\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. converting the results from part 1 to a macro \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

**%macro** amortization(plan= ,amount\_borrowed= ,interest\_rate\_year= ,downpayment= ,

lengthofloan\_years= ,point\_interest= );

%if %upcase(&plan.) = A %then %do;

\*\*\*\*\*\*\*\*\*\*\*\*\*\* PLAN A Data \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ;

**DATA** PLAN\_A;

/\* time in months to clear the loan \*/

time\_period=**12**\*(&lengthofloan\_years.);

label time\_period="time in months to clear the loan";

/\*Interest rate per month \*/

interest\_rate= (&interest\_rate\_year.)/(**12**\***100**);

label ibnterest\_rate="Interest rate per month";

/\* principal loan amount taken for the personal use\*/

ploan\_amount= (&amount\_borrowed. - &downpayment.);

label ploan\_amount="loan amount taken";

payment\_amount=(((ploan\_amount)\*(interest\_rate\*(**1**+interest\_rate)\*\*time\_period))/((**1**+interest\_rate)\*\*time\_period -**1**));

format ploan\_amount DOLLAR10.2;

format payment\_amount DOLLAR10.2;

**RUN**;

\*\*\*\*\*\*\*\* Plan A Amortization Schedule \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

**DATA** CALCULATE\_PLAN\_A(drop=ploan\_amount time\_period interest\_rate);

set plan\_a;

do time=**1** to time\_period;

/\* ploan\_amount is the principal loan amount taken for personal use\*/

/\* payment\_amount is the monthly installement to be paid to clear the loan with interest in

the given time period(time\_period)\*/

/\* beginning balance is the priciple balance due before monthly payment\_amount \*/

beginning\_balance=ploan\_amount;

label beginning\_balance="beginning balance is the balance due before monthly payment\_amount ";

/\* interest amount is the interest to be paid every month on the remaining principle amount\*/

interest\_amount=ploan\_amount\*interest\_rate;

label

interest\_amount="interest amount is the interest to be paid every month";

/\* principal\_amount\_paid is the principal amount paid apart from the interest\_amount monthly \*/

/\* (principal\_amoount\_paid + interest\_amount) gives the monthly installment(payment\_amount)\*/

principal\_amount\_paid=payment\_amount - interest\_amount;

label principal\_amount\_paid="principal\_amount\_paid is the principal

amount paid apart from the interest\_amount monthly";

/\* Updating the plaon\_amount remaining after the principal\_amount\_paid

which is part of payment\_amount\*/

if (ploan\_amount - principal\_amount\_paid) > **0** then

;

ploan\_amount=abs(ploan\_amount) - principal\_amount\_paid;

/\* end\_balanace is the remaining principle loan\_amount that is due after the

monthly installment(payment\_amount)\*/

end\_balance=ploan\_amount;

output;

format ploan\_amount DOLLAR10.2;

format principal\_amount\_paid DOLLAR10.2;

format end\_balance DOLLAR10.2;

format interest\_amount DOLLAR10.2;

format payment\_amount DOLLAR10.2;

format beginning\_balance DOLLAR10.2;

end;

**RUN**;

**PROC** **PRINT** DATA=calculate\_plan\_a;

TITLE "Plan A amortization table for &lengthofloan\_years. years";

**RUN**;

%end;

%else %if %upcase(&plan.) = B %then %do;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* PLAN B Data \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

**DATA** PLAN\_B;

/\* time in months to clear the loan \*/

time\_period=**12**\*(&lengthofloan\_years.);

label time\_period="time in months to clear the loan";

/\*Interest rate per month \*/

interest\_rate= (&interest\_rate\_year.)/(**12**\***100**);

label ibnterest\_rate="Interest rate per month";

/\* loan amount taken \*/

loan\_amount=(&amount\_borrowed. - &downpayment.);

label loan\_amount="loan amount taken";

/\* point\_interest is one time interest at start to be

paid from the taken loan amount to reduce the monthly interest(interest\_rate)\*/

point\_interest= &point\_interest./**100**;

/\*\* Adding the point\_interest to loan\_amount \*/

/\*\* ploan\_amount is the final loan amount to be paid after the time period \*\*/

ploan\_amount=loan\_amount\*(**1**+point\_interest);

payment\_amount=(((ploan\_amount)\*(interest\_rate\*(**1**+interest\_rate)\*\*time\_period))/((**1**+interest\_rate)\*\*time\_period -**1**));

format ploan\_amount DOLLAR10.2;

format payment\_amount DOLLAR10.2;

**RUN**;

\*\*\*\*\*\*\*\* Plan B Amortization Schedule \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

**DATA** CALCULATE\_PLAN\_B(drop=ploan\_amount time\_period interest\_rate

point\_interest loan\_amount);

set plan\_b;

do time=**1** to time\_period;

/\* ploan\_amount is the principal loan amount taken for personal use\*/

/\* payment\_amount is the monthly installement to be paid to clear the loan with interest in

the given time period(time\_period)\*/

/\* beginning balance is the priciple balance due before monthly payment\_amount \*/

beginning\_balance=ploan\_amount;

label beginning\_balance="beginning balance is the balance due before monthly payment\_amount ";

/\* interest amount is the interest to be paid every month on the remaining principle amount\*/

interest\_amount=ploan\_amount \* (interest\_rate);

label interest\_amount="interest amount is the interest to be paid every month";

/\* principal\_amount\_paid is the principal amount paid apart from the interest\_amount monthly \*/

/\* (principal\_amoount\_paid + interest\_amount) gives the monthly installment(payment\_amount)\*/

principal\_amount\_paid=payment\_amount - interest\_amount;

/\* end\_balanace is the remaining priciple loan amount that is due after the

monthly installment(payment\_amount)\*/

end\_balance=ploan\_amount - principal\_amount\_paid;

/\* Updating the plaon\_amount remaining after the principal\_amount\_paid

which is part of payment\_amount\*/

if (ploan\_amount - principal\_amount\_paid) > **0** then;

ploan\_amount=abs(ploan\_amount) - principal\_amount\_paid;

output;

format ploan\_amount DOLLAR10.2;

format principal\_amount\_paid DOLLAR10.2;

format end\_balance DOLLAR10.2;

format interest\_amount DOLLAR10.2;

format payment\_amount DOLLAR10.2;

format beginning\_balance DOLLAR10.2;

end;

**RUN**;

**PROC** **PRINT** DATA=calculate\_plan\_b;

TITLE "Plan B amortization table for &lengthofloan\_years. years";

**RUN**;

%end;

**%mend** amortization;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

/\* 2 a. Code to execute the macro for creating Plan A amortization table \*/

**%amortization**(plan= A ,amount\_borrowed= **600000** ,interest\_rate\_year= **6** ,

downpayment= **120000** ,lengthofloan\_years= **30** );

/\* 2 b. Code to execute the macro for creating Plan B amortization table \*/

**%amortization**(plan= B ,amount\_borrowed= **600000** ,interest\_rate\_year= **5.5** ,

downpayment= **120000** ,lengthofloan\_years= **30**,point\_interest= **4** );

/\* 2 c. Code to execute the macro for creating Plan A amortization table for 15 years \*/

**%amortization**(plan= A ,amount\_borrowed= **600000** ,interest\_rate\_year= **6** ,

downpayment= **120000** ,lengthofloan\_years= **15** );