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**NAME**

RDKitUtil

**SYNOPSIS**

import RDKitUtil

**DESCRIPTION**

RDKitUtil module provides the following functions:

GetInlineSVGForMolecule, GetInlineSVGForMolecules, GetMolName, GetSVGForMolecule, GetSVGForMolecules, IsMolEmpty, MoleculesWriter, ReadAndValidateMolecules, ReadMolecules, ReadMoleculesFromMol2File, ReadMoleculesFromMolFile, ReadMoleculesFromPDBFile, ReadMoleculesFromSDFFile, ReadMoleculesFromSMILESFile, WriteMolecules

**FUNCTIONS****GetInlineSVGForMolecule**

```
GetInlineSVGForMolecule(Mol, Width, Height, Legend = None, AtomListToHighlight = None,
BondListToHighlight = None, BoldText = True)
```

Get SVG image text for a molecule suitable for inline embedding into a HTML page.

**Arguments:**

Mol (object): RDKit molecule object.  
Width (int): Width of a molecule image in pixels.  
Height (int): Height of a molecule image in pixels.  
Legend (str): Text to display under the image.  
AtomListToHighlight (list): List of atoms to highlight.  
BondListToHighlight (list): List of bonds to highlight.  
BoldText (bool): Flag to make text bold in the image of molecule.

**Returns:**

```
str : SVG image text for inline embedding into a HTML page using "img"
tag: 
```

**GetInlineSVGForMolecules**

```
GetInlineSVGForMolecules(Mols, MolsPerRow, MolWidth, MolHeight, Legends = None,
AtomListsToHighlight = None, BondListsToHighlight = None, BoldText = True)
```

Get SVG image text for molecules suitable for inline embedding into a HTML page.

**Arguments:**

Mols (list): List of RDKit molecule objects.  
MolsPerRow (int): Number of molecules per row.  
Width (int): Width of a molecule image in pixels.  
Height (int): Height of a molecule image in pixels.  
Legends (list): List containing strings to display under images.  
AtomListsToHighlight (list): List of lists containing atoms to highlight for molecules.  
BondListsToHighlight (list): List of lists containing bonds to highlight for molecules.  
BoldText (bool): Flag to make text bold in the image of molecules.

**Returns:**

```
str : SVG image text for inline embedding into a HTML page using "img"
tag: 
```

**GetMolName**

```
GetMolName(Mol, MolNum = None)
```

Get molecule name.

**Arguments:**

Mol (object): RDKit molecule object.  
MolNum (int or None): Molecule number in input file.

**Returns:**

str : Molname corresponding to \_Name property of a molecule, generated from specieid MolNum using the format "Mol%d" % MolNum, or an empty string.

**GetSVGForMolecule**

GetSVGForMolecule(Mol, Width, Height, Legend = None, AtomListToHighlight = None, BondListToHighlight = None, BoldText = True)

Get SVG image text for a molecule suitable for viewing in a browser.

**Arguments:**

Mol (object): RDKit molecule object.  
Width (int): Width of a molecule image in pixels.  
Height (int): Height of a molecule image in pixels.  
Legend (str): Text to display under the image.  
AtomListToHighlight (list): List of atoms to highlight.  
BondListToHighlight (list): List of bonds to highlight.  
BoldText (bool): Flag to make text bold in the image of molecule.

**Returns:**

str : SVG image text for writing to a SVG file for viewing in a browser.

**GetSVGForMolecules**

GetSVGForMolecules(Mols, MolsPerRow, MolWidth, MolHeight, Legends = None, AtomListsToHighlight = None, BondListsToHighlight = None, BoldText = True)

Get SVG image text for molecules suitable for viewing in a browser.

**Arguments:**

Mols (list): List of RDKit molecule objects.  
MolsPerRow (int): Number of molecules per row.  
Width (int): Width of a molecule image in pixels.  
Height (int): Height of a molecule image in pixels.  
Legends (list): List containing strings to display under images.  
AtomListsToHighlight (list): List of lists containing atoms to highlight for molecules.  
BondListsToHighlight (list): List of lists containing bonds to highlight for molecules.  
BoldText (bool): Flag to make text bold in the image of molecules.

**Returns:**

str : SVG image text for writing to a SVG file for viewing in a browser.

**IsMolEmpty**

IsMolEmpty(Mol)

Check for the presence of atoms in a molecule.

**Arguments:**

Mol (object): RDKit molecule object.

**Returns:**

bool : True - No atoms in molecule; Otherwise, false.

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## MoleculesWriter

```
MoleculesWriter(FileName, **KeyWordArgs)
```

Set up a molecule writer.

### Arguments:

```
FileName (str): Name of a file with complete path.  
**KeyWordArgs (dictionary) : Parameter name and value pairs for writing and  
processing molecules.
```

### Returns:

```
RDKit object : Molecule writer.
```

The file extension is used to determine type of the file and set up an appropriate file writer.

## ReadAndValidateMolecules

```
ReadAndValidateMolecules(FileName, **KeyWordArgs)
```

Read molecules from an input file, validate all molecule objects, and return a list of valid and non-valid molecule objects along with their counts.

### Arguments:

```
FileName (str): Name of a file with complete path.  
**KeyWordArgs (dictionary) : Parameter name and value pairs for reading and  
processing molecules.
```

### Returns:

```
list : List of valid RDKit molecule objects.  
int : Number of total molecules in input file.  
int : Number of valid molecules in input file.
```

The file extension is used to determine type of the file and set up an appropriate file reader.

## ReadMolecules

```
ReadMolecules(FileName, **KeyWordArgs)
```

Read molecules from an input file without performing any validation and creation of molecule objects.

### Arguments:

```
FileName (str): Name of a file with complete path.  
**KeyWordArgs (dictionary) : Parameter name and value pairs for reading and  
processing molecules.
```

### Returns:

```
list : List of RDKit molecule objects.
```

The file extension is used to determine type of the file and set up an appropriate file reader.

## ReadMoleculesFromMol2File

```
ReadMoleculesFromMol2File(FileName, Sanitize = True, RemoveHydrogens = True)
```

Read molecule from a Tripos Mol2 file.

### Arguments:

```
FileName (str): Name of a file with complete path.  
Sanitize (bool): Sanitize molecules.  
RemoveHydrogens (bool): Remove hydrogens from molecules.
```

### Returns:

```
list : List of RDKit molecule objects.
```

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### ReadMoleculesFromMolFile

```
ReadMoleculesFromMolFile(FileName, Sanitize = True, RemoveHydrogens = True,  
StrictParsing = True)
```

Read molecule from a MDL Mol file.

**Arguments:**

FileName (str): Name of a file with complete path.  
Sanitize (bool): Sanitize molecules.  
RemoveHydrogens (bool): Remove hydrogens from molecules.  
StrictParsing (bool): Perform strict parsing.

**Returns:**

list : List of RDKit molecule objects.

### ReadMoleculesFromPDBFile

```
ReadMoleculesFromPDBFile(FileName, Sanitize = True, RemoveHydrogens = True)
```

Read molecule from a PDB file.

**Arguments:**

FileName (str): Name of a file with complete path.  
Sanitize (bool): Sanitize molecules.  
RemoveHydrogens (bool): Remove hydrogens from molecules.

**Returns:**

list : List of RDKit molecule objects.

### ReadMoleculesFromSDFFile

```
ReadMoleculesFromSDFFile(FileName, Sanitize = True, RemoveHydrogens = True,  
StrictParsing = True)
```

Read molecules from a SD file.

**Arguments:**

FileName (str): Name of a file with complete path.  
Sanitize (bool): Sanitize molecules.  
RemoveHydrogens (bool): Remove hydrogens from molecules.  
StrictParsing (bool): Perform strict parsing.

**Returns:**

list : List of RDKit molecule objects.

### ReadMoleculesFromSMILESFile

```
ReadMoleculesFromSMILESFile(FileName, SMILESDelimiter = ' ', SMILESColIndex = 0,  
SMILESNameColIndex = 1, SMILESTitleLine = 1, Sanitize = 1)
```

Read molecules from a SMILES file.

**Arguments:**

SMILESDelimiter (str): Delimiter for parsing SMILES line  
SMILESColIndex (int): Column index containing SMILES string.  
SMILESNameColIndex (int): Column index containing molecule name.  
SMILESTitleLine (int): Flag to indicate presence of title line.  
Sanitize (int): Sanitize molecules.

**Returns:**

list : List of RDKit molecule objects.

### WriteMolecules

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```
WriteMolecules(FileName, Mols, **KeyWordArgs)
```

Write molecules to an output file.

**Arguments:**

FileName (str): Name of a file with complete path.  
Mols (list): List of RDKit molecule objects.  
\*\*KeyWordArgs (dictionary) : Parameter name and value pairs for writing and processing molecules.

**Returns:**

int : Number of total molecules.  
int : Number of processed molecules written to output file.

The file extension is used to determine type of the file and set up an appropriate file writer.

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The functionality available in this file is implemented using RDKit, an open source toolkit for cheminformatics developed by Greg Landrum.

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