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*

`prefix_graph``

Implements directed graphs to sort and manipulate packages within a prefix.

Object inheritance:

![Inheritance diagram of PrefixGraph,

GeneralGraph](../../../_images/inheritance-2aaa14d4e0bc04c308ddc8c19954daa409b79738.png

)

Classes#

`PrefixGraph`` | A directed graph structure used for sorting packages (`prefix_records`) in prefixes and

---|---

`GeneralGraph`` | Compared with `PrefixGraph`, this class takes in more than one record of a given name,

```
_class _PrefixGraph(_records_ , _specs =())#
```

A directed graph structure used for sorting packages (prefix_records) in prefixes and manipulating packages within prefixes (e.g. removing and pruning).

The terminology used for edge direction is "parents" and "children" rather than "successors" and "predecessors". The parent nodes of a record are those records in the graph that match the record's "depends" field. E.g. NodeA depends on NodeB, then NodeA is a child of NodeB, and NodeB is a parent of NodeA. Nodes can have zero parents, or more than two parents.

Most public methods mutate the graph.

```
_property _records#
```

```
remove_spec(_spec_)#
```

Remove all matching nodes, and any associated child nodes.

Parameters:

****spec****

```
([_MatchSpec_](../match_spec/index.html#conda.models.match_spec.MatchSpec  
"conda.models.match_spec.MatchSpec"))
```

Returns:

The removed nodes.

Return type:

```
[tuple](https://docs.python.org/3/library/stdtypes.html#tuple "(in Python  
v3.13\))"[[PrefixRecord](../records/index.html#conda.models.records.PrefixRecord  
"conda.models.records.PrefixRecord")]
```

`remove_youngest_descendant_nodes_with_specs()`#

A specialized method used to determine only dependencies of requested specs.

Returns:

The removed nodes.

Return type:

```
[tuple](https://docs.python.org/3/library/stdtypes.html#tuple "(in Python  
v3.13\)))[PrefixRecord](../records/index.html#conda.models.records.PrefixRecord  
"conda.models.records.PrefixRecord")]
```

prune()#

Prune back all packages until all child nodes are anchored by a spec.

Returns:

The pruned nodes.

Return type:


```
[tuple](https://docs.python.org/3/library/stdtypes.html#tuple "(in Python  
v3.13\))"[[PrefixRecord](../records/index.html#conda.models.records.PrefixRecord  
"conda.models.records.PrefixRecord")]
```

```
get_node_by_name(_name_)#
```

```
all_descendants(_node_)#
```

```
all_ancestors(_node_)#
```

```
_remove_node(_node_)#
```

Removes this node and all edges referencing it.

```
_toposort()#
```

```
_classmethod __toposort_raise_on_cycles(_graph_)#
```

```
_classmethod __topo_sort_handle_cycles(_graph_)#
```

```
_static __toposort_pop_key(_graph_)#
```

Pop an item from the graph that has the fewest parents. In the case of a tie, use the node with the alphabetically-first package name.

```
_static __toposort_prepare_graph(_graph_)#
```

```
_class _GeneralGraph(_records_ , _specs =())#
```

Bases: `PrefixGraph`

Compared with PrefixGraph, this class takes in more than one record of a given name, and operates on that graph from the higher view across any matching dependencies. It is not a Prefix thing, but more like a "graph of all possible candidates" thing, and is used for unsatisfiability analysis

```
breadth_first_search_by_name(_root_spec_ , _target_spec_)#
```

Return shorted path from root_spec to spec_name

___On this page

* Classes

* `PrefixGraph`

* `PrefixGraph.records`

* `PrefixGraph.remove_spec()`

* `PrefixGraph.remove_youngest_descendant_nodes_with_specs()`

* `PrefixGraph.prune()`

* `PrefixGraph.get_node_by_name()`

* `PrefixGraph.all_descendants()`

* `PrefixGraph.all_ancestors()`

* `PrefixGraph._remove_node()`

* `PrefixGraph._toposort()`

* `PrefixGraph._toposort_raise_on_cycles()`

* `PrefixGraph._topo_sort_handle_cycles()`

* `PrefixGraph._toposort_pop_key()`

- * ``PrefixGraph._toposort_prepare_graph()``
- * ``GeneralGraph``
- * ``GeneralGraph.breadth_first_search_by_name()``

[[__Edit on GitHub](https://github.com/conda/conda/edit/main/docs/source/dev-guide/api/conda/models/prefix_graph/index.rst)](https://github.com/conda/conda/edit/main/docs/source/dev-guide/api/conda/models/prefix_graph/index.rst)

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[[Analytics Dashboard](https://docs-conda-io.goatcounter.com) [__](https://docs-conda-io.goatcounter.com)](https://docs-conda-io.goatcounter.com "Analytics Dashboard")

Built with the [\[PyData Sphinx Theme\]](https://pydata-sphinx-theme.readthedocs.io/en/stable/index.html) 0.15.4.