

## Execution Environment

Author: u61856037  
 File: /home/u61856037/Insurance Assignment1.sas  
 SAS Platform: Linux LIN X64 3.10.0-1062.12.1.el7.x86\_64  
 SAS Host: ODAWS01-APSE1-2.ODA.SAS.COM  
 SAS Version: 9.04.01M6P11072018  
 SAS Locale: en\_US  
 Submission Time: 7/16/2022, 9:01:12 PM  
 Browser Host: 157.47.62.180  
 User Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/103.0.0.0 Safari/537.36  
 Application Server: ODAMID00-APSE1-2.ODA.SAS.COM

---

## Code: Insurance Assignment1.sas

```

/*-----*/
/*-----SAS GRADED PROJECT-----*/
/*-----DOMAIN: INSURANCE-----*/
/*-----NAME: PANAGAM MOHITHA-----*/
/*-----*/
/*1. Import all the 4 files in SAS data environment*/

/*Importing All years file*/

FILENAME REFFILE '/home/u61856037/sasuser.v94/Third_Party.csv';
PROC IMPORT DATAFILE=REFFILE
  DBMS=CSV
  OUT=Third_party;
  GETNAMES=YES;
RUN;
PROC CONTENTS DATA=Third_party; RUN;

FILENAME REFFILE '/home/u61856037/sasuser.v94/Online.csv';
PROC IMPORT DATAFILE=REFFILE
  DBMS=CSV
  OUT=ONLINE;
  GETNAMES=YES;
RUN;
PROC CONTENTS DATA=ONLINE; RUN;

FILENAME REFFILE '/home/u61856037/sasuser.v94/Roll_Agent.csv';
PROC IMPORT DATAFILE=REFFILE
  DBMS=CSV
  OUT=Roll_agent;
  GETNAMES=YES;
RUN;
PROC CONTENTS DATA=Roll_agent; RUN;

/*Importing Agent_score mapping*/
FILENAME REFFILE '/home/u61856037/sasuser.v94/Agent_Score.csv';
PROC IMPORT DATAFILE=REFFILE
  DBMS=CSV
  OUT=Agent_score;
  GETNAMES=YES;
RUN;
PROC CONTENTS DATA=Agent_score; RUN;

/*-----*/
/*2. Create one dataset from all the 4 dataset?*/

/*Appending all agents data*/
data Agents_data;
set project.Roll_agent project.online project.third_party;
run;
/*Checking feature of data*/
proc contents data = Agents_data varnum;
run;

/*Checking feature of data*/
proc contents data = Agent_score varnum;
run;

/*Soring file for merge*/
proc sort data = Agents_data;
by agentid;
run;

/*Soring file for merge*/
proc sort data = Agent_score;
by AgentID;
run;

/*Checking data*/
proc print data = Agent_score;
run;

/*Merging Agents data with Individual Agent information base*/
data agents_base;
  
```

```

merge Agents_data(in=a) Agent_score(in=b);
by AgentID;
if a;
run;
/*Checking data*/
proc print data = agents_base (obs=50);
run;

/*-----*/
/*3. Remove all unwanted ID variables?*/

/*Removing unwanted or personal information variables*/
data Agents_data (drop = hhid proposal_num policy_num);
set Agents_data;
run;

data agents_base (drop = hhid proposal_num policy_num);
set agents_base;
run;

/*-----*/
/*4. Calculate annual premium for all customers?*/

/*Calculation of Total premium of the policy*/
data agents_base;
set agents_base;
if payment_mode="Annual" then Total_premium=(premium);
else if payment_mode="Semi Annual" then Total_premium=(premium*2);
else if payment_mode="Quarterly" then Total_premium=(premium*4);
else Total_premium=(premium*12);
run;

/*-----*/
/*5. Calculate age and tenure as of 31 July 2020 for all customers?*/

/*Calculate age of the customer*/
data agents_base;
set agents_base;
customer_age = intck('year',dob,'31jul2020'd);
run;

/*Calculate tenure of the policy*/
data agents_base;
set agents_base;
Tenure = intck('year',policy_date,'31jul2020'd);
run;

/*-----*/
/*6. Create a product name by using both level of product information.And product name should be representable
i.e. no code should be present in final product name?*/

/*Remove Product code from product lvl2*/
data agents_base;
set agents_base;
Extracted_Product_name = substr(product_lvl2,5);
run;

/*Concat product level 1 and extracted product name to create final product name*/
data agents_base;
set agents_base;
Final_product_name = CAT(product_lvl1,Extracted_Product_name);
run;

/*-----*/
/*7. After doing clean up in your data, you have to calculate the distribution of customers across product and policy status
and interpret the result*/

/* Calculate distribution of customers across product and policy status*/
proc sql;
select policy_status, Final_product_name, count(custid) as no_of_customers
from agents_base
group by policy_status, Final_product_name
order by no_of_customers;
quit;

/*-----*/
/*8. Calculate Average annual premium for different payment mode and interpret the result?*/

/* Calculate Average annual premium for different payment mode*/
proc sql;
select payment_mode, avg(total_premium) as Average_annual_premium
from agents_base
group by payment_mode
order by Average_annual_premium desc;
quit;

/*-----*/
/*9. Calculate Average persistency score, no fraud score and tenure of customers across product and policy status,
and interpret the result?*/

/* Calculate Average persistency score, no fraud score and tenure of customers across product and policy status*/
proc sql;
select Final_product_name,policy_status,avg(Persistency_Score) as Average_Persistency_Score,
avg(NoFraud_Score) as Average_NoFraud_Score,
avg(Tenure) as Average_Tenure
from agents_base
group by Final_product_name,policy_status
order by Average_Persistency_Score desc, Average_NoFraud_Score desc, Average_Tenure desc;

```

```
quit;

/*-----*/
/*10. Calculate Average age of customer across acquisition channel and policy status, and interpret the result?*/

/* Calculate average age of customer across acquisition channel and policy status*/
proc sql;
select acq_chnl,policy_status,avg(customer_age) as Average_Customer_age
from agents_base
group by acq_chnl,policy_status
order by Average_Customer_age desc;
quit;

/*-----*/
```

---

## Log: Insurance Assignment1.sas

Notes (58)

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /*-----*/
69      ! -----*/
70      /*1. Import all the 4 files in SAS data environment*/
71
72      /*Importing All years file*/
73
74      FILENAME REFFILE '/home/u61856037/sasuser.v94/Third_Party.csv';
75      PROC IMPORT DATAFILE=REFFILE
76      DBMS=CSV
77      OUT=Third_party;
78      GETNAMES=YES;
79      RUN;
```

NOTE: Import cancelled. Output dataset WORK.THIRD\_PARTY already exists. Specify REPLACE option to overwrite it.

NOTE: The SAS System stopped processing this step because of errors.

NOTE: PROCEDURE IMPORT used (Total process time):

real time	0.00 seconds
user cpu time	0.00 seconds
system cpu time	0.00 seconds
memory	417.25k
OS Memory	34320.00k
Timestamp	07/16/2022 03:31:11 PM
Step Count	752 Switch Count 0
Page Faults	0
Page Reclaims	14
Page Swaps	0
Voluntary Context Switches	0
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	0

```
80      PROC CONTENTS DATA=Third_party; RUN;
```

NOTE: PROCEDURE CONTENTS used (Total process time):

real time	0.04 seconds
user cpu time	0.05 seconds
system cpu time	0.00 seconds
memory	2003.65k
OS Memory	34840.00k
Timestamp	07/16/2022 03:31:11 PM
Step Count	753 Switch Count 0

Obs	custid	dob	policy_status	Premium	acq_chnl	product_lv1	product_lv2	agentid	payment_mode	policy_date	Persistency_Score	NoFraud_Score	Total_premium	customer_age	Tenure	Extracted_Product_name	Final_product_name
1	CC4000034	02/11/1984	Inforced	10815	On roll Agents	Term	P004 Protection	AA1	Semi Annual	01/01/2020	0.83	0.78	21630	36	0	Protection	Term Protection
2	CC4000092	07/05/1982	Payment Due	5319	On roll Agents	Return	P006 Saath	AA1	Quaterly	20/10/2017	0.83	0.78	63828	38	3	Saath	Return Saath
3	CC4000265	12/05/1971	Payment Due	11374	On roll Agents	Return	P005 5D plan	AA1	Semi Annual	17/11/2018	0.83	0.78	22748	49	2	5D plan	Return 5D plan
4	CC4000396	06/02/1995	Lapsed	10470	On roll Agents	Return	P002 Jawaan	AA1	Semi Annual	14/12/2017	0.83	0.78	20940	25	3	Jawaan	Return Jawaan
5	CC4000642	09/05/1980	Payment Due	2964	On roll Agents	Term	P002 Jawaan	AA1	Monthly	23/09/2018	0.83	0.78	35568	40	2	Jawaan	Term Jawaan
6	CC4000698	23/01/1988	Inforced	2731	On roll Agents	Return	P003 Suracha	AA1	Monthly	25/11/2017	0.83	0.78	32772	32	3	Suracha	Return Suracha
7	CC4000802	10/09/1993	Lapsed	11628	On roll Agents	Term	P004 Protection	AA1	Semi Annual	21/12/2017	0.83	0.78	23256	27	3	Protection	Term Protection
8	CC4001233	25/03/1978	Payment Due	2296	On roll Agents	Term	P004 Protection	AA1	Monthly	07/08/2018	0.83	0.78	27552	42	2	Protection	Term Protection
9	CC4001582	22/02/1970	Inforced	2484	On roll Agents	Return	P001 Kishan	AA1	Monthly	07/11/2019	0.83	0.78	29808	50	1	Kishan	Return Kishan
10	CC4001769	27/03/1991	Inforced	5267	On roll Agents	Return	P005 5D plan	AA1	Quaterly	09/04/2020	0.83	0.78	63204	29	0	5D plan	Return 5D plan
11	CC4001777	10/06/1971	Inforced	11401	On roll Agents	Return	P005 5D plan	AA1	Semi Annual	16/01/2018	0.83	0.78	22802	49	2	5D plan	Return 5D plan
12	CC4001943	30/05/1995	Payment Due	5365	On roll Agents	Return	P006 Saath	AA1	Quaterly	13/04/2019	0.83	0.78	64380	25	1	Saath	Return Saath
13	CC4001992	14/08/1977	Lapsed	10598	On roll Agents	Term	P004 Protection	AA1	Semi Annual	01/09/2018	0.83	0.78	21196	43	2	Protection	Term Protection
14	CC4002449	24/07/1991	Inforced	5231	On roll Agents	Term	P001 Kishan	AA1	Quaterly	08/06/2020	0.83	0.78	62772	29	0	Kishan	Term Kishan
15	CC4002646	01/03/1979	Lapsed	18102	On roll Agents	Term	P001 Kishan	AA1	Annual	28/08/2018	0.83	0.78	18102	41	2	Kishan	Term Kishan
16	CC4002752	22/06/1981	Payment Due	10551	On roll Agents	Return	P004 Protection	AA1	Semi Annual	12/10/2017	0.83	0.78	21102	39	3	Protection	Return Protection
17	CC4002852	08/09/1992	Inforced	2441	On roll Agents	Return	P004 Protection	AA1	Monthly	31/01/2020	0.83	0.78	29292	28	0	Protection	Return Protection
18	CC4003061	28/07/1979	Inforced	10173	On roll Agents	Return	P001 Kishan	AA1	Semi Annual	11/03/2019	0.83	0.78	20346	41	1	Kishan	Return Kishan
19	CC4003103	15/07/1981	Inforced	10838	On roll Agents	Term	P006 Saath	AA1	Semi Annual	08/10/2017	0.83	0.78	21676	39	3	Saath	Term Saath
20	CC4003114	14/02/1972	Inforced	5478	On roll Agents	Return	P001 Kishan	AA1	Quaterly	09/08/2019	0.83	0.78	65736	48	1	Kishan	Return Kishan
21	CC4003540	25/07/1976	Lapsed	18834	On roll Agents	Return	P006 Saath	AA1	Annual	12/03/2018	0.83	0.78	18834	44	2	Saath	Return Saath
22	CC4003542	30/03/1987	Lapsed	10371	On roll Agents	Term	P004 Protection	AA1	Semi Annual	28/04/2020	0.83	0.78	20742	33	0	Protection	Term Protection
23	CC4003603	29/01/1970	Lapsed	2708	On roll Agents	Term	P004 Protection	AA1	Monthly	18/12/2017	0.83	0.78	32496	50	3	Protection	Term Protection
24	CC4003648	01/06/1969	Payment Due	5363	On roll Agents	Term	P002 Jawaan	AA1	Quaterly	11/11/2017	0.83	0.78	64356	51	3	Jawaan	Term Jawaan
25	CC4003664	07/09/1981	Inforced	5736	On roll Agents	Return	P002 Jawaan	AA1	Quaterly	08/09/2018	0.83	0.78	68832	39	2	Jawaan	Return Jawaan
26	CC4003720	14/01/1979	Inforced	11167	On roll Agents	Term	P005 5D plan	AA1	Semi Annual	16/04/2019	0.83	0.78	22334	41	1	5D plan	Term 5D plan
27	CC4003722	02/11/1968	Payment Due	18835	On roll Agents	Term	P006 Saath	AA1	Annual	20/03/2019	0.83	0.78	18835	52	1	Saath	Term Saath
28	CC4003916	01/06/1993	Payment Due	10417	On roll Agents	Term	P004 Protection	AA1	Semi Annual	07/08/2018	0.83	0.78	20834	27	2	Protection	Term Protection

Obs	custid	dob	policy_status	Premium	acq_chnl	product_lv1	product_lv2	agentid	payment_mode	policy_date	Persistency_Score	NoFraud_Score	Total_premium	customer_age	Tenure	Extracted_Product_name	Final_product_name
29	CC4003921	13/01/1984	Inforced	5862	On roll Agents	Term	P001 Kishan	AA1	Quaterly	22/09/2019	0.83	0.78	70344	36	1	Kishan	Term Kishan
30	CC4003941	05/11/1973	Inforced	10018	On roll Agents	Term	P003 Suracha	AA1	Semi Annual	05/10/2017	0.83	0.78	20036	47	3	Suracha	Term Suracha
31	CC4004346	25/08/1992	Inforced	18932	On roll Agents	Return	P006 Saath	AA1	Annual	28/07/2018	0.83	0.78	18932	28	2	Saath	Return Saath
32	CC4004355	09/04/1972	Inforced	10263	On roll Agents	Term	P003 Suracha	AA1	Semi Annual	05/08/2018	0.83	0.78	20526	48	2	Suracha	Term Suracha
33	CC4004472	26/09/1977	Payment Due	2647	On roll Agents	Term	P003 Suracha	AA1	Monthly	28/04/2018	0.83	0.78	31764	43	2	Suracha	Term Suracha
34	CC4004540	11/04/1986	Payment Due	18824	On roll Agents	Return	P003 Suracha	AA1	Annual	13/12/2017	0.83	0.78	18824	34	3	Suracha	Return Suracha
35	CC4004760	14/07/1985	Inforced	11494	On roll Agents	Return	P002 Jawaan	AA1	Semi Annual	28/03/2018	0.83	0.78	22988	35	2	Jawaan	Return Jawaan
36	CC4004787	03/06/1986	Payment Due	18167	On roll Agents	Return	P005 5D plan	AA1	Annual	11/12/2017	0.83	0.78	18167	34	3	5D plan	Return 5D plan
37	CC4004887	27/12/1975	Payment Due	11721	On roll Agents	Term	P002 Jawaan	AA1	Semi Annual	14/10/2017	0.83	0.78	23442	45	3	Jawaan	Term Jawaan
38	CC4004896	12/02/1984	Inforced	2035	On roll Agents	Term	P003 Suracha	AA1	Monthly	03/04/2020	0.83	0.78	24420	36	0	Suracha	Term Suracha
39	CC4005007	05/10/1988	Inforced	5591	On roll Agents	Term	P002 Jawaan	AA1	Quaterly	15/12/2019	0.83	0.78	67092	32	1	Jawaan	Term Jawaan
40	CC4005125	16/03/1973	Lapsed	18336	On roll Agents	Term	P003 Suracha	AA1	Annual	16/10/2018	0.83	0.78	18336	47	2	Suracha	Term Suracha
41	CC4005151	28/01/1993	Lapsed	18473	On roll Agents	Term	P001 Kishan	AA1	Annual	03/10/2019	0.83	0.78	18473	27	1	Kishan	Term Kishan
42	CC4000110	20/12/1992	Inforced	5461	Online	Return	P003 Suracha	AA1	Quaterly	23/05/2020	0.83	0.78	65532	28	0	Suracha	Return Suracha
43	CC4000812	30/03/1989	Inforced	5190	Online	Return	P002 Jawaan	AA1	Quaterly	04/05/2019	0.83	0.78	62280	31	1	Jawaan	Return Jawaan
44	CC4000915	19/02/1990	Inforced	2771	Online	Return	P005 5D plan	AA1	Monthly	20/01/2020	0.83	0.78	33252	30	0	5D plan	Return 5D plan
45	CC4000982	20/06/1993	Lapsed	11654	Online	Return	P006 Saath	AA1	Semi Annual	09/07/2018	0.83	0.78	23308	27	2	Saath	Return Saath
46	CC4001067	28/09/1981	Lapsed	10177	Online	Term	P006 Saath	AA1	Semi Annual	29/01/2019	0.83	0.78	20354	39	1	Saath	Term Saath
47	CC4001361	08/03/1981	Lapsed	2307	Online	Return	P006 Saath	AA1	Monthly	31/01/2019	0.83	0.78	27684	39	1	Saath	Return Saath
48	CC4001413	05/01/1970	Lapsed	2816	Online	Term	P005 5D plan	AA1	Monthly	15/04/2018	0.83	0.78	33792	50	2	5D plan	Term 5D plan
49	CC4001452	21/04/1990	Inforced	18482	Online	Term	P005 5D plan	AA1	Annual	11/10/2018	0.83	0.78	18482	30	2	5D plan	Term 5D plan
50	CC4001621	02/10/1969	Payment Due	2423	Online	Return	P004 Protection	AA1	Monthly	02/03/2020	0.83	0.78	29076	51	0	Protection	Return Protection

## Question 7 Results

policy_status	Final_product_name	no_of_customers
Lapsed	Term Saath	132
Inforced	Term 5D plan	134
Payment Due	Term 5D plan	135
Lapsed	Return Suracha	137
Inforced	Term Protection	139
Lapsed	Term Protection	139
Inforced	Term Saath	141
Inforced	Return Suracha	142
Lapsed	Term Jawaan	142
Inforced	Return Kishan	142
Inforced	Return Saath	143
Payment Due	Term Protection	143
Inforced	Term Suracha	144
Payment Due	Return Kishan	144
Lapsed	Return Protection	145
Lapsed	Return Saath	147
Inforced	Return 5D plan	148
Payment Due	Return Jawaan	150
Lapsed	Return 5D plan	150
Inforced	Return Protection	151
Payment Due	Return Protection	152
Payment Due	Return 5D plan	152
Payment Due	Term Kishan	153
Lapsed	Return Jawaan	154
Payment Due	Term Saath	154
Lapsed	Term 5D plan	155
Payment Due	Term Jawaan	155
Payment Due	Term Suracha	157
Payment Due	Return Suracha	159
Inforced	Return Jawaan	159
Inforced	Term Jawaan	159
Lapsed	Term Kishan	160
Lapsed	Return Kishan	163
Payment Due	Return Saath	164
Inforced	Term Kishan	165
Lapsed	Term Suracha	170

Question 8 Results

payment_mode	Average_annual_premium
Quaterly	65874.88
Monthly	30127.56
Semi Annual	22041.04
Annual	18484.48

## Question 9 Results

Final_product_name	policy_status	Average_Persistence_Score	Average_NoFraud_Score	Average_Tenure
Term Jawaan	Lapsed	0.827817	0.831549	1.232394
Term 5D plan	Lapsed	0.823806	0.819613	1.477419
Term Saath	Lapsed	0.820682	0.82303	1.401515
Return 5D plan	Inforced	0.815	0.834932	1.405405
Term 5D plan	Inforced	0.813955	0.820149	1.373134
Term Kishan	Lapsed	0.813375	0.831813	1.3875
Return 5D plan	Payment Due	0.812961	0.839868	1.361842
Return Suracha	Inforced	0.812746	0.842254	1.514085
Return Jawaan	Inforced	0.811635	0.83283	1.383648
Term Jawaan	Payment Due	0.811419	0.832645	1.380645
Return Suracha	Lapsed	0.811095	0.823066	1.423358
Return Protection	Inforced	0.810662	0.827815	1.350993
Return Jawaan	Lapsed	0.810455	0.837143	1.428571
Return Kishan	Lapsed	0.809755	0.83135	1.374233
Return Protection	Payment Due	0.809539	0.824803	1.434211
Term Suracha	Payment Due	0.809427	0.828917	1.33758
Return Kishan	Inforced	0.809225	0.817254	1.316901
Term Suracha	Inforced	0.806875	0.83125	1.465278
Term Protection	Payment Due	0.806643	0.827692	1.377622
Return Jawaan	Payment Due	0.8066	0.835533	1.506667
Term Protection	Lapsed	0.805971	0.835683	1.410072
Return 5D plan	Lapsed	0.8056	0.8232	1.38
Term Kishan	Payment Due	0.805425	0.811634	1.411765
Term Suracha	Lapsed	0.802588	0.820353	1.364706
Return Kishan	Payment Due	0.801458	0.838958	1.506944
Term Protection	Inforced	0.801007	0.839353	1.410072
Return Suracha	Payment Due	0.800629	0.838491	1.27044
Term 5D plan	Payment Due	0.800519	0.824519	1.503704
Term Saath	Payment Due	0.799805	0.809481	1.525974
Term Kishan	Inforced	0.799576	0.833394	1.460606
Return Saath	Inforced	0.798531	0.814196	1.363636
Term Saath	Inforced	0.798511	0.817376	1.446809
Term Jawaan	Inforced	0.796604	0.829686	1.471698
Return Protection	Lapsed	0.796207	0.815172	1.37931
Return Saath	Lapsed	0.79517	0.825986	1.544218
Return Saath	Payment Due	0.793476	0.827378	1.615854



## Question 10 Results

acq_chnl	policy_status	Average_Customer_age
Third Party	Inforced	38.99659
Online	Payment Due	38.51695
On roll Agents	Lapsed	38.42188
Online	Inforced	38.25748
Third Party	Lapsed	38.25135
On roll Agents	Payment Due	38.23411
Online	Lapsed	38.20603
On roll Agents	Inforced	38.06218
Third Party	Payment Due	37.90566