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]=
In[214]:=
       Framed[Style[#, RandomColor[]], Background → RandomColor[]] & /@ Alphabet[]
Out[214]=
In[215]:=
       Framed[Grid[{#["Name"], #["Flag"]}]] &@ ## Group of 5 COUNTRIES
Out[215]=
                                                                     United Kingdom
              France
                                 Germany
                                                                                          United States
                                                       Japan
```

In[216]:=

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

Out[216]=

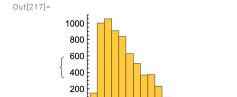


Englishrelated world apple borer total blossomperiod, growing genetic flower blossomperiod, growing genetic flower blossomperiod, growing genetic flower blossomperiod, growing genetic flower blossom growth with the color of th oersica nectarines skinsouthPrunus fruit cultivars used3
mothsignificant fruit centuryalmond mothsignificant domestication cm sourceswild United European grown modern called eastern centralchillingstone flesh, white years cherry place fleshwhiteyears cherry place



In[217]:=

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



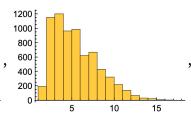
5

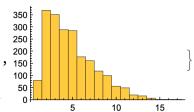
10

15

20

0





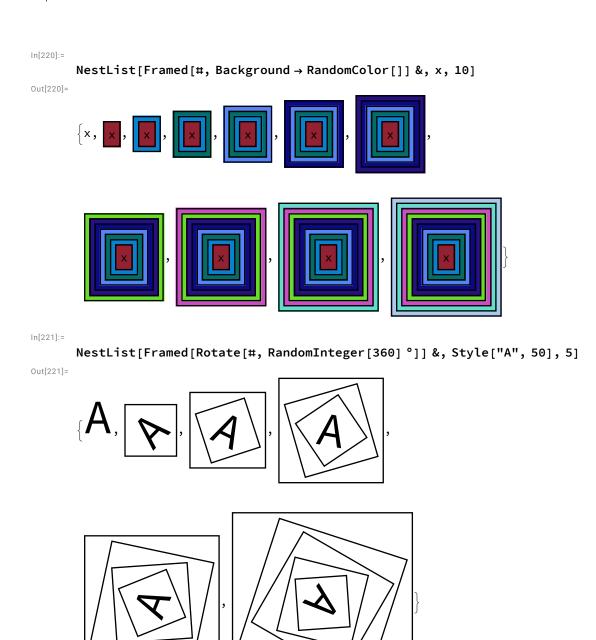
GeoGraphics [GeoStyling[Red], Polygon[#]}, GeoRange → III Central America COUNTRIES EntityList Central America COUNTRIES Out[218]=

Exercises from EIWL3 Section 27

In[218]:=

In[219]:= NestList[Blur[#] &, Rasterize[Style["X", 30]], 10] Out[219]=

 $\{X, X, X, X, X, X, X, X, X, X\}$



In[222]:= ListLinePlot[NestList[4 # (1 - #) &, 0.2, 100]]

Out[222]= 1.0

In[223]:=

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

Out[223]= 1.61803

Out[226]=

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]

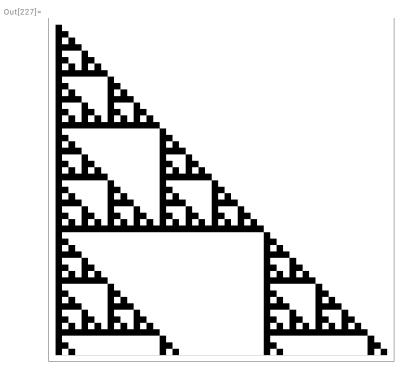
Out[225]= $\left\{-0.414214,\, 0.0857864,\, 0.0024531,\, 2.1239\times 10^{-6},\, 1.59472\times 10^{-12},\, -2.22045\times 10^{-16}\right\}$

In[226]:= Graphics[Line[AnglePath[

NestList[# + {RandomReal[{-1, 1}], RandomReal[{-1, 1}]} &, {0, 0}, 1000]]]]



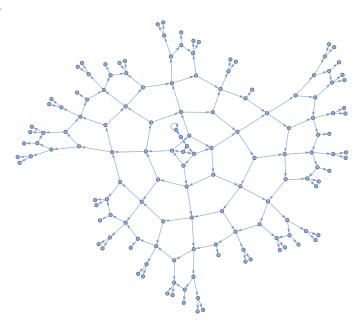
In[227]:= $NestList[Mod[Join[\{0\},\,\#] + Join[\#,\,\{0\}],\,2]\,\&,\,\{1\},\,50]\,\,//\,\,ArrayPlot$



In[228]:=

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

Out[228]=



```
In[229]:=
        NestGraph [#["BorderingCountries"] &, United States COUNTRY], 4, VertexLabels → Automatic
Out[229]=
                                      Belize
          Nicaragua
                                            Mexico
                    Honduras
                                                       United State Canada
                        El Salvador
```

Exercises from EIWL3 Section 27

```
In[230]:=
       123 ^ 321 > 456 ^ 123
Out[230]=
       True
In[231]:=
       Select[Range[100], Total[IntegerDigits[#]] < 5 &]</pre>
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 &]</pre>
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, LXX, LXXX, 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[237]:=
      Select[IntegerName /@ Range[100], First@Characters[#] == Last@Characters[#] &]
Out[237]=
       {nineteen, twenty-eight, thirty-eight, eighty-one,
        eighty-three, eighty-five, eighty-nine, ninety-seven}
In[238]:=
       Select[TextWords[WikipediaData["words"]], StringLength[#] > 15 &]
Out[238]=
       {yibi-jarran-gabun, yibi-gabun-jarran, orthographically,
       multiple-morpheme, Proto-Indo-European, 978-0-08-044854-1}
In[239]:=
      NestList[If[EvenQ[#], #/2, 3 # + 1] &, 1000, 200]
Out[239]=
       {1000, 500, 250, 125, 376, 188, 94, 47, 142, 71, 214, 107, 322, 161, 484, 242, 121, 364,
        182, 91, 274, 137, 412, 206, 103, 310, 155, 466, 233, 700, 350, 175, 526, 263,
       790, 395, 1186, 593, 1780, 890, 445, 1336, 668, 334, 167, 502, 251, 754, 377,
        1132, 566, 283, 850, 425, 1276, 638, 319, 958, 479, 1438, 719, 2158, 1079, 3238,
       1619, 4858, 2429, 7288, 3644, 1822, 911, 2734, 1367, 4102, 2051, 6154, 3077,
       9232, 4616, 2308, 1154, 577, 1732, 866, 433, 1300, 650, 325, 976, 488, 244, 122,
       61, 184, 92, 46, 23, 70, 35, 106, 53, 160, 80, 40, 20, 10, 5, 16, 8, 4, 2, 1, 4, 2,
       1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4,
        2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1,
       4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2}
In[240]:=
      WordCloud[Select[TextWords@WikipediaData["computer"], StringLength[#] == 5 &]]
Out[240]=
          break chips
                       doingabove drove
```

undercards found gates Along casesbased Mouse ahead M meant field ^{1970s}large bytes_{1950s} afterpaperabout_{cause}until^{1,500} equalallow shortusageBerry

```
In[241]:=
       Select[WordList[],
        StringTake[#, 3] == StringReverse[StringTake[#, -3]] && # \( \neq \) 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, discommode, 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}
```