# Brian — PS 18 — 2025-04-15 — Solution

*EIWL3* Sections 41 and 42

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## Exercises from *EIWL3* Section 41

In[7]:= `(* 41.1 *) Cases[IntegerDigits[Array[#`$^2$` &, 100]], {___, x_, y_, ___} /; x == y]`

Out[7]= `{{1, 0, 0}, {1, 4, 4}, {2, 2, 5}, {4, 0, 0}, {4, 4, 1}, {9, 0, 0}, {1, 1, 5, 6},`
`{1, 2, 2, 5}, {1, 4, 4, 4}, {1, 6, 0, 0}, {2, 1, 1, 6}, {2, 2, 0, 9},`
`{2, 5, 0, 0}, {3, 3, 6, 4}, {3, 6, 0, 0}, {3, 8, 4, 4}, {4, 2, 2, 5},`
`{4, 4, 8, 9}, {4, 9, 0, 0}, {5, 7, 7, 6}, {6, 4, 0, 0}, {6, 8, 8, 9},`
`{7, 2, 2, 5}, {7, 7, 4, 4}, {8, 1, 0, 0}, {8, 8, 3, 6}, {1, 0, 0, 0, 0}}`

In[11]:= `(* 41.2 *) StringJoin /@`
`Cases[Array[Characters[RomanNumeral[#]] &, 100], {___, "L", ___, "I", ___, "X", ___}]`

Out[11]=
`{XLIX, LIX, LXIX, LXXIX, LXXXIX}`

In[14]:= `(* 41.3 *) f[list_] := Equal[list, Reverse[list]]`

`(* 41.4 *) (* So as not to fill up my document, I just took the first 20: *)`
`Take[Cases[Partition[TextWords[WikipediaData["alliteration"]], 2, 1],`
`  {x_, y_} /; Characters[x][[1]] == Characters[y][[1]]], 20]`

`{{"or", "of"}, {"as", "a"}, {"Peter", "Piper"}, {"pickled", "peppers"},`
`{"Irish", "It"}, {"as", "an"}, {"ideas", "in"}, {"Icelandic", "It"},`
`{"cartoon", "characters"}, {"the", "term"}, {"identical", "initial"},`
`{"several", "special"}, {"as", "alliteration"}, {"stressed", "syllables"},`
`{"as", "an"}, {"lazy", "languid"}, {"languid", "line"},`
`{"as", "alliteration"}, {"be", "because"}, {"such", "syllables"}}`
`(* Notice that this solution is case-sensitive. One could also convert the *)`
`(* characters to lower-case and then test to get a case-insensitive test. *)`

`(* 41.5 *)`

`(* 41.6 *)`

`(* 41.7 *)`

`(* 41.8 *)`

`(* 41.9 *)`

`(* 41.10 *)`

`(* 41.11 *)`

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(* 41.12 *)
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## Exercises from *EIWL3* Section 42

In[29]:= `(* 42.1 *) StringReplace["1 2 3 4", " " → "---"]`

Out[29]=

1---2---3---4

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(* 42.2 *)
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(* 42.3 *)
```

```
(* 42.4 *)
```

```
(* 42.5 *)
```

```
(* 42.6 *)
```

```
(* 42.7 *)
```

```
(* 42.8 *)
```