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Demo: Examining Residuals Using the Linear Regression Task

Use the Linear Regression task to create residual plots and other diagnostic plots. Use these plots to check your model assumptions and to check for outliers.

1. In the Navigation pane, select **Tasks and Utilities**.
2. Expand **Tasks**.
3. Expand **Statistics** and open the **Linear Regression** task.
4. Select the **stat1.ameshousing3** table.
5. Assign **SalePrice** to the Dependent variable role.
6. Assign the interval variables (**Lot_Area**, **Gr_Liv_Area**, **Bedroom_AbvGr**, **Garage_Area**, **Basement_Area**, **Total_Bathroom**, **Deck_Porch_Area**, and **Age_Sold**) to the Continuous variables role.
7. On the MODEL tab, use the Model Effect Builder to specify the appropriate model. Click the **Edit this model** icon, select all variables, and click **Add**. Then click **OK**.
8. On the OPTIONS tab, expand **Scatter Plots** and clear the check box to display a scatter plot of **Observed values by predicted values**.
9. Click **Run**.

Generated Code

```
ods noproctitle;
ods graphics / imagemap=on;

proc reg data=STAT1.AMESHOUSING3 alpha=0.05 plots(only)=(diagnostics residuals);
   model SalePrice=Lot_Area Gr_Liv_Area Bedroom_AbvGr Garage_Area Basement_Area
                 Total_Bathroom Deck_Porch_Area Age_Sold /;
run;
quit;
```

SAS Studio doesn't offer all available procedure plots when you use tasks. If you'd like to display other plots, you must modify the code and specify each plot using the appropriate plot option. The code below produces the Quantile-Quantile plot, the residual versus predicted values plot, and the residual versus regressor values plot. Individual plots are produced full sized.

```
/*st105d01.sas*/  /*Part B*/
proc reg data=STAT1.ameshousing3
         plots(only)=(QQ RESIDUALBYPREDICTED RESIDUALS);
    CONTINUOUS: model SalePrice
                 = &interval;
    title 'SalePrice Model - Plots of Diagnostic Statistics';
run;
quit;
```