

# Tahm — PS 12 — 2025-03-21

## EIWL3 Sections 31 and 32

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### Chapter 31

```
In[*]:= Take[IntegerDigits[2^1000], -5]
```

```
Out[*]=  
{6, 9, 3, 7, 6}
```

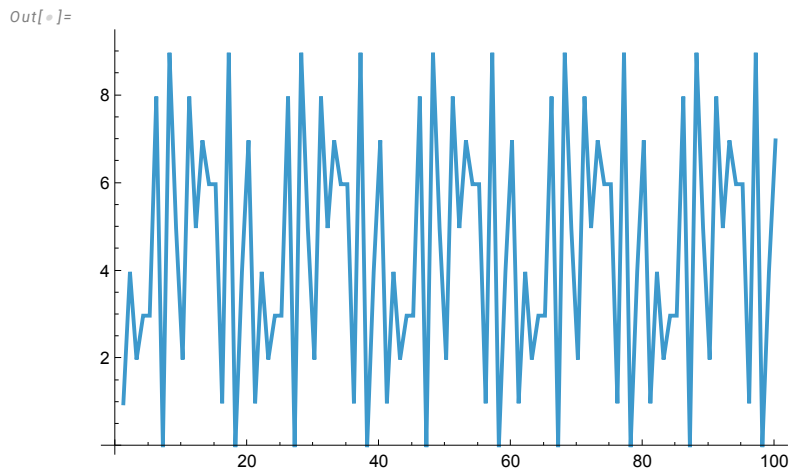
```
In[*]:= Alphabet[][[10 ;; 20]]
```

```
Out[*]=  
{j, k, l, m, n, o, p, q, r, s, t}
```

```
In[*]:= Alphabet[][[Range[2, 26, 2]]]
```

```
Out[*]=  
{b, d, f, h, j, l, n, p, r, t, v, x, z}
```

```
In[*]:= ListLinePlot[Table[IntegerDigits[12^x][[-2]], {x, 100}]]
```

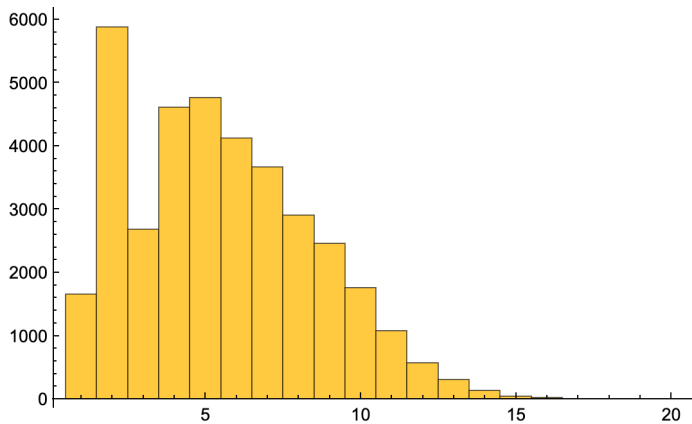


```
In[*]:= TakeSmallest[Join[Range[20]^2, Range[20]^3], 10]
```

```
Out[*]=  
{1, 1, 4, 8, 9, 16, 25, 27, 36, 49}
```

```
In[ ]:= Histogram[Flatten[Position[Characters[#], "e"] & /@ WordList[]]]
```

Out[ ]:=



```
In[ ]:= ReplacePart[Range[100]^3, Thread[Table[x^2, {x, 10}] → Red]]
```

Cool! I didn't use Thread.

Out[ ]:=

```
{
  1, 8, 27, 64, 125, 216, 343, 512, 729, 1000, 1331, 1728, 2197, 2744, 3375, 4096, 4913, 5832,
  6859, 8000, 9261, 10648, 12167, 13824, 15625, 17576, 19683, 21952, 24389, 27000,
  29791, 32768, 35937, 39304, 42875, 46656, 50653, 54872, 59319, 64000, 68921,
  74088, 79507, 85184, 91125, 97336, 103823, 110592, 117725, 125000, 132651, 140608,
  148877, 157464, 166375, 175616, 185193, 195112, 205379, 216000, 226981,
  238328, 250047, 262064, 274496, 287496, 300763, 314432, 328509, 343000, 357911,
  373248, 389017, 405224, 421875, 438976, 456533, 474552, 493039, 512000, 531468,
  551368, 571787, 592704, 614125, 636056, 658503, 681472, 704969, 729000,
  753571, 778688, 804357, 830584, 857375, 884736, 912673, 941192, 970299, 1000000
}
```

```
In[ ]:= If[First[IntegerDigits[#]] > 5, #, Nothing] & /@ Array[Prime, 100]
```

Out[ ]:=

```
{7, 61, 67, 71, 73, 79, 83, 89, 97}
```

```
In[ ]:= TakeLargestBy[WordList[], StringLength, 10]
```

Out[ ]:=

```
{electroencephalographic, electroencephalograph,
  buckminsterfullerene, compartmentalization,
  counterrevolutionary, electroencephalogram, internationalization,
  magnetohydrodynamics, uncharacteristically, counterintelligence}
```

```
In[ ]:= TakeLargestBy[IntegerName[Range[100]], StringLength, 5]
```

Out[ ]:=

```
{seventy-three, seventy-seven, seventy-eight, twenty-three, twenty-seven}
```

```
In[ ]:= TakeLargestBy[IntegerName[Range[100]], Count[Characters[#], "e"] &, 5]
```

Out[ ]:=

```
{seventeen, seventy-three, seventy-seven, eleven, eighteen}
```

## Chapter 32

```
In[ ]:= Cases[IntegerDigits[Range[1000]], {1, _, 9}]
```

```
Out[ ]:=
```

```
{{1, 0, 9}, {1, 1, 9}, {1, 2, 9}, {1, 3, 9},
 {1, 4, 9}, {1, 5, 9}, {1, 6, 9}, {1, 7, 9}, {1, 8, 9}, {1, 9, 9}}
```
































```
In[ ]:= Cases[IntegerDigits[Range[1000]], {x_, x_, x_}]
```

```
Out[ ]:=
```

```
{{1, 1, 1}, {2, 2, 2}, {3, 3, 3}, {4, 4, 4},
 {5, 5, 5}, {6, 6, 6}, {7, 7, 7}, {8, 8, 8}, {9, 9, 9}}
```





























```
In[ ]:= IntegerDigits[Range[100]] /. Thread[{0 → Red, 9 → Orange}]
```

```
Out[ ]:=
```

```
{{1}, {2}, {3}, {4}, {5}, {6}, {7}, {8}, {, {1, , {1, 1}, {1, 2}, {1, 3},
 {1, 4}, {1, 5}, {1, 6}, {1, 7}, {1, 8}, {1, , {2, , {2, 1}, {2, 2},
 {2, 3}, {2, 4}, {2, 5}, {2, 6}, {2, 7}, {2, 8}, {2, , {3, , {3, 1}, {3, 2},
 {3, 3}, {3, 4}, {3, 5}, {3, 6}, {3, 7}, {3, 8}, {3, , {4, , {4, 1}, {4, 2},
 {4, 3}, {4, 4}, {4, 5}, {4, 6}, {4, 7}, {4, 8}, {4, , {5, , {5, 1}, {5, 2},
 {5, 3}, {5, 4}, {5, 5}, {5, 6}, {5, 7}, {5, 8}, {5, , {6, , {6, 1}, {6, 2},
 {6, 3}, {6, 4}, {6, 5}, {6, 6}, {6, 7}, {6, 8}, {6, , {7, , {7, 1}, {7, 2},
 {7, 3}, {7, 4}, {7, 5}, {7, 6}, {7, 7}, {7, 8}, {7, , {8, , {8, 1}, {8, 2},
 {8, 3}, {8, 4}, {8, 5}, {8, 6}, {8, 7}, {8, 8}, {8, , {, , {, 1},
 {, 2}, {, 3}, {, 4}, {, 5}, {, 6}, {, 7}, {, 8}, {, , {1, , 
```

```
In[ ]:= IntegerDigits[2^1000] /. Thread[{0 → Red}]
```

```
Out[ ]:=
```

```
{1, , 7, 1, 5, , 8, 6, , 7, 1, 8, 6, 2, 6, 7, 3, 2, , 9, 4, 8, 4, 2, 5, , 4, 9,
 , 6, , , , 1, 8, 1, , 5, 6, 1, 4, , 4, 8, 1, 1, 7, , 5, 5, 3, 3, 6, ,
 7, 4, 4, 3, 7, 5, , 3, 8, 8, 3, 7, , 3, 5, 1, , 5, 1, 1, 2, 4, 9, 3, 6, 1, 2,
 2, 4, 9, 3, 1, 9, 8, 3, 7, 8, 8, 1, 5, 6, 9, 5, 8, 5, 8, 1, 2, 7, 5, 9, 4, 6, 7, 2,
 9, 1, 7, 5, 5, 3, 1, 4, 6, 8, 2, 5, 1, 8, 7, 1, 4, 5, 2, 8, 5, 6, 9, 2, 3, 1, 4, ,
 4, 3, 5, 9, 8, 4, 5, 7, 7, 5, 7, 4, 6, 9, 8, 5, 7, 4, 8, , 3, 9, 3, 4, 5, 6, 7, 7,
 7, 4, 8, 2, 4, 2, 3, , 9, 8, 5, 4, 2, 1, , 7, 4, 6, , 5, , 6, 2, 3, 7, 1, 1,
 4, 1, 8, 7, 7, 9, 5, 4, 1, 8, 2, 1, 5, 3, , 4, 6, 4, 7, 4, 9, 8, 3, 5, 8, 1, 9, 4,
 1, 2, 6, 7, 3, 9, 8, 7, 6, 7, 5, 5, 9, 1, 6, 5, 5, 4, 3, 9, 4, 6, , 7, 7, , 6,
 2, 9, 1, 4, 5, 7, 1, 1, 9, 6, 4, 7, 7, 6, 8, 6, 5, 4, 2, 1, 6, 7, 6, 6, , 4, 2, 9,
 8, 3, 1, 6, 5, 2, 6, 2, 4, 3, 8, 6, 8, 3, 7, 2, , 5, 6, 6, 8, , 6, 9, 3, 7, 6}
```

```
In[ ]:= Characters["The Wolfram Language"] /. {"a" | "e" | "i" | "o" | "u" → Nothing}
```

```
Out[ ]:=
```

```
{T, h, , W, l, f, r, m, , L, n, g, g}
```

```
In[ ]:= Cases[IntegerDigits[2^1000], 0 | 1]
```

```
Out[ ]:=
```

```
{1, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 1, 1, 1, 1, 1,
  1, 1, 1, 1, 1, 0, 0, 0, 1, 0, 0, 0, 1, 1, 1, 1, 1, 0, 1, 1, 1, 0, 0, 1, 1, 1, 1, 0, 1, 0, 0}
```

```
In[ ]:= Cases[IntegerDigits[Range[100, 999]], {x_, y_, x_}]
```

```
Out[ ]:=
```

```
{{1, 0, 1}, {1, 1, 1}, {1, 2, 1}, {1, 3, 1}, {1, 4, 1}, {1, 5, 1}, {1, 6, 1}, {1, 7, 1},
 {1, 8, 1}, {1, 9, 1}, {2, 0, 2}, {2, 1, 2}, {2, 2, 2}, {2, 3, 2}, {2, 4, 2}, {2, 5, 2},
 {2, 6, 2}, {2, 7, 2}, {2, 8, 2}, {2, 9, 2}, {3, 0, 3}, {3, 1, 3}, {3, 2, 3}, {3, 3, 3},
 {3, 4, 3}, {3, 5, 3}, {3, 6, 3}, {3, 7, 3}, {3, 8, 3}, {3, 9, 3}, {4, 0, 4}, {4, 1, 4},
 {4, 2, 4}, {4, 3, 4}, {4, 4, 4}, {4, 5, 4}, {4, 6, 4}, {4, 7, 4}, {4, 8, 4}, {4, 9, 4},
 {5, 0, 5}, {5, 1, 5}, {5, 2, 5}, {5, 3, 5}, {5, 4, 5}, {5, 5, 5}, {5, 6, 5}, {5, 7, 5},
 {5, 8, 5}, {5, 9, 5}, {6, 0, 6}, {6, 1, 6}, {6, 2, 6}, {6, 3, 6}, {6, 4, 6},
 {6, 5, 6}, {6, 6, 6}, {6, 7, 6}, {6, 8, 6}, {6, 9, 6}, {7, 0, 7}, {7, 1, 7},
 {7, 2, 7}, {7, 3, 7}, {7, 4, 7}, {7, 5, 7}, {7, 6, 7}, {7, 7, 7}, {7, 8, 7},
 {7, 9, 7}, {8, 0, 8}, {8, 1, 8}, {8, 2, 8}, {8, 3, 8}, {8, 4, 8}, {8, 5, 8},
 {8, 6, 8}, {8, 7, 8}, {8, 8, 8}, {8, 9, 8}, {9, 0, 9}, {9, 1, 9}, {9, 2, 9},
 {9, 3, 9}, {9, 4, 9}, {9, 5, 9}, {9, 6, 9}, {9, 7, 9}, {9, 8, 9}, {9, 9, 9}}
```