

Semi-structured Data

6 - XPath (further examples)

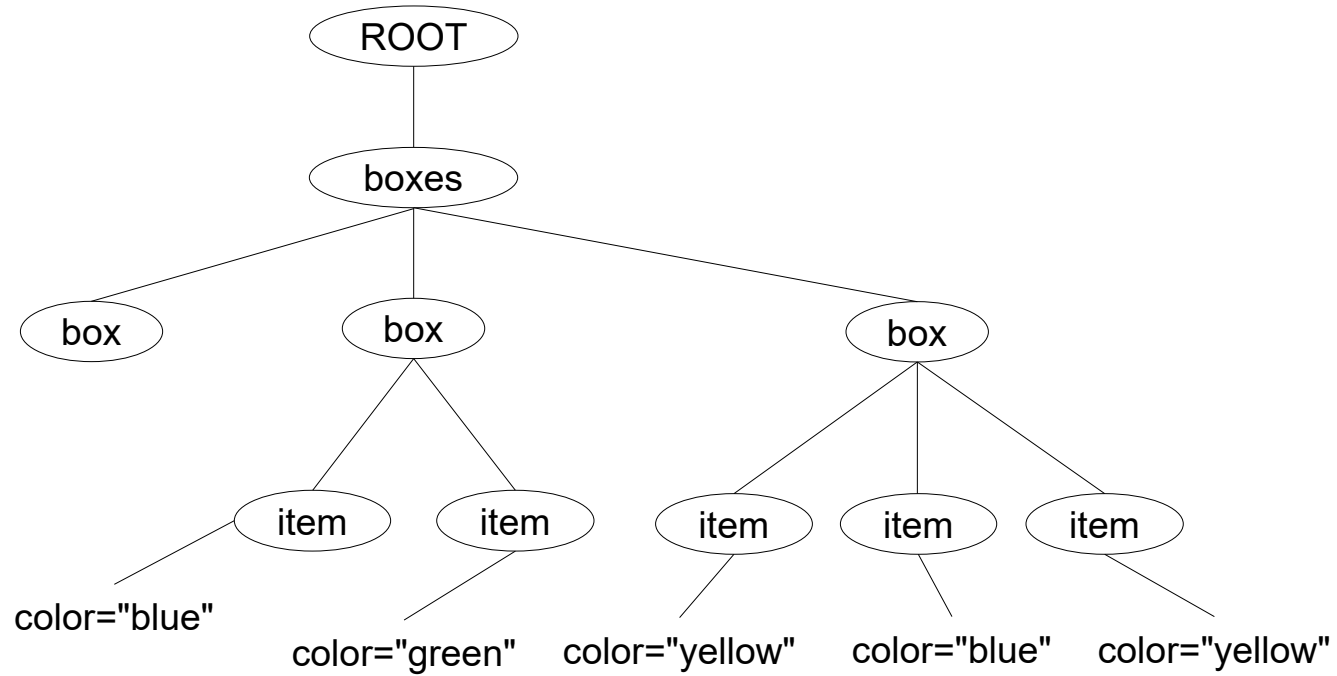
Tools

- Web-based Tools:
 - PathEnq: <http://www.qutoric.com/xslt/analyser/xpathtool.html>
 - xPath tester: <http://www.xpathtester.com/xpath>
- Examples: in the TUWEL course

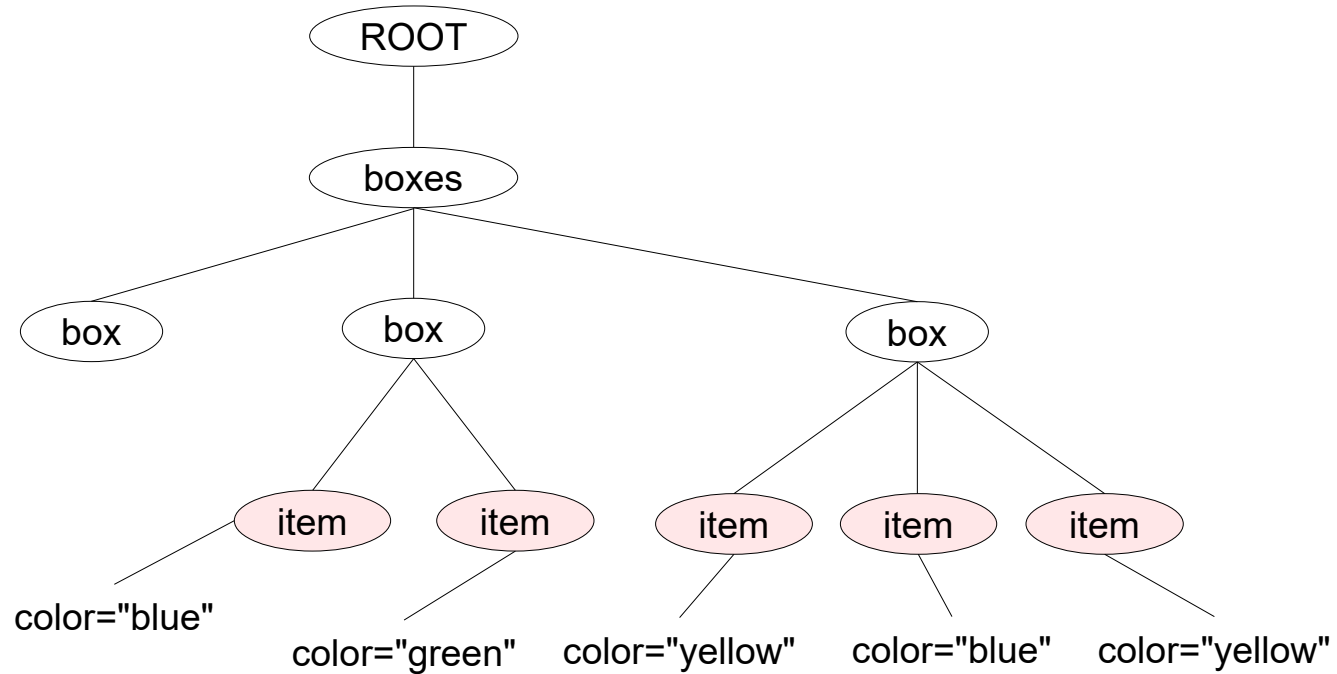
Further Examples

```
<?xml version="1.0"?>
<boxes>
  <box/>
  <box>
    <item color="blue"/>
    <item color="green"/>
  </box>
  <box>
    <item color="yellow"/>
    <item color="blue"/>
    <item color="yellow"/>
  </box>
</boxes>
```

Further Examples



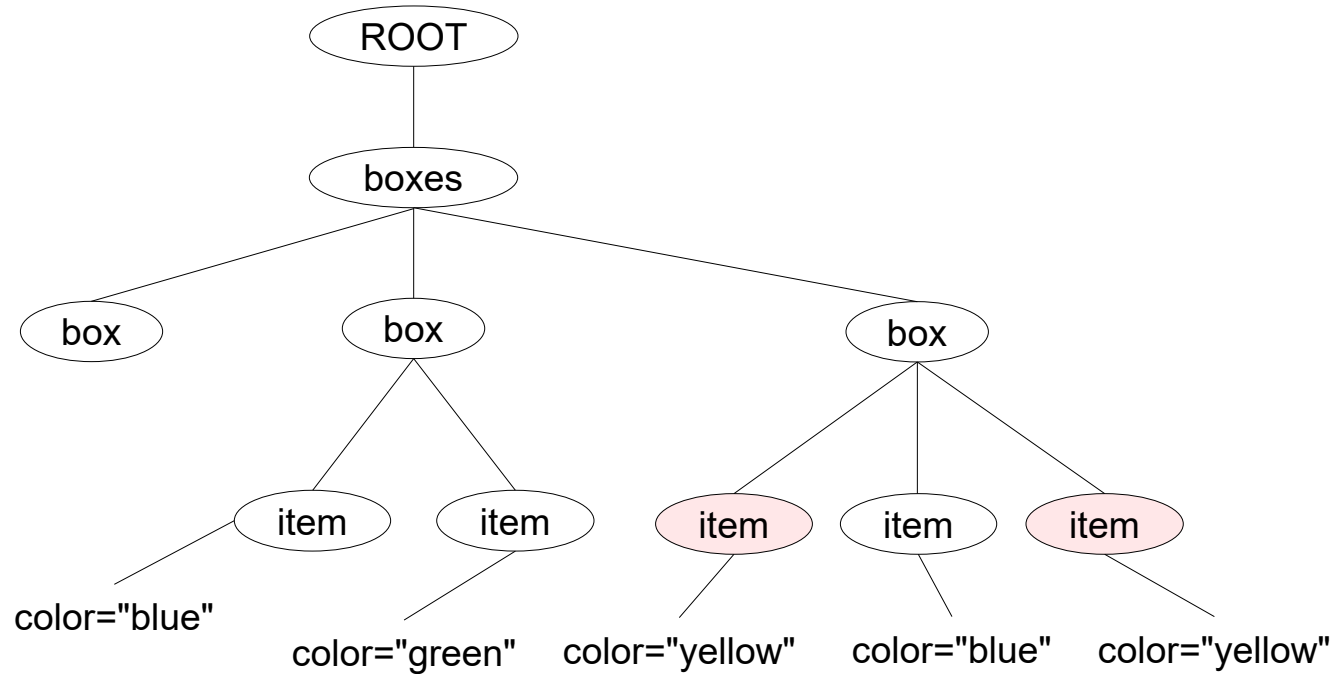
Further Examples



select all items in a box

`//box/item`

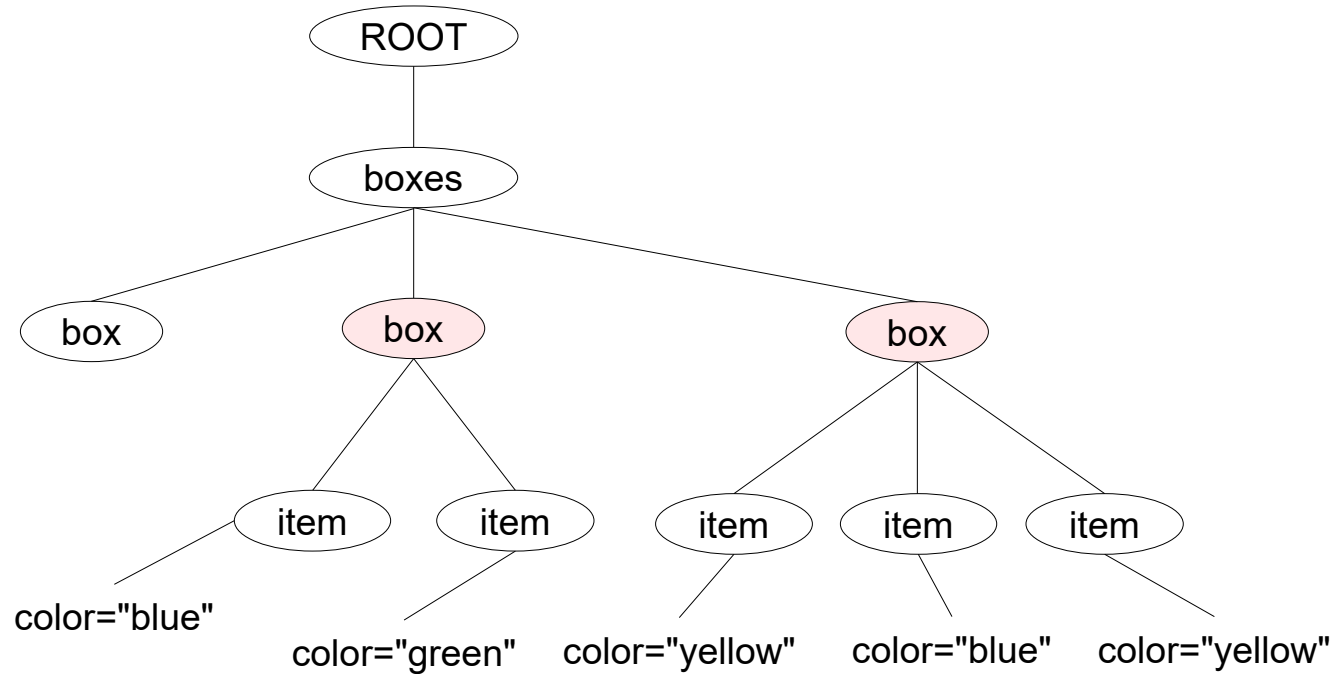
Further Examples



select yellow items in a box

`//box/item[@color="yellow"]`

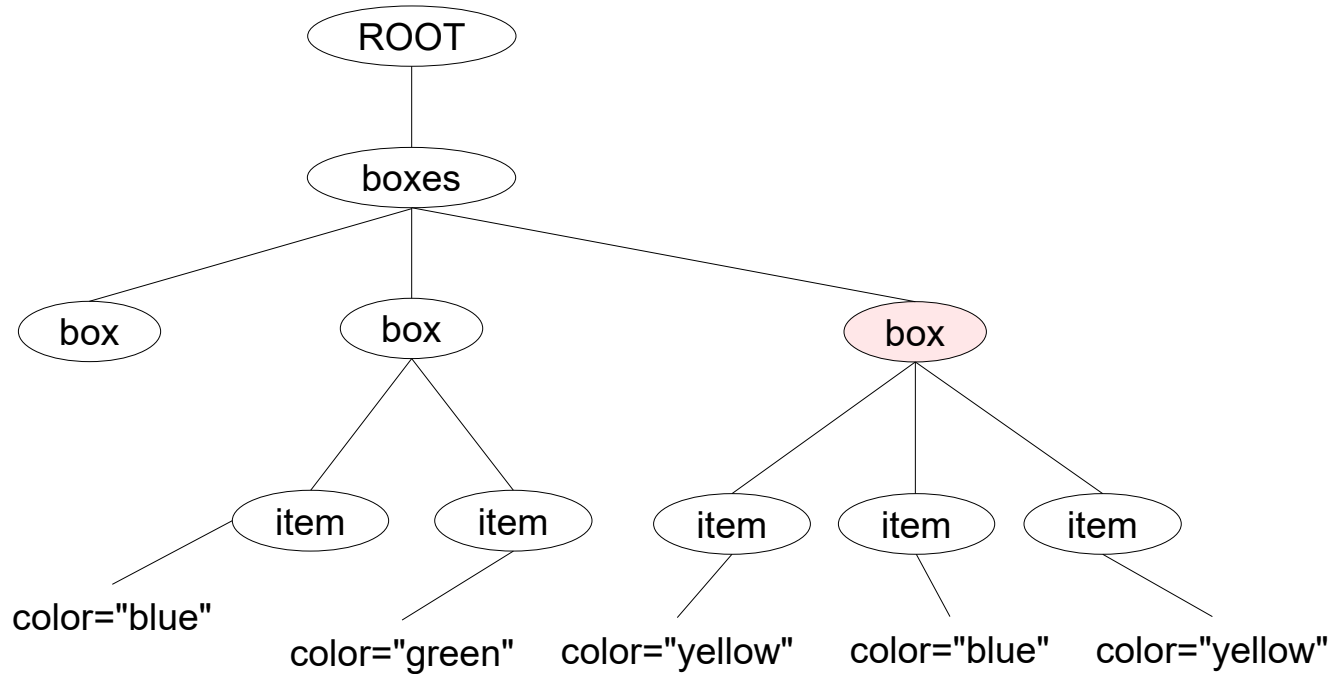
Further Examples



select all boxes with at least one item

`//box[item]`

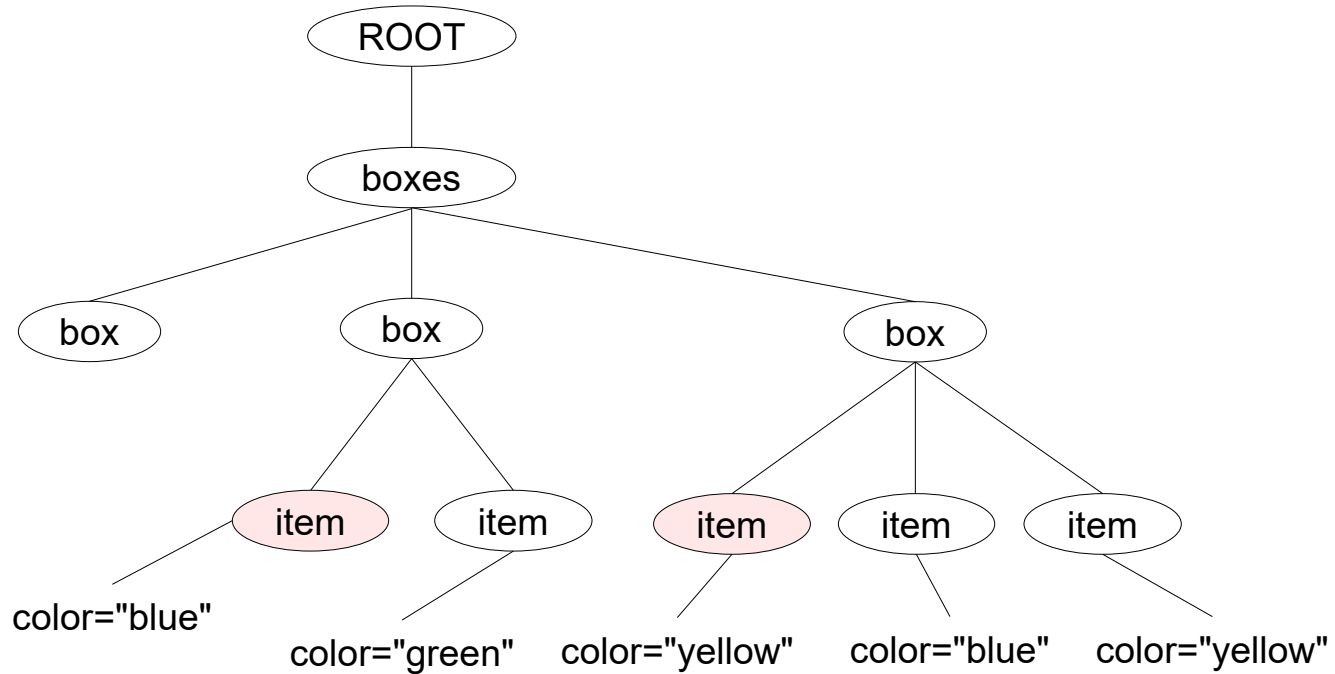
Further Examples



select all boxes with at least one yellow item

```
//box[item[@color="yellow"]]
```


Further Examples

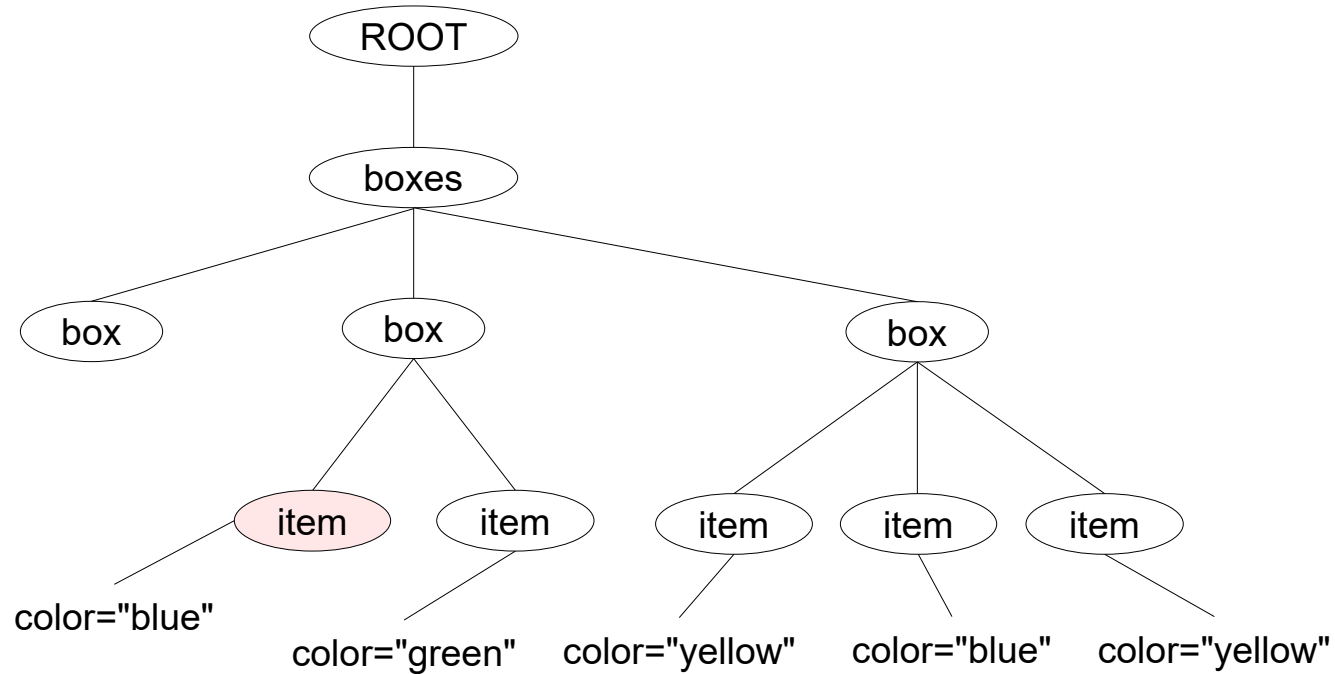


select all items that appear first in a box

`//item[1]`

`/descendant-or-self::node()/item[1]`

Further Examples

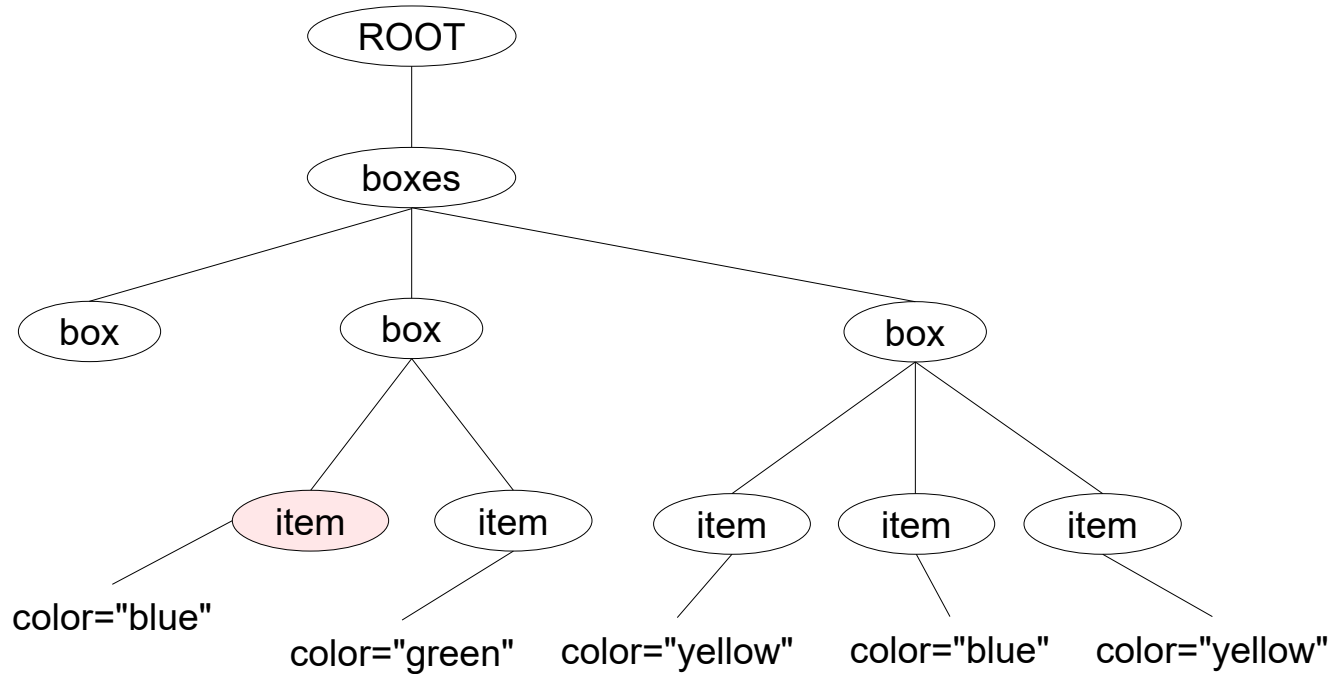


select the first item in the document

`/descendant::item[1]` ✓

`//item[1]` ✗

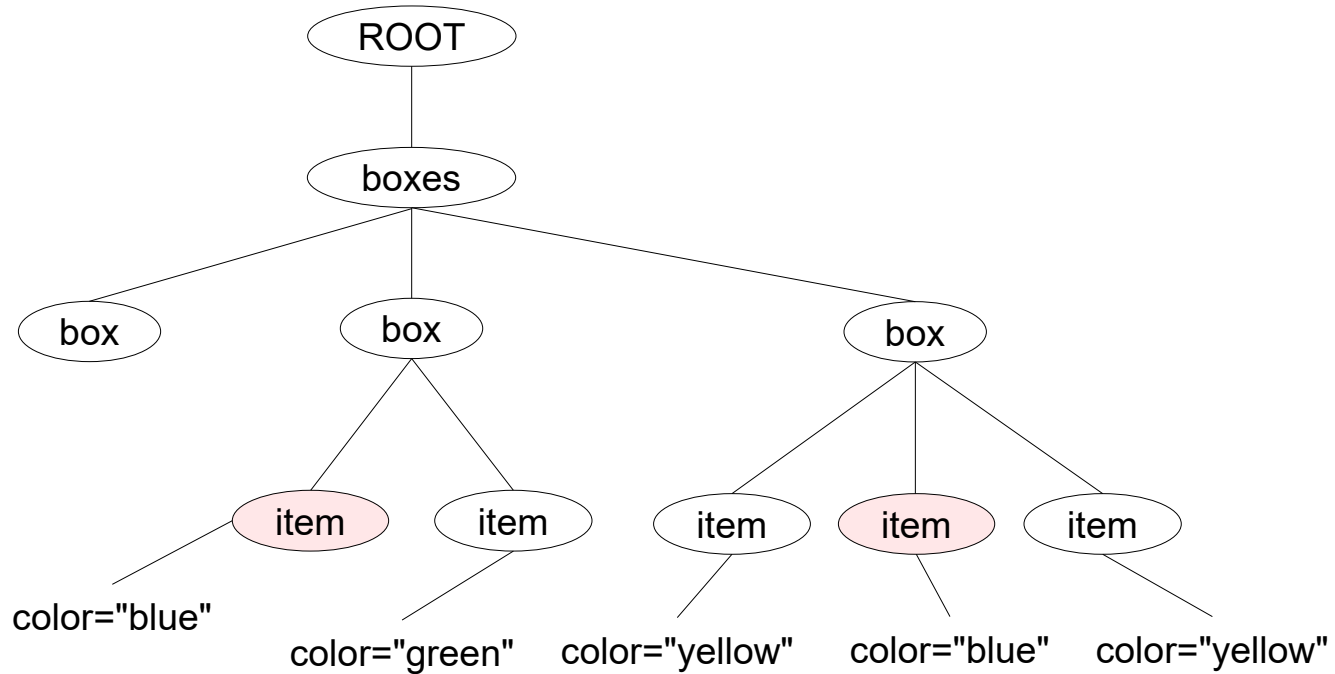
Further Examples



select all items that appear first in a box and are blue

```
//item[1][@color="blue"]
```

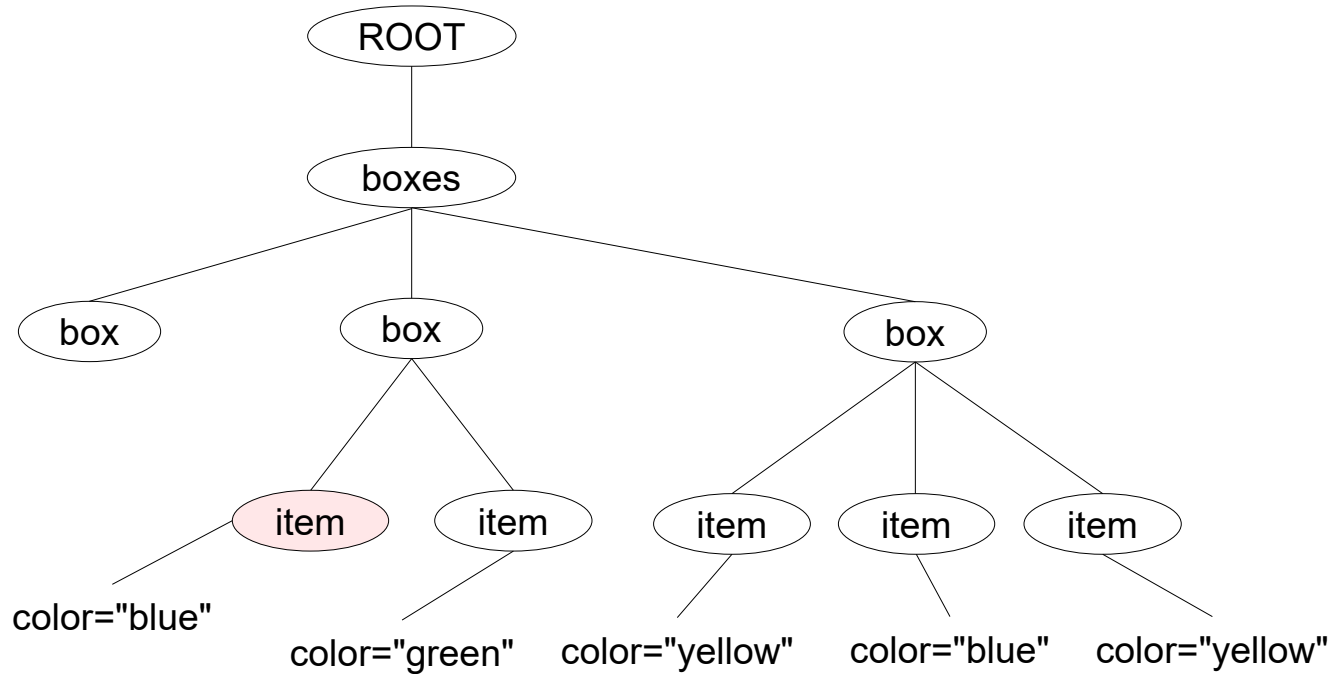
Further Examples



select the first occurrence of a blue item in a box

`//item[@color="blue"][1]`

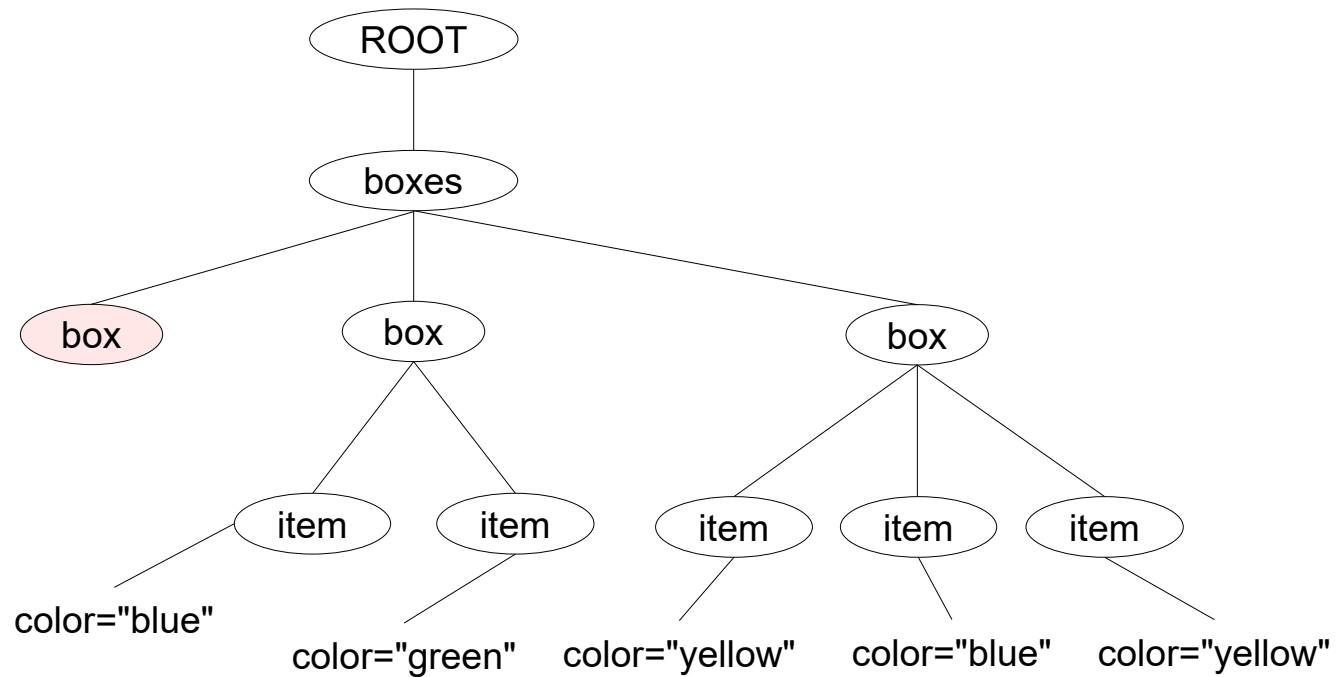
Further Examples



select the first item of the first non-empty box

```
//box[item][1]/item[1]
```

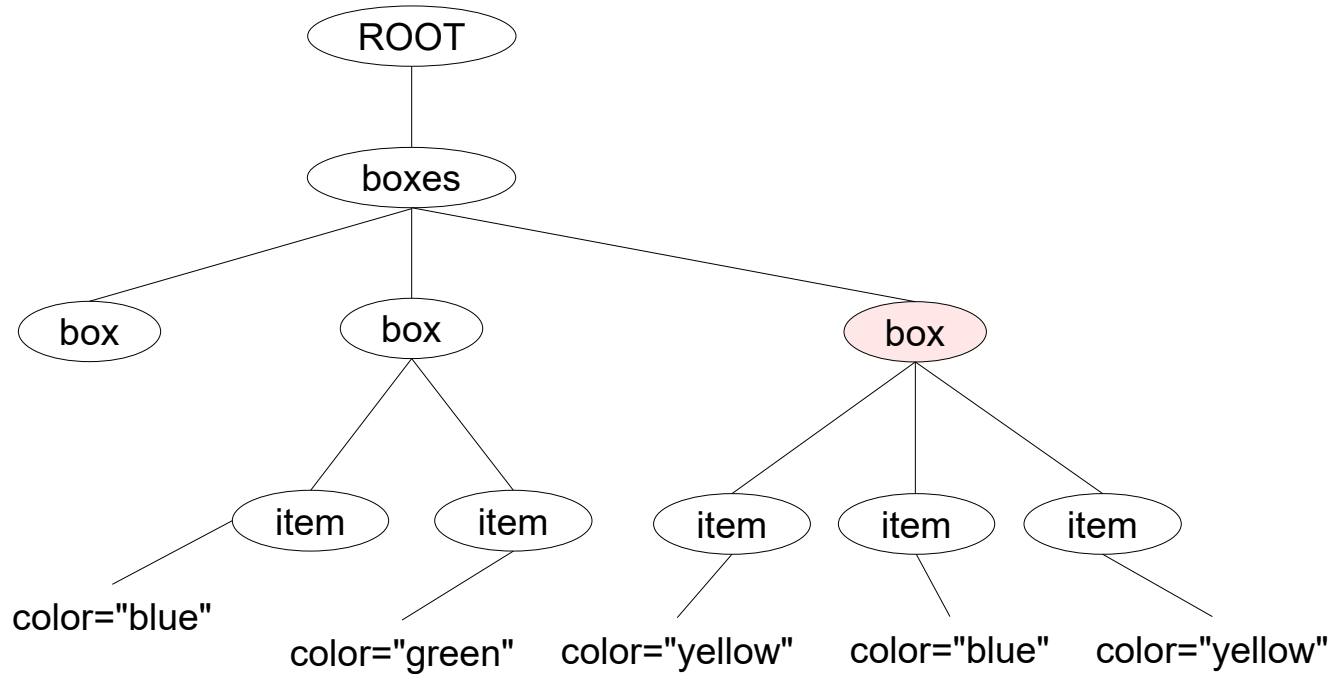
Further Examples



select all empty boxes

`//box[not(*)]`

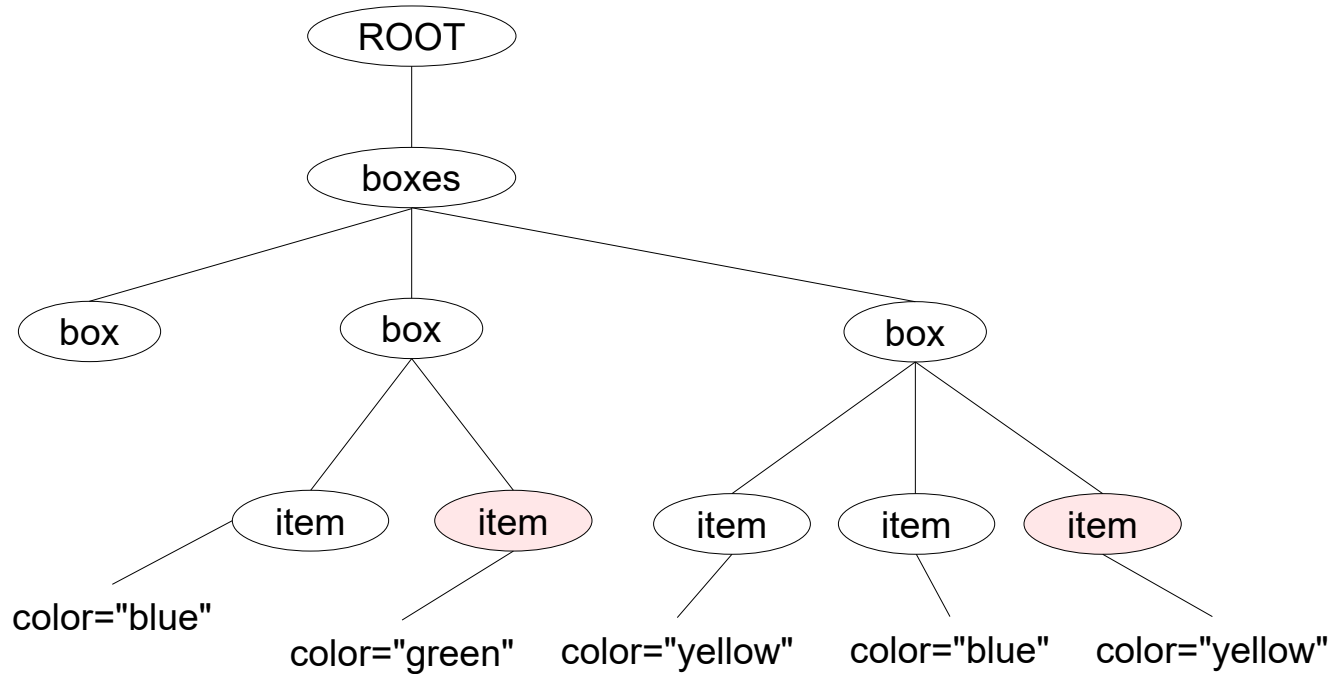
Further Examples



select all boxes with more than two items

```
//box[count(item) > 2]
```

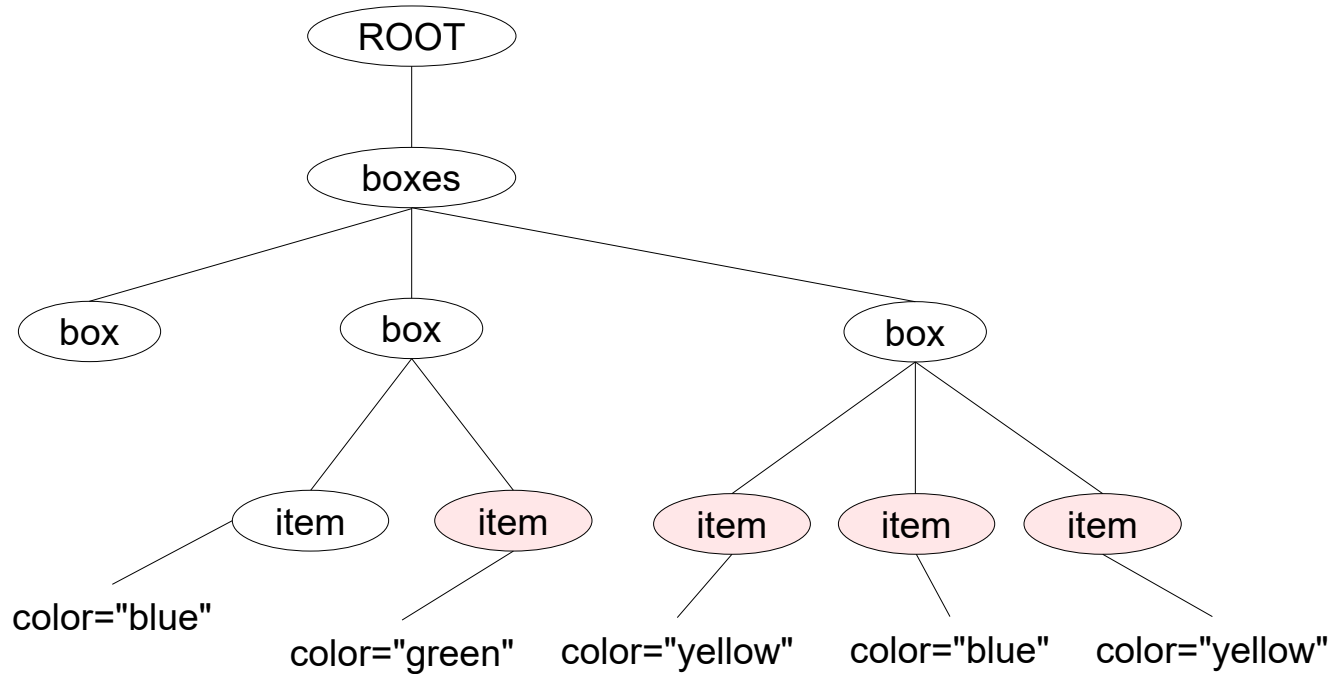
Further Examples



in each box, select all items that follow a blue item

`//item[@color="blue"]/following-sibling::item`

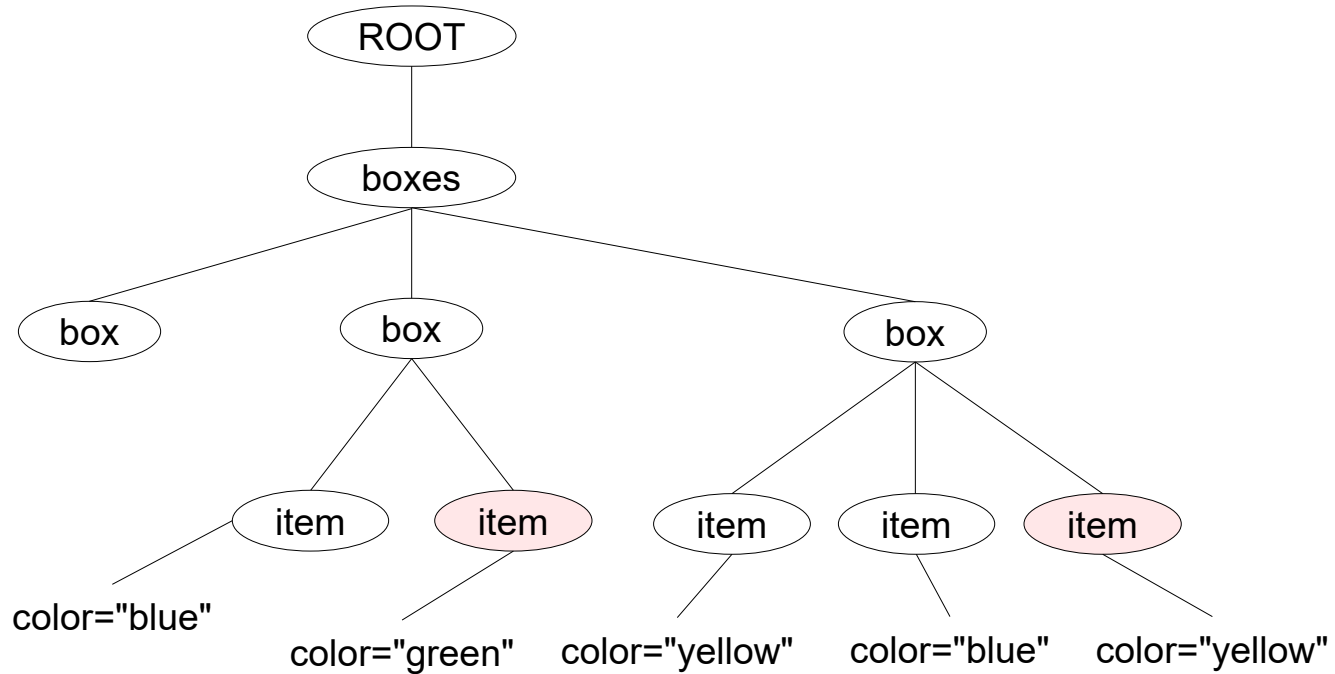
Further Examples



select all items in the document that appear after a blue item

```
//item[@color="blue"]/following::item
```

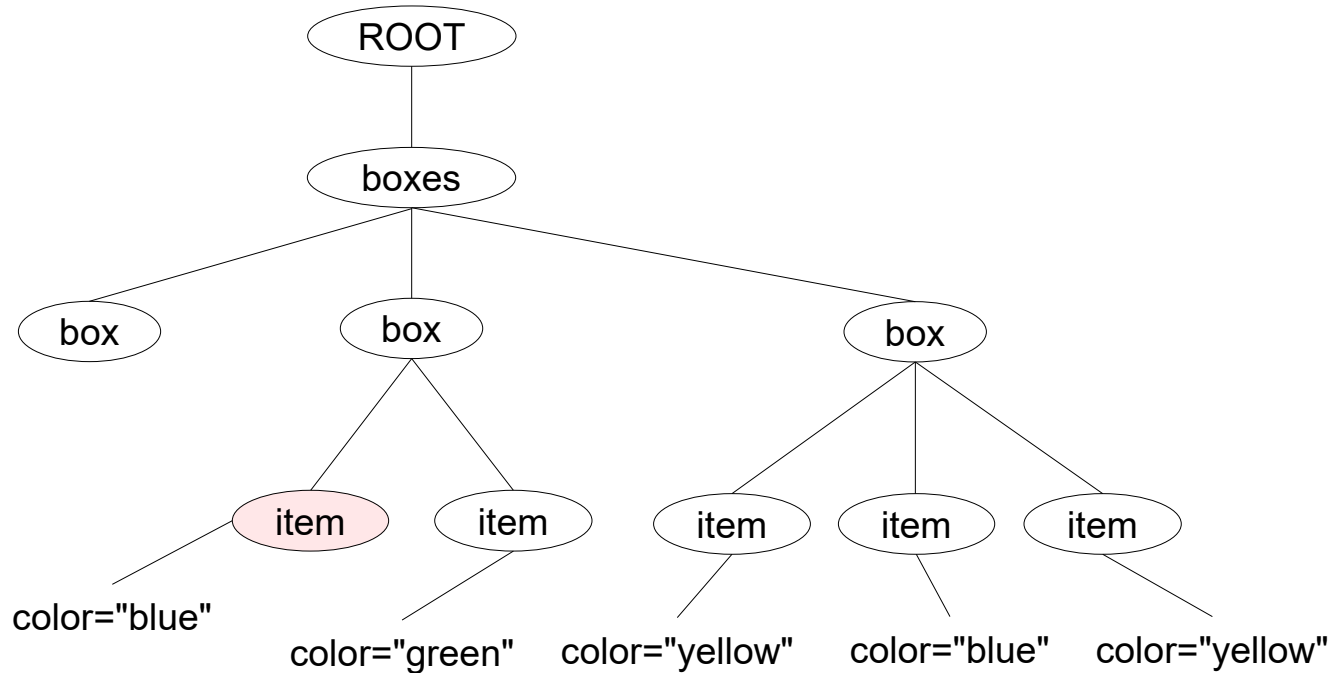
Further Examples



select the first item that follows a blue item

```
//item[@color="blue"]/following::item[1]
```

Further Examples



select the first blue item in the document

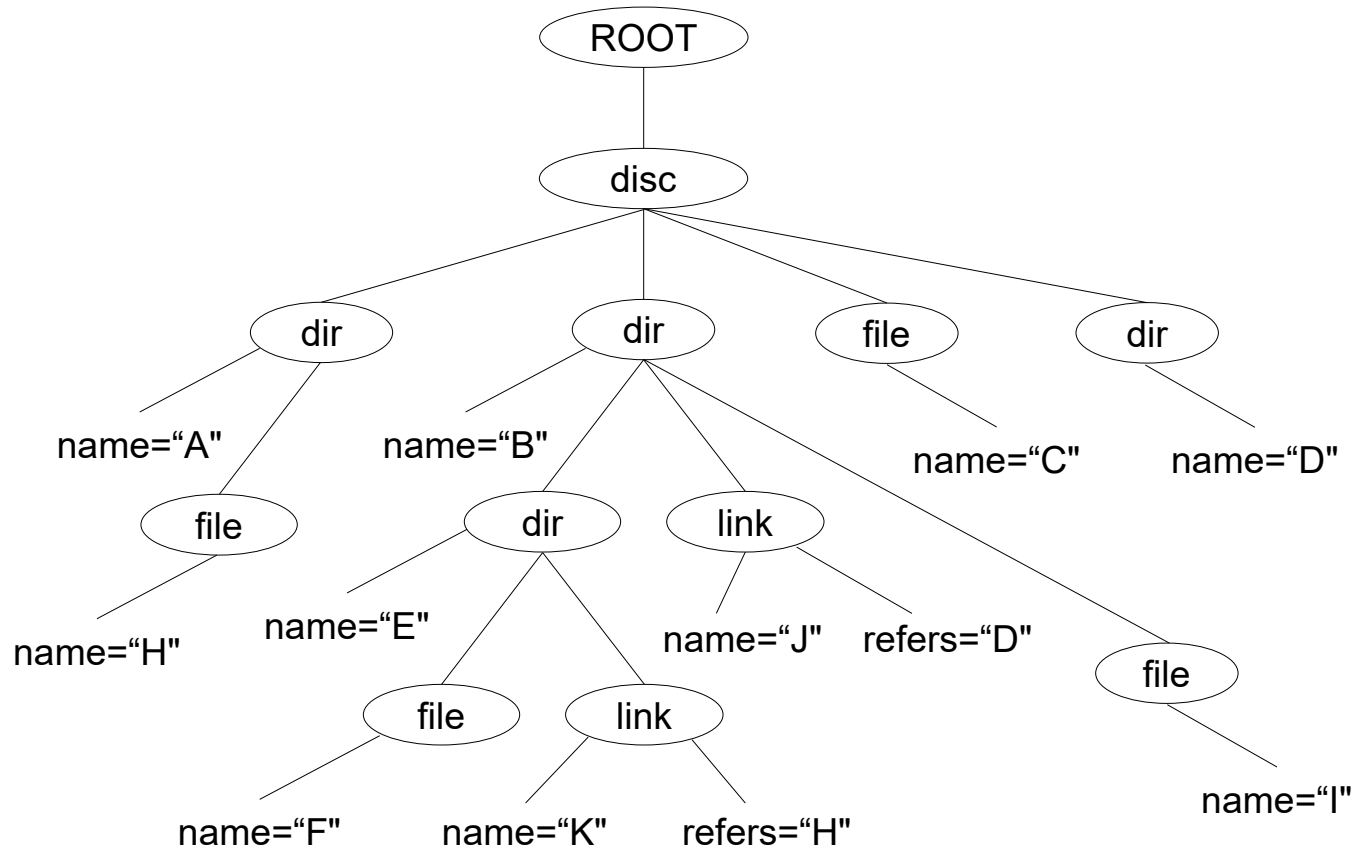
```
//box[item[@color="blue"]][1]/item[@color="blue"][1]
```

```
/descendant::item[@color="blue"][1]
```

Further Examples

```
<?xml version="1.0"?>
<disc>
  <dir name="A">
    <file name="H"/>
  </dir>
  <dir name="B">
    <dir name="E">
      <file name="F"/>
      <link name="K" refers="H"/>
    </dir>
    <link name="J" refers="D"/>
    <file name="I"/>
  </dir>
  <file name="C"/>
  <dir name="D"/>
</disc>
```

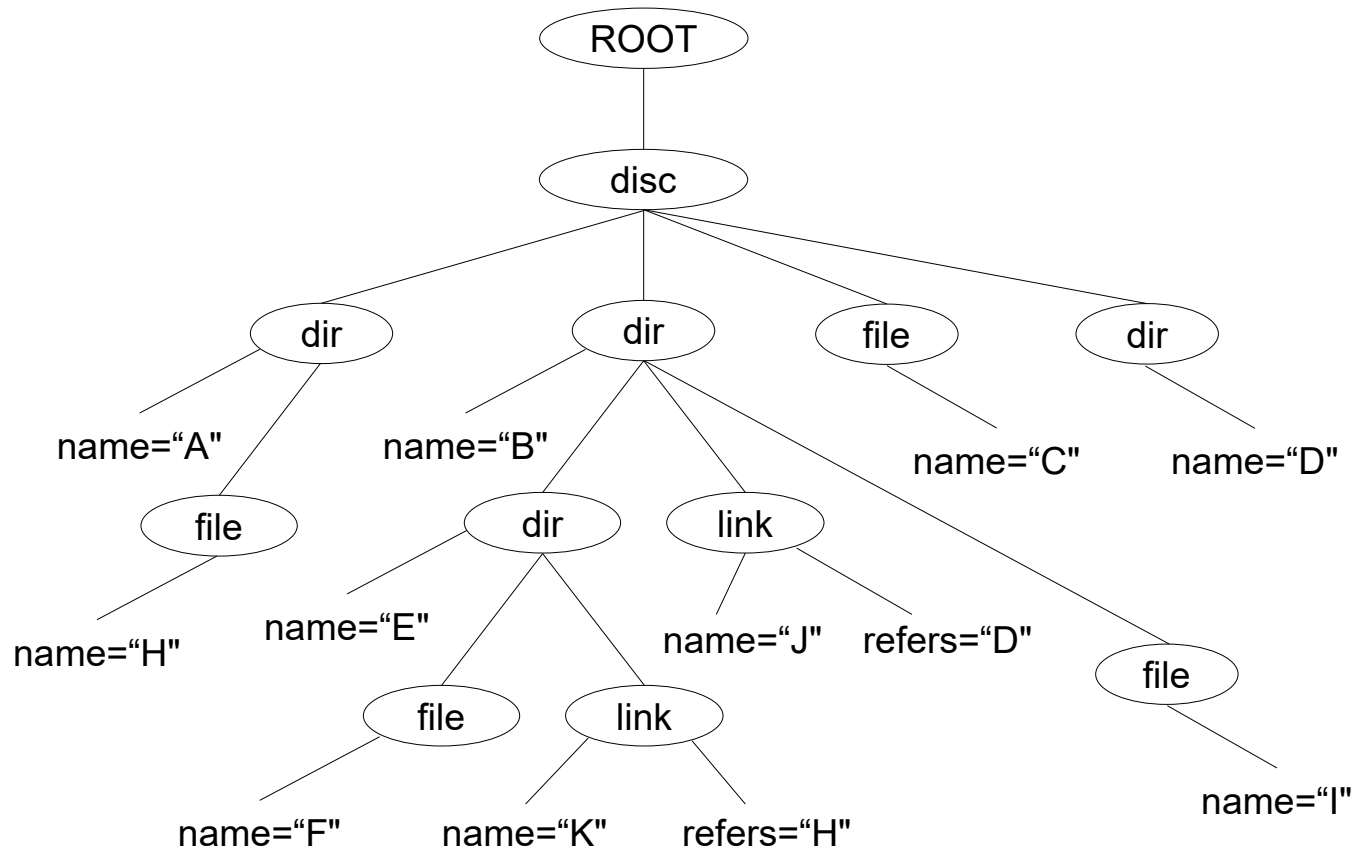
Further Examples



select all files under directory B

`//dir[@name="B"]//file`

Further Examples

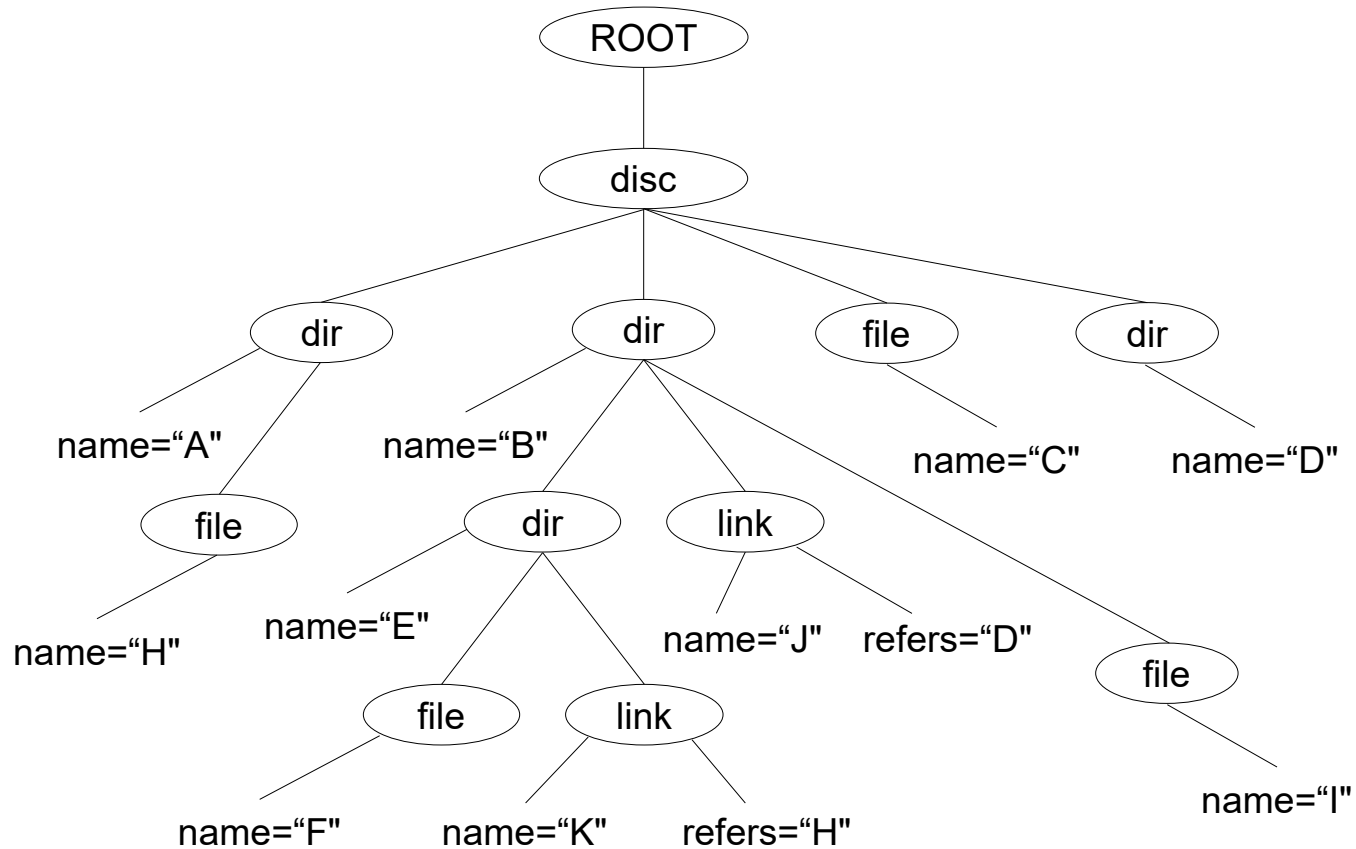


select all files and directories under directory B

`//dir[@name="B"]/(file | dir)` (ab XPath 2.0)

`//dir[@name="B"]/*[self::file|self::dir]` (XPath 1.0)

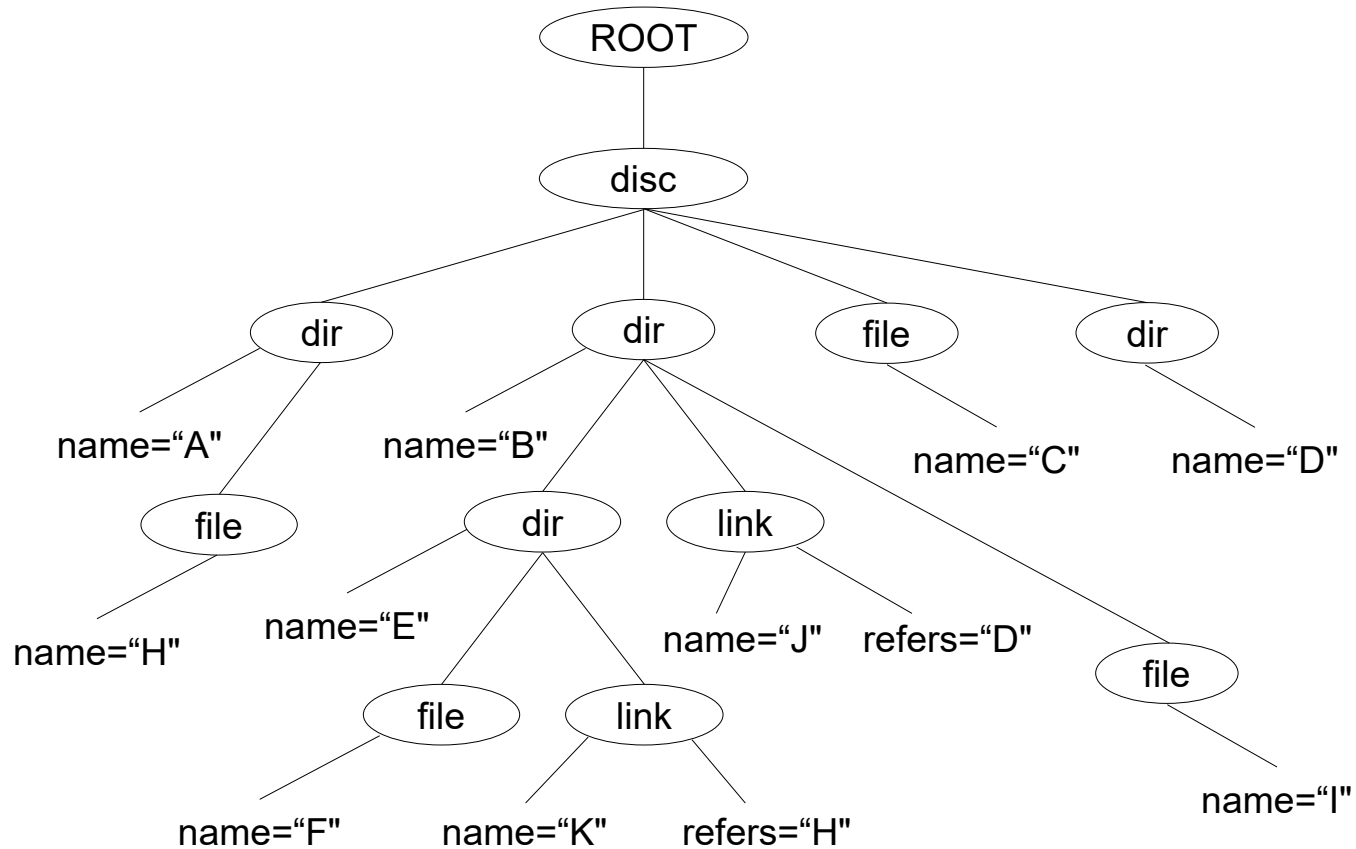
Further Examples



give me the number of files and directories under directory B: **3**

```
count(//dir[@name="B"]/(file | dir))
```

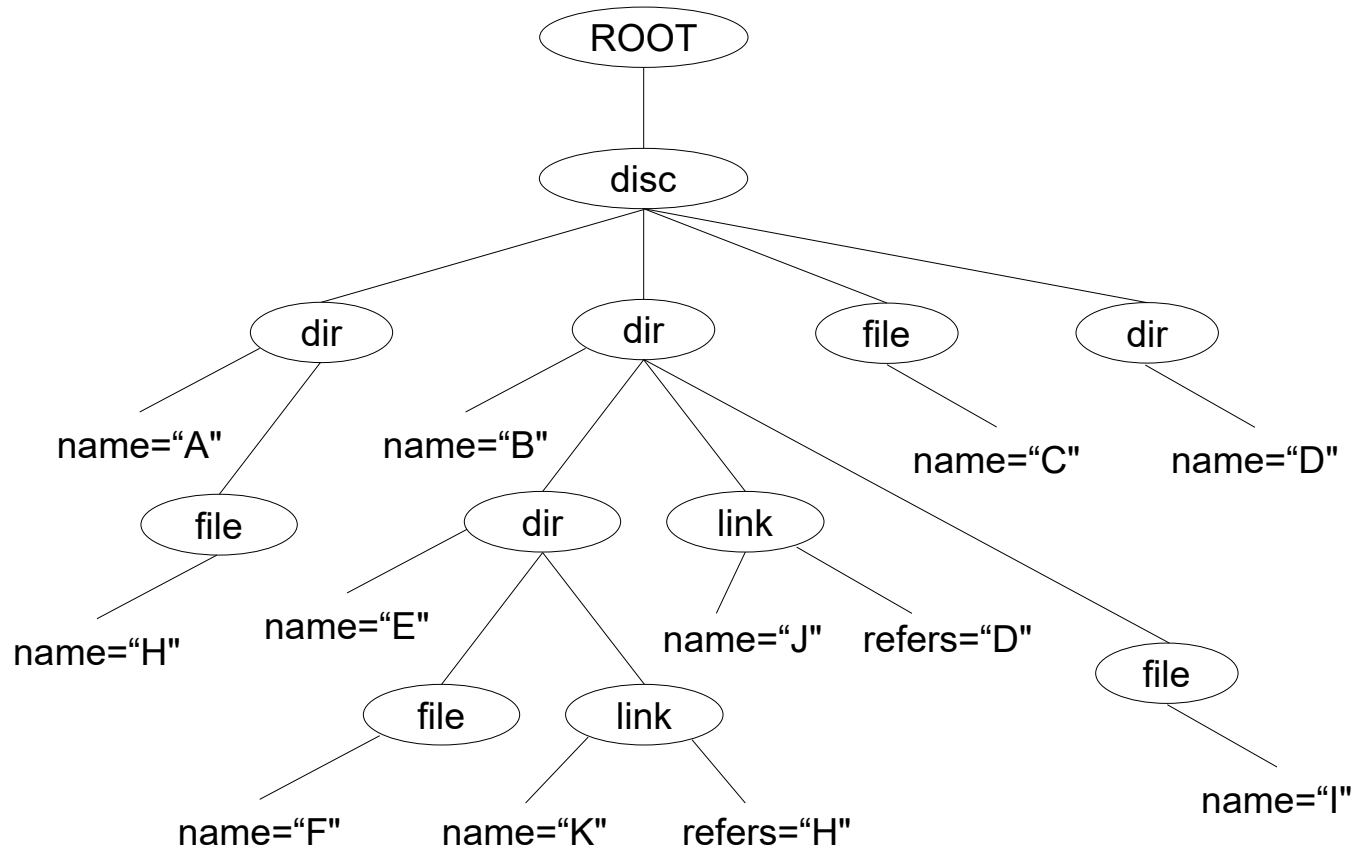
Further Examples



//dir[@name=//link/@refers]

select all directories that are being referred by a link

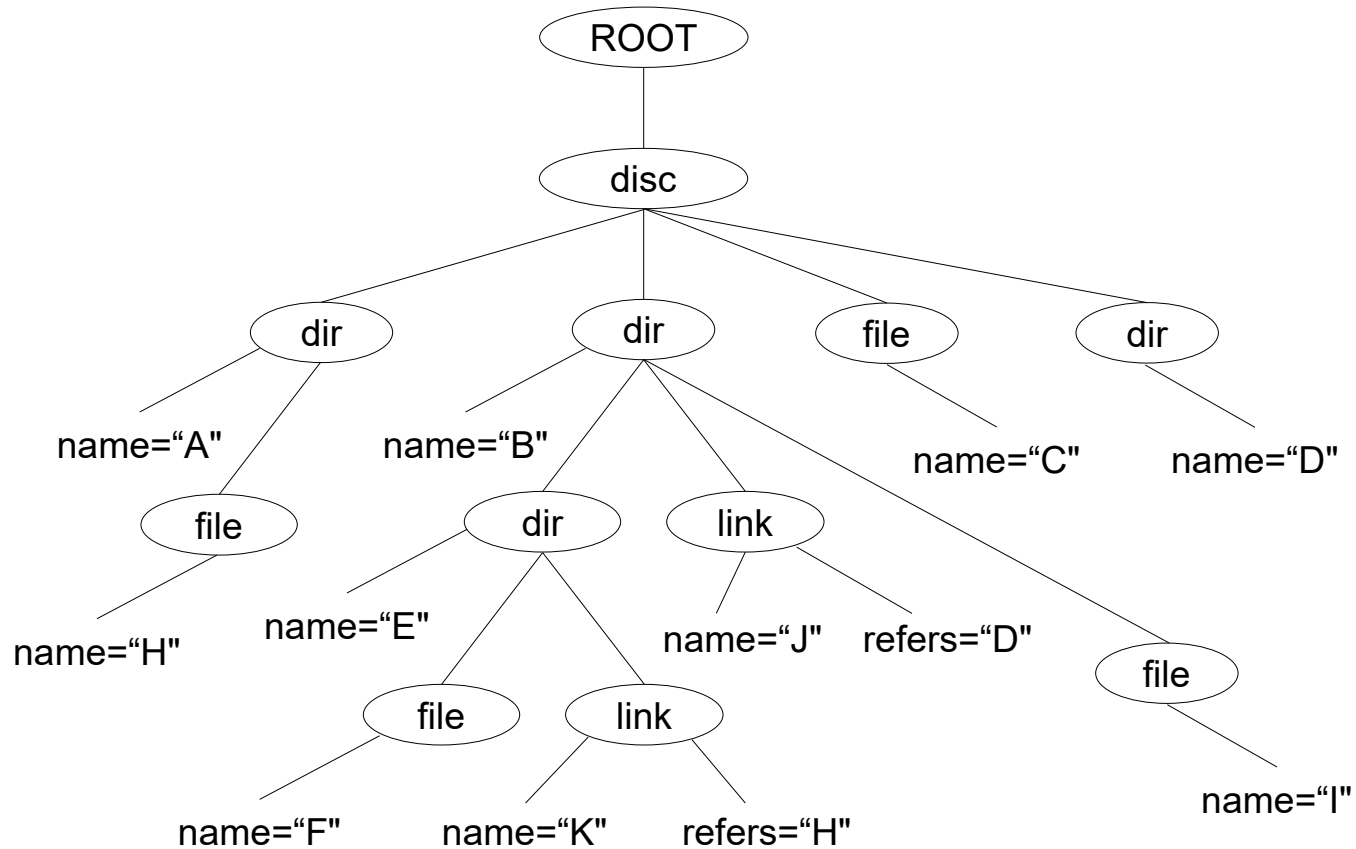
Further Examples



`//file[@name="C"]/preceding::dir[count(*) >= 2]`

select all directories with more than one child that appear before the file C

Further Examples

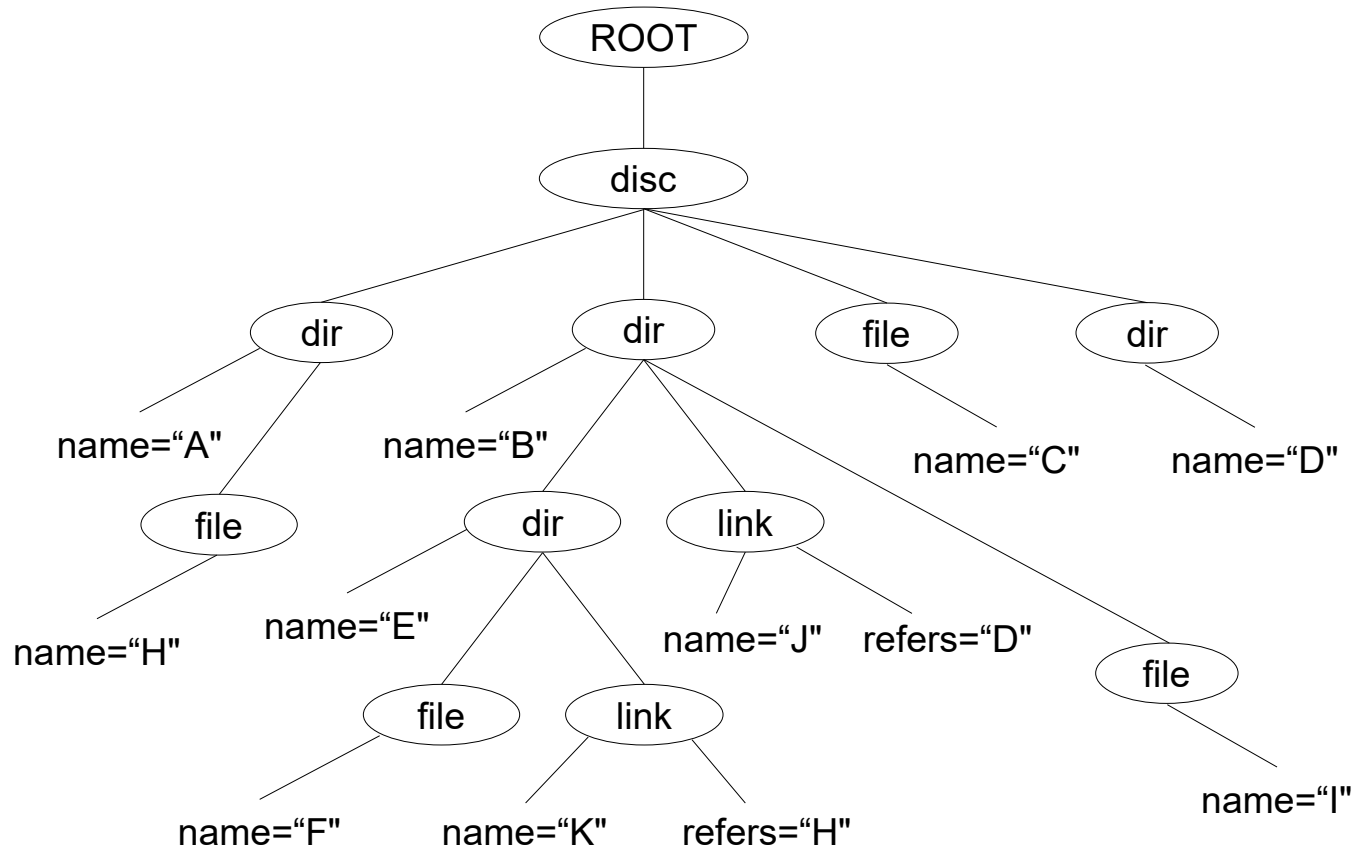


`/*file`

`select all files under disc`

`/disc/file`

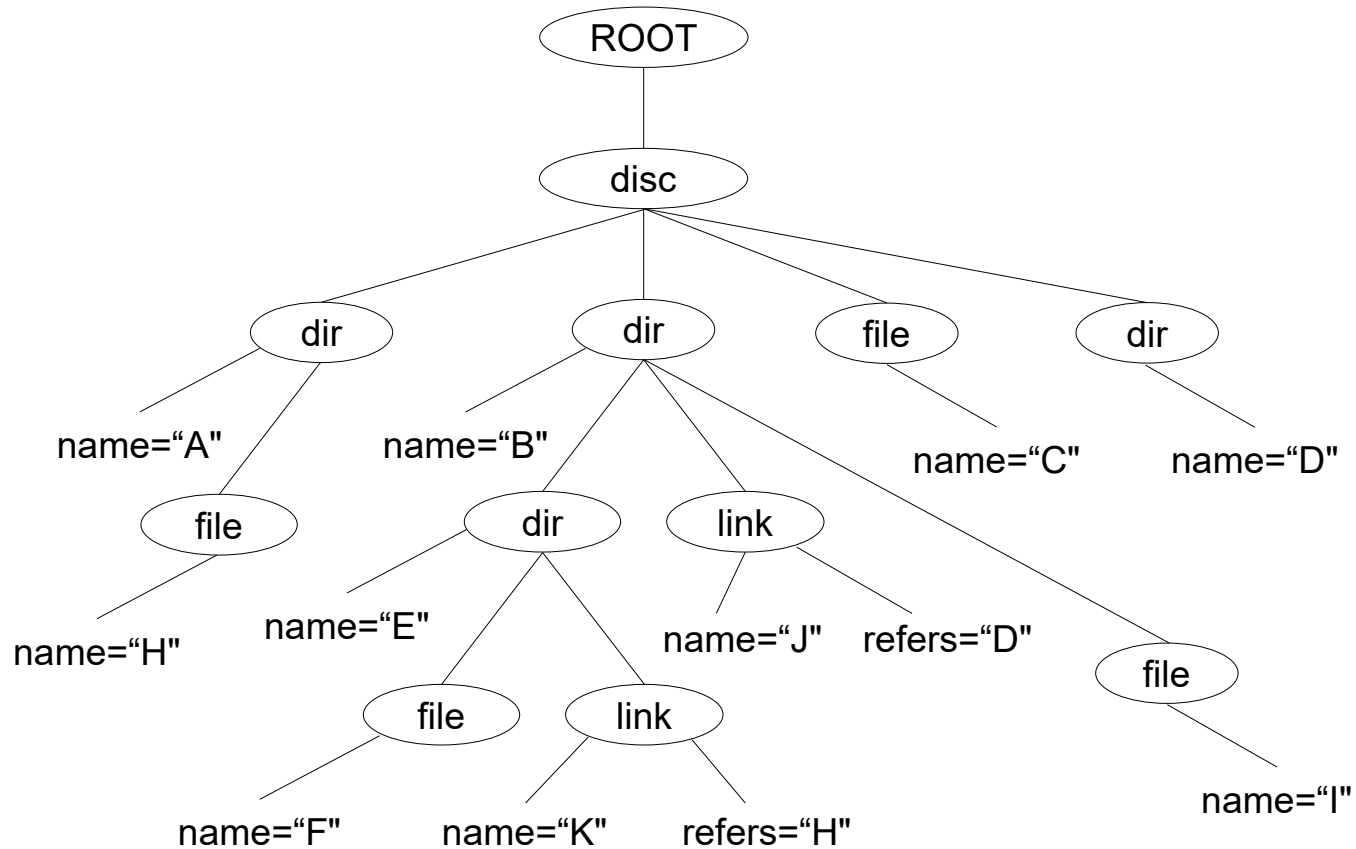
Further Examples



//dir[not(link)]

select all directories without a link

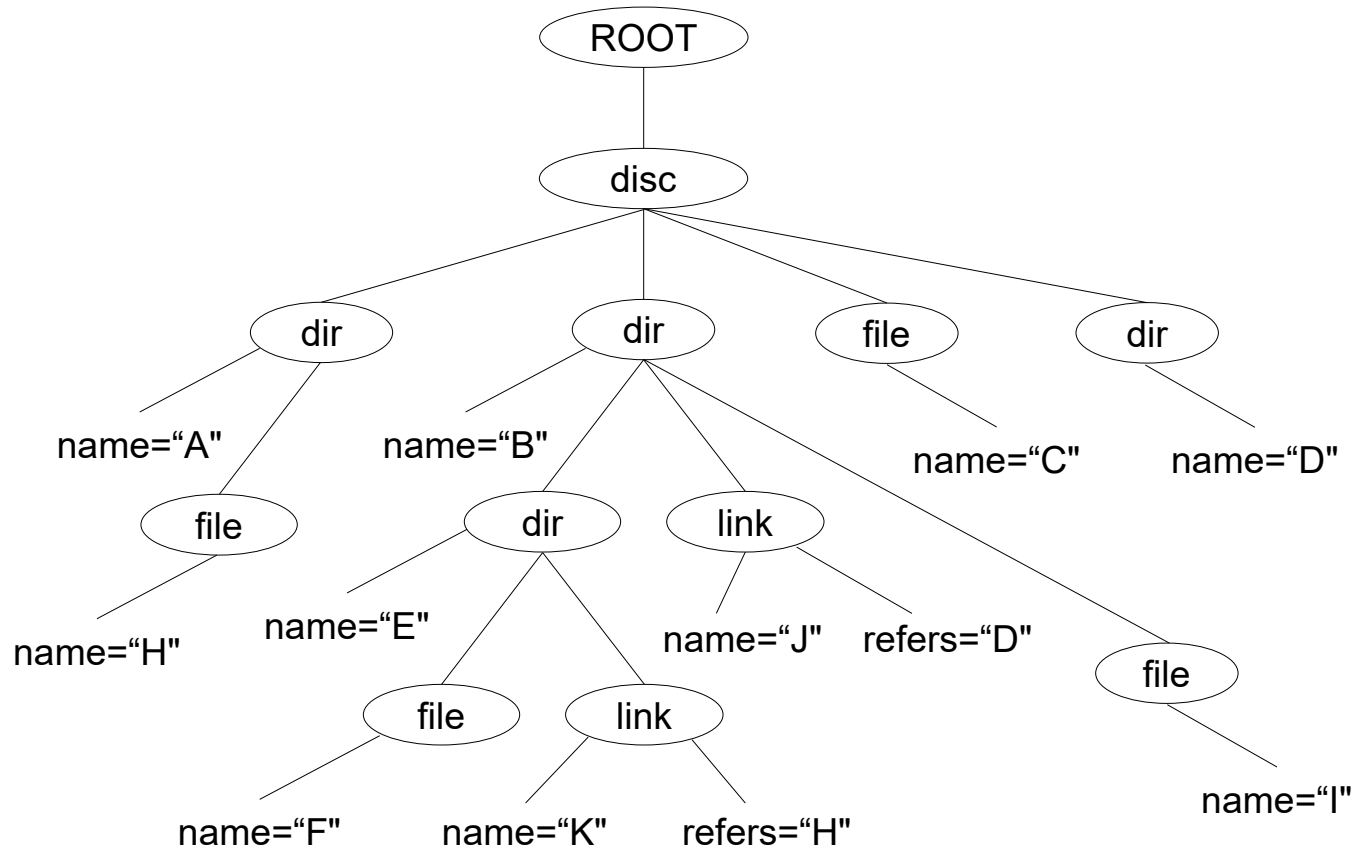
Further Examples



`//*[@name=//link[@name="K"]/@refers]`

select all elements that are being referred by the link K

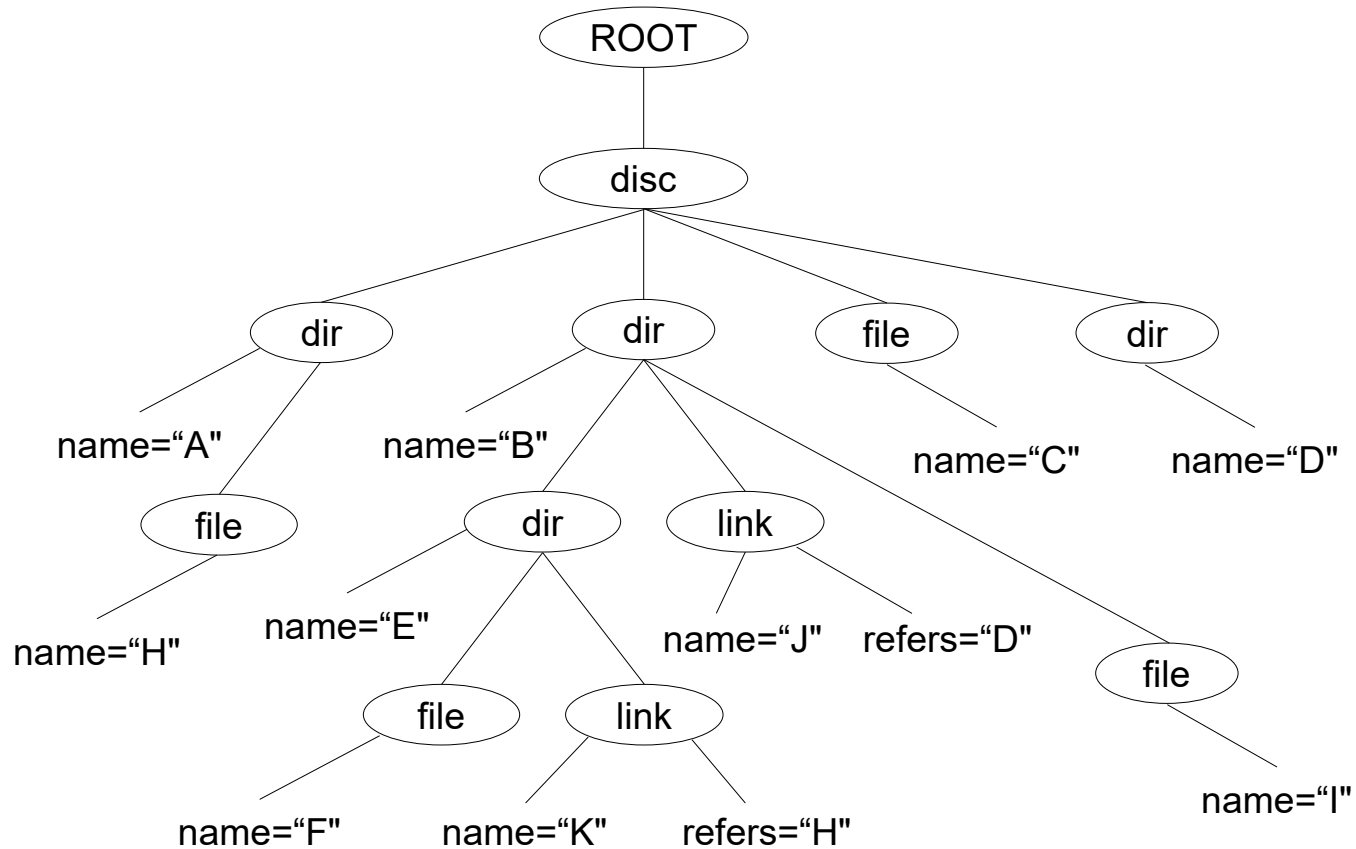
Further Examples



//file[@name="F"]/..@name

give me the name of the parent directory of file F

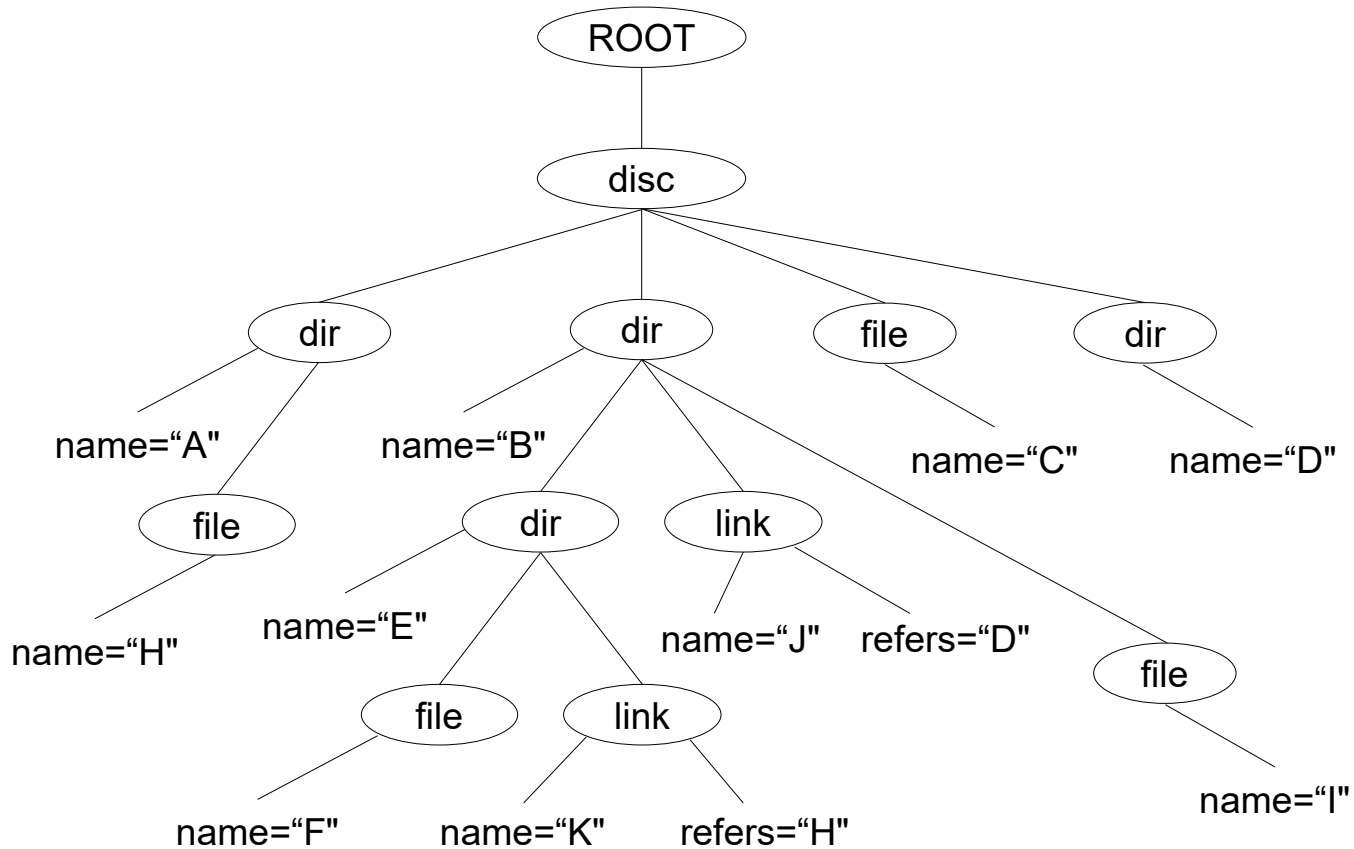
Further Examples



//file[@name="C"]/..@name **EMPTY**

give me the name of the parent directory of file C

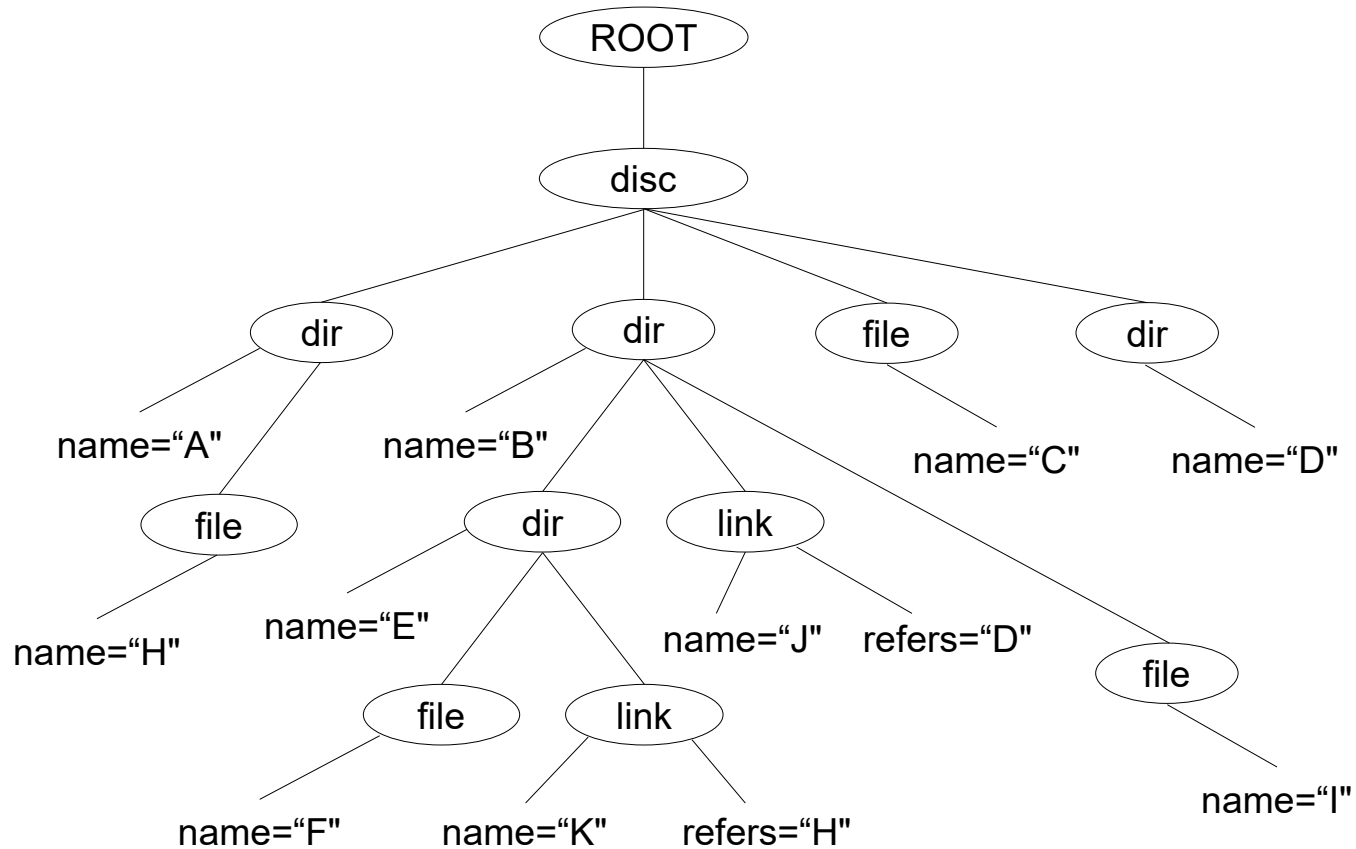
Further Examples



`//file[@name="F"]/ancestor::dir[last()]/@name`

give me the name of the top directory of file F

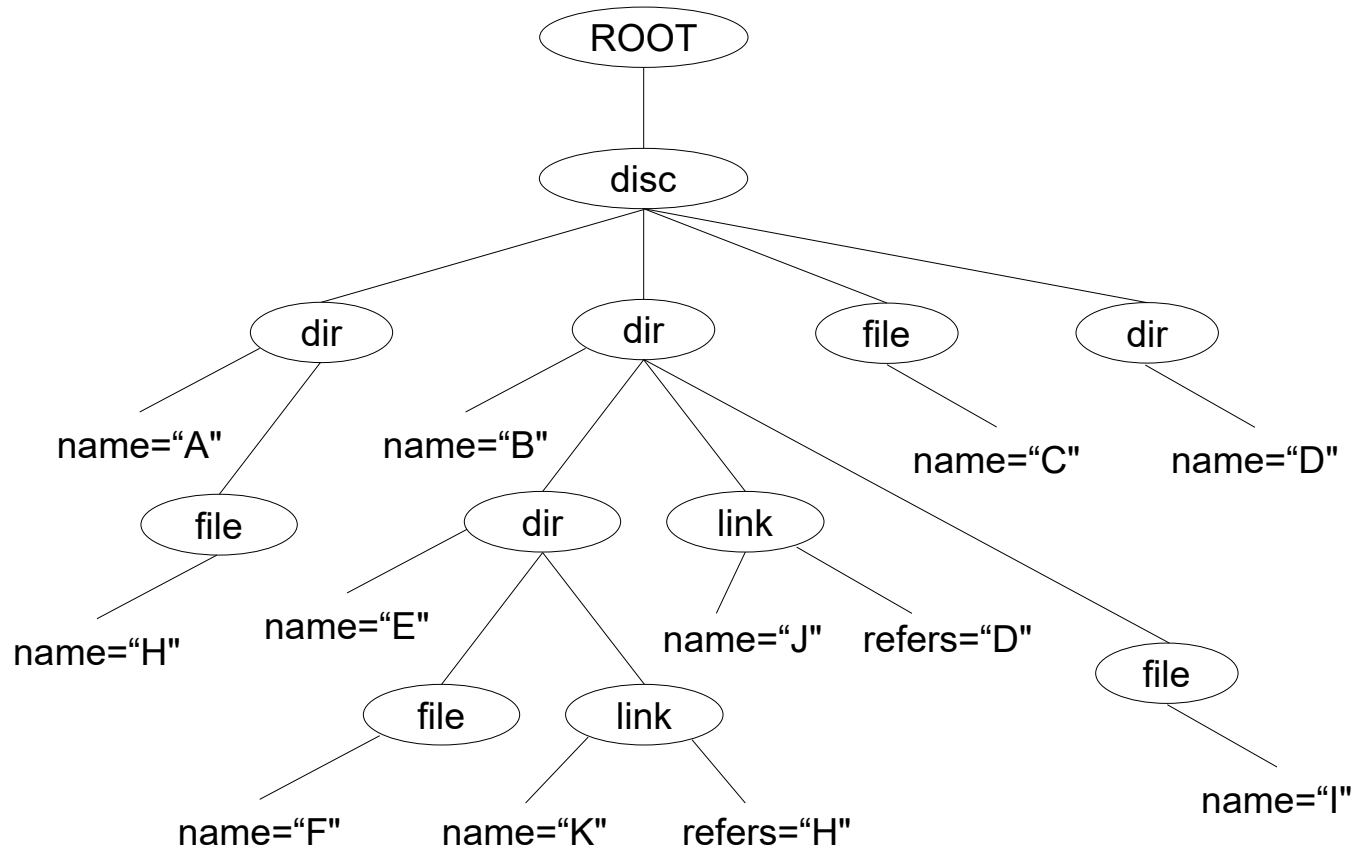
Further Examples



`//file[@name=//link[@name="K"]/@refers]/ancestor::dir[last()]/@name`

give me the name of the top directory of the file that is being referred by link K

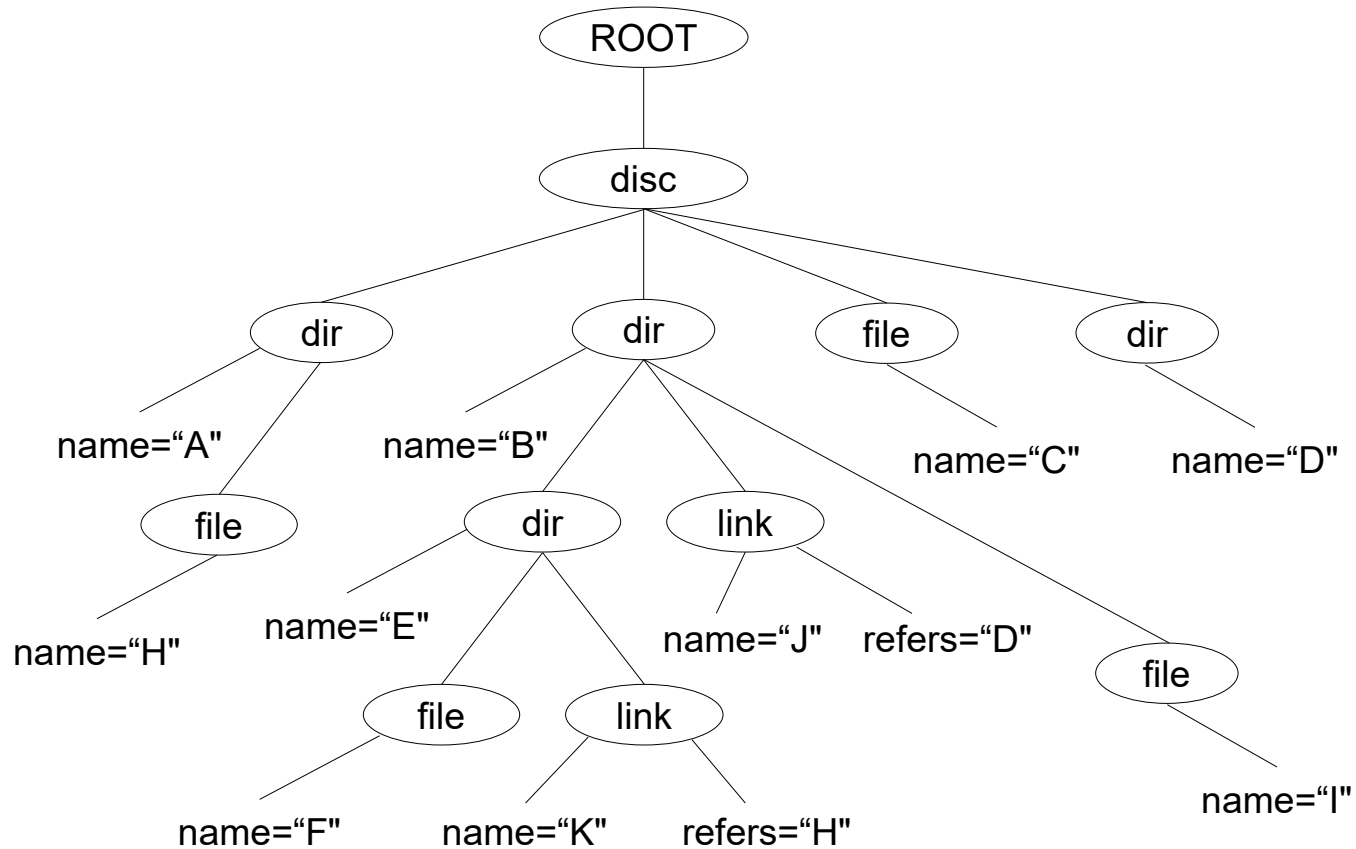
Further Examples



`//file[@name="H"]/../@name | //file[@name="I"]/../@name`

give me the names of the parent directories of files H and I

Further Examples



//file[@name="H" or @name="I"]/../@name

give me the names of the parent directories of files H and I

The final Example

```
<code>
  <if cond="x=0">
    <code id="fehler">ausgabe: fehler</code>
    <code id="main">
      ausgabe: ok
      <if cond="x=1">
        <code ref="odd"/>
      </if>
    <if cond="x=2">
      <code id="even">ausgabe: even number</code>
    </if>
    <if cond="x=3">
      <code id="odd">ausgabe: odd number</code>
      <code>exit</code>
    </if>
    <if cond="true">
      <code>exit</code>
      <!-- (never) do the loop -->
      <code ref="main"/>
    </if>
  </code>
</if>
</code>
```

//code[2]

Give me the code elements that are the second code element child of some node

Output:

```
<code id="main">
...
</code>
<code>exit</code>
<code ref="main"/>
```