

Hexi—PS21—2025 - 04 - 25

EIWL Sections 47 and 48

8/8

Due to getting a little behind in the final two weeks of the semester, I only checked for completeness on PS 18-21. ~Brian

Exercises from EIWL3 Section 47

```
In[•]:= Total[Table[i * (i + 1), {i, 1, 1000, 1}]]
```

`Out[•]=` 334 334 000

```
In[•]:= Nest[1 / (1 + #) &, x, 10]
```

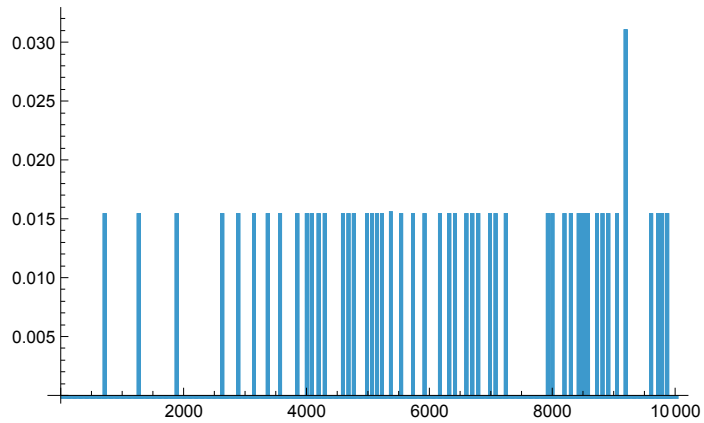
$$Out[*]=$$

```
In[•]:= Flatten[Table[{i, j}, {i, 10}, {j, 10}]]
```

```
Out[*]=
{1, 1, 1, 2, 1, 3, 1, 4, 1, 5, 1, 6, 1, 7, 1, 8, 1, 9, 1, 10, 2, 1, 2, 2, 2, 3, 2, 4, 2, 5, 2,
 6, 2, 7, 2, 8, 2, 9, 2, 10, 3, 1, 3, 2, 3, 3, 3, 4, 3, 5, 3, 6, 3, 7, 3, 8, 3, 9, 3, 10,
 4, 1, 4, 2, 4, 3, 4, 4, 4, 5, 4, 6, 4, 7, 4, 8, 4, 9, 4, 10, 5, 1, 5, 2, 5, 3, 5, 4, 5,
 5, 5, 6, 5, 7, 5, 8, 5, 9, 5, 10, 6, 1, 6, 2, 6, 3, 6, 4, 6, 5, 6, 6, 6, 7, 6, 8, 6, 9,
 6, 10, 7, 1, 7, 2, 7, 3, 7, 4, 7, 5, 7, 6, 7, 7, 7, 8, 7, 9, 7, 10, 8, 1, 8, 2, 8, 3,
 8, 4, 8, 5, 8, 6, 8, 7, 8, 8, 8, 9, 8, 10, 9, 1, 9, 2, 9, 3, 9, 4, 9, 5, 9, 6, 9, 7, 9,
 8, 9, 9, 9, 10, 10, 1, 10, 2, 10, 3, 10, 4, 10, 5, 10, 6, 10, 7, 10, 8, 10, 9, 10, 10}
```

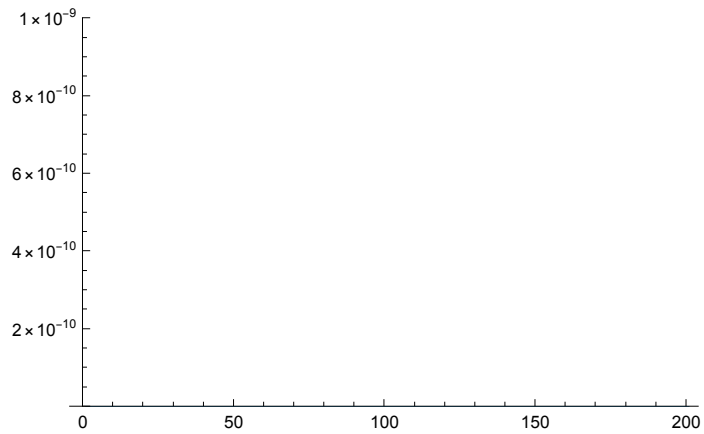
```
In[ ]:= ListLinePlot[Table[First[Timing[n^n]], {n, 10 000}]]
```

Out[]=



```
In[ ]:= ListLinePlot[Table[First[Timing[Sort[RandomSample[Range[n]]]]], {n, 200}], PlotRange -> {0, 10^-9}]
```

Out[]=



Exercises from EIWL3 Section 48

```
In[ ]:= Counts[If[StringLength[#] > 1, StringTake[#, 2], Nothing] & /@ WordList[]]
```

```
Out[ ]:=
```

```
<| aa → 2, ab → 170, ac → 217, ad → 191, ae → 26, af → 72, ag → 81, ah → 5, ai → 55, AI → 1,
aj → 1, ak → 2, al → 204, am → 139, an → 330, ao → 3, ap → 165, Ap → 1, aq → 14,
ar → 207, as → 198, AS → 1, at → 99, au → 117, Au → 1, av → 46, aw → 30, ax → 12,
ay → 2, az → 4, ba → 448, BA → 1, be → 359, bi → 208, bl → 254, bo → 302, br → 306,
bu → 255, by → 14, ca → 612, ce → 126, ch → 442, ci → 89, cl → 265, cn → 1, co → 1589,
CO → 1, cr → 337, cu → 184, cy → 45, cz → 3, da → 152, dB → 1, de → 884, De → 1, dh → 2,
di → 827, DN → 1, do → 244, DO → 1, dr → 172, du → 113, dw → 9, dy → 29, ea → 72,
eb → 7, ec → 45, ed → 39, ee → 4, e' → 2, ef → 45, eg → 28, eh → 1, ei → 16, ej → 3,
el → 136, em → 144, en → 316, eo → 1, ep → 53, eq → 41, er → 56, es → 63, et → 42,
eu → 25, ev → 76, ew → 2, ex → 416, ey → 21, fa → 276, fe → 174, Fe → 1, fi → 251,
fj → 1, fl → 266, fo → 335, FO → 1, fr → 228, Fr → 1, fu → 138, ga → 193, ge → 153,
gh → 15, gi → 65, gl → 136, gn → 13, go → 124, Go → 1, gr → 347, gu → 120, gy → 19,
ha → 363, he → 321, hi → 127, HI → 1, h' → 1, hm → 1, ho → 340, hu → 134, hy → 116,
ia → 4, ib → 4, ic → 27, id → 55, if → 2, ig → 18, il → 54, im → 324, in → 1244, io → 10,
ip → 1, IQ → 1, ir → 90, is → 36, it → 17, iv → 3, ja → 72, Ja → 1, je → 47, ji → 32,
jo → 76, ju → 86, Ju → 2, ka → 20, kc → 1, ke → 40, kh → 3, kH → 1, ki → 88, kl → 4,
kn → 51, ko → 10, kp → 1, kr → 5, ku → 3, kv → 1, kW → 1, la → 301, le → 224, li → 293,
ll → 2, lo → 226, lu → 102, ly → 20, ma → 589, Ma → 2, me → 363, mi → 409, mn → 2,
mo → 392, Mo → 1, ms → 1, mu → 206, my → 33, na → 129, ne → 208, ni → 87, no → 304,
No → 1, nt → 1, nu → 86, ny → 4, oa → 15, ob → 126, oc → 46, o' → 2, Oc → 1, od → 19,
oe → 2, of → 47, og → 3, oh → 5, oi → 12, ok → 3, ol → 20, om → 19, on → 34, oo → 7,
op → 86, or → 114, os → 28, ot → 7, ou → 125, ov → 215, ow → 11, ox → 19, oy → 1,
oz → 1, pa → 553, pe → 487, pf → 1, pH → 1, ph → 160, pi → 217, pl → 228, pn → 4,
po → 402, pr → 815, ps → 50, pt → 3, pu → 225, py → 22, qu → 194, ra → 307, re → 1228,
rh → 39, ri → 148, ro → 206, ru → 122, ry → 1, sa → 321, Sa → 1, sc → 334, se → 552,
Se → 1, sh → 377, si → 241, sk → 94, sl → 196, sm → 77, sn → 115, so → 300, sp → 400,
sq → 56, st → 697, su → 519, Su → 1, sv → 1, sw → 119, sy → 100, ta → 270, te → 313,
th → 283, Th → 1, ti → 167, TN → 1, to → 253, tr → 476, ts → 3, tu → 119, Tu → 1,
TV → 1, tw → 49, ty → 42, ub → 2, ud → 1, UF → 1, ug → 3, uk → 2, ul → 24, um → 14,
un → 1335, UN → 1, up → 75, ur → 36, us → 25, ut → 18, uv → 2, ux → 1, va → 143,
ve → 170, vi → 214, VI → 1, vo → 84, vu → 15, wa → 252, we → 127, We → 1, wh → 165,
wi → 186, wo → 166, wr → 68, xe → 6, xi → 1, xy → 3, ya → 26, ye → 36, yi → 6, yo → 27,
yt → 2, yu → 7, za → 3, ze → 19, zi → 15, zl → 1, zo → 13, zu → 1, zw → 1, zy → 3|>
```

```
In[ ]:= Last[Reap[Fold[10 Sow[#1] + #2 &, {1, 2, 3, 4, 5}]]]
```

```
Out[ ]:=
```

```
{ {1, 12, 123, 1234} }
```

```
In[ ]:= Last[Reap[Nest[If[EvenQ[#], Sow[#] / 2, 3 # + 1] &, 1000, 20]]]
Out[ ]:= {{1000, 500, 250, 376, 188, 94, 142, 214, 322, 484, 242, 364, 182}}
```