for-endfor

```
for(<initialization>;<continuation test>;<update>)
   <loop body>
endfor
```

A for-endfor loop executes the loop body code until the continuation test evaluates as false (zero) or until a break statement is executed in the body code. When the loop starts, the initialization expressions are evaluated once. For each iteration, the continuation test is evaluated at the beginning and the update expressions are evaluated at the end.

```
for(<type> varName : <wave>)  // Range-based for loop added in Igor Pro 9.00
   <loop body>
endfor
```

A range-based for loop iterates over each element of a wave. The specified loop variable contains the value of the current wave element.

See Also

For Loop, **Range-Based For Loop**, **break**

for-var-in-wave

```
for(<type> varName : <wave>)  // Range-based for loop added in Igor Pro 9.00
   <loop body>
endfor
```

A range-based for loop iterates over each element of a wave. The specified loop variable contains the value of the current wave element.

See Also

Range-Based For Loop, **For Loop**, **break**

FPClustering

```
FPClustering [flags] srcWave
```

The FPClustering operation performs cluster analysis using the farthest-point clustering algorithm. The input for the operation *srcWave* defines M points in N-dimensional space. Outputs are the waves W_FPCenterIndex and W_FPClusterIndex.

Flags

/CAC Computes all the clusters specified by /MAXC.

/CM Computes the center of mass for each cluster. The results are stored in the wave M_clustersCM in the current data folder. Each row corresponds to a single cluster with columns providing the respective dimensional components.

/DSO Returns the distance map of *srcWave* in M_DistanceMap. No other output is generated and all other flags are ignores.

/DSO was added in Igor Pro 8.00.

The distance map is the Cartesian distance between any two rows in *srcWave*. The results are stored in the upper triangle of the double-precision output wave M_DistanceMap. The lower triangle is set to zero (results can be obtained by symmetry).

Each element of the distance map is given by:

$$M\_DistanceMap_{rc} = \sqrt{\sum_{i=0}^{nCols-1} \left(srcWave[r][i]-srcWave[c][i]\right)^2}$$