

Hexi—PS10—2025-02-25

Exercises from EIWL3 Section 26

In[211]:=

```
#^2 & /@ Range[20]
```

Out[211]=

```
{1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400}
```

In[212]:=

```
Blend[{#, Red}] & /@ {Yellow, Green, Blue}
```

Out[212]=

```
{, , 
```

In[213]:=

```
Framed[Column[{ToUpperCase[#], ToLowerCase[#]}]] & /@ Alphabet[]
```

Out[213]=

```
{

|   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | K | L |
| a | b | c | d | e | f | g | h | i | j | k | l |

,  


|   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| m | n | o | p | q | r | s | t | u | v | w | x | y | z |

}
```

In[214]:=

```
Framed[Style[#, RandomColor[]], Background → RandomColor[]] & /@ Alphabet[]
```


Out[214]=

```
{







|   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | b | c | d | e | f | g | h | i | j | k | l |   |   |
| m | n | o | p | q | r | s | t | u | v | w | x | y | z |

}
```

In[215]:=

```
Framed[Grid[{#["Name"], #["Flag"]}]] & @  Group of 5 COUNTRIES
```

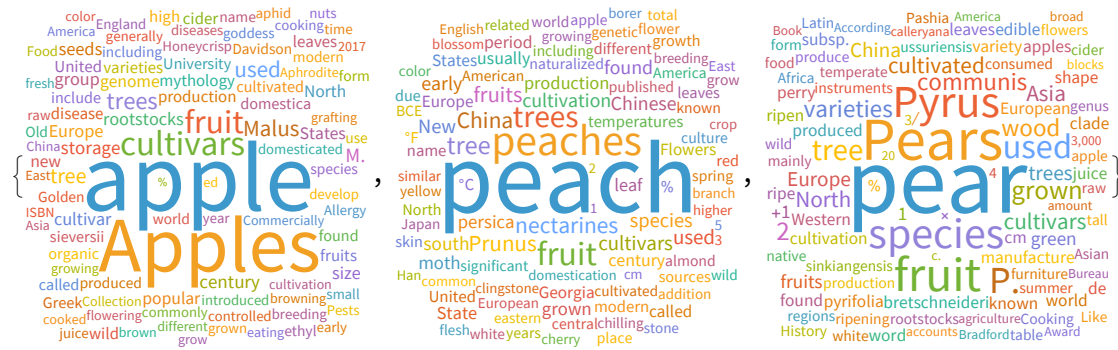
Out[215]=

France		Germany		Japan	United Kingdom	United States
						

```
In[216]:=
```

```
WordCloud[WikipediaData[#]] & /@ {"apple", "peach", "pear"}
```

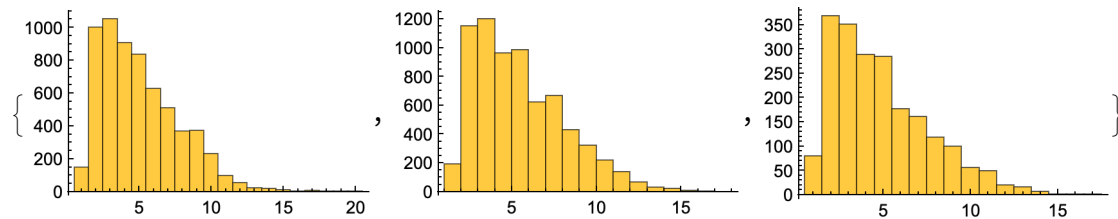
Out[216]=



In[217]:=

```
Histogram[StringLength[TextWords[WikipediaData[#]]]] & /@ {"apple", "peach", "pear"}
```

Out[217]=



In[218]:=

```
GeoGraphics[{GeoStyling[Red], Polygon[#]}, GeoRange → Central America COUNTRIES] & /@
EntityList[Central America COUNTRIES]
```

Out[218]=



Exercises from EIWL3 Section 27

In[219]:=

```
NestList[Blur[#] &, Rasterize[Style["X", 30]], 10]
```

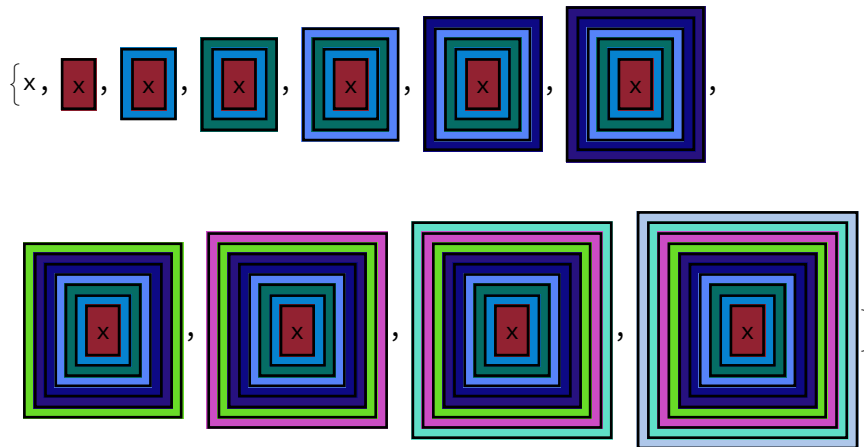
Out[219]=

```
{X, X, X, X, X, X, X, X, X, X, X}
```

In[220]:=

```
NestList[Framed[#, Background → RandomColor[]] &, x, 10]
```

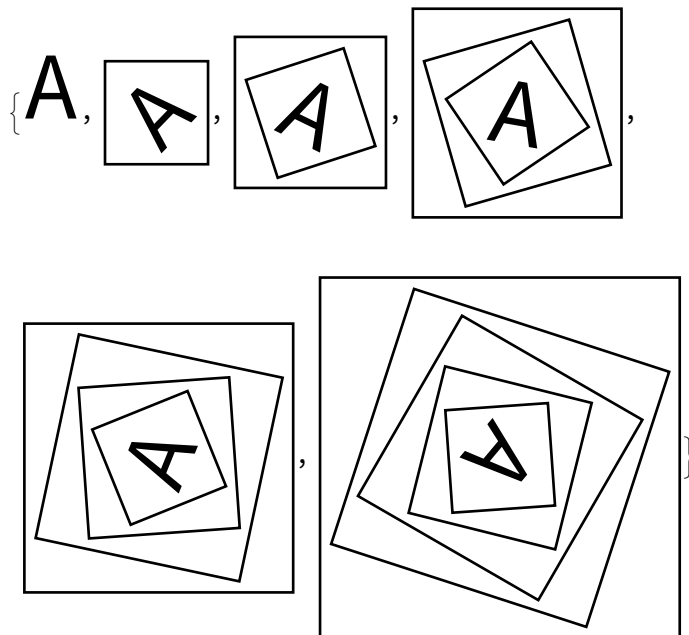
Out[220]=



In[221]:=

```
NestList[Framed[Rotate[#, RandomInteger[360] °]] &, Style["A", 50], 5]
```

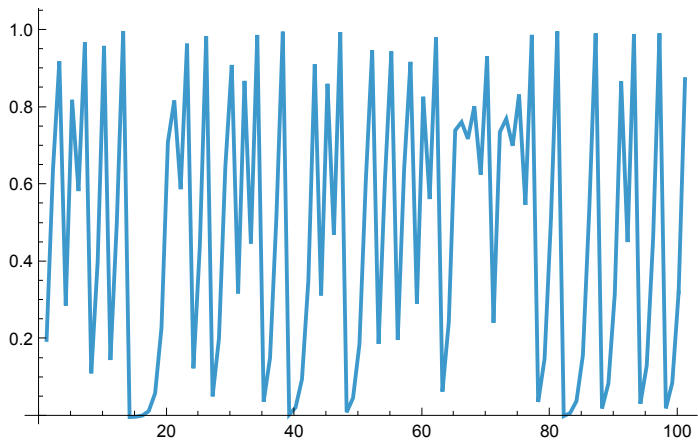
Out[221]=



In[222]:=

ListLinePlot[NestList[4 # (1 - #) &, 0.2, 100]]

Out[222]=



In[223]:=

Nest[1 + 1 / # &, 1, 30] // N

Out[223]=

1.61803

In[224]:=

NestList[3 # &, 1, 10]

Out[224]=

{1, 3, 9, 27, 81, 243, 729, 2187, 6561, 19683, 59049}

In[225]:=

NestList[(# + 2 / #) / 2 &, 1.0, 5] - Sqrt[2]

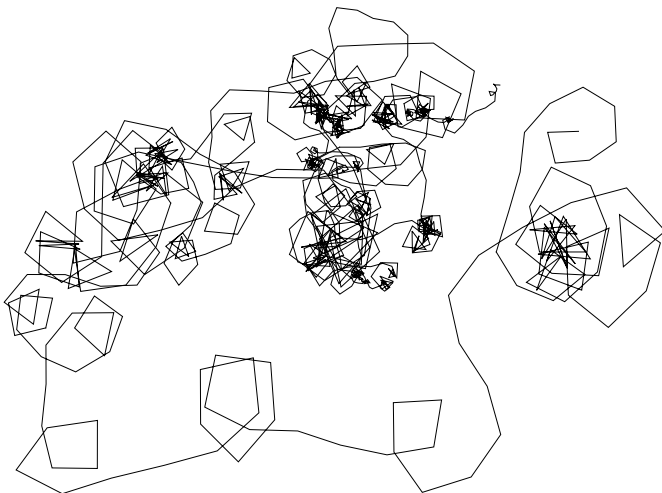
Out[225]=

{-0.414214, 0.0857864, 0.0024531, 2.1239×10^{-6} , 1.59472×10^{-12} , -2.22045×10^{-16} }

In[226]:=

**Graphics[Line[AnglePath[
NestList[# + {RandomReal[{-1, 1}], RandomReal[{-1, 1}]} &, {0, 0}, 1000]]]]**

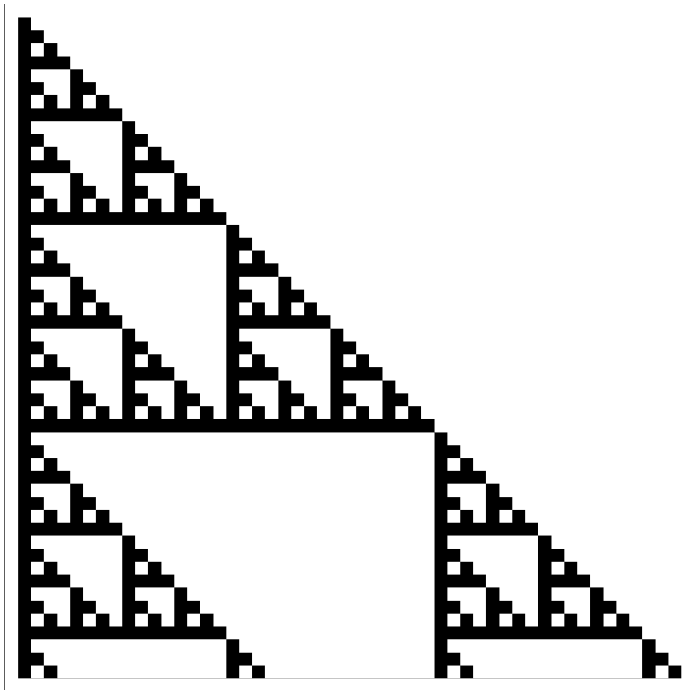
Out[226]=



In[227]:=

```
NestList[Mod[Join[{0}, #] + Join[#, {0}], 2] &, {1}, 50] // ArrayPlot
```

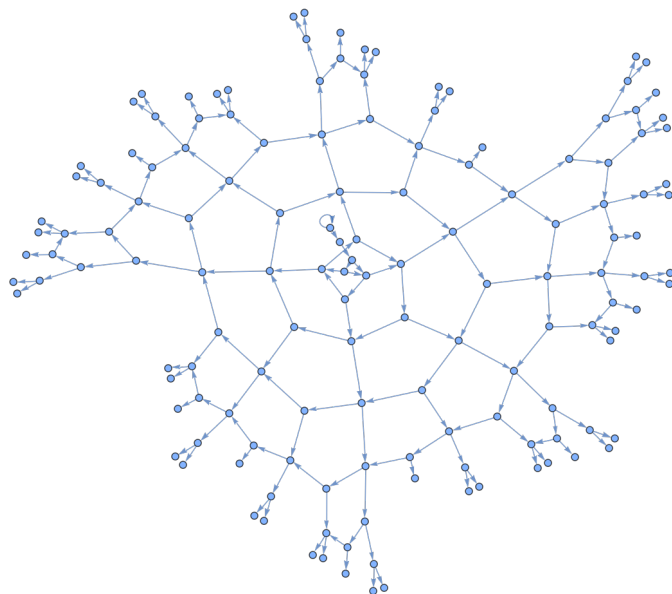
Out[227]=



In[228]:=

```
NestGraph[{2 #, # + 1} &, 0, 10]
```

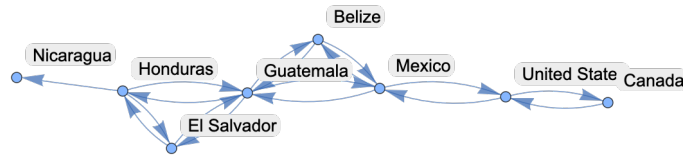
Out[228]=



In[229]:=

```
NestGraph[{"BorderingCountries"} &, United States COUNTRY, 4, VertexLabels → Automatic]
```

Out[229]=



Exercises from EIWL3 Section 27

In[230]:=

```
123 ^ 321 > 456 ^ 123
```

Out[230]=

```
True
```

In[231]:=

```
Select[Range[100], Total[IntegerDigits[#]] < 5 &]
```

Out[231]=

```
{1, 2, 3, 4, 10, 11, 12, 13, 20, 21, 22, 30, 31, 40, 100}
```

In[232]:=

```
If[PrimeQ[#], Style[#, Red], #] & /@ Range[20]
```

Out[232]=

```
{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20}
```

In[233]:=

```
Select[WordList[], StringMatchQ[#, "p" ~~ __ ~~ "p"] &]
```

Out[233]=

```
{pap, paperclip, parsnip, partisanship, partnership, pawnshop, peep, penmanship,
  pep, pickup, pileup, pip, plop, plump, polyp, pomp, pop, premiership,
  prep, primp, professorship, prop, proprietorship, pulp, pump, pup}
```

In[234]:=

```
Select[Prime[Range[100]], Last[IntegerDigits[#]] < 3 &]
```

Out[234]=

```
{2, 11, 31, 41, 61, 71, 101, 131, 151, 181, 191, 211,
  241, 251, 271, 281, 311, 331, 401, 421, 431, 461, 491, 521, 541}
```

In[235]:=

```
Select[RomanNumeral[Range[100]], ! StringContainsQ[#, "I"] &]
```

Out[235]=

```
{V, X, XV, XX, XXV, XXX, XXXV, XL, XLV,
  L, LV, LX, LXV, LXX, LXXV, LXXX, LXXXV, XC, XCV, C}
```

In[236]:=

```
Select[RomanNumeral /@ Range[1000], # == StringReverse[#] &]
```

Out[236]=

```
{I, II, III, V, X, XIX, XX, XXX, L, C, CXC, CC, CCC, D, M}
```


In[241]:=

```
Select[WordList[],
  StringTake[#, 3] == StringReverse[StringTake[#, -3]] && # != StringReverse[#] &]
```

... **StringTake**: Cannot take positions 1 through 3 in "a".

... **StringTake**: Cannot take positions -3 through -1 in "a".

... **StringReverse**: String expected at position 1 in StringReverse[StringTake[a, -3]].

... **StringTake**: Cannot take positions 1 through 3 in "ad".

... **General**: Further output of StringTake::take will be suppressed during this calculation. ⓘ

... **StringReverse**: String expected at position 1 in StringReverse[StringTake[ad, -3]].

... **StringReverse**: String expected at position 1 in StringReverse[StringTake[ah, -3]].

... **General**: Further output of StringReverse::string will be suppressed during this calculation. ⓘ

Out[241]=

```
{despised, detected, detested, drainboard,
 foolproof, lackadaisical, marjoram, revolver}
```

In[242]:=

```
Select[WordList[], StringLength[#] == 10 && Total@LetterNumber@Characters[#] == 100 &]
```

Out[242]=

```
{accumulate, alienation, answerable, apoplectic, aquamarine, bewitching, censurable,
 ceramicist, chastening, chimpanzee, clinically, collecting, condensate,
 congenital, conjugated, connivance, declension, deliquesce, demobilize,
 demodulate, denominate, diagonally, discipline, discomode, egoistical,
 emasculate, embodiment, emendation, empathetic, fatalistic, fatherhood,
 geographer, hemoglobin, inadequacy, interbreed, leveraging, liberalism,
 likelihood, martingale, mercantile, meridional, neoclassic, paramecium,
 plebiscite, potbellied, quadrangle, reciprocal, regimented, reschedule,
 researcher, scoreboard, septicemia, shibboleth, sleepyhead, stagecraft,
 stalemated, temperance, thickening, threatened, uncombined, unmodified}
```