

Pensieve Header: Code to find equivalence classes, given some "declaration of equivalence".

Copied from the FastKh` code within KnotTheory`.

**? Fold**

Fold[*f*, *x*, *list*] gives the last element of FoldList[*f*, *x*, *list*]. >>

**? FoldList**

FoldList[*f*, *x*, {*a*, *b*, ...}] gives {*x*, *f*[*x*, *a*], *f*[*f*[*x*, *a*], *b*], ...}. >>

**? Position**

Position[*expr*, *pattern*] gives a list of the positions at which objects matching *pattern* appear in *expr*.

Position[*expr*, *pattern*, *levspec*] finds only objects that appear on levels specified by *levspec*.

Position[*expr*, *pattern*, *levspec*, *n*] gives the positions of the first *n* objects found. >>

```
EquivalenceClasses[l_List] := Module[{pos},
  Fold[
    (
      pos = First /@ Position[#1, #2];
      Append[Delete[#1, List /@ pos], Union @@ (#1[[pos])] ]
    ) &,
    l,
    Union @@ l
  ]];
```

```
l = {{1, 2, 3}, {2, 6}, {7, 8}, {4, 7}, {5, 6}}
```

```
{{1, 2, 3}, {2, 6}, {7, 8}, {4, 7}, {5, 6}}
```

```
Union @@ l
```

```
{1, 2, 3, 4, 5, 6, 7, 8}
```

```
EquivalenceClasses[l]
```

```
{{1, 2, 3, 5, 6}, {4, 7, 8}}
```