# Putting the Pieces Together

## Task

Phone keys have mnemonics assigned to them.

```scala
val mnemonics = Map(
    '2' -> "ABC", '3' -> "DEF", '4' -> "GHI", '5' -> "JKL",
    '6' -> "MNO", '7' -> "PQRS", '8' -> "TUV", '9' -> "WXYZ")
```

Assume you are given a dictionary `words` as a list of words.

Design a method `translate` such that

```scala
translate(phoneNumber)
```

produces all phrases of words that can serve as mnemonics for the
phone number.

**Example**: The phone number "7225247386" should have the
mnemonic `Scala is fun` as one element of the set of solution
phrases.

## Background

This example was taken from:

> *Lutz Prechelt: An Empirical Comparison of Seven
> Programming Languages. IEEE Computer 33(10): 23-29
> (2000)*

Tested with Tcl, Python, Perl, Rexx, Java, C++, C.

Code size medians:

- ▶ 100 loc for scripting languages
- ▶ 200-300 loc for the others

## The Future?

Scala's immutable collections are:

- *easy to use*: few steps to do the job.
- *concise*: one word replaces a whole loop.
- *safe*: type checker is really good at catching errors.
- *fast*: collection ops are tuned, can be parallelized.
- *universal*: one vocabulary to work on all kinds of collections.

This makes them a very attractive tool for software development