

# 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

```
Total[#* (# + 1) & /@ Range[1000]]
```

Out[ ]=

```
334 334 000
```

```
Nest[1 / (1 + #) &, x, 10]
```

Out[ ]=

$$1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + x}}}}}}}}$$

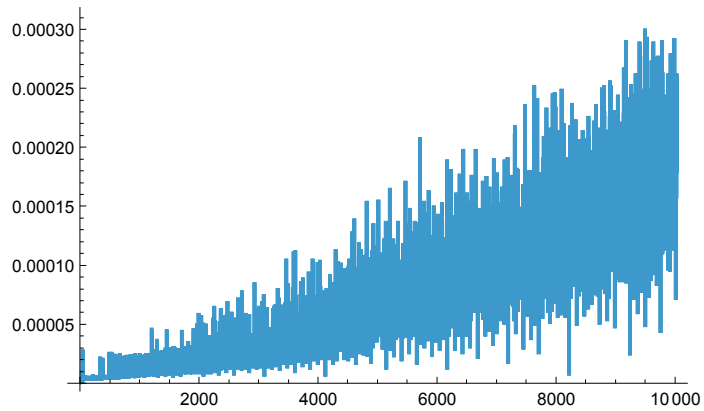
```
Flatten[Array[List, {10, 10}]]
```

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}
```

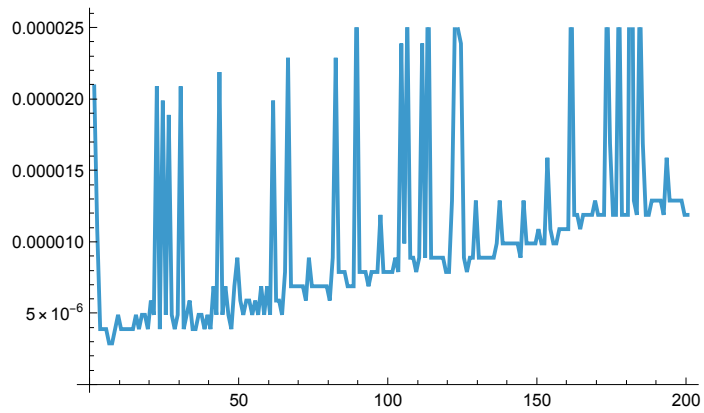
```
ListLinePlot[Table[First[Timing[n^n]], {n, 10 000}]]
```

Out[ ]=



```
ListLinePlot[Table[First[Timing[Sort[RandomSample[Range[n], n]]]], {n, 200}]]
```

Out[ ]=



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

```
Out[8]=
```

```
<| aa → 2, ab → 170, ac → 217, ad → 190, ae → 26, af → 72, ag → 81, ah → 4, ai → 55, AI → 1,
  aj → 1, ak → 2, al → 204, am → 138, an → 329, ao → 3, ap → 165, Ap → 1, aq → 14,
  ar → 207, as → 197, AS → 1, at → 98, au → 117, Au → 1, av → 46, aw → 30, ax → 11, ay → 2,
  az → 4, ba → 448, BA → 1, be → 358, bi → 208, bl → 254, bo → 302, br → 306, bu → 255,
  by → 13, 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, de → 884, De → 1, dh → 2, di → 827,
  DN → 1, do → 243, 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, ei → 16, ej → 3, el → 136, em → 143,
  en → 315, eo → 1, ep → 53, eq → 41, er → 55, es → 63, et → 42, eu → 25, ev → 76, ew → 2,
  ex → 415, ey → 21, fa → 275, 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 → 123, Go → 1, gr → 347, gu → 120, gy → 19, ha → 362, he → 320, hi → 126,
  HI → 1, h' → 1, ho → 339, hu → 134, hy → 116, ia → 4, ib → 4, ic → 27, id → 54, if → 1,
  ig → 18, il → 54, im → 324, in → 1243, io → 10, ip → 1, ir → 90, is → 35, it → 16,
  iv → 3, ja → 72, Ja → 1, je → 47, ji → 32, jo → 76, ju → 86, Ju → 2, ka → 20, ke → 40,
  kh → 3, kH → 1, ki → 88, kl → 4, kn → 51, ko → 10, kp → 1, kr → 5, ku → 3, kv → 1,
  la → 300, le → 224, li → 293, ll → 2, lo → 225, lu → 102, ly → 20, ma → 588, Ma → 2,
  me → 362, mi → 408, mn → 2, mo → 392, Mo → 1, mu → 205, my → 32, na → 129, ne → 208,
  ni → 87, no → 303, No → 1, nt → 1, nu → 85, ny → 4, oa → 15, ob → 126, oc → 46, o' → 2,
  Oc → 1, od → 19, oe → 2, of → 46, og → 3, oh → 4, oi → 12, ok → 3, ol → 20, om → 19,
  on → 33, oo → 7, op → 86, or → 114, os → 28, ot → 7, ou → 125, ov → 215, ow → 10,
  ox → 18, oy → 1, oz → 1, pa → 552, pe → 487, pf → 1, ph → 160, pi → 216, pl → 228,
  pn → 4, po → 402, pr → 815, ps → 50, pt → 3, pu → 225, py → 22, qu → 194, ra → 307,
  re → 1227, rh → 39, ri → 148, ro → 206, ru → 122, ry → 1, sa → 321, Sa → 1, sc → 334,
  se → 552, Se → 1, sh → 376, si → 241, sk → 94, sl → 196, sm → 77, sn → 115, so → 299,
  sp → 400, sq → 56, st → 697, su → 519, Su → 1, sv → 1, sw → 119, sy → 100, ta → 269,
  te → 313, th → 283, Th → 1, ti → 166, TN → 1, to → 252, tr → 476, ts → 3, tu → 119,
  Tu → 1, tw → 49, ty → 42, ub → 2, ud → 1, UF → 1, ug → 3, uk → 2, ul → 24, um → 13,
  un → 1335, UN → 1, up → 74, ur → 36, us → 24, ut → 18, uv → 2, ux → 1, va → 143,
  ve → 170, vi → 214, VI → 1, vo → 84, vu → 15, wa → 252, we → 126, We → 1, wh → 165,
  wi → 186, wo → 166, wr → 68, xe → 6, xy → 3, ya → 25, ye → 35, yi → 6, yo → 27,
  yt → 2, yu → 7, za → 3, ze → 19, zi → 15, zl → 1, zo → 13, zu → 1, zw → 1, zy → 3 |>
```

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

```
Out[9]=
```

```
{12 345, {{1, 12, 123, 1234}}}
```

```
Last[Reap[Nest[If[EvenQ[#], Sow[#/2], 3# + 1] &, 1000, 20]]]
```

```
Out[10]=
```

```
{{500, 250, 125, 188, 94, 47, 71, 107, 161, 242, 121, 182, 91}}
```