

```
/* Generated Code (IMPORT) */
/* Source File: HouseTrain.csv */
/* Source Path: /home/u62744702/sasuser.v94/Stats and DDS/excel */
/* Code generated on: 4/5/23, 11:42 AM */
```

```
%web_drop_table(HouseTrain);
```

```
FILENAME REFFILE '/home/u62744702/sasuser.v94/Stats and DDS/excel/HouseTrain.csv';
```

```
PROC IMPORT DATAFILE=REFFILE
```

```
    DBMS=CSV
```

```
    OUT=HouseTrain;
```

```
    GETNAMES=YES;
```

```
RUN;
```

```
PROC CONTENTS DATA=HouseTrain; RUN;
```

```
%web_open_table(HouseTrain);
```

```
data HouseTrain2;
```

```
set HouseTrain;
```

```
/* MSZoning2 */
```

```
IF MSZoning = 'A' THEN MSZoning2=0;
```

```
IF MSZoning = 'C' THEN MSZoning2=1;
```

```
IF MSZoning = 'FV' THEN MSZoning2=2;
```

```
IF MSZoning = 'I' THEN MSZoning2=3;
```

```
IF MSZoning = 'RH' THEN MSZoning2=4;
```

```
IF MSZoning = 'RL' THEN MSZoning2=5;
```

```
IF MSZoning = 'RP' THEN MSZoning2=6;
```

```
IF MSZoning = 'RM' THEN MSZoning2=7;
```

```
/* Street2 */
```

```
IF Street = 'Grv1' THEN Street2=0;
```

```
IF Street = 'Pave' THEN Street2=1;
```

```
IF Street = 'NA' THEN Street2=2;
```

```
/* Alley2 */
```

```
IF Alley = 'Gr' THEN Alley2=0;
```

```
IF Alley = 'Pave' THEN Alley2=1;
```

```
IF Alley = 'NA' THEN Alley2=2;
```

```
/* LotShape2 */
```

```
IF LotShape = 'Reg' THEN LotShape2=0;
```

```
IF LotShape = 'IR1' THEN LotShape2=1;
```

```
IF LotShape = 'IR2' THEN LotShape2=2;
```

```
IF LotShape = 'IR3' THEN LotShape2=3;
```

```
/* LandContour2 */
```

```
IF LandContour = 'LVL' THEN LandContour2=0;
```

```
IF LandContour = 'Bnk' THEN LandContour2=1;
```

```
IF LandContour = 'HLS' THEN LandContour2=2;
```

```
IF LandContour = 'Low' THEN LandContour2=3;
```

```
/* Utilities2 */
```

```
IF Utilities = 'AllPub' THEN Utilities2=0;
```

```

IF Utilities = 'NoSewr' THEN Utilities2=1;
IF Utilities = 'NoSeWa' THEN Utilities2=2;
IF Utilities = 'ELO' THEN Utilities2=3;

/* LotConfig2 */
IF LotConfig = 'Inside' THEN LotConfig2=0;
IF LotConfig = 'Corner' THEN LotConfig2=1;
IF LotConfig = 'CulDSac' THEN LotConfig2=2;
IF LotConfig = 'FR2' THEN LotConfig2=3;
IF LotConfig = 'FR3' THEN LotConfig2=4;

/* LandSlope2 */
IF LandSlope = 'Gtl' THEN LandSlope2=0;
IF LandSlope = 'Mod' THEN LandSlope2=1;
IF LandSlope = 'Sev' THEN LandSlope2=2;

/* Neighborhood2 */
IF Neighborhood = 'Blmngtn' THEN Neighborhood2=0;
IF Neighborhood = 'Blueste' THEN Neighborhood2=1;
IF Neighborhood = 'BrDale' THEN Neighborhood2=2;
IF Neighborhood = 'BrkSide' THEN Neighborhood2=3;
IF Neighborhood = 'ClearCr' THEN Neighborhood2=4;
IF Neighborhood = 'CollgCr' THEN Neighborhood2=5;
IF Neighborhood = 'Crawfor' THEN Neighborhood2=6;
IF Neighborhood = 'Edwards' THEN Neighborhood2=7;
IF Neighborhood = 'Gilbert' THEN Neighborhood2=8;
IF Neighborhood = 'IDOTRR' THEN Neighborhood2=9;
IF Neighborhood = 'MeadowV' THEN Neighborhood2=10;
IF Neighborhood = 'Mitchel' THEN Neighborhood2=11;
IF Neighborhood = 'NAmes' THEN Neighborhood2=12;
IF Neighborhood = 'NoRidge' THEN Neighborhood2=13;
IF Neighborhood = 'NPkVill' THEN Neighborhood2=14;
IF Neighborhood = 'NridgHt' THEN Neighborhood2=15;
IF Neighborhood = 'NWAmes' THEN Neighborhood2=16;
IF Neighborhood = 'OldTown' THEN Neighborhood2=17;
IF Neighborhood = 'SWISU' THEN Neighborhood2=18;
IF Neighborhood = 'Sawyer' THEN Neighborhood2=19;
IF Neighborhood = 'SawyerW' THEN Neighborhood2=20;
IF Neighborhood = 'Somerst' THEN Neighborhood2=21;
IF Neighborhood = 'StoneBr' THEN Neighborhood2=22;
IF Neighborhood = 'Timber' THEN Neighborhood2=23;
IF Neighborhood = 'Veenker' THEN Neighborhood2=24;

/* Condition12 */
IF Condition1 = 'Artery' THEN Condition12=0;
IF Condition1 = 'Feedr' THEN Condition12=1;
IF Condition1 = 'Norm' THEN Condition12=2;
IF Condition1 = 'RRNn' THEN Condition12=3;
IF Condition1 = 'RRAn' THEN Condition12=4;
IF Condition1 = 'PosN' THEN Condition12=5;
IF Condition1 = 'PosA' THEN Condition12=6;
IF Condition1 = 'RRNe' THEN Condition12=7;
IF Condition1 = 'RR Ae' THEN Condition12=8;

/* Condition22 */
IF Condition2 = 'Artery' THEN Condition22=0;
IF Condition2 = 'Feedr' THEN Condition22=1;
IF Condition2 = 'Norm' THEN Condition22=2;
IF Condition2 = 'RRNn' THEN Condition22=3;
IF Condition2 = 'RRAn' THEN Condition22=4;
IF Condition2 = 'PosN' THEN Condition22=5;

```

```

IF Condition2 = 'PosA' THEN Condition22=6;
IF Condition2 = 'RRNe' THEN Condition22=7;
IF Condition2 = 'RRAe' THEN Condition22=8;

/* BldgType2 */
IF BldgType = '1Fam' THEN BldgType2=0;
IF BldgType = '2FmCon' THEN BldgType2=1;
IF BldgType = 'TwnhsE' THEN BldgType2=2;
IF BldgType = 'TwnhsI' THEN BldgType2=3;

/* HouseStyle2 */
IF HouseStyle = '1Story' THEN HouseStyle2=0;
IF HouseStyle = '1.5Fin' THEN HouseStyle2=1;
IF HouseStyle = '1.5Unf' THEN HouseStyle2=2;
IF HouseStyle = '2Story' THEN HouseStyle2=3;
IF HouseStyle = '2.5Fin' THEN HouseStyle2=4;
IF HouseStyle = '2.5Unf' THEN HouseStyle2=5;
IF HouseStyle = 'SFoyer' THEN HouseStyle2=6;
IF HouseStyle = 'SLvl' THEN HouseStyle2=7;

/* RoofStyle2 */
IF RoofStyle = 'Flat' THEN RoofStyle2=0;
IF RoofStyle = 'Gable' THEN RoofStyle2=1;
IF RoofStyle = 'Gambrel' THEN RoofStyle2=2;
IF RoofStyle = 'Hip' THEN RoofStyle2=3;
IF RoofStyle = 'Mansard' THEN RoofStyle2=4;
IF RoofStyle = 'Shed' THEN RoofStyle2=5;

/* RoofMatl2 */
IF RoofMatl = 'ClyTile' THEN RoofMatl2=0;
IF RoofMatl = 'CompShg' THEN RoofMatl2=1;
IF RoofMatl = 'Membran' THEN RoofMatl2=2;
IF RoofMatl = 'Metal' THEN RoofMatl2=3;
IF RoofMatl = 'Roll' THEN RoofMatl2=4;
IF RoofMatl = 'Tar&Grv' THEN RoofMatl2=5;
IF RoofMatl = 'WdShake' THEN RoofMatl2=6;
IF RoofMatl = 'WdShngl' THEN RoofMatl2=7;

/* Exterior1st2*/
IF Exterior1st = 'AsbShng' THEN Exterior1st2=0;
IF Exterior1st = 'AsphShn' THEN Exterior1st2=1;
IF Exterior1st = 'BrkComm' THEN Exterior1st2=2;
IF Exterior1st = 'BrkFace' THEN Exterior1st2=3;
IF Exterior1st = 'CBlock' THEN Exterior1st2=4;
IF Exterior1st = 'CemntBd' THEN Exterior1st2=5;
IF Exterior1st = 'HdBoard' THEN Exterior1st2=6;
IF Exterior1st = 'BrkFace' THEN Exterior1st2=7;
IF Exterior1st = 'CBlock' THEN Exterior1st2=8;
IF Exterior1st = 'CemntBd' THEN Exterior1st2=9;
IF Exterior1st = 'HdBoard' THEN Exterior1st2=10;
IF Exterior1st = 'ImStucc' THEN Exterior1st2=11;
IF Exterior1st = 'MetalSd' THEN Exterior1st2=12;
IF Exterior1st = 'Other' THEN Exterior1st2=13;
IF Exterior1st = 'Plywood' THEN Exterior1st2=14;
IF Exterior1st = 'PreCast' THEN Exterior1st2=15;
IF Exterior1st = 'Stone' THEN Exterior1st2=16;
IF Exterior1st = 'Stucco' THEN Exterior1st2=17;
IF Exterior1st = 'VinylSd' THEN Exterior1st2=18;
IF Exterior1st = 'Wd Sdng' THEN Exterior1st2=19;
IF Exterior1st = 'WdShing' THEN Exterior1st2=20;

```

```
/* Exterior2nd2 */
IF Exterior2nd = 'AsbShng' THEN Exterior2nd2=0;
IF Exterior2nd = 'AsphShn' THEN Exterior2nd2=1;
IF Exterior2nd = 'BrkComm' THEN Exterior2nd2=2;
IF Exterior2nd = 'BrkFace' THEN Exterior2nd2=3;
IF Exterior2nd = 'CBlock' THEN Exterior2nd2=4;
IF Exterior2nd = 'CemntBd' THEN Exterior2nd2=5;
IF Exterior2nd = 'HdBoard' THEN Exterior2nd2=6;
IF Exterior2nd = 'BrkFace' THEN Exterior2nd2=7;
IF Exterior2nd = 'CBlock' THEN Exterior2nd2=8;
IF Exterior2nd = 'CemntBd' THEN Exterior2nd2=9;
IF Exterior2nd = 'HdBoard' THEN Exterior2nd2=10;
IF Exterior2nd = 'ImStucc' THEN Exterior2nd2=11;
IF Exterior2nd = 'MetalSd' THEN Exterior2nd2=12;
IF Exterior2nd = 'Other' THEN Exterior2nd2=13;
IF Exterior2nd = 'Plywood' THEN Exterior2nd2=14;
IF Exterior2nd = 'PreCast' THEN Exterior2nd2=15;
IF Exterior2nd = 'Stone' THEN Exterior2nd2=16;
IF Exterior2nd = 'Stucco' THEN Exterior2nd2=17;
IF Exterior2nd = 'VinylSd' THEN Exterior2nd2=18;
IF Exterior2nd = 'Wd Sdng' THEN Exterior2nd2=19;
IF Exterior2nd = 'WdShing' THEN Exterior2nd2=20;
```

```
/* MasVnrType2 */
IF MasVnrType = 'Ex' THEN MasVnrType2=0;
IF MasVnrType = 'Gd' THEN MasVnrType2=1;
IF MasVnrType = 'TA' THEN MasVnrType2=2;
IF MasVnrType = 'Fa' THEN MasVnrType2=3;
IF MasVnrType = 'Po' THEN MasVnrType2=4;
IF MasVnrType = 'NA' THEN MasVnrType2=5;
```

```
/* ExterQual2 */
IF ExterQual = 'Ex' THEN ExterQual2=0;
IF ExterQual = 'Gd' THEN ExterQual2=1;
IF ExterQual = 'TA' THEN ExterQual2=2;
IF ExterQual = 'Fa' THEN ExterQual2=3;
IF ExterQual = 'Po' THEN ExterQual2=4;
IF ExterQual = 'NA' THEN ExterQual2=5;
```

```
/* ExterCond2 */
IF ExterCond = 'Ex' THEN ExterCond2=0;
IF ExterCond = 'Gd' THEN ExterCond2=1;
IF ExterCond = 'TA' THEN ExterCond2=2;
IF ExterCond = 'Fa' THEN ExterCond2=3;
IF ExterCond = 'Po' THEN ExterCond2=4;
IF ExterCond = 'NA' THEN ExterCond2=5;
```

```
/* Foundation2 */
IF Foundation = 'BrkTil' THEN Foundation2=0;
IF Foundation = 'CBlock' THEN Foundation2=1;
IF Foundation = 'PConc' THEN Foundation2=2;
IF Foundation = 'Slab' THEN Foundation2=3;
IF Foundation = 'Stone' THEN Foundation2=4;
IF Foundation = 'Wood' THEN Foundation2=5;
```

```
/* BsmtQual2 */
IF BsmtQual = 'Ex' THEN BsmtQual2=0;
IF BsmtQual = 'Gd' THEN BsmtQual2=1;
IF BsmtQual = 'TA' THEN BsmtQual2=2;
IF BsmtQual = 'Fa' THEN BsmtQual2=3;
IF BsmtQual = 'Po' THEN BsmtQual2=4;
```

```

IF BsmtQual = 'NA' THEN BsmtQual2=5;

/* BsmtCond2 */
IF BsmtCond = 'Ex' THEN BsmtCond2=0;
IF BsmtCond = 'Gd' THEN BsmtCond2=1;
IF BsmtCond = 'TA' THEN BsmtCond2=2;
IF BsmtCond = 'Fa' THEN BsmtCond2=3;
IF BsmtCond = 'Po' THEN BsmtCond2=4;
IF BsmtCond = 'NA' THEN BsmtCond2=5;

/* BsmtExposure2 */
IF BsmtExposure = 'Gd' THEN BsmtExposure2=0;
IF BsmtExposure = 'Av' THEN BsmtExposure2=1;
IF BsmtExposure = 'Mn' THEN BsmtExposure2=2;
IF BsmtExposure = 'No' THEN BsmtExposure2=3;
IF BsmtExposure = 'NA' THEN BsmtExposure2=4;

/* BsmtFinType12 */
IF BsmtFinType1 = 'GLQ' THEN BsmtFinType12=0;
IF BsmtFinType1 = 'ALQ' THEN BsmtFinType12=1;
IF BsmtFinType1 = 'BLQ' THEN BsmtFinType12=2;
IF BsmtFinType1 = 'Rec' THEN BsmtFinType12=3;
IF BsmtFinType1 = 'LwQ' THEN BsmtFinType12=4;
IF BsmtFinType1 = 'Unf' THEN BsmtFinType12=5;
IF BsmtFinType1 = 'NA' THEN BsmtFinType12=6;

/* BsmtFinType22 */
IF BsmtFinType2 = 'GLQ' THEN BsmtFinType22=0;
IF BsmtFinType2 = 'ALQ' THEN BsmtFinType22=1;
IF BsmtFinType2 = 'BLQ' THEN BsmtFinType22=2;
IF BsmtFinType2 = 'Rec' THEN BsmtFinType22=3;
IF BsmtFinType2 = 'LwQ' THEN BsmtFinType22=4;
IF BsmtFinType2 = 'Unf' THEN BsmtFinType22=5;
IF BsmtFinType2 = 'NA' THEN BsmtFinType22=6;

/* Electrical2 */
IF Electrical = 'SBrkr' THEN Electrical2=0;
IF Electrical = 'FuseA' THEN Electrical2=1;
IF Electrical = 'FuseF' THEN Electrical2=2;
IF Electrical = 'FuseP' THEN Electrical2=3;
IF Electrical = 'Mix' THEN Electrical2=4;

/* Heating2 */
IF Heating = 'Floor' THEN Heating2=0;
IF Heating = 'GasA' THEN Heating2=1;
IF Heating = 'GasW' THEN Heating2=2;
IF Heating = 'Grav' THEN Heating2=3;
IF Heating = 'OthW' THEN Heating2=4;
IF Heating = 'Wall' THEN Heating2=5;

/* HeatingQC2 */
IF HeatingQC = 'Ex' THEN HeatingQC2=0;
IF HeatingQC = 'Gd' THEN HeatingQC2=1;
IF HeatingQC = 'TA' THEN HeatingQC2=2;
IF HeatingQC = 'Fa' THEN HeatingQC2=3;
IF HeatingQC = 'Po' THEN HeatingQC2=4;
IF HeatingQC = 'NA' THEN HeatingQC2=5;

/* CentralAir2 */
IF CentralAir = 'N' THEN CentralAir2=0;
IF CentralAir = 'Y' THEN CentralAir2=1;

```

```

/* KitchenQual2 */
IF KitchenQual = 'Ex' THEN KitchenQual2=0;
IF KitchenQual = 'Gd' THEN KitchenQual2=1;
IF KitchenQual = 'TA' THEN KitchenQual2=2;
IF KitchenQual = 'Fa' THEN KitchenQual2=3;
IF KitchenQual = 'Po' THEN KitchenQual2=4;
IF KitchenQual = 'NA' THEN KitchenQual2=5;

/* Functional2 */
IF Functional = 'Typ' THEN Functional2=0;
IF Functional = 'Min1' THEN Functional2=1;
IF Functional = 'Min2' THEN Functional2=2;
IF Functional = 'Mod' THEN Functional2=3;
IF Functional = 'Maj1' THEN Functional2=4;
IF Functional = 'Maj2' THEN Functional2=5;
IF Functional = 'Sev' THEN Functional2=6;
IF Functional = 'Sal' THEN Functional2=7;

/* KitchenQual2 */
IF KitchenQual = 'Ex' THEN KitchenQual2=0;
IF KitchenQual = 'Gd' THEN KitchenQual2=1;
IF KitchenQual = 'TA' THEN KitchenQual2=2;
IF KitchenQual = 'Fa' THEN KitchenQual2=3;
IF KitchenQual = 'Po' THEN KitchenQual2=4;
IF KitchenQual = 'NA' THEN KitchenQual2=5;

/* FireplaceQu2 */
IF FireplaceQu = 'Ex' THEN FireplaceQu2=0;
IF FireplaceQu = 'Gd' THEN FireplaceQu2=1;
IF FireplaceQu = 'TA' THEN FireplaceQu2=2;
IF FireplaceQu = 'Fa' THEN FireplaceQu2=3;
IF FireplaceQu = 'Po' THEN FireplaceQu2=4;
IF FireplaceQu = 'NA' THEN FireplaceQu2=5;

/* GarageType2 */
IF GarageType = '2Types' THEN GarageType2=0;
IF GarageType = 'Attchd' THEN GarageType2=1;
IF GarageType = 'Basment' THEN GarageType2=2;
IF GarageType = 'BuiltIn' THEN GarageType2=3;
IF GarageType = 'CarPort' THEN GarageType2=4;
IF GarageType = 'Detchd' THEN GarageType2=5;
IF GarageType = 'NA' THEN GarageType2=6;

/* GarageFinish2 */
IF GarageFinish = 'Fin' THEN GarageFinish2=0;
IF GarageFinish = 'Rfn' THEN GarageFinish2=1;
IF GarageFinish = 'Unf' THEN GarageFinish2=2;
IF GarageFinish = 'NA' THEN GarageFinish2=3;

/* GarageQual2 */
IF GarageQual = 'Ex' THEN GarageQual2=0;
IF GarageQual = 'Gd' THEN GarageQual2=1;
IF GarageQual = 'TA' THEN GarageQual2=2;
IF GarageQual = 'Fa' THEN GarageQual2=3;
IF GarageQual = 'Po' THEN GarageQual2=4;
IF GarageQual = 'NA' THEN GarageQual2=5;

/* GarageCond2 */
IF GarageCond = 'Ex' THEN GarageCond2=0;
IF GarageCond = 'Gd' THEN GarageCond2=1;

```

```

IF GarageCond = 'TA' THEN GarageCond2=2;
IF GarageCond = 'Fa' THEN GarageCond2=3;
IF GarageCond = 'Po' THEN GarageCond2=4;
IF GarageCond = 'NA' THEN GarageCond2=5;

/* PavedDrive2 */
IF PavedDrive = 'Y' THEN PavedDrive2=0;
IF PavedDrive = 'P' THEN PavedDrive2=1;
IF PavedDrive = 'N' THEN PavedDrive2=2;

/* PoolQC2 */
IF PoolQC = 'Ex' THEN PoolQC2=0;
IF PoolQC = 'Gd' THEN PoolQC2=1;
IF PoolQC = 'TA' THEN PoolQC2=2;
IF PoolQC = 'Fa' THEN PoolQC2=3;
IF PoolQC = 'Po' THEN PoolQC2=4;
IF PoolQC = 'NA' THEN PoolQC2=5;

/* Fence2 */
IF Fence = 'GdPrv' THEN Fence2=0;
IF Fence = 'MnPrv' THEN Fence2=1;
IF Fence = 'GdWo' THEN Fence2=2;
IF Fence = 'MnWw' THEN Fence2=3;
IF Fence = 'NA' THEN Fence2=4;

/* MiscFeature2 */
IF MiscFeature = 'Elev' THEN MiscFeature2=0;
IF MiscFeature = 'Gar2' THEN MiscFeature2=1;
IF MiscFeature = 'Othr' THEN MiscFeature2=2;
IF MiscFeature = 'Shed' THEN MiscFeature2=3;
IF MiscFeature = 'TenC' THEN MiscFeature2=4;
IF MiscFeature = 'NA' THEN MiscFeature2=5;

/* SaleType2 */
IF SaleType = 'WD' THEN SaleType2=0;
IF SaleType = 'CWD' THEN SaleType2=1;
IF SaleType = 'VWD' THEN SaleType2=2;
IF SaleType = 'New' THEN SaleType2=3;
IF SaleType = 'COD' THEN SaleType2=4;
IF SaleType = 'Con' THEN SaleType2=5;
IF SaleType = 'ConLw' THEN SaleType2=6;
IF SaleType = 'ConLI' THEN SaleType2=7;
IF SaleType = 'ConLD' THEN SaleType2=8;
IF SaleType = 'Oth' THEN SaleType2=9;

/* SaleCondition2 */
IF SaleCondition = 'Normal' THEN SaleCondition2=0;
IF SaleCondition = 'Abnorml' THEN SaleCondition2=1;
IF SaleCondition = 'AdjLand' THEN SaleCondition2=2;
IF SaleCondition = 'Alloca' THEN SaleCondition2=3;
IF SaleCondition = 'Family' THEN SaleCondition2=4;
IF SaleCondition = 'Partial' THEN SaleCondition2=5;
run;

/*PULL IN TEST DATA */

/* Generated Code (IMPORT) */
/* Source File: HouseTest.csv */

```

```
/* Source Path: /home/u62744702/sasuser.v94/Stats and DDS/excel */
/* Code generated on: 4/6/23, 12:16 PM */
```

```
%web_drop_table(HouseTest);
```

```
FILENAME REFFILE '/home/u62744702/sasuser.v94/Stats and DDS/excel/HouseTest.csv';
```

```
PROC IMPORT DATAFILE=REFFILE
```

```
    DBMS=CSV
```

```
    OUT=HouseTest;
```

```
    GETNAMES=YES;
```

```
RUN;
```

```
PROC CONTENTS DATA=HouseTest; RUN;
```

```
%web_open_table(HouseTest);
```

```
data HouseTest2;
```

```
set HouseTest;
```

```
/* MSZoning2 */
```

```
IF MSZoning = 'A' THEN MSZoning2=0;
```

```
IF MSZoning = 'C' THEN MSZoning2=1;
```

```
IF MSZoning = 'FV' THEN MSZoning2=2;
```

```
IF MSZoning = 'I' THEN MSZoning2=3;
```

```
IF MSZoning = 'RH' THEN MSZoning2=4;
```

```
IF MSZoning = 'RL' THEN MSZoning2=5;
```

```
IF MSZoning = 'RP' THEN MSZoning2=6;
```

```
IF MSZoning = 'RM' THEN MSZoning2=7;
```

```
/* Street2 */
```

```
IF Street = 'Grv1' THEN Street2=0;
```

```
IF Street = 'Pave' THEN Street2=1;
```

```
IF Street = 'NA' THEN Street2=2;
```

```
/* Alley2 */
```

```
IF Alley = 'Gr' THEN Alley2=0;
```

```
IF Alley = 'Pave' THEN Alley2=1;
```

```
IF Alley = 'NA' THEN Alley2=2;
```

```
/* LotShape2 */
```

```
IF LotShape = 'Reg' THEN LotShape2=0;
```

```
IF LotShape = 'IR1' THEN LotShape2=1;
```

```
IF LotShape = 'IR2' THEN LotShape2=2;
```

```
IF LotShape = 'IR3' THEN LotShape2=3;
```

```
/* LandContour2 */
```

```
IF LandContour = 'LVL' THEN LandContour2=0;
```

```
IF LandContour = 'Bnk' THEN LandContour2=1;
```

```
IF LandContour = 'HLS' THEN LandContour2=2;
```

```
IF LandContour = 'Low' THEN LandContour2=3;
```

```
/* Utilities2 */
```

```
IF Utilities = 'AllPub' THEN Utilities2=0;
```

```
IF Utilities = 'NoSewr' THEN Utilities2=1;
```

```
IF Utilities = 'NoSeWa' THEN Utilities2=2;
```

```
IF Utilities = 'ELO' THEN Utilities2=3;
```



```

/* LotConfig2*/
IF LotConfig = 'Inside' THEN LotConfig2=0;
IF LotConfig = 'Corner' THEN LotConfig2=1;
IF LotConfig = 'CulDSac' THEN LotConfig2=2;
IF LotConfig = 'FR2' THEN LotConfig2=3;
IF LotConfig = 'FR3' THEN LotConfig2=4;

/* LandSlope2 */
IF LandSlope = 'Gtl' THEN LandSlope2=0;
IF LandSlope = 'Mod' THEN LandSlope2=1;
IF LandSlope = 'Sev' THEN LandSlope2=2;

/* Neighborhood2 */
IF Neighborhood = 'Blmngtn' THEN Neighborhood2=0;
IF Neighborhood = 'Blueste' THEN Neighborhood2=1;
IF Neighborhood = 'BrDale' THEN Neighborhood2=2;
IF Neighborhood = 'BrkSide' THEN Neighborhood2=3;
IF Neighborhood = 'ClearCr' THEN Neighborhood2=4;
IF Neighborhood = 'CollgCr' THEN Neighborhood2=5;
IF Neighborhood = 'Crawfor' THEN Neighborhood2=6;
IF Neighborhood = 'Edwards' THEN Neighborhood2=7;
IF Neighborhood = 'Gilbert' THEN Neighborhood2=8;
IF Neighborhood = 'IDOTRR' THEN Neighborhood2=9;
IF Neighborhood = 'MeadowV' THEN Neighborhood2=10;
IF Neighborhood = 'Mitchel' THEN Neighborhood2=11;
IF Neighborhood = 'NAmes' THEN Neighborhood2=12;
IF Neighborhood = 'NoRidge' THEN Neighborhood2=13;
IF Neighborhood = 'NPkVill' THEN Neighborhood2=14;
IF Neighborhood = 'NridgHt' THEN Neighborhood2=15;
IF Neighborhood = 'NWAmes' THEN Neighborhood2=16;
IF Neighborhood = 'OldTown' THEN Neighborhood2=17;
IF Neighborhood = 'SWISU' THEN Neighborhood2=18;
IF Neighborhood = 'Sawyer' THEN Neighborhood2=19;
IF Neighborhood = 'SawyerW' THEN Neighborhood2=20;
IF Neighborhood = 'Somerst' THEN Neighborhood2=21;
IF Neighborhood = 'StoneBr' THEN Neighborhood2=22;
IF Neighborhood = 'Timber' THEN Neighborhood2=23;
IF Neighborhood = 'Veenker' THEN Neighborhood2=24;

/* Condition12 */
IF Condition1 = 'Artery' THEN Condition12=0;
IF Condition1 = 'Feedr' THEN Condition12=1;
IF Condition1 = 'Norm' THEN Condition12=2;
IF Condition1 = 'RRNn' THEN Condition12=3;
IF Condition1 = 'RRAn' THEN Condition12=4;
IF Condition1 = 'PosN' THEN Condition12=5;
IF Condition1 = 'PosA' THEN Condition12=6;
IF Condition1 = 'RRNe' THEN Condition12=7;
IF Condition1 = 'RAAe' THEN Condition12=8;

/* Condition22 */
IF Condition2 = 'Artery' THEN Condition22=0;
IF Condition2 = 'Feedr' THEN Condition22=1;
IF Condition2 = 'Norm' THEN Condition22=2;
IF Condition2 = 'RRNn' THEN Condition22=3;
IF Condition2 = 'RRAn' THEN Condition22=4;
IF Condition2 = 'PosN' THEN Condition22=5;
IF Condition2 = 'PosA' THEN Condition22=6;
IF Condition2 = 'RRNe' THEN Condition22=7;
IF Condition2 = 'RAAe' THEN Condition22=8;

```

```

/* BldgType2 */
IF BldgType = '1Fam' THEN BldgType2=0;
IF BldgType = '2FmCon' THEN BldgType2=1;
IF BldgType = 'TwnhsE' THEN BldgType2=2;
IF BldgType = 'TwnhsI' THEN BldgType2=3;

/* HouseStyle2 */
IF HouseStyle = '1Story' THEN HouseStyle2=0;
IF HouseStyle = '1.5Fin' THEN HouseStyle2=1;
IF HouseStyle = '1.5Unf' THEN HouseStyle2=2;
IF HouseStyle = '2Story' THEN HouseStyle2=3;
IF HouseStyle = '2.5Fin' THEN HouseStyle2=4;
IF HouseStyle = '2.5Unf' THEN HouseStyle2=5;
IF HouseStyle = 'SFoyer' THEN HouseStyle2=6;
IF HouseStyle = 'SLvl' THEN HouseStyle2=7;

/* RoofStyle2 */
IF RoofStyle = 'Flat' THEN RoofStyle2=0;
IF RoofStyle = 'Gable' THEN RoofStyle2=1;
IF RoofStyle = 'Gambrel' THEN RoofStyle2=2;
IF RoofStyle = 'Hip' THEN RoofStyle2=3;
IF RoofStyle = 'Mansard' THEN RoofStyle2=4;
IF RoofStyle = 'Shed' THEN RoofStyle2=5;

/* RoofMatl2 */
IF RoofMatl = 'ClyTile' THEN RoofMatl2=0;
IF RoofMatl = 'CompShg' THEN RoofMatl2=1;
IF RoofMatl = 'Membran' THEN RoofMatl2=2;
IF RoofMatl = 'Metal' THEN RoofMatl2=3;
IF RoofMatl = 'Roll' THEN RoofMatl2=4;
IF RoofMatl = 'Tar&Grv' THEN RoofMatl2=5;
IF RoofMatl = 'WdShake' THEN RoofMatl2=6;
IF RoofMatl = 'WdShngl' THEN RoofMatl2=7;

/* Exterior1st2 */
IF Exterior1st = 'AsbShng' THEN Exterior1st2=0;
IF Exterior1st = 'AsphShn' THEN Exterior1st2=1;
IF Exterior1st = 'BrkComm' THEN Exterior1st2=2;
IF Exterior1st = 'BrkFace' THEN Exterior1st2=3;
IF Exterior1st = 'CBlock' THEN Exterior1st2=4;
IF Exterior1st = 'CemntBd' THEN Exterior1st2=5;
IF Exterior1st = 'HdBoard' THEN Exterior1st2=6;
IF Exterior1st = 'BrkFace' THEN Exterior1st2=7;
IF Exterior1st = 'CBlock' THEN Exterior1st2=8;
IF Exterior1st = 'CemntBd' THEN Exterior1st2=9;
IF Exterior1st = 'HdBoard' THEN Exterior1st2=10;
IF Exterior1st = 'ImStucc' THEN Exterior1st2=11;
IF Exterior1st = 'MetalSd' THEN Exterior1st2=12;
IF Exterior1st = 'Other' THEN Exterior1st2=13;
IF Exterior1st = 'Plywood' THEN Exterior1st2=14;
IF Exterior1st = 'PreCast' THEN Exterior1st2=15;
IF Exterior1st = 'Stone' THEN Exterior1st2=16;
IF Exterior1st = 'Stucco' THEN Exterior1st2=17;
IF Exterior1st = 'VinylSd' THEN Exterior1st2=18;
IF Exterior1st = 'Wd Sdng' THEN Exterior1st2=19;
IF Exterior1st = 'WdShing' THEN Exterior1st2=20;

/* Exterior2nd2 */
IF Exterior2nd = 'AsbShng' THEN Exterior2nd2=0;
IF Exterior2nd = 'AsphShn' THEN Exterior2nd2=1;
IF Exterior2nd = 'BrkComm' THEN Exterior2nd2=2;

```

```
IF Exterior2nd = 'BrkFace' THEN Exterior2nd2=3;
IF Exterior2nd = 'CBlock' THEN Exterior2nd2=4;
IF Exterior2nd = 'CemntBd' THEN Exterior2nd2=5;
IF Exterior2nd = 'HdBoard' THEN Exterior2nd2=6;
IF Exterior2nd = 'BrkFace' THEN Exterior2nd2=7;
IF Exterior2nd = 'CBlock' THEN Exterior2nd2=8;
IF Exterior2nd = 'CemntBd' THEN Exterior2nd2=9;
IF Exterior2nd = 'HdBoard' THEN Exterior2nd2=10;
IF Exterior2nd = 'ImStucc' THEN Exterior2nd2=11;
IF Exterior2nd = 'MetalSd' THEN Exterior2nd2=12;
IF Exterior2nd = 'Other' THEN Exterior2nd2=13;
IF Exterior2nd = 'Plywood' THEN Exterior2nd2=14;
IF Exterior2nd = 'PreCast' THEN Exterior2nd2=15;
IF Exterior2nd = 'Stone' THEN Exterior2nd2=16;
IF Exterior2nd = 'Stucco' THEN Exterior2nd2=17;
IF Exterior2nd = 'VinylSd' THEN Exterior2nd2=18;
IF Exterior2nd = 'Wd Sdng' THEN Exterior2nd2=19;
IF Exterior2nd = 'WdShing' THEN Exterior2nd2=20;
```

```
/* MasVnrType2 */
```

```
IF MasVnrType = 'Ex' THEN MasVnrType2=0;
IF MasVnrType = 'Gd' THEN MasVnrType2=1;
IF MasVnrType = 'TA' THEN MasVnrType2=2;
IF MasVnrType = 'Fa' THEN MasVnrType2=3;
IF MasVnrType = 'Po' THEN MasVnrType2=4;
IF MasVnrType = 'NA' THEN MasVnrType2=5;
```

```
/* ExterQual2 */
```

```
IF ExterQual = 'Ex' THEN ExterQual2=0;
IF ExterQual = 'Gd' THEN ExterQual2=1;
IF ExterQual = 'TA' THEN ExterQual2=2;
IF ExterQual = 'Fa' THEN ExterQual2=3;
IF ExterQual = 'Po' THEN ExterQual2=4;
IF ExterQual = 'NA' THEN ExterQual2=5;
```

```
/* ExterCond2 */
```

```
IF ExterCond = 'Ex' THEN ExterCond2=0;
IF ExterCond = 'Gd' THEN ExterCond2=1;
IF ExterCond = 'TA' THEN ExterCond2=2;
IF ExterCond = 'Fa' THEN ExterCond2=3;
IF ExterCond = 'Po' THEN ExterCond2=4;
IF ExterCond = 'NA' THEN ExterCond2=5;
```

```
/* Foundation2 */
```

```
IF Foundation = 'BrkTil' THEN Foundation2=0;
IF Foundation = 'CBlock' THEN Foundation2=1;
IF Foundation = 'PConc' THEN Foundation2=2;
IF Foundation = 'Slab' THEN Foundation2=3;
IF Foundation = 'Stone' THEN Foundation2=4;
IF Foundation = 'Wood' THEN Foundation2=5;
```

```
/* BsmtQual2 */
```

```
IF BsmtQual = 'Ex' THEN BsmtQual2=0;
IF BsmtQual = 'Gd' THEN BsmtQual2=1;
IF BsmtQual = 'TA' THEN BsmtQual2=2;
IF BsmtQual = 'Fa' THEN BsmtQual2=3;
IF BsmtQual = 'Po' THEN BsmtQual2=4;
IF BsmtQual = 'NA' THEN BsmtQual2=5;
```

```
/* BsmtCond2 */
```

```
IF BsmtCond = 'Ex' THEN BsmtCond2=0;
```

```

IF BsmtCond = 'Gd' THEN BsmtCond2=1;
IF BsmtCond = 'TA' THEN BsmtCond2=2;
IF BsmtCond = 'Fa' THEN BsmtCond2=3;
IF BsmtCond = 'Po' THEN BsmtCond2=4;
IF BsmtCond = 'NA' THEN BsmtCond2=5;

/* BsmtExposure2 */
IF BsmtExposure = 'Gd' THEN BsmtExposure2=0;
IF BsmtExposure = 'Av' THEN BsmtExposure2=1;
IF BsmtExposure = 'Mn' THEN BsmtExposure2=2;
IF BsmtExposure = 'No' THEN BsmtExposure2=3;
IF BsmtExposure = 'NA' THEN BsmtExposure2=4;

/* BsmtFinType12 */
IF BsmtFinType1 = 'GLQ' THEN BsmtFinType12=0;
IF BsmtFinType1 = 'ALQ' THEN BsmtFinType12=1;
IF BsmtFinType1 = 'BLQ' THEN BsmtFinType12=2;
IF BsmtFinType1 = 'Rec' THEN BsmtFinType12=3;
IF BsmtFinType1 = 'LwQ' THEN BsmtFinType12=4;
IF BsmtFinType1 = 'Unf' THEN BsmtFinType12=5;
IF BsmtFinType1 = 'NA' THEN BsmtFinType12=6;

/* BsmtFinType22 */
IF BsmtFinType2 = 'GLQ' THEN BsmtFinType22=0;
IF BsmtFinType2 = 'ALQ' THEN BsmtFinType22=1;
IF BsmtFinType2 = 'BLQ' THEN BsmtFinType22=2;
IF BsmtFinType2 = 'Rec' THEN BsmtFinType22=3;
IF BsmtFinType2 = 'LwQ' THEN BsmtFinType22=4;
IF BsmtFinType2 = 'Unf' THEN BsmtFinType22=5;
IF BsmtFinType2 = 'NA' THEN BsmtFinType22=6;

/* Electrical2 */
IF Electrical = 'SBrkr' THEN Electrical2=0;
IF Electrical = 'FuseA' THEN Electrical2=1;
IF Electrical = 'FuseF' THEN Electrical2=2;
IF Electrical = 'FuseP' THEN Electrical2=3;
IF Electrical = 'Mix' THEN Electrical2=4;

/* Heating2 */
IF Heating = 'Floor' THEN Heating2=0;
IF Heating = 'GasA' THEN Heating2=1;
IF Heating = 'GasW' THEN Heating2=2;
IF Heating = 'Grav' THEN Heating2=3;
IF Heating = 'OthW' THEN Heating2=4;
IF Heating = 'Wall' THEN Heating2=5;

/* HeatingQC2 */
IF HeatingQC = 'Ex' THEN HeatingQC2=0;
IF HeatingQC = 'Gd' THEN HeatingQC2=1;
IF HeatingQC = 'TA' THEN HeatingQC2=2;
IF HeatingQC = 'Fa' THEN HeatingQC2=3;
IF HeatingQC = 'Po' THEN HeatingQC2=4;
IF HeatingQC = 'NA' THEN HeatingQC2=5;

/* CentralAir2 */
IF CentralAir = 'N' THEN CentralAir2=0;
IF CentralAir = 'Y' THEN CentralAir2=1;

/* KitchenQual2 */
IF KitchenQual = 'Ex' THEN KitchenQual2=0;
IF KitchenQual = 'Gd' THEN KitchenQual2=1;

```

```

IF KitchenQual = 'TA' THEN KitchenQual2=2;
IF KitchenQual = 'Fa' THEN KitchenQual2=3;
IF KitchenQual = 'Po' THEN KitchenQual2=4;
IF KitchenQual = 'NA' THEN KitchenQual2=5;

/* Functional2 */
IF Functional = 'Typ' THEN Functional2=0;
IF Functional = 'Min1' THEN Functional2=1;
IF Functional = 'Min2' THEN Functional2=2;
IF Functional = 'Mod' THEN Functional2=3;
IF Functional = 'Maj1' THEN Functional2=4;
IF Functional = 'Maj2' THEN Functional2=5;
IF Functional = 'Sev' THEN Functional2=6;
IF Functional = 'Sal' THEN Functional2=7;

/* KitchenQual2 */
IF KitchenQual = 'Ex' THEN KitchenQual2=0;
IF KitchenQual = 'Gd' THEN KitchenQual2=1;
IF KitchenQual = 'TA' THEN KitchenQual2=2;
IF KitchenQual = 'Fa' THEN KitchenQual2=3;
IF KitchenQual = 'Po' THEN KitchenQual2=4;
IF KitchenQual = 'NA' THEN KitchenQual2=5;

/* FireplaceQu2 */
IF FireplaceQu = 'Ex' THEN FireplaceQu2=0;
IF FireplaceQu = 'Gd' THEN FireplaceQu2=1;
IF FireplaceQu = 'TA' THEN FireplaceQu2=2;
IF FireplaceQu = 'Fa' THEN FireplaceQu2=3;
IF FireplaceQu = 'Po' THEN FireplaceQu2=4;
IF FireplaceQu = 'NA' THEN FireplaceQu2=5;

/* GarageType2 */
IF GarageType = '2Types' THEN GarageType2=0;
IF GarageType = 'Attchd' THEN GarageType2=1;
IF GarageType = 'Basment' THEN GarageType2=2;
IF GarageType = 'BuiltIn' THEN GarageType2=3;
IF GarageType = 'CarPort' THEN GarageType2=4;
IF GarageType = 'Detchd' THEN GarageType2=5;
IF GarageType = 'NA' THEN GarageType2=6;

/* GarageFinish2 */
IF GarageFinish = 'Fin' THEN GarageFinish2=0;
IF GarageFinish = 'RFn' THEN GarageFinish2=1;
IF GarageFinish = 'Unf' THEN GarageFinish2=2;
IF GarageFinish = 'NA' THEN GarageFinish2=3;

/* GarageQual2 */
IF GarageQual = 'Ex' THEN GarageQual2=0;
IF GarageQual = 'Gd' THEN GarageQual2=1;
IF GarageQual = 'TA' THEN GarageQual2=2;
IF GarageQual = 'Fa' THEN GarageQual2=3;
IF GarageQual = 'Po' THEN GarageQual2=4;
IF GarageQual = 'NA' THEN GarageQual2=5;

/* GarageCond2 */
IF GarageCond = 'Ex' THEN GarageCond2=0;
IF GarageCond = 'Gd' THEN GarageCond2=1;
IF GarageCond = 'TA' THEN GarageCond2=2;
IF GarageCond = 'Fa' THEN GarageCond2=3;
IF GarageCond = 'Po' THEN GarageCond2=4;
IF GarageCond = 'NA' THEN GarageCond2=5;

```

```

/* PavedDrive2 */
IF PavedDrive = 'Y' THEN PavedDrive2=0;
IF PavedDrive = 'P' THEN PavedDrive2=1;
IF PavedDrive = 'N' THEN PavedDrive2=2;

/* PoolQC2 */
IF PoolQC = 'Ex' THEN PoolQC2=0;
IF PoolQC = 'Gd' THEN PoolQC2=1;
IF PoolQC = 'TA' THEN PoolQC2=2;
IF PoolQC = 'Fa' THEN PoolQC2=3;
IF PoolQC = 'Po' THEN PoolQC2=4;
IF PoolQC = 'NA' THEN PoolQC2=5;

/* Fence2 */
IF Fence = 'GdPrv' THEN Fence2=0;
IF Fence = 'MnPrv' THEN Fence2=1;
IF Fence = 'GdWo' THEN Fence2=2;
IF Fence = 'MnWw' THEN Fence2=3;
IF Fence = 'NA' THEN Fence2=4;

/* MiscFeature2 */
IF MiscFeature = 'Elev' THEN MiscFeature2=0;
IF MiscFeature = 'Gar2' THEN MiscFeature2=1;
IF MiscFeature = 'Othr' THEN MiscFeature2=2;
IF MiscFeature = 'Shed' THEN MiscFeature2=3;
IF MiscFeature = 'TenC' THEN MiscFeature2=4;
IF MiscFeature = 'NA' THEN MiscFeature2=5;

/* SaleType2 */
IF SaleType = 'WD' THEN SaleType2=0;
IF SaleType = 'CWD' THEN SaleType2=1;
IF SaleType = 'VWD' THEN SaleType2=2;
IF SaleType = 'New' THEN SaleType2=3;
IF SaleType = 'COD' THEN SaleType2=4;
IF SaleType = 'Con' THEN SaleType2=5;
IF SaleType = 'ConLw' THEN SaleType2=6;
IF SaleType = 'ConLI' THEN SaleType2=7;
IF SaleType = 'ConLD' THEN SaleType2=8;
IF SaleType = 'Oth' THEN SaleType2=9;

/* SaleCondition2 */
IF SaleCondition = 'Normal' THEN SaleCondition2=0;
IF SaleCondition = 'Abnorml' THEN SaleCondition2=1;
IF SaleCondition = 'AdjLand' THEN SaleCondition2=2;
IF SaleCondition = 'Alloca' THEN SaleCondition2=3;
IF SaleCondition = 'Family' THEN SaleCondition2=4;
IF SaleCondition = 'Partial' THEN SaleCondition2=5;
run;

/* Add a new column called "new_column" */
data HouseTest2;
    set HouseTest2;
    SalePrice = .; /* You can set the default value of the new column here */
run;

/*putting test and train together*/
data Final1;

```

```
set HouseTrain2 HouseTest2;  
run;
```

```
proc print data=Final1;  
run;
```

```
/* Best Forward Model */
```

```
proc glmselect data=HouseTrain2 plots(stepaxis=number) = (criterionpanel ASEPlot);  
partition fraction(test=.2);
```

```
/* Numeric Categories */
```

```
class OverallCond HalfBath BedroomAbvGr KitchenAbvGr MoSold YrSold
```

```
/* String Categories */
```

```
Alley LotShape LandContour LotConfig LandSlope Neighborhood Condition1
```

```
Condition2 BldgType
```

```
HouseStyle RoofStyle RoofMatl MasVnrType ExterQual ExterCond Foundation
```

```
BsmtQual BsmtCond
```

```
BsmtExposure BsmtFinType1 BsmtFinType2 Heating HeatingQC CentralAir Electrical
```

```
FireplaceQu
```

```
GarageType GarageFinish GarageQual GarageCond PavedDrive PoolQC Fence
```

```
MiscFeature SaleCondition;
```

```
model SalePrice = OverallQual GrLivArea GarageCars FullBath
```

```
TotRmsAbvGrd Fireplaces OpenPorchSF GarageArea MasVnrArea
```

```
/* String Categories */
```

```
Alley LotShape LandContour LotConfig LandSlope Neighborhood Condition1
```

```
Condition2 BldgType
```

```
HouseStyle RoofStyle RoofMatl MasVnrType ExterQual ExterCond Foundation
```

```
BsmtQual BsmtCond
```

```
BsmtExposure BsmtFinType1 BsmtFinType2 Heating HeatingQC CentralAir Electrical
```

```
FireplaceQu
```

```
GarageType GarageFinish GarageQual GarageCond PavedDrive PoolQC Fence
```

```
MiscFeature SaleCondition
```

```
/ selection=forward (choose = bic stop = bic) CVDETAILS;
```

```
score data=HouseTest2 out=pred_forward;
```

```
run;
```

```
/* Best backward Model */
```

```
proc glmselect data=HouseTrain2 plots(stepaxis=number) = (criterionpanel ASEPlot);  
partition fraction(test=.2);
```

```
/* Numeric Categories */
```

```
class OverallCond HalfBath BedroomAbvGr KitchenAbvGr MoSold YrSold
```

```
/* String Categories */
```

```
Alley LotShape LandContour LotConfig LandSlope Neighborhood Condition1
```

```
Condition2 BldgType
```

```
HouseStyle RoofStyle RoofMatl MasVnrType ExterQual ExterCond Foundation
```

```
BsmtQual BsmtCond
```

```
BsmtExposure BsmtFinType1 BsmtFinType2 Heating HeatingQC CentralAir Electrical
```

```
FireplaceQu
```

```
GarageType GarageFinish GarageQual GarageCond PavedDrive PoolQC Fence
```

```
MiscFeature SaleCondition;
```

```
model SalePrice = OverallQual GrLivArea GarageCars FullBath
```

```
TotRmsAbvGrd Fireplaces OpenPorchSF GarageArea MasVnrArea
```

```
/* String Categories */
```

```
Alley LotShape LandContour LotConfig LandSlope Neighborhood Condition1
```

```
Condition2 BldgType HouseStyle RoofStyle RoofMatl MasVnrType ExterQual ExterCond Foundation
```

```
BsmtQual BsmtCond
```

```
BsmtExposure BsmtFinType1 BsmtFinType2 Heating HeatingQC CentralAir Electrical
```

```
FireplaceQu
```

```

GarageType GarageFinish GarageQual GarageCond PavedDrive PoolQC Fence
MiscFeature SaleCondition
/selection=backward (choose = bic stop = bic) CVDETAILS;
score data=HouseTest2 out=pred_backward;
run;

/* Best stepwise Model */
proc glmselect data=HouseTrain2 plots(stepaxis=number) = (criterionpanel ASEPlot);
partition fraction(test=.2);
/* Numeric Categories */
class OverallCond HalfBath BedroomAbvGr KitchenAbvGr MoSold YrSold
/* String Categories */
Alley LotShape LandContour LotConfig LandSlope Neighborhood Condition1
Condition2 BldgType
HouseStyle RoofStyle RoofMatl MasVnrType ExterQual ExterCond Foundation
BsmtQual BsmtCond
BsmtExposure BsmtFinType1 BsmtFinType2 Heating HeatingQC CentralAir Electrical
FireplaceQu
GarageType GarageFinish GarageQual GarageCond PavedDrive PoolQC Fence
MiscFeature SaleCondition;
model SalePrice = OverallQual GrLivArea GarageCars FullBath
TotRmsAbvGrd Fireplaces OpenPorchSF GarageArea MasVnrArea
/* String Categories */
Alley LotShape LandContour LotConfig LandSlope Neighborhood Condition1
Condition2 BldgType HouseStyle RoofStyle RoofMatl MasVnrType ExterQual ExterCond Foundation
BsmtQual BsmtCond
BsmtExposure BsmtFinType1 BsmtFinType2 Heating HeatingQC CentralAir Electrical
FireplaceQu
GarageType GarageFinish GarageQual GarageCond PavedDrive PoolQC Fence
MiscFeature SaleCondition
/selection=stepwise (choose = bic stop = bic) CVDETAILS;
score data=HouseTest2 out=pred_stepwise;
run;

/* Removed column with VIF significantly above 10 which include YearBuilt BsmtFinSF1 BsmtUnfSF TotalBsmtSF */
/* Removed column with singularity which include SaleType(87% WD) ScreenPorch(92% 0)EnclosedPorch(86% 0) PoolArea(99.5% 0) MiscVal(97% 0) Utilities2 ;
/* Removed column with unique identifiers which include ID */
/* Removed column due to unable to change name 1stFlrSF 2ndFlrSF 3SsnPorch */

/* WoodDeckSF MSSubClass MSZoning
LotFrontage LotArea YearRemodAdd Exterior1st Exterior2nd BsmtFinSF2
LowQualFinSF BsmtFullBath BsmtHalfBath KitchenQual Functional GarageYrBlt */

/* Best Custom(stepwise) Model */
proc glmselect data=HouseTrain2 plots(stepaxis=number) = (criterionpanel ASEPlot);
partition fraction(test=.2);
/* Numeric Categories */
class OverallCond BedroomAbvGr KitchenAbvGr MoSold YrSold
/* String Categories */
Alley LotShape LandContour LotConfig LandSlope Neighborhood Condition1
Condition2 BldgType
HouseStyle RoofStyle RoofMatl MasVnrType ExterQual ExterCond Foundation
BsmtQual BsmtCond
BsmtExposure Heating HeatingQC CentralAir Electrical
GarageType GarageFinish GarageQual GarageCond PavedDrive SaleCondition;
model SalePrice = OverallQual GrLivArea GarageCars FullBath
TotRmsAbvGrd Fireplaces OpenPorchSF GarageArea MasVnrArea
/* String Categories */
Alley LotShape LandContour LotConfig LandSlope Neighborhood Condition1
Condition2 BldgType HouseStyle RoofStyle RoofMatl MasVnrType ExterQual ExterCond Foundation

```



```
BsmtQual BsmtCond  
BsmtExposure Heating HeatingQC CentralAir Electrical  
GarageType GarageFinish GarageQual GarageCond PavedDrive SaleCondition  
/selection=stepwise (choose = bic stop = bic) CVDETAILS;  
score data=HouseTest2 out=pred_stepwise;  
run;
```

```
proc reg data=HouseTrain2;  
model SalePrice = Heating2 MSZoning2 Street2 Alley2 LotShape2 LandContour2 Utilities2 LotConfig2 LandSlope2 Neighborhood2 Condition12 Condition22 BldgType2  
run;
```