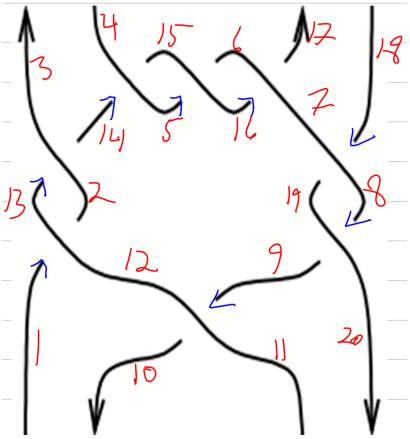
In[ ]:=
```
SetDirectory["C:\\drorbn\\AcademicPensieve\\2022-09\\KnottedGraphs"];
Once[<< KnotTheory`]
```

```
Loading KnotTheory` version of February 2, 2020, 10:53:45.2097.
Read more at http://katlas.org/wiki/KnotTheory.
```



In[ ]:=
```
epd = EPD[Bottom[20, 11, 10, 1],
  Xp[9, 12, 10, 11], Xm[1, 12, 2, 13], Xm[8, 19, 9, 20], Xm[13, 2, 14, 3],
  Xm[18, 7, 19, 8], Xp[14, 5, 15, 4], Xp[5, 16, 6, 15], Xp[16, 7, 17, 6],
  Top[3, 4, 17, 18]]
```

Out[ ]=
```
EPD[Bottom[20, 11, 10, 1], Xp[9, 12, 10, 11],
 Xm[1, 12, 2, 13], Xm[8, 19, 9, 20], Xm[13, 2, 14, 3], Xm[18, 7, 19, 8],
 Xp[14, 5, 15, 4], Xp[5, 16, 6, 15], Xp[16, 7, 17, 6], Top[3, 4, 17, 18]]
```

In[ ]:=
```
front = {1, 12, 9, 20};
Length[LongestCommonSubsequence[List @@ #, front]] & /@ epd
```

Out[ ]=
```
EPD[1, 1, 2, 2, 0, 0, 0, 0, 0, 0]
```

In[ ]:=
```
SequenceReplace[{1, 2, 3, 4, 5, 6, 7, 8, 9}, {3, 4, 5} → Sequence[22, 33]]
```

Out[ ]=
```
{1, 2, 22, 33, 6, 7, 8, 9}
```

In[ ]:=
```
SequenceReplace[{}, {} → 7]
```

Out[ ]=
```
{}
```

In[ ]:=
```
Complement[{5, 4, 3, 2, 1}, {3, 2}]
```

Out[ ]=
```
{1, 4, 5}
```

```
In[ ]:= Draw[epd_EPD] := Module[{kill = 30, front = {}, left = List @@ epd, do, com},
          While[Length[left] > 0 ∧ --kill > 0,
           do = RandomChoice@MaximalBy[left,
              v ↦ Length[LongestCommonSubsequence[List @@ v, front]] + Switch[Head[v],
                 Bottom, +1,
                 Top, -1,
                 _, 0
                ]
             ];
           left = DeleteCases[left, do];
           com = LongestCommonSubsequence[List @@ do, front];
           If[Length[com] > 0,
            front = SequenceReplace[front,
              com → Sequence @@ Reverse[SequenceReplace[List @@ do, com → Nothing]]],
            front = Reverse[List @@ do];
           ];
           Echo@{do, front}
          ]
         ]

In[ ]:= Draw[epd]

» {Bottom[20, 11, 10, 1], {1, 10, 11, 20}}

» {Xp[9, 12, 10, 11], {1, 12, 9, 20}}

» {Xm[1, 12, 2, 13], {13, 2, 9, 20}}

» {Xm[8, 19, 9, 20], {13, 2, 19, 8}}

» {Xm[18, 7, 19, 8], {13, 2, 7, 18}}

» {Xm[13, 2, 14, 3], {3, 14, 7, 18}}

» {Xp[14, 5, 15, 4], {3, 4, 15, 5, 7, 18}}

» {Xp[16, 7, 17, 6], {3, 4, 15, 5, 6, 17, 16, 18}}

» {Xp[5, 16, 6, 15], {3, 4, 6, 16, 5, 5, 6, 17, 16, 18}}

» {Top[3, 4, 17, 18], {18, 17, 6, 16, 5, 5, 6, 17, 16, 18}}
```