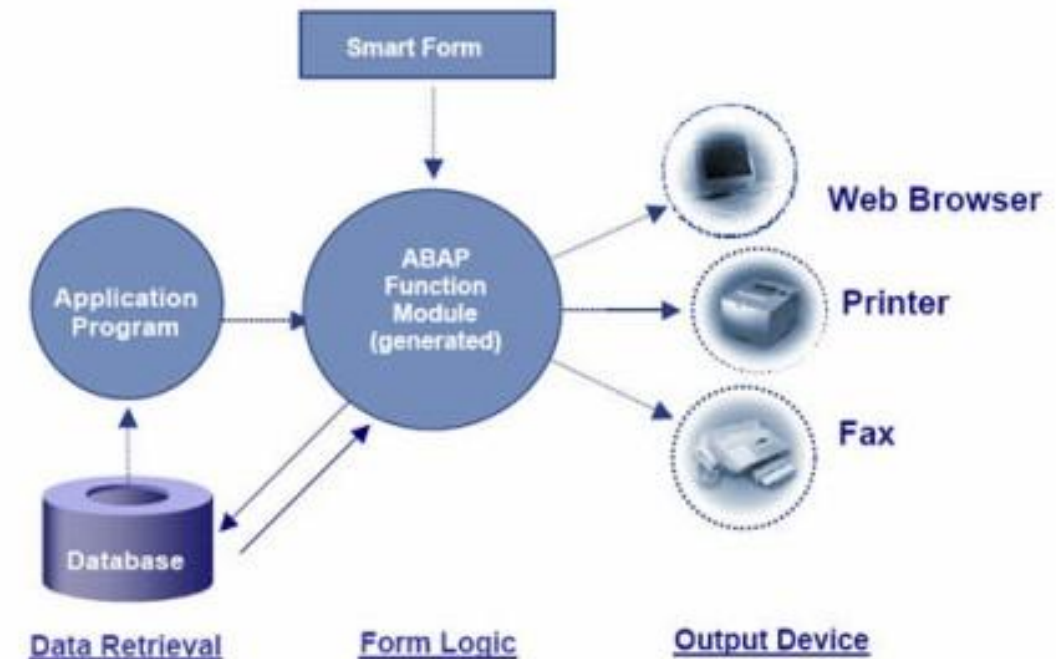
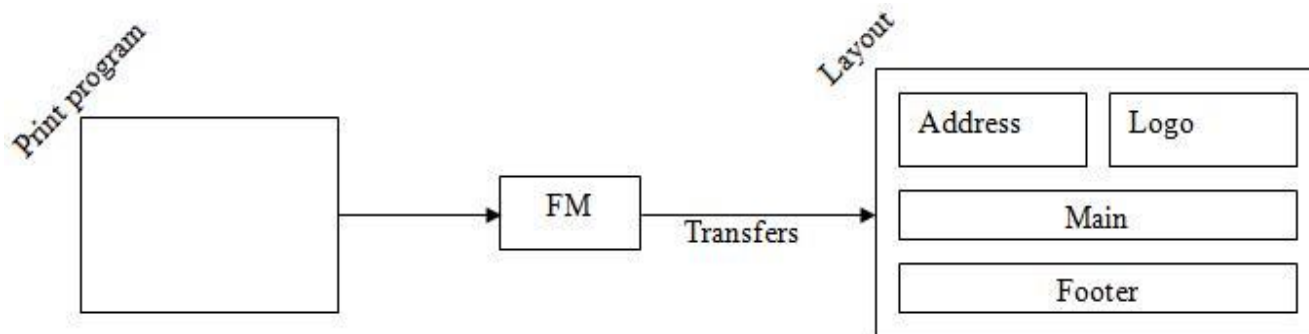
SNO	ROLL NO	FULL NAME	NAME OF INSTITUTE	MARKS OBTAINED	BRANCH
1	366	ANUBHA	JUIT	97	CSE
3	322	VAISHNAVI	JIIT	100	ECE
2	369	DEVESH	JUIT	83	CSE
4	326	SARTHAK	JUIT	75	CIVIL
5	377	GARIMS	JUET	71	BI

## Steps to work with blocked ALV: -

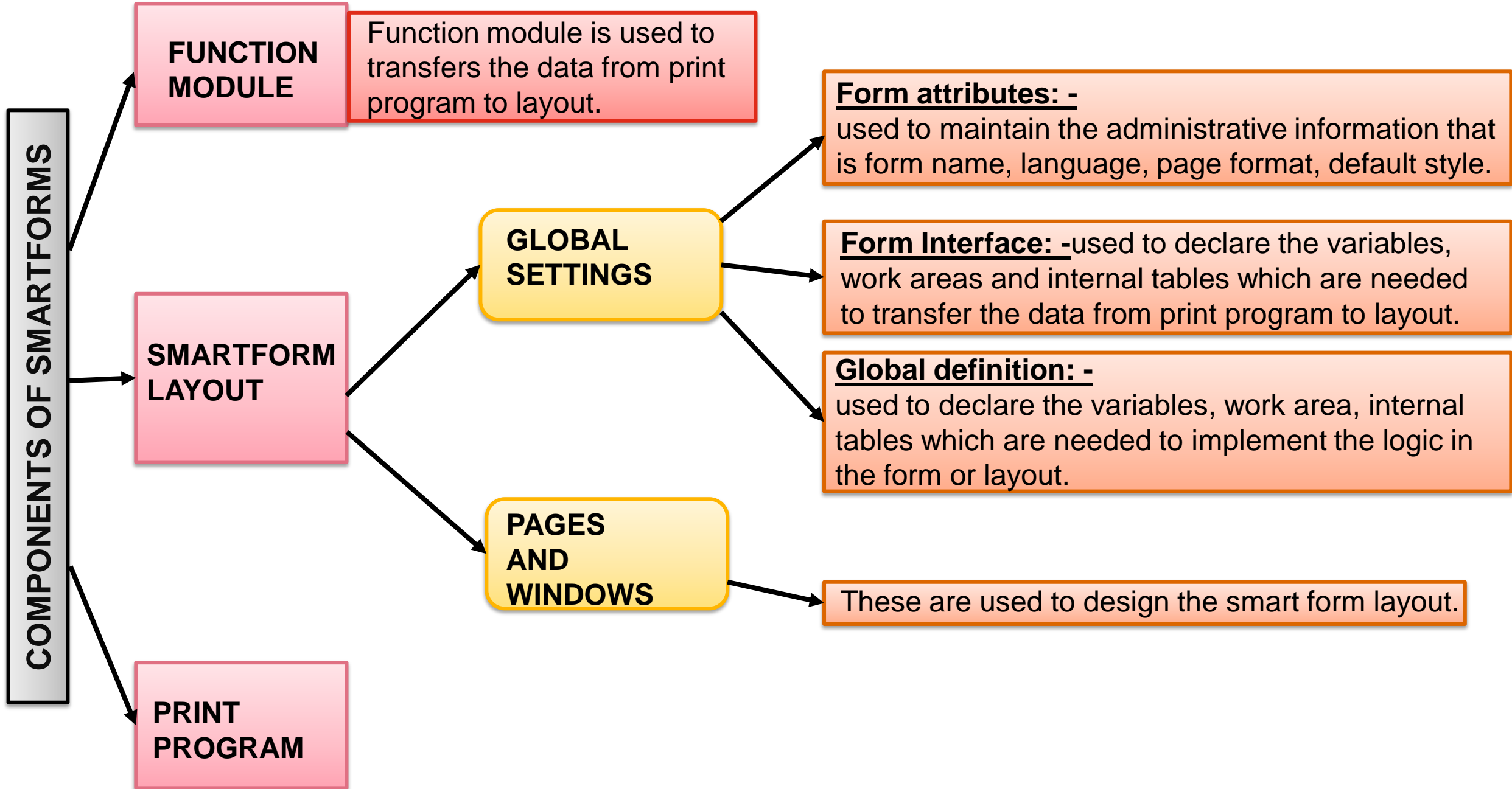
- Initialize the blocked ALV by using *'REUSE\_ALV\_BLOCK\_LIST\_INIT'* function module.
- Append the data IT to the blocked ALV by using *'REUSE\_ALV\_BLOCK\_LIST\_APPEND'* function module.
- Display the data in blocked ALV by using *'REUSE\_ALV\_BLOCK\_LIST\_DISPLAY'* function module.

# SMARTFORMS

- SAP Smart Forms is used to create and maintain forms for mass printing in SAP Systems.
- As output medium SAP Smart Forms support a printer, a fax, e-mail, or the Internet (by using the generated XML output).
- Based on the client requirement we design the smart form layout by using 'SMARTFORMS' transaction code & provide the necessary symbols and layouts.
- When ever we activate the smart form it generates a function module. Based on the function module we develop the print program.



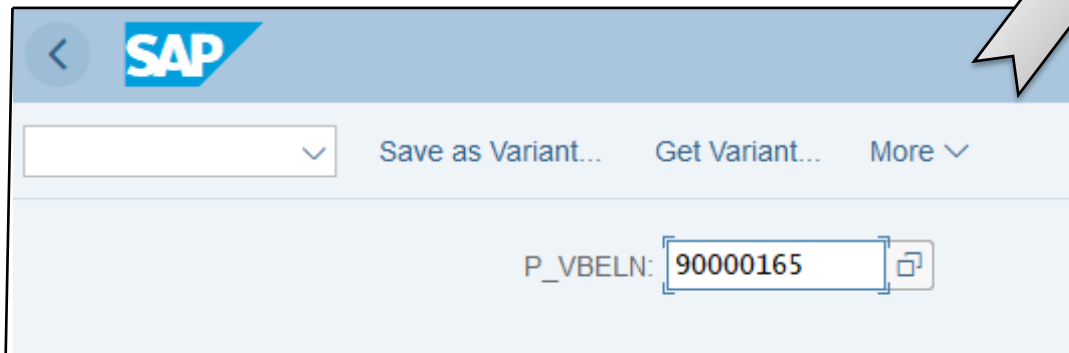
ARCHITECTURE OF SMAFTFORMS





# WORK DONE

Created a **BILL/INVOICE** using  
TABLES: *VBRK, VBRP, KNA1*.

This smartform uses **Bill No. (P\_VBELN)**  
as an input field and displays the details  
related to the same bill number, by fetching  
data from the tables used and displays it in  
the designed layout.



The image shows a SAP Smartform interface. At the top left is a back arrow and the SAP logo. Below this is a search bar with a dropdown arrow. To the right of the search bar are three buttons: 'Save as Variant...', 'Get Variant...', and 'More' with a dropdown arrow. Below these buttons is a label 'P\_VBELN:' followed by a text input field containing the value '90000165'. To the right of the input field is a small square icon with a plus sign. A large grey arrow points from the input field towards the right, indicating the data flow to the bill/invoice layout.

BILL / INVOICE				
		BILL NO. : 90000165 BILL DATE : 15.10.2018		
FROM: ABC COMPANY, DLC CYBERHUB, CYBERCIY, GURGAON. IN - 123456				
ITEM NO	MATERIAL NO.	DESCRIPTION	QUANTITY	AMOUNT
000010	150000231718	Cooked Rice	15.000	5,250.00
000020	150000231719	Cooked Dal	14.000	5,600.00
000030	150000231720	Dal Makhani	10.000	4,500.00
			<b>TOTAL</b>	15,350.00
<b>NOTE:</b> All items marked with green are to be handled with care.				

Report: ZBILL\_PROGRAM

Active

```
1  *&-----
2  *& Report ZBILL_PROGRAM
3  *&-----
4  *&
5  *&-----
6  REPORT zbill_program.
7
8  INCLUDE zbill_program_top.
9  INCLUDE zbill_program_ss.
10 INCLUDE zbill_program_form.
11
12 START-OF-SELECTION.
13
14 PERFORM get_data.
15 PERFORM process_data
16 PERFORM call_form.
```

Report ZBILL\_PROGRAM created in SE38.  
This includes other reports which help in the  
complete display of the bill.

Form ZBILL  
created in  
transaction  
'SMARTFORMS'  
is used to  
prepare the final  
layout of the  
form.

Form

▼ ZBILL

▼ Global Settings

Form Attributes

Form Interface

Global Definitions

▼ Pages and Windows

▼ %PAGE1 New Page

> %WINDOW6 New Window 6

> %WINDOW5 New Window 5

> %WINDOW4 New Window 4

%GRAPHIC1 New Graphic 1

> %WINDOW3 New Window 3

> %WINDOW2 New Window 2

> %WINDOW1 New Window 1

> MAIN Main Window

Form: ZBILL

Description: New Form

General Attributes

Output Options

Created By: ADITYA

Date: 03.07.2019

Time: 09:01:18

Package: \$TMP

Language Attributes

Language: EN

Translate

Into All Languages

SAP ABAP

%WINDOW1

%WINDOW4

%WINDOW3

%WINDOW2

MAIN

%WINDOW6

%WINDOW5



In the second smartform, I created a form which displays the material data from the *MARA* table .

It uses the material numbers ( S\_MATNR) as the input fields and displays the data in the designed layout.



SAP material data

Save as Variant... Get Variant... More ▾

S\_MATNR: 18 to: 60



Random Softech India PVT LTD

TO  
Ware House Department

Material Number	Created On	Created by	Material Type
1	10.04.2017	FIORI	FERT
4	10.04.2017	FIORI	ROH
2	10.04.2017	FIORI	ROH

Page no. 1

# LEARNING

I learnt how SAP ABAP is used to **manage data** in an organized and efficient way.

Write report programs using **object-oriented concepts** and basic **SQL queries**.

Create my own tables and **manipulate data** according to the requirement.

Create **customized print programs** using smartforms according to the requirement.

# CONCLUSION

